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INNOVATION MANAGEMENT, ENTREPRENEURSHIP AND SUSTAINABILITY 2018

Proceedings of the 6th International Conference

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Faculty of Business Administration

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Foreword

The 6th International Conference Innovation Management, Entrepreneurship and Sustainability (IMES 2018) took place on May 31 – June 1, 2018 at the University of Economics, Prague. The conference was organised by the Department of Entrepreneurship of the University of Economics, Prague, Czech Republic in cooperation with

- Faculty of Management, Comenius University in Bratislava, Slovakia
- School of Business and Economics, Linnaeus University in Vaxjo, Sweden
- Corvinus University of Budapest, Hungary
- University of Huelva, Spain

and other partners.

Sound keynote speakers – Roy Thurik (Erasmus University Rotterdam), Ute Stephan (Aston Business School), Michael Fritsch (Friedrich Schiller University Jena), Stefan Schaltegger (Leuphana University Lüneburg), Marina Dabič (University of Zagreb and Nottingham Trent University), Martin Srholec (CERGE-EI) and Jiří Hnilica (University of Economics, Prague), discussed the trends in the fields of innovation management, entrepreneurship and sustainability. The conference aimed to achieve academic excellence in a regional context and to establish a platform for mutual collaboration, exchange and dissemination of ideas among researchers and professionals.

These conference proceedings contain contributions of the conference participants presented during both days of the conference. Authors of papers come from 30 countries all over the world, namely from Australia, Bangladesh, Belgium, Brazil, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Ghana, Hungary, India, Indonesia, Iran, Italy, Netherlands, Paraguay, Poland, Romania, Russia, Serbia, Slovakia, Spain, Sweden, Switzerland, Taiwan, Turkey, USA, Vietnam. All these contributions have successfully passed the doubleblind peer-review process.

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THE IMPACT OF ENTREPRENEURSHIP TRAINING PROGRAM ON RUSSIAN STUDENTS' INTENTION TOWARDS ENTREPRENEURSHIP

Abid Abidullah

Abstract

Purpose: The purpose of this research was to study the change in intention of Russian university students towards alternate career choice, to be an entrepreneur and start a business after attending the entrepreneurial training program.

Design/methodology/approach: In methodology non-probability quantitative design convenience sampling were used for the study. The collected data were evaluated through Statistical package for the social sciences by running descriptive statistics and paired t-test to interpret the impact of entrepreneurship training program.

Findings: The results show the positive impact of entrepreneurship training programs on university students' intention towards entrepreneurship. The impact was also detected in the attitude of the students towards entrepreneurship.

Practical implications: Providing only business managing skills and producing job seekers may create burden on economy of a country. To be entrepreneur youth may create not only job for themselves but for other as well. The study may bring the attention of educators, policy makers and authorities to give proper space to entrepreneurship concept in the education system. The students who will be entrepreneurs in the future will not only contribute in the development of the economy but will solve society's problems in entrepreneurial and innovative way.

Quality/value: A small contribution to the literature of short entrepreneurship training program impact on students' entrepreneurial intention. Further the study also contributes to present the outcomes of entrepreneurship training program testing Theory of planned behaviour.

Keywords: Entrepreneurship training programs, entrepreneurship education, university students

JEL Codes: I21, M53

Introduction

Entrepreneurship education has gained recognition and grown an emerging area of study not only in the US, but all over the world (Fayolle A. , 2013) .The first course on entrepreneurship was offered at Howard university in 1947 by Myles Mace in the US (Katz, 2003). In 2013 Fayolle explained that developing entrepreneurial behaviour, of potential entrepreneurs, institutions of higher education worldwide are continuously contributing. Not only US universities being the pioneered to make entrepreneurship education the part of their business programs, but Latin America and Europe are not behind in the race (Alvarez, 2011).Besides Europe and US China also made entrepreneurship education as a main part of education Chinese Ministry of Education (MOE) promoting entrepreneurial education in universities and startups by college students (MOE, 2010). Russia an Eurasian country and being the part of Soviet Union entrepreneurship is still a new concept specially for Millennials. The collapse of the former Soviet Union changed the centralized state operated supply system. According to Nussbaum et al 2005 cited by (Medvedeva, 2012) Russian are good at inventing but due to lack of business skills they are unable to commercialize their Ideas in the market in form of business. Nothing is known about entrepreneurship in Russia it is certainly needed to be studied in the future (Kolvereid & Tkachev, 1999) . Keeping challenge to Russian business development in front to promote entrepreneurship in education system, Russian Association for Entrepreneurship Education (RUAEE) was formed in 2008 to focus on entrepreneurship research.

1   Effectiveness of Entrepreneurship Education

Due to different types of course design, teaching style, and classroom environment the debate on the effectiveness of entrepreneurship is still an open topic for researchers. Based on their research after the evaluation of students' participation in entrepreneurship course (Lucas & Cooper, 2004) argue that it is possible to develop the confidence of students to expose them to entrepreneurship courses. There is a positive relationship of entrepreneurship education with entrepreneurship attitude and intention (Walter & Dohse, 2009).In empirical quasi-experimental study of (Souitaris, Zerbinati, & Al-Laham, 2007) reported positive change in students' intention after entrepreneurship course. The support of the university has a positive impact on students' entrepreneurship intention (Autio, Keeley, Klofsten, & Ulfstedt, 1997).

Based on theory of planned behaviour (Ajzen, 1991)we tried to find out the ETP effects on students' intention towards entrepreneurship. According to (Ajzen, 1991) intentions predict

behaviour while the intention is predicted by attitude, subjective norms and perceived behavioural control. To become an entrepreneur and start a business in the future as an action or behaviour one should have the intention towards starting a business. The (TPB) has been used by many researchers in order to evaluate entrepreneurship intention and behaviour (Souitaris, Zerbinati, & Al-Laham, 2007); (Kolvereid & Tkachev, 1999); (Autio, Keeley, Klofsten, & Ulfstedt, 1997); According (Ajzen, 1991) intention is important to perform or not to perform a certain behavior it gives prediction about certain behaviour.

In the context of this we only focus on the difference in the reflection of the students towards entrepreneurship. The purpose of this ETP was to aware students about entrepreneurship concept according to (Linan, 2004) of education for entrepreneurs. According to (Johannisson, 1991) the learning process of entrepreneurship in different levels. The five-different level are Know-Why: (Attitude and motives towards entrepreneurship), Know-How: (The competences, skills and abilities), Know-Who (Social capabilities and skills), Know-when: (Intuition), Know-What: (concept and knowledge). As the purpose of this ETP was to aware students about the concept of entrepreneurship the category of Johanisson Know-when was not considered the part of this study.

2   Methodology

For this study the data were collected from the students of Ural federal University, Russia who participated in six days ETP on May 20, 2017. The program was organized for the first time in university the details are shown in figure 1. The students in this ETP were mostly from final year bachelor degree within average age of 20-25 and 95% were full time students.

Non-probability convenience sampling (Cohen, 2000) was used for this study. The questionnaire was developed from the literature for which the questions for TPB construct were taken from (Liñán & Chen, 2009) and for effectiveness of ETP were taken from (Souitaris, Zerbinati, & Al-Laham, 2007). As the questionnaire was used by the previous researchers for the same kind of study, we twice translated from English back to Russian. The questionnaire Cronbach alpha for the construct range from (0.7 to 0.8) after pilot study as shown in the table 1. For the purpose of matching the reflection the questionnaire was distributed before and with additional contextual variable of ETP at the end of the ETP among the same students. A total of 54 questionnaires in hard copy were distributed among the students before and after the ETP for which the response to the questionnaire was 100% of the students in both collections.

Fig. 1: ETP

3   Results

To find out the impact of ETP paired t-test was run to compare the outcomes of descriptive statistics before and after the program table 1, shows the details of the means and standard deviation. According to the results of the data we see the impact of ETP on students' intention, but it does not make the evident strong of its impact for a long time. The behaviour and actions of human cannot be guaranteed. We did not get any positive significance of ETP on perceived behavioural control and subjective norm.

Tab. 2: Results

Measures	No of items	Average score before ETP	Average score after ETP	Standard deviation Before ETP	Standard deviation after ETP	p-value	Cronbach Alpha
Attitude towards entrepreneurship	5	3.12	3.56	0.64	0.89	.01	0.8
Perceived behavioral control	6	3.12	3.48	0.71	0.49	.17	0.8
Subjective norms	4	2.70	3.18	0.99	0.71	.57	0.7
Entrepreneurial Intention	6	3.33	3.80	0.46	0.77	.01	0.7

Discussion

The purpose of this study was to find out the reflection of Russian students towards entrepreneurship after training program. The influence of participation in ETP has been studied by many researchers like (Walter & Dohse, 2009) got the positive impact of ETP on students' intentions towards entrepreneurship. On another place (Souitaris, Zerbinati, & Al-Laham, 2007) noticed a change in subjective norms and intentions in their quasi-experimental study of ETP. Most of the studies in entrepreneurship argue that entrepreneurship is a practice and one can learn by practicing but to provide sources to every student to practice his/her idea is very

costly for the institution. In previous studies the researchers studied financially sponsored ETPs in which students has practically applied their business ideas on small level. Our target respondents for the study were the students who attended ETP which was not financially sponsored. In our results we have noticed the changes in attitude of the students towards entrepreneurship behavior after ETP.

Conclusion

Keeping the previous studies and our results in front, we are not going to generalize our report but sharing the signals of ETP. Making the part of curricula these ETPs somehow may give benefits to students in different ways.

The three types of students may be benefiting from the ETP in different ways:

Job oriented students:

Students who want to do the job in their future career are considered to be job-oriented students. In current market those organizations are surviving who continuously bring some innovation in their organization. Soon the organization will demand entrepreneurial mind set employees to play role as entrepreneurs inside the organization and having the ability to create new businesses under the umbrella of parent organizations and bringing innovation in the organization. These kinds of entrepreneurship training programs may be the source of preparing entrepreneurial mind employees in university for the market. The purpose of playing a role in the development of the economy and society can be fulfilled not only to by creating own business but be entrepreneur in somebody else business. Most students consider that experience, finance and fear of failure are barriers to start own business. In this way youth can utilize the opportunity of available resources, finance and the environment for experience of already existed organization.

Business oriented students:

Those students who want to start their own business after completing their studies are considered to be business-oriented students. These kinds of ETP may help the students to provide them the opportunity to listen and meet the existing and experienced entrepreneurs. To start a new business, developing existing business or to run business of others, they need proper skills and abilities which can be developed in these kinds of programs. In very young ages, mostly entrepreneurs face financial problems in that they need to develop the skills to get

finance and having the ability to convince partners and investors to implement his/her business idea.

Undecided students:

Those students who are in a degree program just because of some factors and still they are in doubt in their present and future career choice are considered to be undecided students. While introducing these kinds of students to ETP may affect them to choose their future career. They may inspire or to be entrepreneurial and start own business may match their choice of future career. These ETP may be a good source of discovery of their own abilities and skills for undecided students.

The study opens the track for future study in comparison of different entrepreneurship programs to find out the main cause of change in intention.

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Contact

Abid Abidullah

Institute of Public Administration and Entrepreneurship

Ural Federal University

51, Lenina Ave., Ekaterinburg, 620083, Russian Federation

aabidulla@urfu.ru

E-LEARNING SUPPORT FOR NEW PRODUCT DEVELOPMENT STUDENTS TEAMS

Cătălin George Alexe – Bogdan Ţigănoaia – Alexandra Ioanid – Dana Corina Deselnicu – Valentin Mănescu

Abstract

Purpose: The purpose of the paper is to present a case study about the use of E-learning platforms to support entrepreneurship spirit and form initiatives among students for new products development. The secondary objective of this research is to present a comparative analysis based on some common criteria such as given functionalities, technical characteristics, quality of graphical interface, of the main platforms which promote the concept of new product development (NPD) by offering their users access to free information about the steps of the product development process.

Design/methodology/approach: The paper used bibliographic research and comparative analysis of the NPD platforms. The methodology also included a quantitative research which examined the ways in which the main entrepreneurial preoccupations of the students at Politehnica University of Bucharest are being directed towards the development of industrial products and services. The target group for this analysis consisted in more than 139 students (the majority having less than 25 years old) from Politehnica University of Bucharest.

Findings: This study compares the available chosen NPD platforms based on pre-defined criteria and concludes on their most important and helpful characteristics. Also, the findings of the field research detail the use of E-learning platforms to support the entrepreneurship spirit of the students of Politehnica University of Bucharest.

Research/practical implications: This research provides a significant contribution to the future development of a didactic product development platform which will support the teaching/learning process of the students at one of the largest technical university in Romania - Politehnica University of Bucharest. The didactic NPD platform will support the self-learning process of students and will provide its users with access to quality information and advice regarding the product development process, also promoting innovation, research and development-oriented entrepreneurship.

Originality/value: The added value of the present research is twofold: it provides an up-to-date comparison and analysis of some of the online platforms dedicated to the new products development and emphasizes the perceptions and challenges of students having entrepreneurial preoccupations regarding the use of online platforms on NPD.

Keywords: Entrepreneurship, platforms, new product development - NPD

JEL Codes: M15, M00

Introduction

The study of the specialty literature highlights the various concerns aimed at developing online tools with a strong pedagogical character in supporting entrepreneurial initiatives among the students. The students are using the learning-by-doing method that stimulates the action-based entrepreneurship education. In order to create and implement their own business, they approach various resources from the Web sites. Kremer (2017) made a survey of 281 students with no business experience which signed up in the entrepreneurship seminars, asking them to assess the perceived quality of the Storyteller application. Among the evaluated items of the Storyteller were its ease of use, organization and design. Entrepreneurial education based on action facilitates the understanding of the context and of the business opportunity and can increase the number of the persons who act as entrepreneurs or members of a team which supervises the well-being of a business (Rasmussen, 2006; Neck, 2011). Even if they are willing to take on the risks associated with starting a business, young people with no business experience are aware of the lack of theoretical and practical knowledge of entrepreneurship. Therefore, they try to find and use various ICT tools to obtain additional information, skills and knowledge. Young entrepreneurs, students or graduates, especially those who have started small businesses based on the creation of material goods, need to be aware that without understanding the notions of the new product development process and applying in their businesses, they cannot withstand the market. By choosing to enter into high-risk businesses associated with the productive activity, these young entrepreneurs are more exposed to failure, and therefore they need support.

1   The product development framework

The concept of new product development – NPD is defined in many ways in the specialized literature. New product development is a process of developing new products and services for the market. It refers to a number of measures that must be achieved before the product can be introduced to the market. Another definition refers to a series of steps that includes the conceptualization, design, development and marketing of newly created or newly rebranded goods or services (Rouse, 2018). New product development means multidisciplinary collaboration and teamwork. The process of new product development is complex (Griffin, 1997; Ulrich & Eppinger, 2008), but in certain limits, it can vary from industry to industry depending on the specificity of the product and on the way the company concerned may choose to manage the resources and the existing capabilities and knowledge of the company's top management.

Rouse is advancing a composite new product development (NPD) framework for manufactured goods which has eight important components: Idea generation and Idea screening; Concept development and testing; Market strategy/business analysis is about the four P's, which are product, price, promotion and placement; Feasibility analysis/study yields information that is critical to the product's success; Product technical design/Product development; Test marketing, or market testing - the purpose of this step is to validate the entire concept; Market entry/commercialization – the purpose of this step is to introduce the product to the target market (Rouse, 2018).

2   E-learning support for new product development teams

Product development needs cross-functional teams for an efficient teamwork. Some of the core items are the importance of communication and collaboration, coordination, establishing team goals, the effectiveness of the leadership, the importance of problem-solving, learning within the team and making decisions (Gözde, 2007).

Product development is an ever-evolving and fluid process. Depending on the organization, one of the following situations can appear (Rouse, 2018):

- a dedicated team researches and tests new products;
- a specialized design team is formed for new product development in smaller companies;
- product manager is often the person in charge of product development (he/she may be from the marketing team) - in midsize companies.

Directly applicable suggestions to enhance collaborative creativity and learning for NPD teams are hard to find. Relevant insights are spread across domains. Inspiration can be obtained from the domains of engineering, new product design, creative problem solving, virtual collaboration and team learning (Rijpkema et al., 2009).

In table 1 a comparison between regular, work-based and NPD learning is presented:

Tab. 1: Comparison between regular, work-based, and NPD learning.

Learning in regular (education) settings	Work-based learning	Learning in NPD
Planned	Both planned and just in time	Just-in-time
Predefined	Both predefined and unpredictable	Mainly unpredictable
Usually aimed at the individual (he or she has to be able to…)	Both aimed at the individual and team	Primarily aimed at the team (project unit) Aimed at enhancing collaborative creativity Aimed at enhancing collaborative learning
Formal	Formal, non-formal	Non-formal

Source: (Rijpkema et al., 2009)

Choosing an online learning platform

Standard features influence the decision of choosing an online learning platform (Burns, 2014):

- Analytics (with varying degrees of quality) and Apps;

- Assignment submission, Discussion forum and Grading, File upload/download capacity;

- Instant messages and online calendar;

- Online news and announcement (institution and course level), Online quiz and Wiki;

- Widgets that allow connections to social media.

Some criteria in choosing an online learning platform refer to (Burns, 2014):

- Cost, Ease of use, Appearance (look and feel)

- The ability to integrate with other platforms / Education Information Management Systems (EMIS);

- Suite of supports (hosting the course, course design, help with upgrades etc.), Special features.

3 Analysis of online solutions for managing new product development projects

There are several online solutions for new products development. They have various characteristics and functionalities, which will be analyzed in the following paragraphs.

3.1 NPD-solutions

It is a platform where you can learn or be trained on the main steps for new product development, like time, value and the NPD process. It has both NPD Consulting and NPD Training as well as a lot of NPD resources (papers and articles). Its consulting page, as well as the training page, is well informed, with plenty of information including design to cost, lean design as well as reducing time to market.

It has the "best practices to the development of complex products in industries such as aerospace, automotive, capital equipment, consumer products, defense, high technology, medical devices and equipment, and other industries". The user can even choose specific consulting from the ones mentioned above.

3.2 Product Development Institute Inc.

This platform considers the "roadmap for New Product Development" to be a 5-steps road: "Scoping", "Build Business Case", "Development", "Testing and Validation" and "Launch". The platform claims to "Accelerate speed to market". It provides articles, books and seminars in this scope.

The stages presented on this platform are delimited by gates, each gate having a specific input and output, where deliverables are the input of the gates and the outputs are the result of the gate review. A big impact on the gates is the criteria part, where the decisions are prioritized. "Preceding each stage is a decision point or gate which serves as a Go/Kill and prioritization decision point". Among the advantages, it claims to "reduce re-work and others form of waste", and to ensure a "complete process".

3.3 PD Trak Platform

On this platform, people interested in NPD can find a product portfolio management software as well as NPD services designed to "improve their product development process". An interesting part of this platform is the fact that users are given a list of steps (for example "Develop a project budget") and they get explanations on how to accomplish every step. The software instrument available on the platform is complex, offering a lot of tools to help in

portfolio management, process configuration, project management, idea management etc. Just like the Product Development Institute Inc. platform, this platform also has a model based on stages and gates and it offers consultancy for users who apply for the gate review.

3.4 A comparison analysis between platforms by using defined criteria

Table 2 shows a comparison between platforms by using some defined criteria:

Tab. 2: Internet solutions for managing projects

Name of the platform	NPD-solutions	Product Development Institute Inc.	PD Trak
The web link	http://www.npd-solutions.com/bok-planning.htmm	http://www.prod-dev.com/stage-gate.php	https://pd-trak.com/new-product-development/
Given functionalities	Training in NPD, pointing out what tools to use for selecting a portfolio, managing resources, applying lean product development etc.	The stage-gate model (the 5 steps Roadmap)	A full software instrument that can offer support and consulting as well as software customizations.
Technical characteristics	A web interface for their consulting, training and resources	Web interface for the documentation articles	MySQL database, PHP as backend and JavaScript on the fronted. Optional MS Excel and MS Project, as well as the Microsoft Office, files being compatible
Quality of graphical interface	The graphical interface looks good, being easy to find what you need. The colors seem a bit too powerful.	Even if the graphical interface looks a bit old the figures point out really easy what the steps are.	The graphic interface is really nice looking, having a lot of schemas and graphs for what they are explaining
Is the platform offering NPD consulting services?	Yes, they have a page dedicated to NPD Consulting	No	Yes, on their workshops
Is the platform offering resources in order to learn NPD?	Yes, they have a chapter dedicated to NPD Learning	A couple of articles are linked on their website.	Yes, with some pages on their site or on the workshops
Is the platform offering support for online training?	Yes	No	No, only offline for workshops
Software Instruments	Pointing out what tools you can use. For example, on portfolio management, it is said that "we could prepare a training program for the portfolio management process"	-	The PD Track software solution is a really complex instrument that can deal with almost everything you need in your New Product Development

Following the comparative analysis from table 2, the platform that meets most criteria is NPD-solutions, which combines a variety of functionalities and facilities.

4 Case study

4.1 Research methodology

The study used quantitative methodology by applying a 29-items questionnaire. The **objective** of the study was to study aspects regarding the use of E-learning platforms to support entrepreneurship spirit of students of the Politehnica University of Bucharest.

4.1.1 Research variables

The authors tested variables related to the use of E-learning platforms to support entrepreneurship spirit and demographic variables (age, gender etc).

4.1.2 Research sample

The sample was formed by students from Politehnica University of Bucharest The questionnaire was applied on a significant group of undergraduate and master degree students of three different faculties from University Politehnica of Bucharest (UPB), Romania: Faculty of Entrepreneurship, Business Engineering and Management (FAIMA), Faculty of Engineering in Foreign Languages (FILS) and Faculty of Automatics and Computers (AUT). The questionnaire was distributed to more than 150 persons, but only 139 questionnaires were considered usable. The vast majority of respondents were less than 25 years old.

4.2 Data analysis and research findings

The intention to be an entrepreneur is widespread among the respondents:

- „I think it would be good to start a business someday in my professional life" - 32%;
- „I think, quite often, to start a business in the near future" – 39%;
- „I sometimes think of starting a business in the near future" – 18%.

Regarding the *domain of the respondent's business idea*, it can be concluded, according to the results of the research, that the industrial domain (production of goods, including software) was chosen by a small number (29.5%) of the respondents.

Regarding *the disadvantages that they are aware of* in the case of choosing to implement a business idea in the field of goods production, including software, the respondents' answers were:

- Higher initial investment (cost of machinery, production area, etc.) - 44.6%
- Solid knowledge in many areas – 35.9%
- Difficulty in finding skilled staff – 30.21%

- The need to sell in order to finance new production cycles – 25.17%

- Danger of perishability of products in certain situations – 16.5%

- Existence of storage, dispatch costs, which may affect the size of the profit – 15.8%

- The difficulty of adapting product type to changes in consumer demand - the need to innovate – 32.3%

- There may arise a lack of liquidity – 12.9%.

For the question *What is your experience with the use of E-learning platforms?* the results were as follows: 51% - Good / 23% - Low / 20% - Very good / 6% - I do not use.

The respondents were asked: What are the main three advantages of using an E-learning platform to support the entrepreneurship spirit for students of the University Politehnica of Bucharest? The findings were as follows:

- The information on the platform can be accessed from anywhere – 63%;

- In the case of open courses, they can be accessed by students from other specializations and would help to create an entrepreneurial community on the campus of the University – 40%;

- The possibility of accessing multiple necessary information resources in the learning process – 33%;

- Information can be scanned gradually and selectively according to the need for learning – 33%;

The next advantages chosen by the respondents were:

- It is possible to communicate with other students and it is possible to create partnerships – 25%;

- Access to structured and systematized information on various entrepreneurial issues – 25%.

According to the respondents' answers, the students would use such a platform:

- Only to get information without commenting – 32%;

- For both existing information and the ability to interact with others – 53%;

- In order to interact with other people – 5%;

- In particular, to promote your own business ideas – 6 %;

- First, to evaluate the knowledge already acquired – 3%;

- I would not use such a platform – 1 %.

Regarding the *need of business consulting* in order to start or to develop the own business, among the twenty areas analyzed, the students nominated especially:

- Project Management – 48%;
- Developing a business plan – 46%;
- Accessing EU funds – 43%;
- Improving product performance - Product development – 33%;
- Calculating costs and establishing prices – 31%;
- Business promotion – 30%.

Most of the difficulties associated with initiating a business in the field of goods production are known by students, and they are willing to seek support in this respect (33% of them want to improve their knowledge of product development).

Conclusions

In Romania, 1 in 100 young people decides to start a business on their own, compared to 1 in 4 young people in the Czech Republic, Poland or Hungary (Government of Romania, 2015). Besides the small number of young entrepreneurs, another common problem is that students or graduates of technical faculties from universities in Romania choose to enter the business world by choosing, in a large proportion, business in the field of trade and services, to the detriment of the creation or improvement of material goods. Specialty literature is extremely poor in providing information on how to approach the process of developing new products, at the very best it is presented broadly, without detailing at the sub-steps level, activities, techniques and methods used and so on. There is a lack of an integrative perspective at the process level. Students are more likely to get information from online learning platforms, where access to information is made easier, communication is faster, and the learning process takes less time. The product development solutions identified on the Internet, proposed by different consultancy firms or research institutes, by addressing, structuring, and synthesizing information can be a starting point for building an eLearning platform, knowledge, methods and tools, good practices related to the product development process among the entrepreneurial students of the Politehnica University of Bucharest in order to increase the competitiveness of their business and team training to initiate joint projects.

Following the analysis, it turned out that NPD-solutions is the best online platform for NPD. Also, the field research done on 139 students from the UPB revealed that students' experience

in using e-learning platforms and their appreciation of the facilities offered can be a starting point in providing an institutional support to a large number of students and creating the prerequisites for the formation of an entrepreneurial university.

The NPD field is still underdeveloped in Romania, and that entrepreneurial students from UPB would greatly benefit if they had access to an online learning tool for new products development. This is the prospect that the authors will continue their research in this very dynamic sector.

Acknowledgment

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Contact

Cătălin George Alexe

Politehnica University of Bucharest

Splaiul Independenţei no. 313, sector 6, Bucharest, Romania

cataalexe@yahoo.com

Bogdan Ţiganoaia

Politehnica University of Bucharest

Splaiul Independenţei no. 313, sector 6, Bucharest, Romania

bogdan.tiganoaia@upb.ro

Alexandra Ioanid

Politehnica University of Bucharest

Splaiul Independenţei no. 313, sector 6, Bucharest, Romania

ioanid.alexandra@gmail.com

Dana Corina Deselnicu

Politehnica University of Bucharest

Splaiul Independenţei no. 313, sector 6, Bucharest, Romania

dana.deselnicu@upb.ro

Valentin Mănescu

Politehnica University of Bucharest

Splaiul Independenţei no. 313, sector 6, Bucharest, Romania

valentin.manescu@upb.ro

APPROVED MODEL OF FACTORS, INFLUENCING THE MANAGEMENT PROCESS IN DEVELOPING NEW PRODUCTS

Diana Antonova - Bozhana Stoycheva

Abstract

Purpose: The aim of this study is to identify the major groups of factors that influence the management process of new product development (NPD) for the purpose of its improvement in industrial enterprises. The main tasks are related to the development and approbation of a basic factor model, representing the dependent groups of variables with a significant influence on the process of developing new products in the manufacturing industry - a strategic sector in Bulgarian industry.

Research/practical implications: The results of this research are applicable to medium and large industrial enterprises in order to improve the methodology of management process in all its stages of product innovation development.

Design/methodology/approach: Empirical data are collected based on a survey, conducted through interview of respondents from medium and large industrial enterprises. Out of 559 organizations, operating in the Manufacturing sector until 2017 (according to data from the National Statistical Institute of Bulgaria), 234 enterprices have taken part in the servey, which makes for 63% activity level of the sample. Furthermore, in the final stage representatives of the surveyed organizations took part in approving the model through expert assessments. The data obtained have been processed by applying descriptive statistics, correlation and regression analysis to look for dependencies between the variables which have been studied.

Findings: As a result of the analysis it has been established that the success of the NPD management process is influenced by main factors, such as implementation of target strategy for new product activities and formalising of the NPD process. Other such factors are resource, investment, and technology support provided by senior managers; using mixed working teams of different functional areas; and implementation of specific marketing, research, technological and management tools.

Research/practical implications: This article presents the results from a study, related to identifying key factors influencing the management of the product innovation process. Based on the analysis and approval of the model, it can be concluded that solving the difficult tasks of differentiating, systematizing and ranking factors essential for the product innovation process provides valuable and specific grounds for assisting the successful management process of NPD. The results of the analysis could help industrial organizations not only in the manufacturing, but also in other sectors to improve the NPD management process.

Originality/value: The aim of the article is to provide methods and adapted good practices, which would help industrial enterprises to improve the process of managing NPD by revealing the factors leading to the success of product innovations. The approval of the model justifies the need of a systematic approach and cross-functional participation of multifunctional teams throughout the life cycle of the innovations under consideration.

Keywords: Innovation process, new products development, factor analysis, manufacturing industry, innovation models

JEL: L60, M11

Introduction

Organizations make a lot of efforts to develop new products. In order to introduce successful innovation, companies seek to develop their innovative skills, accumulate knowledge and build on what has been achieved so far. The pursuit of success, the overcoming of uncertainty and risks, depend to a large extent on the effectiveness of decisions in implementing the innovation process, focusing not only on the manufacturing of new products but also on the process of innovation management. It is important to investigate and track the impact of as many factors as possible on the NPD management process. (Dereli, 2015; Marcon, Medeiros and Ribeiro, 2017; Chwastyk and Kosowski, 2014). Companies should force all their resources into product development activity as a strategic innovation (Gemser and Leenders, 2011; Gmelin and Seuring, 2014).

Today's scientists are putting significant efforts into studying NPD practices and identifying the best among them (Durmuşoğlu and Barczak, 2011). Views on the essence of innovation are converging, and in a business context they are perceived as a process in the company that can be divided into separate phases (Acosta, Acosta, and Espinoza, 2016; Kamasak, 2015; Riel, Neumann and Tichkiewitch, 2013). The process approach is more appropriate because it provides the opportunity to look for ways to improve the organizational state and the management of the innovation process through its deliberate rationalization (Kunev and Antonova 2014, Dibrov, 2016; Luqmani, Leach and Jesson, 2017). According to this conception, the specific roles and tasks of the participants in the process change through its different phases and stages. A prerequisite for successful innovation is good communication, coordination of the different stages, use of multifunctional teams, formalisation of the NPD process, as well as the organization and the methods and tools used in the process of innovation (Marcon, Medeiros and Ribeiro, 2017; Stock, Obenaus, Slaymaker and Seliger, 2017).

1   Research

The subject of analysis is the management process of NPD in the enterprises of manufacturing industry in Bulgaria.

The object of analysis are medium-sized and large enterprises, (on the criterion of number of staff), engaged in the production of: (1) food products; (2) wood and products made of wood and cork (excluding furniture and articles of straw and plaiting materials); (3) paper and cardboard, as well as paper and cardboard products; (4) rubber and plastic products; (5) machines and equipment of general and specific purpose.

Methods of study: A combination of qualitative and quantitative research methods was employed in this study.

1.1 The stages of Qualitative research methods are:

− *Desk study.* Gathering statistics on the population surveyed with the help of public institutions - National Statistical Institute, databases of company information based in the commercial register and Internet. Desk research saves expenditure of time and resources.

− *Survey.* The development of a survey in Bulgaria, founded on indicators already tested, has been based on previous similar studies, related to acquiring and distributing knowledge of managing and improving the process of developing new products in innovative developed economies such as that of the USA (Coordinators of the project were: (I) Product Development and Marketing Association (PDMA) conducted in 1989, (II) A. Griffin in 1995 (Griffin, 1997); PDMA conducted in 2003 (Barczak, Griffin and Kaht, 2009)); Sweden (Coordinators of the project were Rundquist and Chibba and it was conducted in 2004 (Rundquist and Chibba, 2004); Rundquist and Halila conducted a study in 2008 (Rundquist and Halila, 2010)) and Malaysia (Al-Shalabi, Omar and Rundquist, 2008).

Developing a questionnaire in Bulgaria is partly based on the questionnaire used by PDMA in 2003. The survey is carried out in two phases - a pilot and a genuine inquiry.

− *Pilot survey.* A preliminary test for suitability and readability issues. Its aim is to shape the final version of the questionnaire for the Bulgarian industrial enterprises:

− *Structure and content of the questionnaire.* The final version of a questionnaire in Bulgaria is partly based on questionnaires from previous studies - PDMA in 2003 Sweden (2004) and Malaysia (2008) - whose questionnaires were provided for a comparative analysis of the outcomes, with the explicit consent.

The questionnire contains a cover letter and six sections: (I) General questions about the enterprise, (II) General process of new product development in the enterprise, (III) Managing portfolios of innovative products, (IV) Processes of product development through outsourcing, (V) Organizing the development of new products, (VI) Methods and tools for developing new products.

The total number of sub-questions that are part of the survey was 253. It contains both open (76) and closed (177) questions, some of which are presented in tabular form with grading

systems. These questions are related to the company as a whole and not to its individual business units. Responses have been obtained from the following types of respondents: CEO or manager, brand manager, manager in charge of research and development in the enterprise. In the absence of analogous position in the organization, the survey was completed by the specialist responsible for NPD.

- *Actual survey.* Data collection for the formation of the population surveyed is achieved using data collected from the National Statistical Institute of Bulgaria, where evidence of the general population has been obtained. The survey is conducted in five sections of the sector "Manufacturing" in Bulgaria. To check the statistical significance, the calculator Raosoft is used (Sample size calculator), which allows the calculation of the sample size (n). The statistical error is set to p = 0.05, with a confidence level $^\gamma = 0.95$. The tendency of the activity level for the population studied was 63%. The results can be considered statistically significant, both for the overall population and for each section.

- *Method of expertise.* The method of expert evaluations is used as an additional condition for final confirmation or rejection of the formulated hypotheses and sub-hypotheses of the study after treatment of statistical results.

1.2   The stages of Quantitative analysis methods

The method comprises applying a Statistical Program for the Social Sciences (SPSS)[1], statistical analysis and reliable processing of the data collected.

Statistical analysis methods with SPSS. In the present study the following statistical methods have been applied:

- *Narrative (descriptive) statistics* - descriptive methods used for classification and summary presentation (organization) of the data in tabular, graphical and analytical type. Attached are the following techniques: (1) The results obtained can be analyzed by *calculating the average results,* allowing both sectoral and comparative analysis and comparing them with previous studies of the process of NPD; (2) Part of the data is organized by *creating tables for frequency allocation*. Creation of tables of

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[1] In the present study, analysis of the survey data was made by specialized software for statistical data processing SPSS, Version 19, a licensed version of Angel Kanchev University.

frequency distribution (frequency tables) is one of the first steps in organizing data from a sample.

The results of descriptive statistics serve to formulate a sub-hypotheses to the initially displayed hypotheses of the study. The data obtained for each sector allow conducting of cross-sector analysis while the data for the whole sample is a basis for carrying out a comparative analysis with similar studies conducted.

Statistical evaluation (summary statistics) - methods of analyzing and interpreting data to formulate meaningful assessments, regarding the correctness of the hypotheses stated, as well as formulating generalizations.

- *Correlation analysis* -it is related to establishing statistical correlations between two variables. The values of the entitlement correlations are measured from -1 to +1. The stronger the connection is, the closer to 1 the values obtained are. In this paper, to establish correlations between the variables, the most commonly applied measure correlation coefficient of Pearson Pearson (*r*) is used for the connection and relationship between the two variables.

- *Regression analysis* - the change in the dependent variable due to the change in the independent variable. The study was administered as a standard multiple regression, the most widely applied type of regression analysis that is used.

2   Results and discussion

The aim of the study is to offer guidelines for improving the management process of NPD in Bulgarian industrial enterprises. The main hypotheses include claims, that: *the efficiency of NPD process, leading to the achievement of market success, is determined by three factors, defined as dependent variable:*

- *new product success compared to that of competitors* – identified by the organisations themselves, according to the place occupied by their new products in the most important markets for them, compared to that of their competitors (ranked as the most successful in the industry; the upper third of the industry, the middle third of the industry; the lower third of the industry).

- *success of the programme for NPD* – respondents evaluated these indicators on a scale from 1 - "not responding"/"failed" to 9 -"fully responding"/"completely successful". In

order to achieve comparability of results from similar studies, it is assumed that the program to develop new products is successful for responses in the range from 7 to 9.

- *formalising of the NPD process* – in this paper, formalizing the process of NPD is considered to be the use of formal documented procedures describing this process.

The aim of the survey is to identify the factors, which affect this result variable to the highest degree. In order to achieve this aim, a preliminary testing of the correlations of all three factor variables from the survey questions with the dependents variable: (1) New product success compared to competitors; (2) The success of the programme for NPD; (3) Formalising of the NPD process has been conducted with the purpose of identifying statistically significant relationships. As a result of correlation analysis, the following factors are presented below with statistical significance for the three dependent variables tested. They are components of the accumulated base model.

2.1   Factors of statistically significant correlation, connected to the dependent variable *"New product success compared to competitors"*

Nineteen impact factors have been identified: (1) A moderate relationship has been established between the factor "Market developments for the last two years" *(corrcoef r=0.344)* and the dependent variable; (2) There is a significant relationship between "Technical assurance of the NPD programme" *(corrcoef r=0.541)* and the dependent variable; (3) There is a significant relationship between "The success of the programme for NPD" *(corrcoef r=0.629)* and the dependent variable; (4) A moderate relationship has been established between the factor "Market development" and the dependent variable *(corrcoef r=0.344);* (5) There is a significant direct relationship between "Formalising the process of NPD" and "New product success compared to competitors" *(corrcoef r=0.518)*; (6) The application of a specific strategy for new product activities that directs and integrates the entire new product programme helps the company to hold a better market position compared to that of competitors *(corrcoef r=0.321);* (7) The more technology managers support innovation by ensuring that their staff participate actively and effectively in teams, the greater new product success is achieved, compared to that of competitors *(corrcoef r=0.334);* (8) Manufacturing managers support innovation by ensuring that their staff participate actively and effectively in teams, which leads to greater new product success compared to that of competitors *(corrcoef r=0.344);* (9) Marketing managers support innovation by ensuring that their staff participate actively and effectively in teams, which leads to greater new product success compared to that of competitors *(corrcoef r=0.395);* (10) There is a moderate direct link between "Senior business unit managers support innovation by

ensuring that structure, processes, and other organisational mechanisms support the innovation teams" and "New product success compared to that of competitors" *(corrcoef r=0.484);* (11) The more actively senior managers support innovation by making sure that available resources flow smoothly to innovation projects, the greater new product success is, compared to that of competitors *(corrcoef r=0.441);* (12) When Senior managers make long-term investments in technology, manufacturing, etc. to support ongoing innovation, it leads to greater new product success compared to that of competitors *(corrcoef r=0.377);* (13) In terms of marketing methods and tools, there is a moderate direct link between Engineering (official method for concept development) and new product success compared to that of competitors *(corrcoef r=0.321);* (14) New products are more successful in more frequent application of the following technology methods and tools*: Product Data Management system *(corrcoef r=0.305);* (15) Web-based management software *(corrcoef r=0.309);* (16) Configuration management systems *(corrcoef r=0.337);* (17) Project management systems *(corrcoef r=0.306);* (18) Knowledge management systems *(corrcoef r=0.349); (19)* In terms of management methods and tools, it has been found that more frequent application of software allowing interaction and group work has a positive impact on new product success compared to that of competitors *(corrcoef r=0.344).*

2.2 Factors of statistically significant correlation, connected to the dependent variable *"The success of the programme for NPD"*

Six impact factors have been identified, referring to the basic survey modules, as follows: (1) The successful launching of new products leads to a greater success of the NPD programme *(corrcoef r=0.629);* (2) The faster development of markets helps to improve the NPD programme *(corrcoef r=0.360*); (3) The higher technical assurance of the NPD programme leads to a greater success of the NPD programme *(corrcoef r=0.762);* (4) Formalising the NPD process has a positive effect on the success of the NPD programme *(corrcoef r=0.357);* (5) Senior business unit managers' support for innovation through providing structure, processes, and other organisational mechanisms is directly related to the success of the NPD programme *(corrcoef r=0.336);* (6) Senior managers' support innovation by making sure that available resources flow smoothly to innovation projects, which directly affects the success of the NPD programme *(corrcoef r=0.325).*

2.3 As a result of the correlational analysis conducted, , connected to the dependent variable „Formalising the NPD process"

Twenty-two impact factors of statistically significant correlation have been identified (Tab.1).

Tab. 1: Results from the correlation analysis of the dependent variable „Formalising of the NPD process"

	Statement	Independent variable vs. a dependent variable "Formalising the NPD process"	Corrco ef (*r*)
	Formalising the NPD process is in direct correlation with:		
1.	new product success compared to that of competitors.	New product success compared to that of competitors	0.518
2.	technical Assurance of the NPD Programme.	Technical Assurance of the NPD Programme	0.341
3.	the success of the NPD programme.	"The success of the NPD programme"	0.357
4.	application of specific strategy for new product activities that directs and integrates the entire new product programme.	"Specific strategy for new product activities that directs and integrates the entire new product programme"	0.436
5.	manufacturing Managers' support for innovation by ensuring that their staff participate actively and effectively in teams.	Manufacturing Managers' support forinnovation by ensuring that their staff participate actively and effectively in teams	0.308
6.	senior business unit managers' support for innovation by ensuring that structure, processes, and other organisational mechanisms support the innovation teams.	Senior business unit managers' support for innovation by ensuring that structure, processes, and other organisational mechanisms support the innovation teams	0.310
7.	senior managers' support for innovation by making sure that available resources flow smoothly to innovation projects.	Senior managers' support for innovation by making sure that available resources flow smoothly to innovation projects	0.315
8.	application of *"Concept Engineering"*.	*"Concept Engineering"*	0.312
9.	application of *"Value Analysis/Value Engineering"*.	*"Value Analysis/Value Engineering"*	0.332
10.	application of *"Design for Manufacturing, Assembly, Testing"*.	*"Design for Manufacturing, Assembly, Testing"*	0.412
11.	application of *"Parallel Engineering"*.	*"Parallel Engineering"*	0.327

12.	application of *"Rapid Prototyping Systems"*.	*"Rapid Prototyping Systems"*	0.321
13.	application of *"Simulation Systems"*.	*"Simulation Systems"*	0.359
14.	application of *"Virtual Design"*.	*"Virtual Design"*	0.333
15.	application of *"Product Data Management Systems"*.	*"Product Data Management Systems"*	0.380
16.	application of *"Product Portfolio Management Software"*.	*"Product Portfolio Management Software"*	0.318
17.	application of *"Web-Based Sourcing Management Software"*.	*"Web-Based Sourcing Management Software"*	0.351
18.	application of *"Configuration Management Systems"*.	*"Configuration Management Systems"*	0.420
19.	application of *"Project Management Systems"*.	*"Project Management Systems"*	0.330
20.	application of *"Knowledge Management Systems"*.	*"Knowledge Management Systems"*	0.357
21.	application of "Dedicated project intranet".	"Dedicated project intranet"	0.307
22.	application of "Groupware (software which allows group interaction)".	"Groupware (software which allows group interaction)"	0.326

Source: own survey results, 2017

Based on the correlation analysis of factors influencing: *(*1) Formalising the NPD process; (2) New product success compared to that of competitors; (3) The success of the NPD programme and the regression analysis of the three dependent variables, a generalized basic model of factors influencing the successful management of the process of developing new products was generated in the Bulgarian industrial companies from the processing industry.

3   Expert assessments

Influencing factors in the proposed baseline model are verified by expert evaluations, the purpose of which is to finally confirm or reject the model to be approved. It is important to get an expertise from a representative of each section studied to make it possible to conclude whether the deduced dependencies could be attributed to the whole population. Estimates are collected through a developed expert form. We assume that all expert opinions have equal weights when processing the results. An influencing factor with an over 50% average degree of consent and established dependence is confirmed. Conclusions were also made on the

average weighted relationship between the variables studied. The expertise was conducted in April 2017 and 11 expert reports were summarized. The expert form includes the deduced baseline model based on the correlation and regression analysis of the population studied. Experts express a degree of consent with a given statement and assess the strength of the link between the variables by using evaluation scales: (I) *Degree of Consent with the Statement: 0%* - completely disagree with the statement; *1–25%* rather disagree; *26–49%* - I agree in part; *50–74%* - I rather agree; *75–99%* - a high degree of agreement; *100%* - completely agree with the statement; (II) *Strength of connection between the variables specified: 1* - missing connection; *2* - weak connection; *3* - satisfactory connection*; 4* - strong connection; 5 - very strong connection.

Tables 2, 3 and 4 present the results of the respondents' evaluations according to their degree of consent with the formulated hypotheses, as well as the average responses for the strength of the relationship between the variables examined.

Tab. 2: Expert estimate results for new product success compared to that of competitors

Statement New product success compared to that of competitors depends directly on:	Average degree of consent (in %)	Average strength of the connection (from 1 to 5)
1. the success of the NPD programme.	83.18	4.27
2. application of formalising the NPD process.	71.27	3.45
3. application of specific strategy for new product activities that directs and integrates the entire new product programme.	84.09	4.09
4. technology managers' support for innovation by ensuring that their staff participate actively and effectively in teams.	90	4.27
5. marketing managers' support for innovation by ensuring that their staff participate actively and effectively in teams.	90.45	4.45
6. senior business unit managers' support for innovation by ensuring that structure, processes, and other organisational mechanisms support the innovation teams.	88.64	4.36
7. senior managers make long-term investments in technology, manufacturing, etc. to support ongoing innovation.	89.91	4.36
8. application of "Engineering" (official method for concept development).	75.82	3.55

9.	application of *"Product Data Management Systems"*.	84	3.91
10.	application of *"Web-Based Sourcing Management Software"*.	76.82	3.45
11.	application of *"Configuration Management Systems"*.	67.73	3
12.	application of *"Project Management Systems"*.	69.09	3.45
13.	application of *"Knowledge Management Systems"*.	77.18	3.82
14.	application of *"Dedicated project intranet"*.	68.55	3.45
15.	The faster development of markets.	80.36	3.91

Source: own survey results, 2017

The expert opinions which we received, confirmed all the statements made, with a high level of consent on the part of the experts for 1, 3, 4, 5, 6, 7, 8, 9, 10, 13 and 15.

Tab. 3: Expert estimate results for the success of the NPD programme

	Statement: The success of the NPD programme depends directly on:	Average degree of consent (in %)	Average strength of the link (from 1 to 5)
1.	the success of the new products, compared to that of the competitors.	71.27	3.45
2.	formalising the process of NPD.	74.91	3.54
3.	senior business unit managers' support for innovation by ensuring that structure, processes, and other organisational mechanisms support the innovation teams.	85.45	4.09
4.	the faster development of markets.	75.45	3.55

Source: own survey results, 2017

The expert opinions confirmed all of the formulated hypotheses, and a high degree of consent was established for claims 3 and 4.

Tab. 4: Expert estimate results for formalising the NPD process

	Statement: Formalising the NPD process depends directly on:	Average degree of consent (in%)	Average strength of the link (from 1 to 5)
1.	new product success compared to that of competitors.	59.45	3.09
2.	the success of the NPD programme.	64.91	3.27
3.	application of specific strategy for new product activities that directs and integrates the entire new product programme.	79	3.91
4.	manufacturing managers' support for innovation by ensuring that their staff participate actively and effectively in teams.	80	4.09
5.	senior managers support for innovation by making sure that available resources flow smoothly to innovation projects.	82.27	4.27
6.	application of *"Engineering"*.	75.27	3.73
7.	application of *"Value Analysis/Value Engineering"*.	78.18	4
8.	application of *"Design for Manufacturing, Assembly, Testing"*.	74.09	3.73
9.	application of *"Parallel Engineering"*.	75.36	3.82
10.	application of *"Simulation Systems"*.	70	3.45
11.	application of *"Virtual Design"*.	66.36	3.09
12.	application of *"Product Data Management Systems"*.	74.91	3.72
13.	application of *"Product Portfolio Management Software"*.	78.55	4
14.	application of *"Web-Based Sourcing Management Software"*.	65.91	3.18
15.	application of *"Configuration Management Systems"*.	70.91	3.36
16.	application of *"Project Management Systems"*.	77.18	3.91
17.	application of *"Knowledge Management Systems"*.	75.91	4
18.	application of *"Dedicated project intranet"*.	77.73	3.64
19.	application of *"Groupware"*.	66.91	3.64

Source: own survey results, 2017

The average results, which summarize the expert opinions, confirm all hypotheses and semi-hypotheses formulated, and thus we can assume the proposed baseline model of factors influencing the management success of NPD to be approved. **Figure 1** "An attributed model of factors influencing the success of NPD process management" presents the established dependency ratios and expert evaluations with over 50% average degree of consent.

Fig. 1: An attributed model of factors influencing the success of NPD process management
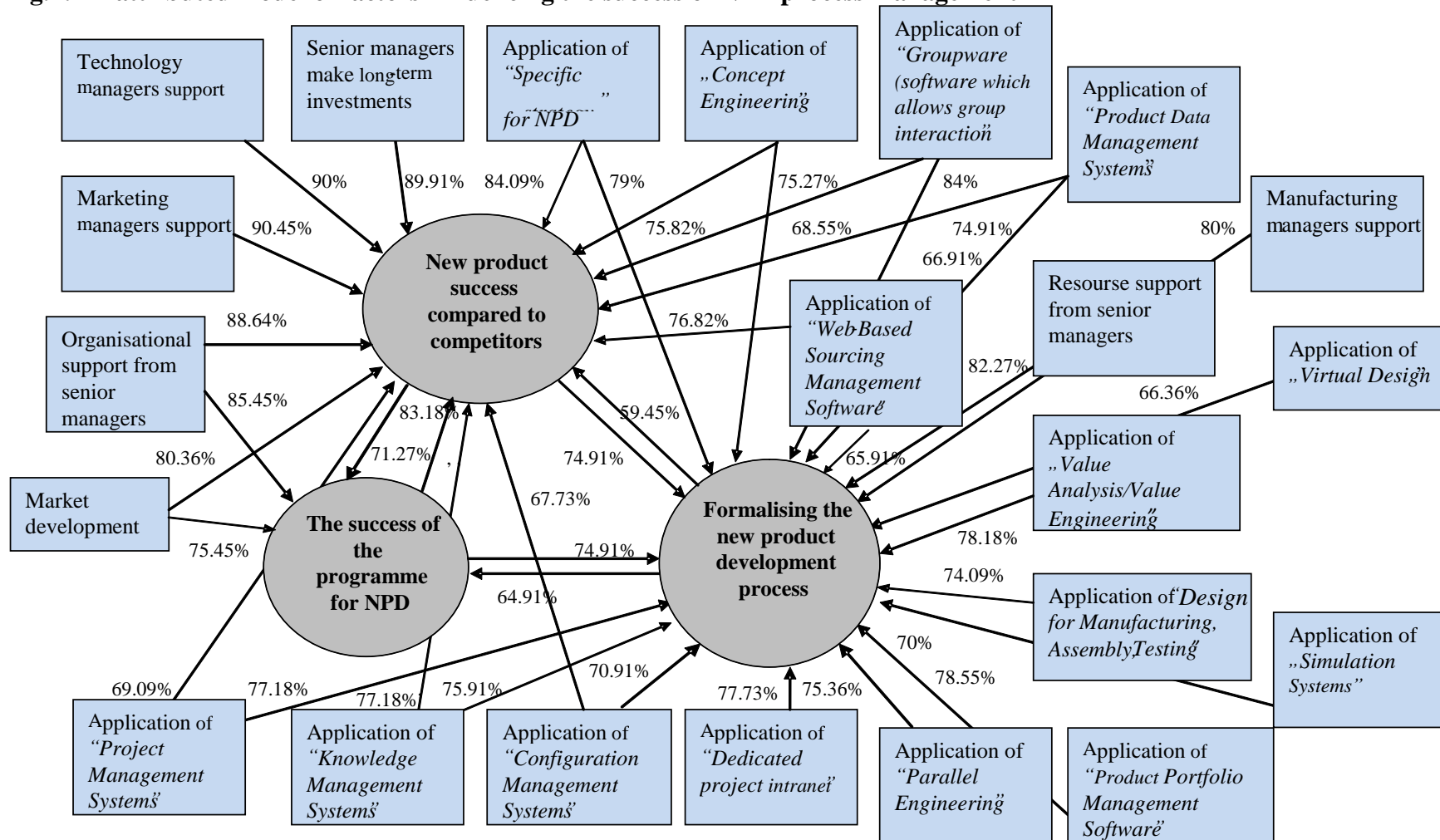
Conclusion

The research conducted on the NPD process in industry enables the identification of the most accurate management practices, methods and tools for its leadership. In the course of the study, a methodological approach has been developed for studying the NPD management process. After processing the descriptive statistics results, a number of regular relationships have been derived from the defined dependent variables "New product success compared to that of the competitors", "Success of the programme for NPD" and "Formalising NPD process". A basic model of factors influencing the management of the NPD process has been created based on a correlation and regression analysis of the data from the empirical study. Experimental evaluation of the basic model has been performed. The opinions obtained, expressing a high degree of consent with the statements, give grounds for considering all claims, for which statistically significant links of factors influencing NPD management in the Bulgarian industrial enterprises from the processing industry have been derived, confirmed.

A number of inter-company factors have been identified that can be influenced for the successful NPD. In this respect, the use of officially documented procedures is an imperative. Mechanisms to be reinforced are the tactics used to form the project teams. The creation of cross-functional teams is a priority, thus encouraging communication between departments, sharing knowledge and experience, and providing mutual assistance among the team members. Factors with a direct link to the NPD process are the support of innovation not only by senior managers, but also by technology, production and marketing managers. This aspect can also be enhanced with a view of promoting mutual assistance and communication between teams from different functional areas.

All analytical factors influencing the NPD process should be subject to particular attention by the managers with a view of improving the management level in the development of product innovations not only in the processing sector, but also as a general pattern and good practice in modern industry.

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Contacts

Diana Antonova

Department of Management and business development, Faculty of Business and Management

"Angel Kanchev" University of Ruse

Studentska 8 st., 7017, Ruse, Bulgaria

dantonova@uni-ruse.bg

Bozhana Stoycheva

Department of Management and business development, Faculty of Business and Management

"Angel Kanchev" University of Ruse

Studentska 8 st., 7017, Ruse, Bulgaria

bstoycheva@uni-ruse.bg

HOW KNOWLEDGE INTENSIVE BUSINESS SERVICES FOSTER ENTREPRENEURIAL DYNAMICS AND MACROECONOMIC PERFOMANCE IN EUROPEAN ECONOMIES?

Daniel Badulescu – Alina Badulescu – Sebastian Sipos-Gug – Anamaria Diana Herte

Abstract

Purpose: The knowledge and innovation-based economy is internationally accepted as a key factor for competitiveness, and the European Union, which is constantly searching for competitiveness, has recognized more than two decades ago the role and importance of Knowledge Intensive Business Services (KIBS) in transferring innovations and competences to all sectors of the economy, as sources of innovation and modernization, diversification and dynamism for entrepreneurial activities. In this context, we intent to investigate the complex relationship between KIBS and entrepreneurial dynamics, including terms of macroeconomic effects (GDP and labor productivity).

Design/methodology/approach: As an indicator of KIBS density it was used the share of companies from the KIBS sector in the total number of active companies, every year, for each country in the study. The data was obtained from EUROSTAT and it covers the EU27 member countries over the 2008-2012 period using NACE Rev. 2 classification system.

Findings: The analysis provided interesting, complex and sometimes surprising results. Thus, partly offsetting expectations, we did not find that the share of KIBS firms stimulated entrepreneurial activity (as new firms creation), but that they are, however, a factor preventing discontinuity of the companies and, under certain conditions, a factor driving to increasing labor productivity in the EU economy.

Research/practical implications: We found out that the impact of KIBS on the entrepreneurial activity at the level of the 24 European Union's member state is mostly indirect. Moreover, we consider that although no evidence was found that the share of KIBS companies in the total number of active companies is directly fostering the entrepreneurial activity, the density of KIBS has been proved to be a factor preventing the closure or discontinuing of the companies, as well as a factor leading to increased labor productivity.

Originality/value: The paper brings evidence and bridges the existing gap regarding the role of a very innovative sector of the economy, namely the KIBS sector, and argues the necessity for public policies to foster the development of these activities.

Keywords: Knowledge-based services, entrepreneurial activity, macroeconomic indicators, European Union

JEL Codes: L84, L86, O33

Introduction

Although only recently in the attention of researchers, practitioners and policy makers, Knowledge Intensive Business Services (KIBS) are currently undergoing a resurgence of interest in the topic, motivated by the new global realities and economic challenges. On a European level, after a spectacular start in the early 1990s, the European Commission recommences socio-economic research on this topic, systematically encouraging member states to support innovation and development of the KIBS sector, as part of their "smart" strategies of growth KIBS (European Commission, 2012). The role of KIBS in the economy seems obvious: based on a profound interaction between client and supplier, they generate a reciprocal relationship and a process of cumulative learning (Desmarchelier, et al., 2013), stimulate the capitalization of competences and finding solutions through permanent innovation, and the interdisciplinary character of KIBS is essential not only in orienting economic development and innovative performance, but also through their general influence on economic sectors and, particularly, on entrepreneurial initiative.

This paper examines the role of knowledge-based business services (KIBS) in fostering entrepreneurial activity and macroeconomic outcomes at EU level, being organized as follows: in the next (second) part we briefly review the literature; in the third part we present the research methodology, in the fourth we discuss the result. Finally, we conclude about the complex relationship between KIBS and entrepreneurial dynamics, and between KIBS and labor productivity respectively, as they result from our researches.

1   Literature review

According to the European Commission, knowledge-intensive business services (KIBS) are services where 'knowledge is the main production factor and the good they offer' (European Commission, 2012). Other authors consider KIBS "services that involve economic activities which are intended to result in the creation, accumulation or dissemination of knowledge" (Miles, 2005), activities in which knowledge is both the main input and the main output (Desmarchelier, et al., 2013), while KIBS companies are "expert companies that provide services to other companies and organizations" (Toivonen, 2006) or "private companies or organizations relying heavily on professional knowledge i.e. knowledge or expertise related to a specific (technical) discipline or (technical) functional domain" (Den Hertog, 2000), firms offering "strategically significant technical or organizational knowledge that client staff do not possess, or could not exploit without consultancy support'' (Wood, 2002). Additionally, KIBS companies are "specialized in knowledge screening, assessment and evaluation, and trading of professional consultancy services" (Consoli & Elche-Hortelano, 2010).

In a series of studies on the impact of KIBS and R&D services on regional innovation systems in Germany, Stahlecker (2014) attribute a significant role to these services in regenerating the number of

companies and the creation of knowledge-based business opportunities in regional economies. This potential is, however, dependent (at least during the launch of the business) on geographical proximity to suppliers and clients, the attraction of metropolitan areas and, certainly, the structure and configuration of the regional knowledge base. Weber et al (2016) credit KIBS with the chance to be part of "the winning sectors", essential in the process of creating a new innovative business model.

Among the advantages brought by KIBS to modern economies, researchers mention: in-depth interaction between supplier and user (Muller et al., 2015), problem solver by adapting their expertise and knowledge to the need of the client (Strambach, 2008), capable to "generate, facilitate or adopt technological, organizational, social or other kinds of innovation" (Merino & Rubalcaba, 2013), an engine for the economic growth, operating as a substitute for the material capital accumulation (Desmarchelier, et al., 2013). Other researchers, approaching the role of "business angels" in boosting business, link the KIBS with the presence of so-called "knowledge angels", i.e. individual persons whose "motivations, talents and specific activities play a specific role within the innovation processes of these firms" (Muller, et al., 2012), "a creative knowledge broker responsible for most of KIBS' efficiency in the global innovation process" (Muller, et al., 2015), acting as "innovation catalysts" within KIBS (European Commission, 2012). It is likely that promoting KIBS as incentive agents for innovation, regardless of sector and economic structure (i.e. including primary sector, micro enterprises) is overrated and, detrimental to understanding the importance and role of KIBS firms in the mechanisms of development. For example, according to Evangelista et al. (2013) in particular the financial sector and the business services sector itself seem to be primary users, while, in productive sectors, the intensity of the use of these services is associated to the general dynamism of innovation on a national economic level […] playing a complementary role to the efforts supporting "internal" (firm-level) innovation and, generally, the performance of national economies (Evangelista, et al., 2013).

EU policies and strategies insist on a knowledge-based economy, by fostering entrepreneurship and by the commercialization of new technologies (Audretsch, et al., 2009), (Varis, et al., 2014), (European Commission, 2010), while Wong et al. (2005) assert the potential of innovative start-ups to sustain economic growth to an even greater extent than the public policies supporting the setting-up of new firms, regardless theirs sector of activity. However, a direct relationship between KIBS sector incentives, the creation of new ventures and the regeneration of economic growth in various areas is difficult to endorse. Varis et al (2014), in a study on the knowledge-based industries in Finland regions, found out that, despite investments, support and favorable conditions, the impact on the regional economy of the development of knowledge-based industries, as a whole, is not remarkable. A possible explanation is that relations between KIBS companies and other local industries (especially low tech ones) are not proximity-dependent. In terms of efficiency, the aforementioned authors question significant public expenditures on a local, national or EU level, anticipating a hypothetical multiplier effect of KIBS in

the less developed regions. Hyytinen et al. consider that public policies to support innovative start-ups in high-tech field or KIBS should not overuse the argument that innovating ventures are more likely to survive than other start-ups and create stable jobs (Hyytinen, et al., 2015) as the access to knowledge could be a chance for ambitious and experienced entrepreneurs from different sectors (not necessarily high knowledge). As a partial conclusion regarding possible policies in the field, as KIBS "are increasingly recognized not only achieving high rates of innovation […] but also helping their clients to innovate" (Pina & Tether, 2016), policymakers should rather focus not on financing the launching and consolidation of firms acting in KIBS sector, but to encourage all firms „to seek assistance from incubators, technology centers, and universities, to benefit from the wide range of innovative entrepreneurship support services these institutions offer" (Roig-Tierno et al., 2015).

Are KIBS companies more resilient (or longer-lived) than firms in other sectors? Do they accelerate or slow down the rhythm of firm closure? Although research on the topic is neither numerous, nor decisive, we ought to mention that the closure of an entrepreneurial firm doesn't automatically create a gap in the economy or a failure (or waste) of private initiative, especially when taking into consideration innovative and knowledge based companies, after her remain ideas, knowledge and assets that can facilitate the launch of another company.

Regarding the issue of labor productivity, scholars are relatively unanimous that the services sector present, with few exceptions, lower productivity compared to industrial sectors. However, it is questionable to apply the industrial concept of productivity to services, due to their specific characteristics (e.g. intangibility, heterogeneity, strong connectivity to customers and the high importance of the human factor). The discussion is complicated when considering the contribution of the services sector to the labor productivity growth on the economy as a whole, or referring to the relationship between clients' perceived quality and productivity. With regard to macro-economic reasons, it can be argued that innovation induced by knowledge (intensive) services raise productivity and foster innovation in general. However, the participation of service sector' firms in R&D programs is relatively low, compared to their economic share (European Commission, 2012). Knowledge intensive business services often accompany regional prosperity and innovation, and wealthy regions are typically characterized by a considerable high concentration of KIBS (Europe Innova, 2009). Regions with high concentrations of KIBS exhibit superior patenting activity, which shows that, beyond other factors able to explain labor productivity in certain sectors or regions, the presence of KIBS is noticeable.

2   Research methodology

As an indicator of KIBS density we used the share of companies from the KIBS sector in the total number of active companies, for each country in the study and every year. The data was obtained from

EUROSTAT and it covers the EU27 member countries over the 2008-2012 period using NACE Rev. 2 classification system, as NACE 1.1 (employed until 2009) did not allow using a longer-term continuous time series. As stated before, we included in the analysis firms whose activity code is associated (Schnabl and Zenker, 2013; European Commission, 2012), to KIBS activities (NACE 2 Rev.2 codes: J62, J63, M69, M70, M71, M72, M73, M742, M743, N782), taking into account certain restrictions, especially those related to the availability of data only at class level.

Regarding entrepreneurial dynamics (the number of new / closed companies) and labor productivity (the turnover per /employed persons) we employed the available Eurostat yearly database. Due to a significant shortage of data in analyzed data series, we had to eliminate in this stage three countries (Greece, Denmark and Malta) and therefore in the next analysis stage we have only tested our proposed models on a total of 24 countries. Data analysis was performed using R 3.0.3, the "plm" package.

Taking into consideration the KIBS activities mentioned, a first observation is that the density of KIBS enterprises in the total active companies at the EU level presents major differences between countries, with values starting at 10-11% in countries like Bulgaria and Cyprus, and reaching 25-30% in countries like Sweden and Netherlands (see Figure 1). Starting from the hypothesis that industry, especially the manufacturing industry, stimulates innovation and the assimilation of technological progress, being intrinsically linked to the existence and activity of KIBS, the first topic of our research is whether KIBS could act as a stimulating factor for the entrepreneurial activity, by stimulating the founding of more firms, or, as a blocking factor for the number of closed companies, respectively, in the studied EU countries. The second question (which is, in fact, the main hypothesis of this paper) is the following: Do KIBS act as factors fostering the growth of labor productivity within companies?

Fig. 1: The share of KIBS sector companies in the total active companies in EU, 2012
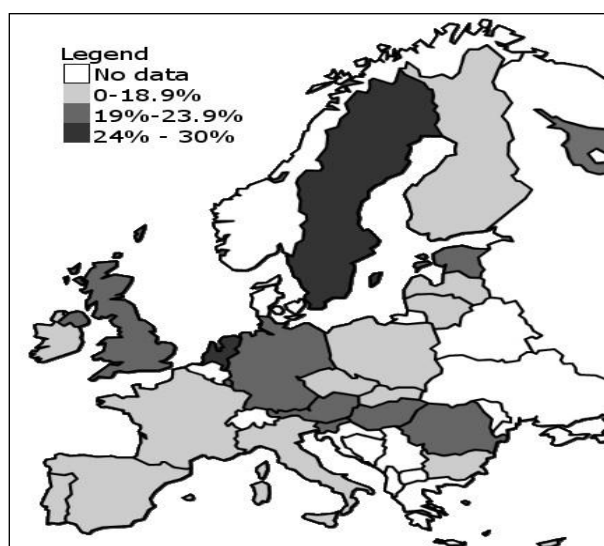
Source: own elaboration based on EUROSTAT (2012)

3   Results

As for the first hypothesis, our previous research (Badulescu, et al., 2018) has not been able to create viable models, i.e. we were unable to find arguments supporting the influence of the number (or market share) of KIBS companies on entrepreneurial activity, neither on a general economic level, nor within specific sectors. As for the relation between KIBS and the number of closed societies, we discovered that, in the selected countries, during the five years taken into consideration, the share of KIBS societies has a negative influence on the number of closed societies per 1000 working-age inhabitants. Following the previous analysis, we looked at the relation between GDP and the share of KIBS. We found that GDP per capita is not a significant factor of the evolution of the share of KIBS in the total number of active companies in the investigated countries (EU 27 with the exception of Greece, Denmark and Malta; the ANOVA test of the model is $F(1, 95) = 0.527$ with a p value of 0.47. Data reveals that Luxembourg is an outlier, due to its high GDP value. Therefore, we decided to run the analysis again by excluding it. Even so, no valid regression model was found (p=0.66).

Figure 2 shows the results of the "loess" analysis, which indicated the possibility of a non-linear relationship between the share of KIBS in total active companies and GDP. A second order (quadratic) model was also tested, but rejected in the case of the whole sample of countries (p=0.73) and in the case of sample with Luxembourg excluded (p=0.21). Therefore, the change in the share of KIBS in total active companies is apparently independent of the level of the aggregated macroeconomic indicator GDP.

Fig. 2: The relation between GDP and the share of KIBS companies in total active companies
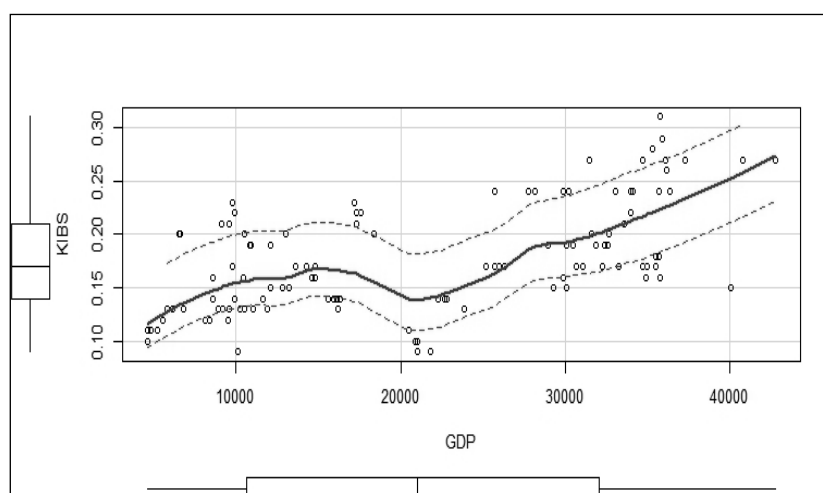
Source: own elaboration based on EUROSTAT (2012)

We have however found that the share of KIBS is a significant factor of labor productivity within the companies in the sample of countries (EU 27, except Greece, Denmark and Malta). The ANOVA test of the regression model $F(1, 95) = 4.316$ has an associated p value of 0.04. If we look at the relation between the share of KIBS and the labor productivity if analyzed in the context of including GDP as a

factor of the productivity, the resulting model is also valid ($F(1, 95) = 41.837$, $p < 0.001$). At the same time, the model is more efficient than the model including only KIBS. It explains 47% of the variance in productivity, compared to 4% in the case of the simple model ($R2 = 0.47$ versus $R2 = 0.04$).

Figure 3 allows us to look closer to this relation, which has a relatively high variability, but a definite upwards trends. It would seem that a higher share of the KIBS companies in the economy allows reaching higher levels of productivity. However, the relative constant level of the minimum level of the local regression (i.e. the lower dotted line) suggests that this relation is influenced by other factors as well.

Fig. 3: The relation between the share of KIBS in total active companies and the labor productivity in all companies
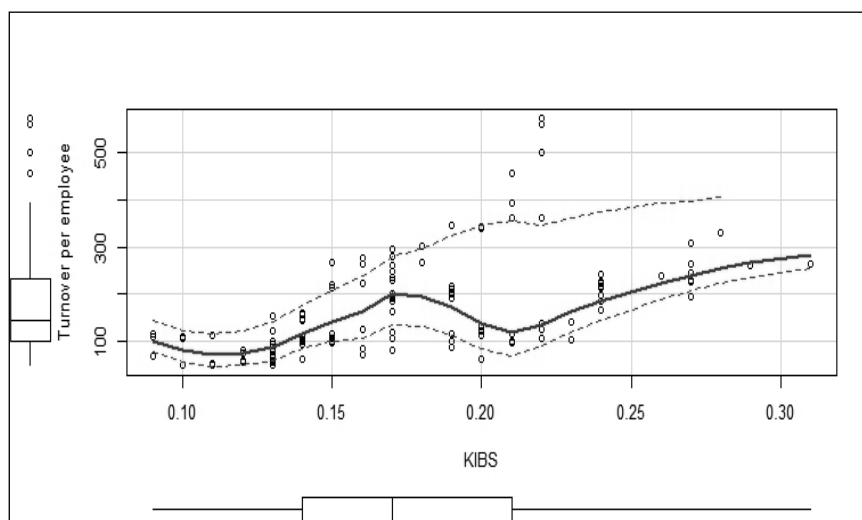
Source: own elaboration based on EUROSTAT (2012)

One such factor is GDP, which is (predictably) related to the labor productivity, measured by the turnover per employee. Figure 4 allows us to visualize the relation, which is approximately linear and positive.

Fig. 4: The relation between GDP and labor productivity
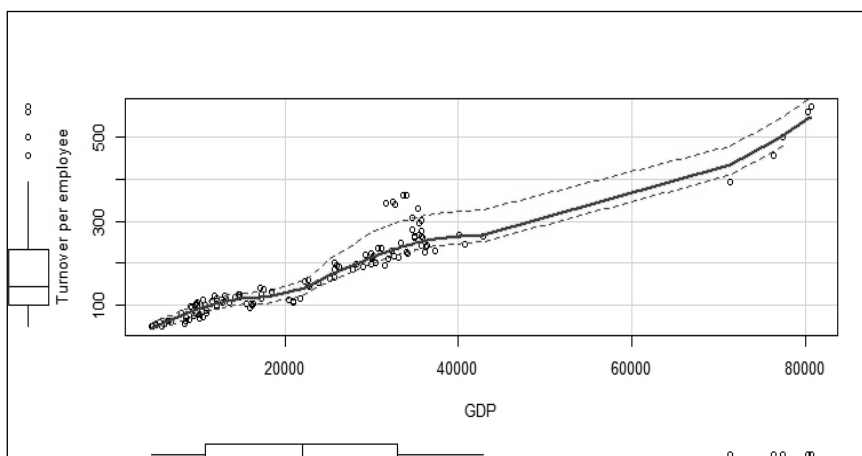
Source: own elaboration based on EUROSTAT (2012)

The interaction between the two factors, i.e. GDP and KIBS, allows us to build a more efficient model. We can look at the set of countries that in Figure no. 3 display an average level of the KIBS companies share in total companies (15-20%) but a low labor productivity (i.e. Romania, Latvia, Estonia, Czech Republic). We can notice that these countries also register also lower values of GDP per capita than the countries with comparable KIBS levels and higher levels of productivity (i.e. France, Ireland, Finland, Italy, Germany and Belgium).

Conclusion

The aim of our research was to discover the answer to a series of questions regarding the relations between KIBS and entrepreneurial activity. Initially, we came to the conclusion that theories regarding the influence of KIBS in founding entrepreneurial ventures cannot be unequivocally validated, neither on a general economic level, nor in specific sectors. On the other hand, we found that KIBS may be a blocking factor of the number of closed (discontinued) companies, both on a general economic level, and in specific sectors. Regarding the relation between KIBS and the labor productivity, we compared two regression models. The first model includes as a factor only KIBS, while the second one includes the combined effects of KIBS and GPD on labor productivity. As expected, the second model is significantly more effective for explaining the variance of labor productivity. Therefore, the share of KIBS companies in the total number of active companies is a factor of the labor productivity. At the same time, the country GDP level together with KIBS density explains up to 47% of the labor productivity. As a general conclusion, we consider that although no evidence was found that the share of KIBS companies in the total number of active companies is directly fostering the entrepreneurial activity, the density of KIBS has been proved to be a factor preventing the closure or discontinuing of the companies, as well as a factor leading to increased labor productivity. One of the limitations of this paper is given by the insufficient analysis of the various effects of KIBS on the sectors and structures of national economies. Additionally, further studies are necessary, especially to identify and design specific and effective policies to foster the impact of KIBS within the economy.

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Contact

Daniel Badulescu

Faculty of Economic Sciences

University of Oradea

Str. Universitatii nr. 1, Oradea, Romania

dbadulescu@uoradea.ro

Alina Badulescu

Faculty of Economic Sciences

University of Oradea

Str. Universitatii nr. 1, Oradea, Romania

abadulescu@uoradea.ro

Sebastian Sipos-Gug

Doctoral School of Economic Sciences

University of Oradea

Str. Universitatii nr. 1, Oradea, Romania

ssiposgug@yahoo.com

Anamaria-Diana Herte

Doctoral School of Economic Sciences

University of Oradea

Str. Universitatii nr. 1, Oradea, Romania

dianaherte89@gmail.com

INNOVATIVE APPROACH TO A SPECIFIC AREA OF CAREER MANAGEMENT IN THE CZECH ARMED FORCES

Kristýna Binková

Abstract

Purpose: The aim of the paper is to briefly present the theoretical basis of career management issues and difficulties of placement of professional soldiers in the labour market, outline the current state of the specific area of career management in the Czech Armed Forces, describe the system of preparation of soldiers for a second career in Czech Republic and Poland and find preferences related to this topic of a selected group of soldiers. Finally, propose measures for the innovation of the existing career management in the Czech Armed Forces.

Design/methodology/approach: The theoretical basis was found based on the study of professional literature. An analysis of legislative, conceptual and statistical documents was carried out to describe the current situation in the Czech Republic and two semi-structured interviews with a representative of the Warsaw Professional Activation Centre held to describe the system used in Poland. The discovery of attitudes towards outplacement forms used by the Defence Department of Poland allowed a sociological survey of 86 professional soldiers in active service.

Findings: In the Czech Republic, there is currently no elaborate system for the preparation of soldiers for the second career. Soldiers perceive integration to a civilian sector after the termination of military service as problematic. The outplacement system in the Polish armed forces is highly sophisticated, consists of several measures and can therefore serve as a good example. 86 respondents, professional soldiers, attendants of a course of senior officers evaluate the forms of support used in Poland positively. Soldiers would welcome coaching, group seminars job fairs, internships and vacancies at public sector organizations.

Research/practical implications: From the results it is possible to deduce concrete measures for the managing and coordinating bodies of the Ministry of Defence, such as The Sections of the State Secretary of the Ministry of Defence and the Personnel Agency of the Army of the Czech Republic. Should some measures be approved, the next phase would be specifically carried out by personnel of military units and other external staff. Further research should be carried out with soldiers in lower rank corps in order to provide a more comprehensive view of the issue.

Originality/value: The main contribution and added value of the paper is the opening of under-researched and in debates at the level of Ministry of Defence often absent relationship between management of innovations in human resources management and management of second career of soldiers. The paper brings opinions and preferences of a representative sample of attendants of a course of senior officers related to this often-neglected area of career management. The preparation of soldiers for their post-military life is problematic and changes should be made. The good practice of the Polish defence may be followed.

Keywords: Career, outplacement, soldiers, army

JEL Codes: M53, M54

Introduction

The second career can be defined as the next stage in the career path or in a new profession as a result of the termination of the previous career. The period between the first and the second career is known as a career transition. A key role in supporting the successful mastery of and individual's transition to a second career plays an organization through a specific career management area that we can also call outplacement. Changing career orientation can be an inevitable part of professional life from the character of some professions. In the paper, there's a focus on a specific professional group - professional soldiers. In the Czech Republic there is not a very sophisticated system of preparation of soldiers for a second career. As a good example, a system of the Polish Armed Forces is outlined and used as a basis for sociological research in the Czech Armed Forces in order to find out in what direction is it necessary to implement an innovative approach to career management within the Czech defence sector.

1 Theoretical basis

1.1 Innovation management and human resources management

Innovation management is a combination of the management of innovation processes, and change management. Innovation management includes a set of tools that allow managers to cooperate with a common understanding of processes and goals. Innovation management allows the organization to respond to external or internal opportunities, and use its creativity to introduce new ideas and processes (Huizenga, 2014). Human resource management is the management of human resources and is primarily concerned with the management of people within organizations, focusing on policies and on systems (Collings & Wood 2009).

The range of human resources management issues linked to the management of innovation are multi-level, and across from macro- to micro-levels of analysis (Sparrow, Hird & Cooper, 2014). At the macro-level, there is the challenge of business model innovation, the need to examine the organisational and structural alternatives needed for developing innovation, the need to co-ordinate human resources management – often across broad networks of organisation – and the challenges of institutionalising an innovation model and culture. At the micro-level, attention traditionally focuses on issues of leadership for innovation, creating a culture or climate for innovation at team level, shaping employees through the management and selection of individual talent, and the development of creativity at the individual level.

The problem faced by both academics and practitioners alike is that the management of innovation presents organisations with a multi-layered problem. The solution requires strategies, including human resources management strategies that touch upon, and tie together, an inter-related set of component factors. A key tension frequently highlighted in the innovation literature is that management is designed to solve problems, replicate, scale and increase efficienty. By contrast, innovation is not about these

factors, and therefore requires a new management model, that in turn demands different assumptions about how we organise, lead, manage, resource allocation, plan, recruit and motivate (Sparrow, 2016).

One of the forward challenges for research and practice that Schuler and Bondarouk (2014) identified is to consider human resources, not only inside their own organisation but also those embedded in the broader cooperative network. Human resources management policies and practices are needed to increase employees' organisational commitment i.e. to improve the organisational climate. The importance of innovation in human resources management can hardly be exaggerated.

1.2   Career management as a part of human resources management

The career of an individual is not predictable and straightforward but periodic, consisting of career cycles that closely relate to whether the individual deviates from his professional experience during his working life (German, Bucman & Šikýř, 2014). The single lifelong employment relationship with one employer tends to be rarer, with people tending to have multiple careers in different organizations and various areas. Often, therefore, the transition to a second career occurs. The second career can be defined as the next stage in the career path as a result of the voluntary or necessary termination of a previous career (Bělohlávek, 1994). The period between the first and the second career is often referred to in the literature as a career transition. Kidd (2006) describes it as a movement between jobs during which an individual is reintegrated into the labour market, adapting to the new environment and new working roles with which he has no experience. According to Tyson and Jackson (1997), individuals at that time have internal forces, i.e. skills or resilience to uncertainty, and power within the system, that is, the organizational culture.

HR professionals are all soldiers fighting in the war for talent. Offering the right career development and training is one of the most important weapons that the HR manager has in his or her armoury. We are entering the era of self-managed careers. The impetus for providing career development has changed. It is no longer about developing the employee for the long-term benefit of the company, but about developing the employee in order to increase his or her own knowledge, skills and employability. A progressive and accomodating approach to career development is vital for the innovative human resource manager, increasing commitment and productivity. The development of key employees can prove the difference between an ordinary organisation and a high-performance organisation (Reed, 2001).

A specific means of career management with regard to further employability in the labour market and the successful transition to a second career is so-called outplacement. Outplacement originated at the end of World War II in the US as a psychological assistance to soldiers in their reintegration into professional life, and its idea developed later in the 1980s. We understand it as the placement of employees outside the organization or as a tool for choosing a strategy in finding a new job. Well-done

outplacement improves the atmosphere and morale of the organization, promotes good relationships, loyalty and employee stability, image and good reputation of the company, builds and strengthens organizational culture and mitigates the negative social and psychological impacts of staff reductions (Kuldová, 2010).

1.3   Czech Armed Forces and specifics of career path of a soldier

A professional soldier is a citizen who performs military service as a job in his service. A professional soldier is recruited for a fixed period of between 2 and 20 years, which can be extended. The service relationship expires when this period expires, or for other reasons stated in the Act (Act No. 221/1999 Coll., On Professional Soldiers).

Career in the military is not a lifetime career. Most military members re-enter the workforce soon after their "retirement" event, for economic, social or psychological reasons (Spiegel & Shultz 2003). Generally a military retirement marks the end to approximately 15 - 20 year career of service to the nation. According to McCarthy, the goal of most retiring military members is to attain a second career (McCarthy, 1992). Soldiers should be prepared for the eventuality of a post-military career and given appropriate training while in the military in order to give them a stronger sense of control over their own lives and to overcome tendencies towards passivity. Spiegel and Shultz (2003) argues that effective planning is a key element in successful post-military adjustment. Fuller and Redfering (1976) show that planning before the end of military service was the only factor which had significant effect on retirement adjustment.

2   Current career management in Czech Armed Forces

The main two tools of career management of Ministry of Defence that take into account the aspect of facilitating integration into civilian sector are professional training and retraining courses. Professional training of a soldier is an integral part of his professional career. However, it can be perceived as a way of preparing a soldier for a second career. It aims at fulfilling the qualification prerequisites, namely the level of education that is set for the soldiers and the qualification requirements, i.e. military career courses, established for each post. Specialized training of Defence Department in terms of usability for the second career is supported especially by the Military High School and the Higher Technical School of the Ministry of Defence in Moravská Třebová, the University of Defence and the Headquarters of Training - the Military Academy in Vyškov within their fields of study and courses (Preparation Concept, 2011). Retraining is provided to professional soldiers whose service lasted at least 5 years. Retraining is granted to soldiers on the basis of their application in the form of short-term courses whose duration must not exceed 3 months. Not later than 4 to 5 months before the end of contract, it is necessary to decide whether the soldier's period of service will be extended or the service relationship will be terminated. In terms of preparation for the second career, however, this is a very short time span.

Likewise, the maximum admission time of courses of 3 months is not long enough for re-training in the new field. Courses, each year offered by the Ministry of Defence, last for an average of 3 to 4 weeks. However, it is difficult for a professionally trained soldier to retrain to a different expert for such a short period of time. Moreover, courses focus only on the basic knowledge and skills needed to perform the profession in which the soldiers retrain and it is not in line with labour market requirements. There is no competitive advantage for soldiers and the success at the labour market is not very realistic (Binková & Krč, 2017)

3 A good example of career management in military environment - Polish Armed Forces

Two semi-structured interviews with a chief of the Warsaw Professional Activation Centre were held to describe the system used in Poland. The interviews ranged from 120 to 360 minutes. The choice of the respondent was the method of deliberate (non-random) selection - the criterion was the job position. The interviews were semi-structured with the use of a record sheet and an outline of the interview. First-order reduction and subsequent open coding were performed on the obtained text. The non-directing style of the interview was used. The main questions were: Is there a system of preparation of soldiers for a second career in Poland? What does it consist of?

The core of the career management considering preparation for the second career and integration of soldiers to the labour market is a system based on the cooperation of specialized institutions of the Ministry of Defence, the so-called Professional Activation Centres. Centres offers a variety of activities supporting the transition to a second career from which they can benefit depending on the criteria up to 2 years before and 2 years after the termination of service, in special cases without any limitation. Short description of services provided by Professional Activation Centres is listed below. In addition to these, the personnel of Professional Activation Centres, located in 8 cities, regularly visits all of the military facilities in the country and lectures on their services and the possibilities of their use. This keeps the army informed.

Soldier can be provided individual consultations with experts, offering him the opportunity to meet employers, personalists selected by companies or other people who have successfully undergone a career change. Counselling can be provided personally, via phone or e-mail. Soldier can participate in up to 3-day seminars on the theme of retraining opportunities, start-ups, job opportunities, labour market adaptations, job search methods, rules of writing a CV and motivation letter, interviewing techniques, and employment law issues. Part of the preparation for a second career is training, i.e. retraining and other courses, which are paid up to the amount that is given by: the percentage of the lowest basic salary in force as of the first day of the calendar year in which the person requires retraining, the number of years worked in active service and the date of termination of service. A soldier looking for a new job

can apply for a job search assistance at the appropriate military unit. He /she is provided with a wide list of vacancies within his / her place of living, which takes into account his / her needs, qualifications and requirements. A soldier, whose service relationship was terminated for reasons defined by law and whose service lasted for at least 10 years, has a priority in applying to positions in the area of national defence in the public sector. Upon a decision of the Minister of Defence and with the consent of the commander of a military unit, the soldier can apply up to 6 months of internship before termination of service if it is necessary for obtaining employment in the civilian sector. Professional Activation Centres also offer business start-up assistance and organize job fairs that employers are invited to, to establish contacts for future cooperation with soldiers (Rogoń, 2017).

4   Quantitative sociological research

4.1   Description of the research sample and measurement tools

The goal of questionnaire was to identify whether professional soldiers perceive the transition to the civilian sector as problematic and whether they evaluate the selected instruments of support for the integration of soldiers into the labour market used in Poland positively.

The research sample has been created by 86 officer's attendants of career course of superior officers, which are classified to deciding leaders on the level of direct leadership in the Czech Armed Forces. The selection of participant was conducted based on availability which was enabled. The location of career course of superior officers was University of Defence, Brno, Czech Republic. The method of quantitative research by using the questionnaire research technique in electronic version was applied. The data were collected between 2 to 27 November 2017 and processed during January 2018. Among the respondents there were 78 men and 8 women, the average age was 37 years and the education of all respondents was higher education.

5   Results

Tab. 1: Results

1) Do professional soldiers meet difficulties during a job search after the termination of military service?			2) Is there a well-developed system of preparation of professional soldier for a second career in the Czech Republic?		
Answers	Absolute frequency	Relative frequency	Answers	Absolute frequency	Relative frequency
Definitely yes	23	27%	Definitely yes	0	0%
Rather yes	41	48%	Rather yes	7	8%
I don't know	12	14%	I don't know	8	9%
Rather no	10	11%	Rather no	39	46%
Definitely no	0	0%	Definitely no	32	37%

3) Would you welcome an individual approach to preparation for a second career during your military service?				
Answers	Absolute frequency	Relative frequency	If yes, please assign the numerical value to the following forms of individual care according to their degree of profitability and usefulness. (1 = least beneficial, 5 = most beneficial)	Average value
Yes	67	78%	Consultation with a career counselor / personnel manager	3,94
I don't know	10	12%	Coaching	4,03
No	9	10%	Psychological help	2,67

4) Would you welcome mediation of group seminars on preparation for the second career during your military service?				
Answers	Absolute frequency	Relative frequency	If yes, please assign the numerical value to the following forms of individual care according to their degree of profitability and usefulness. (1 = least beneficial, 5 = most beneficial)	Average value
Yes	59	69%	Techniques of self-presentation in the labour market and in front of employers	4,12
I don't know	12	14%	Preparation for job interview	4,27
No	15	17%	Knowledge of labour market specifics and job search techniques	3,83
			Labour law issues	3,46
			Preparation for the admission procedure for further study	3,15

5) Would you attend job fairs?			6) Would you be interested in unpaid 3 - 6 months internship in civilian organization?			7) Would you like public sector organizations (not just within the Defence Department) to offer vacancies for former soldiers?		
Yes	69	80%	Yes	67	78%	Yes	46	53%
I don't know	12	14%	I don't know	8	9%	I don't know	35	41%
No	5	6%	No	11	13%	No	5	6%

Source: author

For the purposes of research, there were sestablished two hypotheses for the first two questions:

- Respondents perceive that professional soldiers meet difficulties during a job search after the termination of military service.

- According to respondents there is not a well-developed system of preparation of professional soldier for a second career in the Czech Republic.

On the basis of the statistical comparison of respondents' answers (Chi-square test of independence), both hypotheses can be confirmed. It can be concluded that a statistically significant number of respondents perceive that professional soldiers meet difficulties during a job search after the termination of military service (χ^2 39,41, p < 0.01) and perceive the system of preparation of professional soldier for a second career in the Czech Republic as not a well-developed system (χ^2 52,51, p < 0.01).

6   Interpretation of results, discussion

Three quarters of respondents perceive job search after the termination of military service as problematic and 83% of respondents find the system of preparation of soldiers for a second career in the Czech Republic insufficient. This may already be an evidence of the increased importance of the research problem, and hence the urgency to change the approach of the defence ministry to the career management. Subsequently, soldiers expressed their preferences in relation to concrete tools of support during the career transition. 78% of respondents would appreciate an individual approach, with the most appreciated form of coaching, which means longer-term co-operation with the assigned coach and working on related activites - identifying ideas and wishes, searching for ways to gain knowledge, skills, strengths and talents and help with creating of a personal career plan. 59% of the respondents would also welcome group seminars, which, according to their assessment of the value of utility, should mainly focus on preparing for a job interview. Soldiers were also interested in other support tools - 80% would attend job fairs organized exclusively for soldiers, 78% would be interested in attending an internship. The Military Forests and Farms of the Czech Republic, Volareza or the Military Technical Institute are examples of state-owned sectoral enterprises that offer vacancies for former soldiers. In the chapter dealing with career management in the Czech Armed Forces, this was not mentioned intentionally because it is not a significant tool of support for soldiers. In the questionnaire, however, in connection with the last question it was. 53% of respondents would welcome other public sector organizations (not just within the defence sector) to offer vacancies preferably to former soldiers.

It would be appropriate for the Defence Department to reconsider its approach to preparation of soldiers for a second career. It would not have to be very costly measures. Experts for these assistance services can be both trained personnel from the defence sector and professional experts from a commercial environment. A trained specialist whose task is to prepare the client for a new job can provide a full range of assistance services aimed at achieving the goal - professional counseling, mediating assistance in the area of legislative issues, mediating information about potential employers in the public and private sector. Soldiers could not only be helped to orientate themselves in the labour market and in selecting a new job. The service offer could be expandable by personal consultations, diagnostic tests,

psychological tests, assessments, or skill tests. Partial task of experts in this context could also be the transfer of references to organizations in the civilian labour market, personnel agencies or organizations interested in recruiting former soldiers. Such trained staff or external career experts could also organize group seminars and lectures either directly in military units or at the Military Academy in Vyškov of University of Defence in Brno and address labour market issues that were mentioned.

Retraining courses provided by the Ministry of Defence can, to some extent, facilitate the start of a new career. However, for a 40-year-old participant of a military retraining course who worked most of his military career in specific military expertise, the certificate of attending such a course may not be as useful as the practice in the organization itself. Absence of practice disqualifies former soldiers against other job seekers (Pernica, 2007). Therefore, soldiers could be allowed to work as an interns in companies for a certain period of time, for example 3 -6 months, as mentioned in the questionnaire. Today, soldiers are usually allowed to study college in distance form. For some soldiers who do not wish to study, however, the opportunity to try a job in a civilian organization could be far more beneficial. If the defence department started working with civilian organizations in this way, it would be possible to bring them together at job fairs and to mediate direct contact between potential employers and soldiers who are interested in preparing for a post-military career, but at the same time did not find a concrete idea of a future job. A practical solution of a job portal services can be a database of job seekers, for example at existing webpage www.army.cz, where employers could also place their job offers, or the ministry personnel could share them from other job portals.

The basic layer would be the training of military personnel to provide the basic service and the necessary information on the possibilities of assistance services for soldiers leaving the army. Second layer could be already functional recruitment offices. They could, therefore, serve both as entry and exit gateways for soldiers. An important and indispensable role in the whole system must have the third layer – the managing and coordinating bodies of the Ministry of Defence, such as The Sections of the State Secretary of the Ministry of Defence and the Personnel Agency of the Army of the Czech Republic. The criterion for the use of these services could be the length of service, as in the case of retraining, good service evaluation or termination of service for specific reasons. An important factor is to provide soldiers with the service well in advance, for example, 2 years before the termination of service, such as in Poland.

Conclusion

In the paper, the theoretical basis was defined, the current state of preparation of soldiers for a second career in the Czech Republic and Poland was described and a sociological survey among soldiers of Czech Armed Forces was conducted. Respondents found the integration of soldiers into the labour market problematic and a system of support in preparing for further careers as unprocessed. The soldiers

also responded positively to some of the support tools used in the Polish Defence Department. Particularly to the offer of job fairs, the possibility of a 3-6 month practice and individual assistance during the transition to the civilian sector and would welcome their transfer into the conditions of the Czech Republic's Defence Department. The task of the Ministry of Defence of the Czech Republic is seen in considering the adaptation of at least some of the tools of support used in Poland.

Suggested inovations in the area of human resources management – specifically career management in defence secotr could lead to a coherent and sophisticated system of preparation of soldiers for a second career, which could then be reflected in increased attractiveness of the Czech Armed Forces in the labour market, better recruitment, improvement of the image and prestige of the army and related public opinion about professional soldiers and reduce the negative consequences of unemployment of people leaving the army.

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Contact

Kristýna Binková

University of Defence

Kounicova 65/662 10 Brno, Czech Republic

kristyna.binkova@unob.cz

DIMENSIONS OF INTERNATIONALISATION. ENTERING FOREIGN MARKETS BY COMPANIES LOCATED IN POLISH TECHNOLOGY PARKS. FIRM LEVEL STUDIES

Mateusz Błaszczyk – Leszek Kwieciński – Marek Wróblewski

Abstract

Purpose: The presentation addresses the question of internationalization of tenant firms of Polish technology parks. This issue is discussed in terms of scale, determinants, and forms of companies entering foreign markets. The analyses are aimed to identify the differentiation in the ways of internationalization as well.

Design/methodology/approach: The holistic approach to the phenomenon of internationalization has been applied. It was considered as not only in terms of trade activities but also international capital ties, cooperation in R&D and the exchange of human resources.

The data comes from quantitative research carried out with the managers of the firms located in Polish technology parks. Due to the parks functions, one may treat the population of such companies as a kind of avant-garde of knowledge economy with a special potential for internationalization theirs business activity. The random sample of 300 was surveyed.

Findings: The research results show that internationalization concerns about half of the surveyed firms. The factors that stimulate the internationalization of enterprises are the levels of innovation, market experience and the use of public support. The analysis of forms of internationalization allowed to develop six relatively independent dimensions of business activity on foreign markets: traditional – directs, traditional – intermediated, within the paradigm of the knowledge-based economy, direct foreign investments and pre-internationalisation. The various forms of trade remain the dominant way of activity on foreign markets, however, participation in the international knowledge exchange and preparation for entering the external markets.

Research/practical implication: The research outcomes may be useful both for companies that establish their international activity and for the managers of business environment institutions that support the development and internationalization of economic entitles. Results of this paper could be useful also for policy-makers who create and evaluate the efficiency and effectiveness of the role of the technology parks as a tool of the public pro-innovation policy.

Originality/value: The presentation describes original research which is the first attempt of a comprehensive study on internationalization of tenant enterprises of technology parks.

Keywords: Companies internationalization, technology parks, small and medium enterprises

JEL Codes: E6, F4, O3

Introduction

A question of internationalization is one of the central issue discussed in the field of economic and management sciences. However, due to the rapid globalization processes and development of technology, as C. Axinn and P. Matthyssens (2002) point out, this phenomenon cannot be fully explained in terms of increasing export, foreign direct investments, and other "traditional" modes of exploring markets outside the domestic economy. The special context of contemporary internationalization of business activity is defined, among others, by the knowledge economy in which the importance of innovations is being emphasized, by the liberalization of international trade, and by off- and nearshoring. Therefore internationalisation could be viewed in prism of international dissemination of knowledge and intellectual property rights (Liu et al., 2014; Awate et al, 2015), global mobility of workforce (e.g. Hansen 2016), participation in the global value chains, international networking and strategic business alliances (Vahlne, Johanson, 2013; Johanson, Mattsson, 2015), and even the interpersonal relations (Harris, Wheeler, 2005). The modern approaches to internationalization stress the complexity and multidimensionality of this phenomenon, pointing to the parallel co-existence of various forms of firms' activity on international markets (e.g. Fletcher2001; Belniak 2015; Wach 2015).

The aim of this paper is to examine the level and the forms of internationalization of tenant firms of Polish technology parks. The question of determinants of the internationalization is also briefly discussed. Technology parks are one of the widely used instruments of local and regional economic growth policy. They are to serve, first of all, the stimulation of endogenous resources of knowledge by the incubation and acceleration of the development of new-knowledge based enterprises. It is on the premises of the park that services of renting business space (incubation), of access to state-of-the-art research and laboratory equipment, of early financing undertakings with a high potential of growth (private equity, venture capital, loan funds), and of innovative support for business development (creating pro-innovative networks, partnerships, legal services, accounting, patenting) as well as services aiding the processes of internationalising enterprises (Albahari et al. 2010; Cumming and Johan 2013). Support of internationalization activities is also one of the crucial function for technology parks of the 3rd generation (f.e. Technopolis Barcelona, Norrköping Technology Parks, Medical Valley Lund, EBC Cambridge). J. Allen and his co-authors have identified 5 features typical of the 3rd generation parks (Allen 2007):

- a global player embedded locally,
- a participant in the complex global networks,
- activities focused on the real needs of firms-residents,
- a local specificity showing itself in the care of people and the natural environment,

- a place of a school's main activities.

For these reasons, the population of business entities operating in Polish technology parks may be treated as a kind of avant-garde of the knowledge-based economy, with the particular potential of internationalization in accordance with the conditions of management characterizing the contemporary global economy.

Research methodology

The analyzed data come from a survey done in 2016 in the tenant firm of technology parks in Poland. The representative sample included 300 out of 1584 enterprises from all 36 actively functioning Polish technology parks. Owners of enterprises or individuals directly responsible for managing an enterprise (MD, CEO, business executive, etc.) were respondents in the research. In the case of an interview being impossible in an enterprise drawn in the primary trial (due to the refusal, the unavailability of a respondent or errors in the draw), the measurement was made in an enterprise of the substitute trial. In the primary trial, 33% of all measurements were realized, which is a typical result of these kinds of studies in Poland.

In the presented studies, internationalisation was treated as any kind of company activity on foreign markets, covering in particular: trade (import / export) in various forms, foreign direct investment (including the creation of foreign branches and capital involvement in foreign companies and shares of international companies in surveyed enterprise), international R&D cooperation and participation in the international circulation of knowledge (including sale and purchase of knowledge covered by intellectual rights), employment of foreign employees, participation in international production networks, strategic sales and cooperation, and obtaining trading permits on foreign markets, international certificates, quality marks, etc.

The investigated entitles were also characterized by size, market experience (year of establishment), level of spending on R&D, and using the different forms of public support. In case of missing values, the pairwise deletion was used. For this reason, the actual number of analyzed cases was 290 or 291 depending on the variable.

The research was carried out using the questionnaire specially prepared by the authors. It was focused on the issues of innovation and research-development activities, internationalization and the use of public support and of the technology park's offer. The statistical analyses were made with the use of the statistical package IBM SPSS Statistics 24.

Data and research findings

The functions and tasks performed by technology parks essentially define their clients' profile. According to the NACE v.2 classification, the surveyed sample included 27% of firm classified in the section *M. Professional, scientific and technical activities*; 26% of section *J. Information and communication*, and 17% of *C. Manufacturing*. The remaining sections were represented by less than 30 enterprises each.

In a column "number of firms" of table 1. there are presented distributions of variables characterizing surveyed enterprises: size, market experience, innovative activity, and using different forms of public support. The nature of technology parks is the reason why their residents are mainly micro-enterprises (including the individual business activities, they accounted for 64% of the researched sample) and small firms (25%). Almost half of the surveyed enterprises were set up after 2010, including new business undertakings of 2015 or 2016 that accounted for around 8% of the sample. The percentage of the firms set up before 2000 was relatively small – it amounted to 17%.

It should be emphasized that half of the investigated enterprises had not financed R&D activities. Over half of the entitles (55%) received some forms of public support.

Tab.1 :. Conducting international activities and enterprises' characteristics. The model of logistic regression.

Variable	Value	Number of firms	Enterprises conducting international activities n (%)	Odds Ratio (95 %CI)*
size of enterprise	individual business activity	29	13 (44.8)	1 (ref.)
	micro-enterprise	161	66 (41.0)	0.61 (0.26-1.42)
	small enterprise	73	47 (64.4)	1.26 (0.48-3.30)
	medium-sized or big enterprise	28	20 (71.4)	1.56 (0.44-5.52)
year of establishment	before 2000	48	31 (64.6)	1 (ref.)
	between 2001 and 2010	101	58 (57.4)	0.96 (0.43-2.16)
	between 2011 and 2015	117	53 (45.3)	0.64 (0.28-1.48)
	after 2015	25	4 (16.0)	0.18 (0.06-0.69)
innovation – expenditures on R&D	without expenditures on R&D	146	54 (37)	1 (ref.)
	expenditures on R&D<=20 %	84	52 (61.9)	2.14 (1.19-3.85)
	expenditures on R&D>20 %	60	39 (65.0)	3.10 (1.57-6.10)
Using public support	no	130	56 (43.1)	1 (ref.)
	yes	161	90 (55.9)	1.75 (1.04-2.92)

* The dependent variable: conducting international activity. The model's predicates: size of enterprise, year of establishment, innovation, and using public support.

Source: Author's research

In the presented approach, one understands the internationalization as any form of a firm's activity in international markets or cooperation with foreign markets, including import, export, trading in licenses, foreign sub-contracting, locating branches outside the home country, and direct foreign investments as well as foreign cooperation in the field of R&D. The phenomenon of internationalization defined in this way concerns half (50.2%) of the investigated enterprises. Over 46 percent of the respondents declared

sales within the Single European Market, whereas barely 23 percent of the surveyed firms declared business activity outside Europe (the US market was mainly indicated).

The model of the logistic regression allowed for defining which characteristics of enterprises increase the chances of undertaking the international activity. The values of odds ratios are shown in Table 1 indicate that enterprises' innovation (measured by expenditures for research and development) indeed increases an enterprise's chance of internationalization. The chance of finding a firm conducting international activities among enterprises using different forms of public support is almost twice greater (OR=1.75). It should also be noted that among newly created enterprises (set up in 2015 or later) the fraction of enterprises undergoing internationalization is considerably smaller than among enterprises with longer market experience.

The enterprises where international activity was declared (N=146) was asked about its forms. The obtained data are shown in Figure 1.

Fig. 1: Forms of internationalization of surveyed enterprises.

% of indications
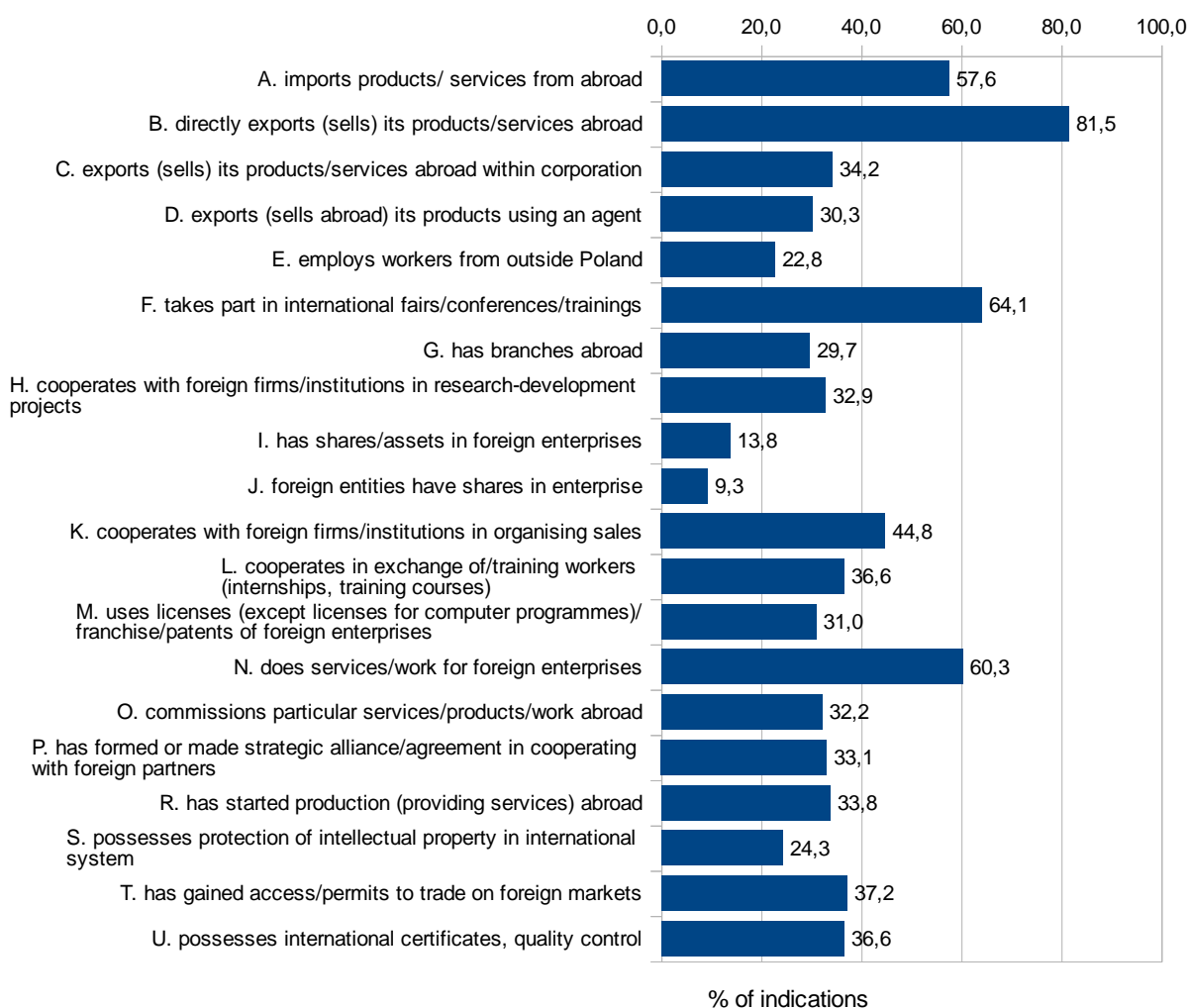
Source: Author's research

The data obtained seems to prove the thesis that micro-, small-, and medium-sized enterprises of a relatively short experience in the market (which dominate in the researched sample), in view of limited resource potentials, expand internationally using less advanced forms of internationalization, first of all by internationalizing the sphere of trade. A considerable interest in a short presence in foreign markets (in the form of training, fairs, conferences), which can be interpreted in the categories of an interest in expanding the economic activity of enterprises into foreign markets, should also be noted. This type of activity often has a character of preparing a firm for later (proper) activity outside the domestic economy.

Scrutiny of the similarities of investigated forms of activity on foreign markets revealed six basic levels of internationalization. For this purpose developing the homogeneous groups of variables, Ward's hierarchical clustering method was applied. Figure 2 shows the results of the analysis in the form of a dendrogram. It illustrates the connections of clusters of an ever greater degree. The obtained hierarchy allows for describing mutual positions of the objects it includes.

Fig. 2: The dendrogram with the use of the Ward connection – overall clusters (over-scaled distances).
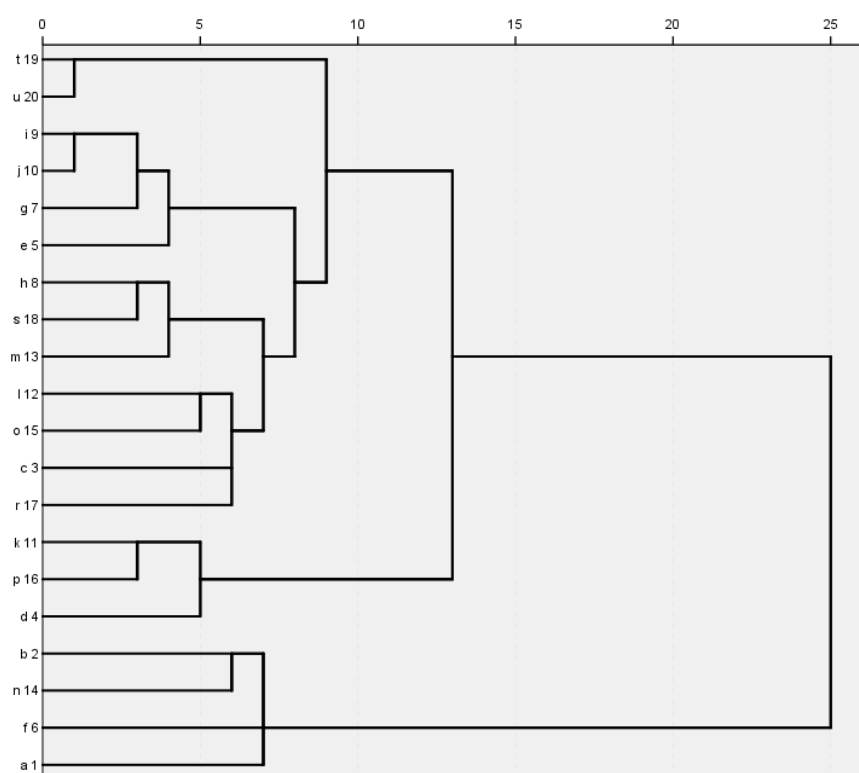
Note: The letters on the chart refer to the variables as presented in figure 1.

Source: Author's research.

The conducted analysis shows 6 groups of homogeneous variables corresponding to six basic dimensions of internationalization (which were then conventionally named on the basis of their most

distinct attributes defining their internal specificity). The variables concreting a given cluster define the empirical sense of a given dimension.

The first noticeable cluster is a dimension which can be identified as ***pre-internationalisation***. It is characterized by an enterprise's possession of permits and certificates allowing it to introduce products/services into trade on foreign markets. The second cluster is the structure defined as ***internationalization by foreign direct investments***. Generally speaking, it concerns enterprises' possession of shares/assets in foreign firms, foreign firms' possession of shares in a domestic firm, the setting up of branches abroad, and the employment of workers from outside Poland. The third cluster is the internationalization realized within the so-called ***paradigm of a knowledge-based economy***. In this aspect, internationalization is revealed by a cooperation of tenant firms of technology parks with foreign entities in the field of R&D, by the possession of the protection of intellectual property in the international system as well as by the use of a license/franchise and foreign patents. The fourth cluster, in turn, is a dimension of internationalization approximate to the broadly defined process of ***network internationalization*** (understood as a transfer of production outside the domestic economy in a different form within diversified types of cooperative connections). In the researched population of enterprises, it includes commissioning the manufacture and provision of products/services abroad, export of products/services abroad within a corporation, production abroad and the exchange of employees (including training abroad).

The last two identified dimensions refer in turn to traditional forms of internationalization. As a result, the fifth group of variables defines ***a traditional-intermediate*** dimension of internationalization comprising cooperation with external firms in organizing sales, also including the making of a strategic agreement on cooperation with foreign partners and the use of agent services in organizing sales. The sixth identified dimension is finally ***traditional direct internationalization*** comprising direct sales or purchase of products/services in the foreign market, doing work for foreign economic entities and participation in fairs, conferences, and training abroad.

The classification presented above additionally served to construe variables referring to activity undertaken by enterprises on each of the identified dimensions. The indicator of activity on a given dimension was the *yes* answer to any question referring to variables of a given cluster. This procedure allowed for a diagnosis of how common internationalization on particular identified dimensions is. The information is presented in Table 2.

Tab. 2: The universality of particular approaches to internationalization (N=146)

Dimensions of internationalization	number of firms	
	Number	**% of firms undertaking activity on a given dimension**
Dimension 1 Pre-internationalisation	64	43.8
Dimension 2 FDI	65	44.5
Dimension 3 Internationalisation within the KBE	75	51.4
Dimension 4 Internationalisation within a network	104	71.2
Dimension 5 Traditional (intermediate)	83	56.8
Dimension 6 Traditional (direct)	142	97.3

Source: Author's research

Conclusion

The presented results of the research into firms in Polish technology parks suggest that these institutions essentially create only to some extent an environment conducive to internationalizing their tenant enterprises' activities. Half of them undergo different forms of internationalization, but the percentage of tenant companies making international trade transactions is decisively greater than is the case for the majority of Polish firms. Among the enterprises included in the research, the percentage of firms conducting sales abroad (in different forms: directly, within a corporation and through agents) was as much as 44%. The results prove the thesis that the determinants conducive to entering foreign markets in the researched population of firms are, first of all, an ability to compete through innovative solutions and also the acquired experience and knowledge of conducting business (including international business, as well as capital and human resources (see e.g. Onetti et al, 2012, Chiva et al., 2014). The observations refer then to the theoretical concepts emphasizing the significance of a firm's learning process and an increasing ability for internationalization and the positive correlation with innovation and a potential for internationalizing activities that result from the process.

The conducted analyses prove the thesis that internationalization is a multi-dimensional phenomenon. The conducted analysis suggests that the internationalization of economic activity cannot be reduced to just export/import, although traditional forms of internationalization are the most common and comprise almost all surveyed enterprises which declared activity outside the domestic economy. More complex, advanced ways of acting on foreign markets, however, usually accompany the traditional forms of internationalization, and they also often require a more considerable investment or cooperative engagement. A particular dimension of internationalization, especially crucial for enterprises operating in modern technology branches and within the knowledge-based economy, is participation in

international trade in the rights of intellectual property circulation. The issue concerns about half of tenant enterprises of technology parks in Poland which conduct the international activity.

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Contact

Błaszczyk Mateusz
Uniwersytet Wrocławski
Koszarowa 3, 51-147, Wroclaw, Poland
mateusz.blasczyk@uwr.edu.pl

Leszek Kwieciński
Uniwersytet Wrocławski
Koszarowa 3, 51-147, Wroclaw, Poland
leszek.kwiecinski@uwr.edu.pl

Marek Wróblewski
Uniwersytet Wrocławski
Koszarowa 3, 51-147, Wroclaw, Poland
marek.wroblewski@uwr.edu.pl

STUDY ON THE COSTS AND BENEFITS OF IMPLEMENTING WIND ENERGY IN THE WESTERN REGION OF ROMANIA

Oana Bogdan – Aura Emanuela Domil – Dorel Mateş – Moise Domil - Alin Emanuel Artene

Abstract

Purpose: This paper presents an overview of the main costs and benefits of the implementation of wind energy in the Western Region of Romania. Various studies are available in the literature on the costs and benefits of wind energy, but our paper is focused on the relationship between the main costs and benefits of wind energy and the perceptions of professionals who activate in the energy field about the advantages and disadvantages of using this alternative source of energy in the Western Region of Romania. The aim of the research was to investigate whether the benefits of implementation exceed costs and if professionals who activate in this field are aware of the importance of green energy and especially wind energy.

Design/methodology/approach: In order to accomplish this research, we carried out in a quantitative approach, assuming measurement of respondents' perception, so the research paradigm is positivist-functionalistic. The answers of the questions are analyzed with the Likert scale with 5 levels of appreciation, from 1-5, as follows: 1 = in very little measure, 2 = in little measure, 3 = in average measure, 4 = in large measure, and 5 = in very large measure, which will show us the perception of the respondents about the benefits and costs of implementing wind energy, being able to determine the cost - benefit ratio.

Research/practical implications: Following the study, there is an awareness of the importance of using regenerative sources and supporting the costs of developing wind farms. The reduction of greenhouse gases (GHG) emissions and the use of regenerative sources contributes to the achievement of the 20/20/20 European objective.

Originality/value: Presented paper contributes to the knowledge of the costs and benefits of wind energy farms in the Western Region of Romania.

Keywords*:* Cost of wind energy, wind farms, benefits of clean source, renewable source and zero emissions, Western Region of Romania.

JEL classification: Q42, Q53, Q56

Introduction

Wind energy is to be one of the most important kinds of clean energy. The first wind turbine in Romania was installed in Prahova county in 2004 (Chirilă Nicoleta, 2013). It was a second-hand low-power turbine, but this acquisition determined ANRE to issue a Green Certificates Award for those who are interested to build wind farms. The interest in wind energy has begun to grow in our country, so that in 2007 a massive process begins exploring the wind potential of Romania by installing wind measuring stations with average heights of about 60 meters. If by 2009 there were installed 14 MW in Romania, starting with 2010 there is an investment explosion and at the end of 2012 it reaches an installed capacity of 1905 MW (Romanian Wind Energy Association, 2017).

According to RWEA (2016), the year 2012 was an absolute peak for the installation of new wind capacity in Romania, with almost 1000 MW; In other words, a new turbine with an average capacity of 2.5 MW was installed each calendar day.

Global wind energy outlook (2016) points out that Romania, which according to the EU Directive must meet 24% of its energy demand by renewable in 2020, had installed 2599.6 MW of wind power at the end of 2013, up from 14 MW in 2009. Romania's operating wind farms are mainly located in Dobrogea on the Black Sea coast, which has average wind speeds of 7 m/s at 100 m hub heights (Global wind energy outlook, 2014). Romania's wind potential is considered to be the highest in Southeast Europe with Dobrogea region being the second highest wind potential area on the continent (Dragomir G et al, 2016).

On January 1, 2017, Romania recorded 3025 MW installed in wind power, which represents investments of over 5 billion euro and we can appreciate that "wind energy has experienced growth over the past decade". Romania has a diversified electricity mix, mostly based on indigenous energy resources. For 2015, the structure of electricity production was as follows: 28% coal, 27% hydro, 18% nuclear, 13% natural gas, 11% wind, 2% photovoltaic and 1% biomass. For January-October 2016, production consisted of 29% hydro, 25% coal, 18% nuclear, 15% natural gas, 10% wind, 2% photovoltaic and 1% biomass (European Commission. JRC Wind Energy Status Report, 2016). The use of renewable sources contributes to the reduction of GHG and thus there is an increase in social comfort, economic growth and reduction of environmental pollution (Hdidouan, D.; Staffell, 2017).

Renewable energy sources (RES) have a great potential in Romania, especially the wind and solar ones, so that investment projects can be developed to ensure a green energy production, for a sustainable development. (Câmpeanu Virginia., Pencea Sarmiza, 2014)

At Oravița, in Caraş Severin County, the first operational wind farm in the West Region of Romania was opened in 2011. The value of the investment exceeds 47 million euro, one third of which were obtained from European funds attracted through the Sectorial Operational Program Increase of

Economic Competitiveness. The wind farm in Oraviţa has a capacity of 26.5 MW and in 2011 included 6 turbines. Three other wind farms are developing in Coronini, Moldova Nouă and Toplea, talking about another 24 wind turbines and millions of euro invested (West Regional Development Agency. Sustainable Development Strategy, 2012).

1 Materials and Methods

Our research on the costs and benefits of implementing wind energy in the Western Region of Romania is a descriptive one of a transversal type, as follows: the period during which the research was carried out: September 2016 – February 2017, the research method used: the survey, and the research tool used: questionnaire.

In order to accomplish this research, we went through the following steps: establishing the purpose and objectives of research; identification of the questioned group surveyed and depending on it - determination of the volume of the analyzed sample; conceiving and writing questionnaires; reliability analysis of questionnaires; application of the questionnaire on the ground - gathering the necessary data; data centralization, processing and interpretation of results.

1.1 Purpose and objectives of the research

Regarding the purpose of the research, in this paper we intend to identify the main costs and benefits of the implementation of wind energy in the Western Region of Romania and the reliability of such a decision given the significant potential in this area of the region, in other words, the aim of the paper is to determine if the benefits of implementation exceed costs. The research objectives consist of: OB 1: Assessing the perceptions of energy experts on the importance of wind energy in th Western Region of Romania, OB 2: Identification of the main benefits of wind energy implementation and their hierarchy, OB 3: Identification of the main costs of wind energy implementation and their hierarchy, OB 4: Determining the cost - benefit ratio of wind energy implementation.

1.2 The research group

The target group of our analysis consists of 130 ANRE experts from the Western Region of Romania, respectively from the counties of Timiş, Arad, Caraş-Severin and Hunedoara and 350 legal or private individuals (LPI) who work in the energy field or use green energy in their activity, thus having a thorough knowledge of both the costs and benefits of using this alternative energy source.

1.3 Conceiving and writing questionnaires

The first part of the questionnaire addresses the general aspects of wind energy. This part highlights the perception of ANRE experts and legal or private individuals on the benefits and obstacles of the implementation of wind energy in the Western Region of Romania, a request that allowed their

subsequent assessment. That's what we used: matrix type questions, multiple-choice questions that offered the interviewee the opportunity to choose the best possible answer from many possible, dichotomous questions, closed questions with the yes or no, were used to find the respondent's opinion in a particular case, to find out the level of appreciation given by the respondent to a particular accounting situation or item, we used multiple choice questions on a scale of importance. The second part of the questionnaire presents the profile of the respondent.

2   Results

This chapter assesses of the benefits and the costs of wind energy implementation in the Western Region of Romania. In this section are presented the results obtained after applying the questionnaire. The answers of the questions use the Likert scale with 5 levels of appreciation, from 1-5, as follows: 1 = in very little measure, 2 = in little measure, 3 = in average measure, 4 = in large measure, and 5 = in very large measure.

2.1   Assessment of the benefits of wind energy implementation in the Western Region of Romania

Our survey respondents, respectively 130 Romanian Energy Regulatory Authority (ANRE) experts and 350 legal or private individuals (LPI) were asked to note the following benefits (main benefits): Zero emissions of pollutants and greenhouse gases; Reduced costs per unit of produced energy; Renewable source; Clean source of power; Generates economic benefits.

Tab. 1: Evaluation of the main benefits of wind energy

Evaluation of the benefits		Zero emissions of pollutants and GHG		Reduced costs per unit of produced energy		Renewable source		Clean source of power		Generator of economic benefits	
Scale	**Marks**	ANRE	LPI	ANRE	LPI	ANRE	LPI	ANRE	LPI	ANRE	LPI
in very little measure	1	15	9	7	15	2	4	2	2	12	11
in little measure	2	18	22	12	34	7	8	5	12	8	28
in average measure	3	30	40	26	47	30	12	25	17	50	122
in large measure	4	32	99	37	80	40	107	43	116	35	100
in very large measure	5	35	180	48	174	51	219	55	203	25	89
TOTAL		130	350	130	350	130	350	130	350	130	350

Source: Author's elaboration after the questionnaire

2.2   Assessment of the costs of wind energy implementation in the Western Region of Romania

Our survey respondents, respectively 130 ANRE experts and 350 legal or private individuals were asked to note the following costs (main cost): Noise pollution; Affecting ecosystems - Threat to Wildlife; Relatively small number of turbines; Unpredictable source; Wind farms need a lot of land.

The answers are as follows:

Tab. 2: Evaluation of the main costs of wind energy

Evaluation of the costs		Noise pollution		Affecting ecosystems		Relatively small number of turbines		Unpredicta-ble source		Land used to build turbines	
Scale	**Marks**	ANRE	LPI	ANRE	LPI	ANRE	LPI	ANRE	LPI	ANRE	LPI
in very little measure	1	45	125	48	80	4	25	8	30	30	45
in little measure	2	30	100	27	75	12	36	9	32	39	28
in average measure	3	25	70	25	130	70	115	20	55	27	157
in large measure	4	18	38	19	55	25	54	28	90	19	70
in very large measure	5	12	17	11	10	19	120	65	143	15	50
TOTAL		130	350	130	350	130	350	130	350	130	350

Source: Author's elaboration after the questionnaire

2.3 Evaluation process

2.3.1 The perception about the benefits of implementing wind energy in the Western Region of Romania

The respondents have been asked to choose the best benefit of implementing wind energy out of 5 options, like: *zero emissions of pollutants and GHG* (**B1**), *reduced costs per unit of produced energy* (**B2**), *renewable source* (**B3**), *clean source of power* (**B4**), and *generates economic benefits* (**B5**); they have been asked to put the influence of these factors in a hierarchy, on a scale of importance from 1 to 5, where 1 = very small benefit of adopting wind energy and 5 = very high benefit of implementation. These dates are presented in following table:

Tab. 3: Summary evaluation: The relevance of benefits of implementing wind energy

Indicators	$\bar{x}$					The relevance of benefits of implementing wind energy				
	B_1	B_2	B_3	B_4	B_5	P_{B1}	P_{B2}	P_{B3}	P_{B4}	P_{B5}
ANRE	3,42	3,82	4,01	4,11	3,41	0,68	0,76	0,80	0,82	0,68
LPI	4,20	4,04	4,51	4,45	3,65	0,84	0,81	0,90	0,89	0,73

Source: Author's elaboration after the questionnaire

Where,

$\bar{x}$ = weighted arithmetic average, P_{B1-5} = Variable perception of the benefits of wind energy implementation. This indicator will be calculated for each benefit as follows:

$$PB = \frac{\bar{x}}{5}$$

✓ PB ≤ 0.4 - low potential to generate economic benefits after implementation

✓ 0.4 <PB ≤ 0.7 - medium potential to generate economic benefits after implementation

✓ PB> 0.7 – high potential to generate economic benefits after implementation.

By analysing the answers, we can notice that the greatest perception has been registered on the benefit *clean source of power*, with a score of 0,86, followed by the perception on the benefit of *renewable source*, with a score of 0,85. The perception on *reduced costs per unit of produced energy* has registered a score of 0,79 and the perception on *zero emissions of pollutants and greenhouse gases* has also scored high, namely 0,76. The fact that wind farms may *generate economic benefits in the future* has registered the lowest value, 0,71.

2.3.2 The perception about the costs of implementing wind energy in the Western Region of Romania

Within the research we also wished to find the respondents views regarding the costs of implementing wind energy. Out of 5 choices of obstacles that can cause difficulties for the adoption process, such as: *noise pollution* (**C1**), *affecting ecosystems - threat to wildlife* (**C2**), *relatively small number of turbines* (**C3**), *unpredictable source* (**C4**), *wind farms need a lot of land* (**C5**), the respondents have been asked to choose the one they found the most important and then to prioritize the influence of costs on a scale from 1 to 5, where 1 is a low influence and 5 a great influence of the obstacle.

Tab. 4: Summary Evaluation: The relevance of costs of implementing wind energy

Indicators	$\bar{x}$					The relevance of costs of implementing wind energy				
	C_1	C_2	C_3	C_4	C_5	P_{C1}	P_{C2}	P_{C3}	P_{C4}	P_{C5}
ANRE	2,40	2,37	3,33	4,02	2,62	0,48	0,47	0,67	0,80	0,52
LPI	2,21	2,54	3,59	3,81	3,15	0,44	0,51	0,72	0,76	0,63

Source: Author's elaboration after the questionnaire

Where:

$\bar{x}$ = Weighted arithmetic average, P_{C1-5} = Variable perception of the costs of wind energy implementation. This indicator will be calculated for each cost as follows:

$$PC = \frac{\bar{x}}{5}$$

✓ PC ≤ 0.4 - low potential to generate economic difficulties and costs in implementation

✓ 0.4 <PC ≤ 0.7 - medium potential to generate difficulties in wind energy implementation

✓ PC > 0.7 – high potential to cause difficulties and costs in implementation

The results have emphasised the following aspects: within, the strongest perceived aspect has been the *unpredictable source of energy*, with a score of 0,78, the *relatively small number of turbines* has gained a score of 0,70 and the perception on the fact that *wind farms need a lot of land* has registered a value of 0,58. The perception on the fact that wind farms are *affecting ecosystems - threat to wildlife* has registered a value of 0,49. Lastly, with a score of 0,46, we have the perception on *noise pollution.*

3   Discussion

Having reached these results, we wanted to identify the potential of the benefits, respectively of the obstacles to generate implementation difficulties. So, we notice that our chosen sample of respondent's give the benefits a 0.79 score, that reflects a high potential that exceeds the value of the obstacles, 0.61.

$$\text{PB. ANRE} = \frac{3,42 + 3,82 + 4,01 + 4,11 + 3,41}{5 * 5} = 0,75$$

$$\text{PB. Legal or private individuals} = \frac{4,20 + 4,04 + 4,51 + 4,45 + 3,65}{5 * 5} = 0,83$$

$$\text{PC. ANRE} = \frac{2,40 + 2,37 + 3,33 + 4,02 + 2,62}{5 * 5} = 0,60$$

$$\text{PC. Legal or private individuals} = \frac{2,21 + 2,54 + 3,59 + 3,81 + 3,15}{5 * 5} = 0,6$$

Fig.2: Main benefits of wind energy
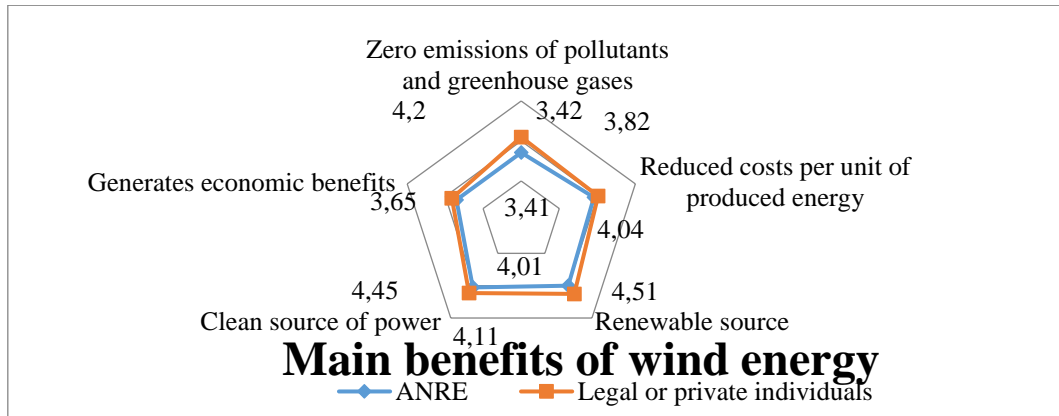
Source: Author's elaboration after the questionnaire

In our situation, PB. ANRE has a value of 0.75, ranging from PB> 0.7 - high potential to generate economic benefits after implementation - reflecting the fact that the investigated sample provides the benefits of wind energy implementation in the Western Region Romania has a high potential to generate economic benefits for society as a whole. Also, PB. Private or legal individuals are in the range of > 0.7 - high potential to generate economic benefits after implementation, reflecting the fact that both ANRE experts and other surveyed people believe that the implementation of this alternative energy can lead to increased economic benefits.

Fig.3: Main costs of wind energy
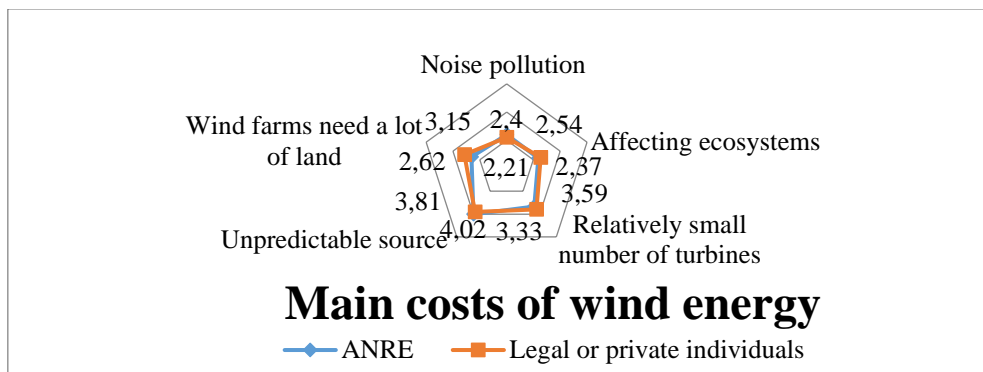
Source: Author's elaboration after the questionnaire

In our situation, PC. ANRE has a value of 0.60, ranging from 0.4 <PC ≤ 0.7 - which reflects the fact that the investigated sample gives the potential of the costs of wind energy implementation in the Western Region of Romania environment to generate implementation difficulties. PC. Legal or private individuals has a value of 0.61, also ranging from 0.4 < PC ≤ 0.7 - reflecting the fact that the investigated sample gives the costs of implementing wind energy

in the Western Region of Romania a medium potential to generate difficulties in the implementation process.

Energy is the guiding force of our society. Important issues such as climate change, increased dependence on oil and other fossil fuels and the steady increase in energy costs lead us to rethink the way we produce and consume energy. From this point of view, renewable energy sources are an important part of the solution for a sustainable energy future. The European Union is therefore committed to increasing the share of renewable energy by 20% by 2020 and to increasing the level of bio fuels in transport to 10% by 2020. From calculations we see we can see that population, besides experts are aware of the importance of using alternative energies, such as wind energy. And with small but important steps, each of us can contribute to reduce energy consumption and increase the use of renewable energy for heating, domestic or motor vehicle fuel - contributing in this way to the goal of a sustainable and healthy future.

Analyzing the results obtained in this study we can state the following: wind energy has a number of advantages and benefits that contribute to reducing pollution and, implicitly, to sustainable development; the cost per unit of generated energy represents an important benefit of wind energy that contributes to the growth of the economic level; the use of renewable sources contributes to reducing GHG emissions, increasing social and economic levels; pollution contributes to the development of heat islands that affect localities; at the local level, Romania has a relatively small number of turbines; increasing the number of wind farms is an important step for the country.

Assessing Romania's development strategy (Ministry of Environment and Climate Change. National Strategy of Romania 2013 - 2020 – 2030, 2013) it can be noticed that efforts are being made to use renewable sources and reduce the impact of GHG emissions. Moreover, Romania has joined the 20/20/20 target of reducing GHG emissions by at least 20% compared to 1990 levels, increasing the share of renewable energy in final energy consumption by 20%, and increasing by 20% the local energy efficiency.

In this respect, the three priorities of the Western Region (West Regional Development Agency. Sustainable Development Strategy, 2012) are:

- *Smart growth:* Developing and sustaining an economy based on knowledge, innovation and technology.
- *Sustainable growth*: adapting and promoting an efficient economy based on the balanced use of resources.

- *Increasing inclusion:* promoting an economy with a high employment rate and offering equal opportunities.

Conclusion

These results reflect the fact that society is open in adopting such alternative energy sources. Electricity and heat producers and administrative / territorial units / intra-Community development associations that produce electricity from renewable sources will be eligible for state aid, with the total budget allocated to the scheme being EUR 100.6 million for the next four years, according to a Government Decision.

Of the total budget allocated to the scheme, 85% represent European non-reimbursable funds provided through the European Regional Development Fund and 15% public co-financing funds, provided from the state budget through the budget of the Ministry of Regional Development, Public Administration and European Funds and local budgets.

The maximum aid that can be granted for an investment project may not exceed EUR 15 million and the maximum number of beneficiaries of state aid under the scheme is estimated at 40. This scheme is applicable until 31.12.2020 (Ivascu, L.; Cioca, 2014). Using wind energy increases local capacity to deliver energy and reduce GHG emissions. In this respect, there are a number of globally developed actions that contribute to increasing energy efficiency (European Commission. Subsidies and Costs of EU Energy; Report No. DESNL14583; European Commission, Directorate-General for Energy, 2011)

The state aid scheme is aimed at large, medium or small enterprises, micro-enterprises, including newly founded enterprises whose accounts have not been approved and which have included in the Company's Statute the activity related to the production of electricity / heat, corresponding to Division 35: And the supply of electric and thermal energy, gas, hot water and air conditioning - from the CAEN codes and the administrative-territorial units / the administrative- territorial subdivisions / the intercommunity development associations.

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Contact

Oana Bogdan

Accounting and Audit Department, West University of Timisoara

J. H. Pestalozzi No. 16, 300116 Timisoara, Romania

oana_bogdan26@yahoo.com, oana.bogdan@e-uvt.ro

Aura Emanuela Domil

Accounting and Audit Department, West University of Timisoara

J. H. Pestalozzi No. 16, 300116 Timisoara, Romania

aura.domil@e-uvt.ro

Dorel Mateş

Accounting and Audit Department, West University of Timisoara

J. H. Pestalozzi No. 16, 300116 Timisoara, Romania

dorel.mates@e-uvt.ro

Moise Domil

Accounting and Audit Department, West University of Timisoara

J. H. Pestalozzi No. 16, 300116 Timisoara, Romania

moise.domil@e-uvt.ro

Alin Emanuel Artene

Accounting and Audit Department, West University of Timisoara

J. H. Pestalozzi No. 16, 300116 Timisoara, Romania

alin.artene@upt.ro

CHALLENGES RELATED TO THE DIGITAL TRANSFORMATION OF BUSINESS COMPANIES

Miroslava Boneva

Abstract

Purpose: This paper aims to discuss the challenges, which the companies clash with in relation with the digital transformation and to propound a model to overcome them.

Design/methodology/approach: The literature review of scientific papers is used for researching the essence of the digital transformation, the reasons which engender it and the challenges related to its implementation in the business companies.

Findings: As a result of the discussion: (1) the challenges which are related to the digital transformation have been systematized and (2) it has been adduced, that the digital transformation is implemented according to an algorithm, that starts with a digital audit, continues with developing of a strategy, setting of measurable aims, prioritization, assessment of the effect achieved by measuring the results and it "concludes" with proposals of improvements.

Research/practical implications: The types of challenges of digital business transformation have been established and a grounded sequence of processes for accomplishment of digital transformation has been presented. When the managers know potential dangers, they could avoid or neutralize the unfavourable consequences. The algorithm for the implementation of digital business transformation could support the participants in this undertaking. Further research has been suggested, through which to validate the algorithm for digital business transformation in companies of different sectors.

Originality/value: A systematization of challenges, faced by the business companies in the course of the digital business transformation has been made. A theoretical model of the algorithm for digital business transformation has been developed.

Keywords: Digital transformation, types of challenges of digital transformation, algorithm for digital business transformation.

JEL Codes: M10, L15, D89

Introduction

The business companies are facing inevitable digital business transformation in the era of the digital economy, Industry 4.0 and innovations in different point of views: dynamic capabilities in e-business transformation (Daniel & Wilson, 2003), digital convergence (Jeon, Park, & Digman, 2008), peculiarities of digital business and e-commerce management (Chaffey, 2015), in terms of macrocontext and microfoundations (Coviello, Kano, & Liesch, 2017), regardless of the sector: building industry (Vlachos, 2016), photovoltaic plants (Kirova & Velikova, 2016), knitwear industry (Mihaylova, Papazov & Kirova, 2016), courier services (Otsetova, 2017), consulting industry (Nissen, 2018), as well as the level of innovation (Kirova, 2010) and decision-making (Kirova, 2012).

"The Internet of everything (IoE) is having a profound effect on how organizations and industries are transforming." (Wade, 2015)

This paper has an aim to discuss the challenges, which the companies encounter in relation with the digital transformation and to propound a model to overcome them.

This aim is attainable trough the accomplishment of the following research tasks: (1) to investigate the essence of the digital transformation and the preconditions, which impose it; (2) to research and systematize the challenges, which accompany the implementation of digital transformation in business organizations; (3) to develop a theoretical model of the algorithm for digital business transformation.

1   The digital transformation – essence and preconditions

The process of organizational transformation trough the use of digital technologies and business models to improve economic indicators and respond of changing consumer behavior is inevitable for the contemporary organizations. The digital transformation excites the scientific researchers in terms of: factors determination algorithm (Kunev, Antonova & Ruskova, 2012), ecosystems of converging products, services and industries (Berman & Marshall, 2014), strategies, implementation and practice of digital business and e-commerce management (Chaffey, 2015), business models (Stott, Stone & Fae, 2016), digital supply chain management (Scuotto, Caputo, Villasalero & Del Giudice, 2017), as well as the managers from different business sectors: information and communication technologies (Wade, 2015), business information systems developing and impementation (Nagel-Martin, 2016), creative industries (Li, 2018).

The follow definitions express the essence of the notion "digital transformation".

"Digital business transformation - Significant changes to organisational processes, structures and system implemented to improve organisational performance through increasing the use of digital media and technology platforms." (Chaffey, 2015)

"Digital Business Transformation is Organizational Change through the use of Digital Technologies and Business Models to Improve Performance." (Wade, 2015)

Fundamental importance for the digital business transformation have: the adoption of e-business technologies in enterprises; the use of cloud computing services, the e-sales, the information security and the "disruptive technologies".

The information and communication technologies have fast become an integral part of enterprise functioning and its extensive and intensive use, combined with new ways of accessing and using the internet efficiently, characterise what is refers the digital economy (e-economy) – (Fig. 1) (Eurostat, 2016).

Fig. 1: Adoption of e-business technologies in enterprises, EU-28, 2010 and 2015 (% enterprises)
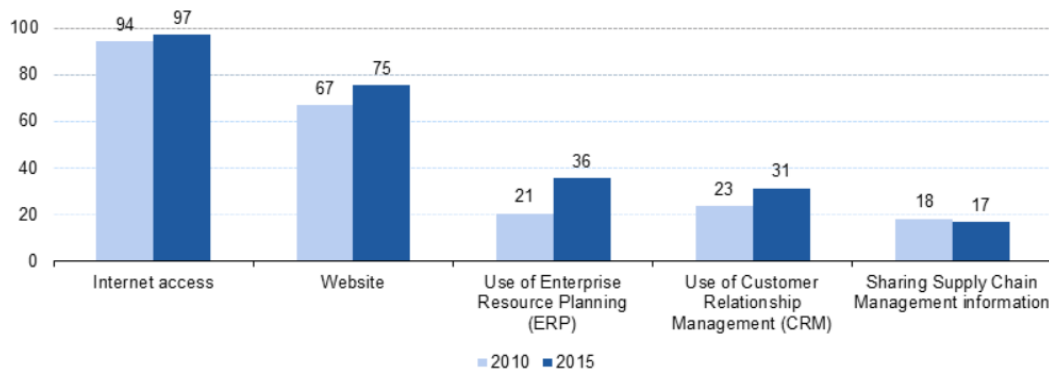
Source: Eurostat (isoc_ci_in_en2) and (isoc_ciweb) and (isoc_eb_ics) and (isoc_eb_iip)

The development of information technologies and their dissemination in various business activities is confirmed by Eurostat data (Eurostat, 2018) wich indicate that: there is an increase in the use of cloud computing services EU 28 (from 19% in 2014 to 21%, 2016) and the figure 2. presents it by purpose. Figure 3. presents the degree of dependence on cloud computing, by economic activity.

In the EU-28, during the period 2008 to 2016, the percentage of enterprises that had e-sales increased by 7 percentage points and the enterprises' turnover realised from e-sales increased by 6 percentage points. During 2016, 44 % of large enterprises made e-sales corresponding to

26 % of total turnover in this size class. Similarly, 29 % of medium sized enterprises made e-sales corresponding to 13 % of total turnover in this size class. By contrast, 18 % of small enterprises engaged in e-sales, corresponding to only 7 % of the turnover of such enterprises (Eurostat, 2018).

Fig. 2: Use of cloud computing services, by purpose, 2014 and 2016 (% of enterprises using the cloud)
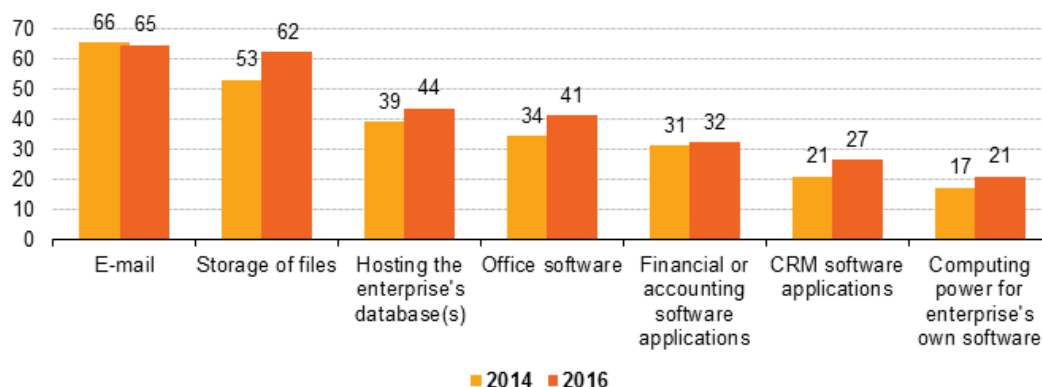
Source: Eurostat (isoc_cicce_use)

Fig. 3: Degree of dependence on cloud computing, by economic activity, EU-28, 2016 (% of enterprises using the cloud)
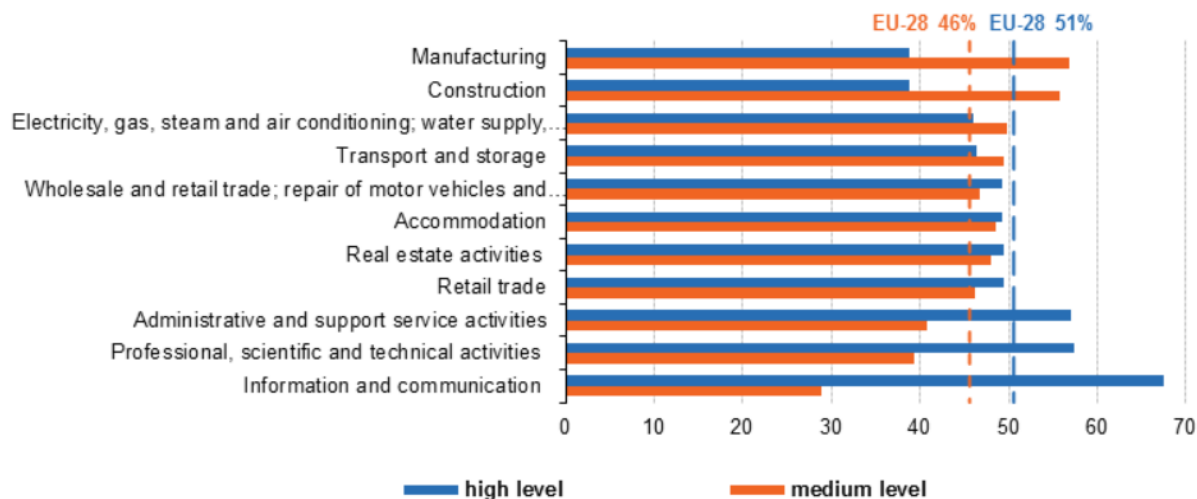
Source: Eurostat (isoc_cicce_use)

In 2015, 32 % of enterprises in the EU-28 had a formally defined information and communication technologies security policy. The highest proportions of enterprises having such a policy in the EU-28 was reported by enterprises in the sector of Information and communication activities (60 %) as well as by enterprises with Professional, scientific and technical activities (49 %). The lowest proportions were registered in the sectors of

Construction (20 %), Real estate (25 %) and Transportation and storage (26 %) (Eurostat, 2016).

A Fobes`contributor communicates that in 2020, artificial intelligence (AI) will become a positive net job motivator, creating 2.3M jobs while eliminating only 1.8M jobs and by 2020, IoT technology will be in 95% of electronics for new product designs; furthermore by 2021, 40% of IT staff will be versatilists, holding multiple roles, most of which will be business, rather than technology-related (Columbus, 2017).

The phenomenon digital transformation has been causal from multitude preconditions, which represent an aggregate of (1) key factors for change achievement (Chaffey, 2015) and (2) the novelties, which are developed with the advance of information and communications technologies, the so-called „disruptive technologies" (World Economic Forum, 2016). The synergy between the two groups of factors has been presented in the Figure 4.

Fig. 4: The preconditions for the digital transformation
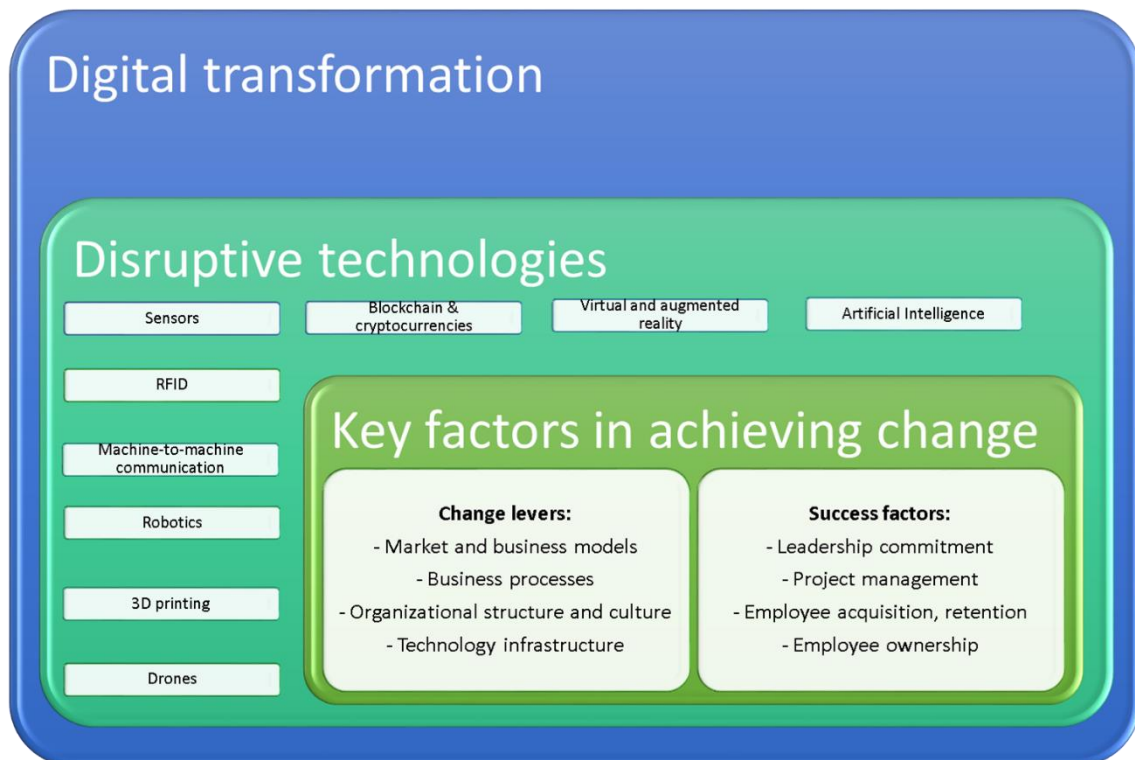
Source: adapted from (Chaffey, 2015) and (World Economic Forum, 2016)

The numerous components, which cause the digital transformation, are indicative of the difficulties which the organizations encounter while implementing the digitization process.

2   The challenges of digital business transformation

Gartner estimates that by 2020, 75% of businesses will be digital, or have digital business transformations underway, but only 30% of those efforts will be successful (O'Connell, Delaney & Moriarty, 2015).

For companies, founded before the digital age, the fundamental problem is the change, and the real place to look for change is not on the Internet, but inside your company - in the organizational culture and in the attitude toward change (Kanter, 2001).

In order to make a change, it is necessary to become aware of the need for it and to assess the resources by which it can be realized. With regard to this, Sanchez (2017)   has developed a framework for assessing the readiness of the organizations for the digital transformation, which aims to define resources, opportunities and management solutions for responding to the new reality.

Research papers dedicated to investigating the challenges that the companies from different sectors and countries need to overcome in carrying out the digital transformation have been studied. They have made it clear that the business organizations are confronted with: political and structural challenges (Jaing, 2015); scale, scope, regulation (Midtun & Piccini, 2017); lack of spatial-temporal statistical models for efficient business data processing in order to optimize product placement, analyze customer transaction and market structure, develop customized product systems, manage risks and support timely business decisions. (Yang, Huang, Li, Liu, & Hu, 2017). Yang at. al (2017) describe the relationship between the challenges of big data (storage, transmission, management, processing, analyses, visualization, integration, architecture, security, privacy, quality, and others) and cloud computing for innovation in different fields of activity.

In „Communication of the E-skills for the 21st century" (Commission of the European communities, 2007) it has been established that for the European Union and its Member States to remain successful in a global economy characterised by rapid technological change, more efforts will be needed to raise and widen the level of e-skills of the workforce and the citizens, which is one of the foundations of a knowledge-based society (Commission of the European Communities, 2007). Nevertheless more than two fifths (41 %) of large enterprises recruited or tried to recruit personnel for jobs requiring specialist ICT skills in 2015, while 20 % of large enterprises reported that they had hard-to-fill vacancies for jobs requiring specialist ICT skills.

By contrast, the corresponding shares for medium-sized enterprises were 16 % and 6 % respectively, and for small enterprises they were 6 % and 2 % respectively (Eurostat, 2017).

Because the business organizations have to overcome many different challenges in the course of their digital transformation, a systematization has been developed with the purpose of defining the challenges (Table 1). The systematisation of difficulties is founded on the 7S model of the consulting group „McKinsey", later elaborated by Chaffey (2015) and the transformation categories of the "digitization piano", classified by „Global Center for Digital Business Transformation" (Wade, 2015). The problems presented above find their place among the challenges categorised in Table 1.

Some questions have also been included in Table 1. with the presumption, that the challenge is overcome in a half, when the correct questions have been asked and the exact answers have been sought.

Besides, the questions can be used to provide a roadmap of the need of transformation, i.e. the current status and the digital transformation aims to be defined (Wade, 2015).

The challenges, which the business organizations should be overcome in the course of their own digital transformation can be integrated in the following directions:

- Consequences from the IT sector development and the influence of the latter on the strategies and business models in the remaining sectors;
- The need for modification of organisational structure to make it suitable for digital business management;
- The need for development of specific processes, procedures, information systems, computing models for processing large volume of data for Internet marketing support;
- Changes in key skills and abilities, leadership style of managers etc.;
- Development of shared values, channels, and approaches to interact with customers, vendors, and partners.

Tab. 1: Systematization of the challenges for the digital business transformation

Element of 7S model (Chaffey, 2015)	Transfor-mation category (Wade, 2015)	Challenges - relevance to digital business management (Chaffey, 2015)	Questions for overcoming challenges (Wade, 2015)
Strategy	*Business model*	*The contribution of digital business in influencing and supporting organizations' strategy.*	*What are your routes to market? How relevant is digitallyenabled commerce, i.e. e-commerce, m-commerce?* *Where does most of your revenue and profit come from?* *What are your main customer segments? Do these need to change?* *How are you differentiated from your competition? How relevant is this for the future?*
Structure	*Structure*	*The modification of organisational structure to support digital business.*	*What type of organizational structure do you have? What is the balance between local and global decision making?* *Does this make sense for the future?* *Where do different aspects of 'digital' sit in your organization?* *Are they effective?*
Systems	*IT capability*	*The development of specific processes, procedures or information systems to support Internet marketing.*	*How effective is your IT infrastructure: core systems, networks, databases. Is it able to support your digital ambitions?* *How effective is your forward facing IT: websites,mobile sites, social media?* *How effective is your customer relationship management system?* *Do you have a clear IT strategy linked to your corporate strategy?* *Are your "dark assets" connected so you have all the data you need?* *Are you deriving value from your data?*
Staff	*People*	*The breakdown of staff in terms of their background, age and sex and characteristics such as IT vs marketing, use of contractors/ consultants.*	*How digitally savvy are your employees across different parts of your organization?* *How digitally savvy are your leaders?* *What new capabilities are required? How will you acquire them?*
Style		*Includes both the way in which key managers behave in achieving the organisation's goals and the cultural style of the organisation as a whole.*	
Skills		*Distinctive capabilities of key staff, but can be interpreted as specific skill- sets of team members.*	
Super-ordinate	*Engage-ment model* *Processes*	*The guiding concepts of the e-commerce organisation which are also part of shared values and culture. The internal and external perception of these goals may vary.*	*How strong is your relationship with customers? How many customer touch-points do you have, i.e. web, mobile, mail, face to face? How often do you engage with them?* *How loyal are your customers?* *To what extent are your processes automated and digitized?* *To what extent are your processes consistent across your organization?*

		To what extent are your processes adaptable to change?
Offerings products & services		*How digitally enabled are your products?* *How digitally enabled are your services?*

3 The algorithm for digital business transformation implementation

The known challenges and the support questions have potential to facilitate the digital transformation process in business organizations.

A theoretical algorithm has been developed for fulfilment of digital business transformation (Fig. 5). It has a goal to support of the participants in a real process of organization transformation and adapting the company in present conditions, which have been raised from the dynamic technology development, intersectoral competition, changing consumer`s needs and behavior.

The logical sequence of the key aspects in accomplishing the digital transformation resemble the Plan-Do-Check-Act Cycle (Deming, 2000), since the transformation is not a one-time act, but a process for adaptation of the organization to the dynamic environment and continuous need of improvements.

Fig. 5: The digital business transformation algorithm
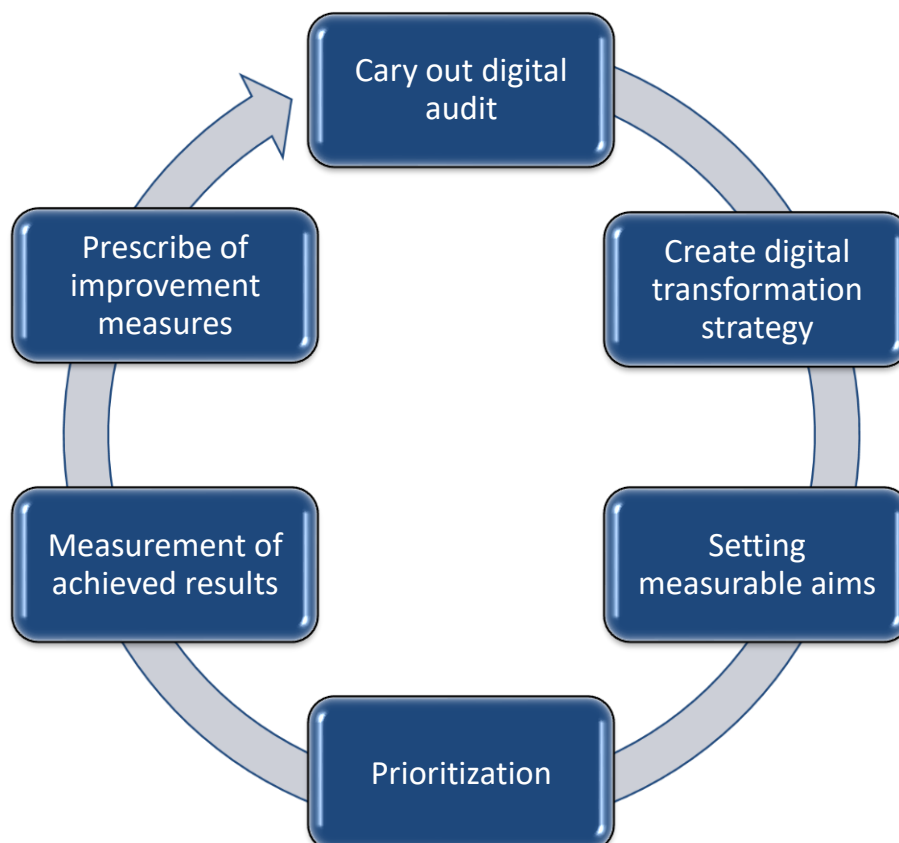
The stages of the digital business transformation have a strict sequence:

1) Conducting a digital audit – it is the first stage, because the status diagnostics is necessary before continuing to other actions.

2) Creating a digital transformation strategy – based on the current status, a strategic framework describes the desired business development.

3) Setting measurable objectives – according to the strategic framework, objectives are set, which are defined over time, measurable and valuable.

4) Prioritization – ranking of the priorities by degree of importance and task assignment.

5) Assessment of results achieved – after the execution of the assignments, they are checked and assessed, compared to the indexes of the relevant objective to assess the extent of its achievement.

6) Applying improvement measures – depending on the results achieved and the disparities with the objectives set, as well as according to the changes that have occurred in the meantime in the external environment, recommendations for improvement are proposed and a new transformation cycle begins again.

Conclusion

In conclusion of this paper could be established the following inferences and contributions:

It has been proved that the digital transformation in business companies is an organizational change through the use of digital technologies and business models in order to improve economic indicators and respond to the changing consumer behavior and the intersectoral competition.

The types of challenges during the digital transformation in business organisations have been determined and systematised on the basis of the area of their manifestation.

It has been proved and justified that the digital transformation is implemented in an algorithm, that starts with a digital audit, continues with the developing of a strategy, setting of measurable aims, prioritization, assessment of the effect achieved by measuring of results and, finally, it "concludes" with proposals for improvements and a theoretical model of an algorithm for implementation of the digital business transformation.

Further research is recommended, to validate the algorithm for digital business transformation in companies from different sectors. There will be continued consultations with representatives

of various business organizations, in wich digital transformation is implementing to identify key milestones that deliver positive results.

Acknowledgment

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Contact

Miroslava Boneva

"Angel Kanchev" University of Ruse

Faculty of Business and Management, Department Management and Business Development

8 Studentska Str., 7017, Ruse, Bulgaria

mboneva@uni-ruse.bg

SMARTAINABILITY AND MOBILITY STRATEGY: THE CASE OF BELGIAN LOCAL GOVERNMENTS

Djida Bounazef-Vanmarsenille – Nathalie Crutzen

Abstract

Purpose: In order to be smarter and more sustainable, local governments have to face urban mobility challenges. Even if they integrate sustainable and smart approaches, local governments meet obstacles to define the adapted combination between smart mobility and sustainable mobility. For this propose, this paper aims at understanding the impact of different combinations on the development of mobility strategies in Belgian local governments. The alternative Venn diagrams of urban mobility developed by Lyons (2016) are used as a theoretical lens to explore the link between smartainability and mobility strategy.

Design/methodology/approach: An exploratory case study was used for the propose of this study. The case study utilised semi-structured interviews with mobility managers in ten Belgian local governments. To strengthen the analysis, documentary analysis with a focus on publicly-available reports on sustainability, smart city strategies and urban mobility were collected before and after the interviews. Further, different mobility projects initiated by start-ups and organisations of local governments have been collected during different mobility meetings in Belgium.

Findings: Even if there are different combinations between smart and sustainable mobility, the definition of sustainability as a part of smart mobility contributes to develop mobility strategy. This ""*smartainable*"" alternative encourages transitions to anticipate future challenges. Citizens are initiated to new solutions and are eager to contribute in the development of mobility strategy. All public, private and civil actors collaborate to face sustainability challenges like pollution and CO_2 emission. Mobility strategy is then more oriented towards integrated smart mobility platforms.

Research/practical implications: The outcomes for practice of this paper is to identify the best combination between smart and sustainable approaches to facilitate the development of strategies in local governments. Moreover, these exploratory case studies offer new insights for future research on the concept of smartainability in strategic axes of smart city such as mobility.

Originality/value: Current researches on urban mobility follow either a sustainable paradigm or a smart paradigm. There are few researches exploring the interdependencies between the two paradigms. In addition, there is no significant researches which explored the link between smartainability and mobility strategy in the context of public sector.

Keywords: Urban mobility, smart city, sustainability, strategy, local governments

JEL Codes: R41, M48, H76

Introduction

To be competitive and to face social, economic and technological challenges, local governments integrate new strategic visions (Naldi, & al. 2015). A deep understanding of interdependencies between strategic sectors is required to make cities smarter (Kourtit, Nijkamp & Steenbruggen, 2017). Urban transport or urban mobility is a strategic sector with a significant impact on life quality, safety and sustainability (MrKajic & Anguelovski, 2016). Urban mobility is directly related to local transport, urban infrastructures and energy environmental performance (Konrad, 2015). In order to be smarter and more sustainable, cities have to face mobility challenges (Schaltegger, 2011). Urban mobility contributes, defines and influences the achievement of smart city goals through the strategic impact of complex transport systems.

Urban mobility in smart cities is based on the sharing economy which involved both top-down public initiatives and bottom-up private and individual initiatives (Giffinger, & al. 2007). To manage the complex system, transport technology is used (applications, smart lighting, smart speed limit control) to increase connectivity between infrastructures, drivers, pedestrians and cyclists. However, digital technologies based on smart urban mobility is not a complete solution which enablers to solve all mobility issues (Ilarri, Stojanovic & Ray, 2015). Based on that, multimodality transports are encouraged through the development of sustainable mobility plans and strategies (Kesselring & Tschoerner, 2016).

This paper aims at understanding the impact of different combinations of smart and sustainable approaches on the development of mobility strategies in Belgian local governments. The alternative Venn diagrams of urban mobility developed by Lyons (2016) are used as a theoretical lens to explore the link between smartainability and mobility strategy. The paper is organised as follows. The first section explores the link between smartainaibility and mobility strategy in recent literature. the second section outlines the research method applied in this study, followed by findings in the third section. Finally, the last section draws discussions from this research.

1   Literature review

Urban mobility requires the integration of smart tools with a sustainable way on different matters like intelligent transport, development of apps and "*datafication*", and sharing systems (Giffinger, Haindlmaier, & Kramar, 2010). Local governments have to identify the best combination between urban sustainability challenges and needs of digital development to facilitate the development of mobility strategy (Behrendt 2016; Ben Lataifa, 2015).

1.1 Smartainability and mobility strategy

The smartainability is an approach combining different alternatives of sustainable and smart visions to facilitate the deployment of smart technologies in sustainable actions. This approach is developed and tested on the Expo Milano 2015 (Pierpaolo & Temporeli, 2017). This study highlights the combination between functionalities, benefits and key performance indicators for smart cities to improve life quality, sustainability and energy usages (Yeh, 2017), The orientation of urban mobility strategy is defined by sustainable (environmental), social and economic components (Meekan & al., 2017). Even if mobility strategy tens to integrate sustainable and smart approaches, it is difficult to distinguish between the definition of a smart mobility, a sustainable mobility and a "smartainable" mobility. This definition varies according to city profiles (garden city, sustainable city, eco-city, green city, compact city, smart city, resilient city), city protocols and to city keys (Ahvenniemi & al. 2017; Eremia, Toma & Sanduleac, 2017). A sustainable city is associated to walkable, competitive and intelligent; a smart one is associated to digital, open and integrated for social, economic and governance issues (Eremia, Toma & Sanduleac, 2017).

The "smartainable" mobility refers to participative initiatives developed by successful top-down and bottom-up collaborations to face mobility issues. A mobility strategy which is both smart and sustainable brings behavioural changes on dynamic signalisations, traffic management systems, urban control driving and on eco-driving (Chen, Ardila-Gomez & Frame, 2017). The orientations of a "smartainable" mobility strategy are adapted to city building planning (shopping centres, strategic infrastructures, companies) and budgeting (municipal budget, indirect funding, municipal public debt) (Baucelles Aleta, Moreno Alonso & Arce Ruiz, 2017). The development of an adapted "smartainable" mobility strategy requires to be supported by coordinated data and information, monitoring and evaluating system. These components facilitate how mobility strategy is planned, administrated and controlled. They refer to indicators developed in Sustainable Mobility Plans, SUMP, EcoMobility SHIFT, EPOPP-TERMS, KPIs of the CONDUITS project, ESPON TRACC, European Air Quality Database, Global City Indicators Facility, EUROSTAT, Economist Intelligence Unit and ARCADIS. Even if mobility controls are gathered from international experiences, they are completed according to location specific development objectives (Kesselring & Tschoerner, 2016).

1.2   Motivations from a Smartainability paradigm

The link between smartainability and mobility strategy is well defined in a framework developed by Glenn Lyons (2016) in his article "Getting smart about urban mobility – Aligning the paradigms of smart and sustainable" published in Transport Research Part A. His framework illustrates different alternatives of the alignment between smart mobility and sustainable mobility paradigms in the four alternatives of Venn diagrams for urban mobility.

Fig. 1: Venn diagrams for urban mobility
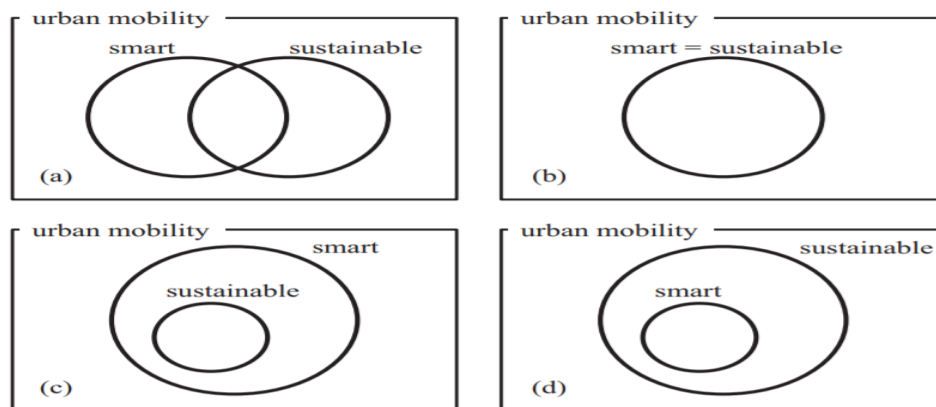
Source: Lyons (2016).

The first alternative refers to a medium harmonious coalition between smart and sustainable according to city goals (Bibri & Krogstie, 2017). The second alternative refers to the sustainable mobility paradigm that does not distinguish between smart and sustainable. The third alternative presents sustainable as a part of smart mobility. The last alternative integrates smart mobility as a part of sustainable mobility (Lyons, 2016). As illustrated in the figure 1, the four alternative of Venn Diagrams for urban mobility is used as a framework to analyse how local governments link between smart and sustainability in the development of their mobility strategy.

2   Research method

This research is based on an exploratory qualitative case study of ten local governments in Belgium based on documentary analysis and interviews with mobility managers. This paper focuses on top-down actions developed by local governments to strengthen mobility strategy with an integrated smart and sustainability vision.

2.1   Sample

Belgium is a federal state, divided into three different regions: Brussels (the capital), Flanders (the Flemish region), and Wallonia (the Walloon region). Based on this division and on the list

of the fifteen biggest local governments in Belgium, our sample is composed by ten local governments. Further, our case studies use different means of transport (car users, public transport, car-pooling, cycling and promotion of city walkers) in order to understand how mobility is oriented, specially the use of public transport and bikes.

Tab. 1: Presentation of means of transport in the studied Belgian local governments

/	Region	Car users	Carpooling	Train	Bus	Bike	Walkers
Antwerp	Flanders	53,8%	2,7%	10%	11,9%	14,8%	2,1%
Brugge	Flanders	56,3%	1,5%	10,5%	3,8%	25,4%	0,9%
Brussels	Capital	31,1%	0,8%	43,8%	19,6%	2,2%	1,5%
Charleroi	Wallonia	83,8%	3,2%	6,1%	4,3%	0,4%	1,6%
Ghent	Flanders	60,2%	4,0%	10,6%	5,7%	15,6%	1,3%
Hasselt	Flanders	68,5%	2,5%	7,6%	4,5%	14,5%	1,3%
Leuven	Flanders	58,8%	1,6%	13,2%	5,9%	17,7%	1,5%
Liege	Wallonia	75,4%	1,3%	6,4%	12,5%	1,5%	2,4%
Mons	Wallonia	78,0%	1,7%	12,1%	3,0%	1,7%	2,1%
Namur	Wallonia	70,2%	2,6%	13,4%	7,7%	1,8%	3,4%

Source: Based on federal Belgian and Eurostat statistics [2]

They also develop projects and strategies to be more sustainable and smart. In order to have a good representation of the Belgian territory (see Tab.1), all regions are represented by case studies (one for the capital, five for Flanders, and four for Wallonia).

2.2 Data collection

The Research is based on ten semi-structured interviews conducted with mobility managers to identify top-downs actions. Each interview lasted 2 hours and was recorded to understand the how mobility strategies are planned, implemented and controlled. The interviewees were previously informed on prior axes of our research. However, they did not know more details about the interview guide. To strengthen the analysis, documentary analysis with a focus on publicly-available reports on sustainability, smart city strategies and urban mobility were collected before and after the interviews. These documents are published by the studied local governments, Belgian federal government and European institutions such as the European Commission. Copies of other relevant written documents were requested during the interviews (long-range plans, action plans, list of indicators etc.). Further, documentary analysis of different mobility projects initiated by start-ups and organisations of local governments have been collected during different mobility meetings in Belgium.

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[2] Federal Belgian statistics: http://statbel.fgov.be/en/statistics/figures/
University reports: http://ec.europa.eu/eurostat/statistics-explained/index.php/Tertiary_education_statistics/fr

2.3   Data analysis

The data were analysed according to the principles of the qualitative content analysis. The data were organised and classified into several categories in a systematic analysis grid. Horizontal and vertical analyses were successfully undertaken. Firstly, the data were classified in six different categories to determine how mobility strategy is planned, organised and controlled in the context of smart city. Secondly, data were organised according to how interviewees estimate the development of mobility strategy.

A third classification divided the data into four categories (alternatives of Venn Diagram). To do so, the classification refers to documentary analysis of different official reports and documents on sustainability and smart city strategies of the ten local governments (strategic projects, vision, underdeveloped themes, long-range objectives, the importance of sustainability and smartness). The last classification divided the data to highlight differences and similarities between the Belgian regions (Wallonia, Brussels and Flanders). For the ethical aspects of the research, all interviewees agreed to use all the data collected during the interview including open-access documents and some parts or pages of internal documents. Confidential documents have not been shared during the interview.

3   Results

This section identifies different combinations between smart and sustainable approaches developed by Belgian local governments to support their urban mobility strategy. It then explores the link between smartainability and the development of mobility strategy.

3.1 Identification of different combinations between smart and sustainable approaches for mobility

In terms of mobility, the studied local governments develop smart projects with a focus on technology, digitalisation, smart lighting and smart traffic control. They also develop sustainable projects to reduce pollution, congestion and $CO2$ emissions. The studied local governments dissociate between smart and sustainable projects. These projects are initiated and developed by different departments of local government according to their priorities and interests. The results highlight that the link between smart and sustainable mobility is developed only for strategic axes which necessitate important financial, infrastructural and human supports (such as urban and building transformations; strategic collaborations between local governments, regions and the federal government and long-term budgeting). The "smartainable" mobility refers to a vision and values that define the main directions of mobility strategy according to the challenges of local governments.

The vision of smartainability mobility differs between local governments of the north (Flanders) and the south (Wallonia) of Belgium. Local governments in Wallonia are more oriented to alternatives B and D of the Venn Diagrams for urban mobility developed by Lyons. Local governments with an orientation to alternative B do not distinguish between smart and sustainable mobility. They define smart digital actions, such as the development of mobility apps and platforms, as an enabler to reach sustainable mobility. On the other hand, they define sustainable behavioural changes, such as the use of bike and public transport, as smart integrative solutions through the development of citizen participation. However, local governments with an orientation to alternative D promote entrepreneurship and bottom-up initiatives through integrative citizen participations.

Smart mobility is defined as a component of sustainable mobility. For this propose, innovative and smart projects with a strong sustainability impact are highly promoted and supported by these local governments. The case studies show that local governments in the north of Belgium (Flanders) define sustainable mobility (sharing values, quality of life, zero emission) as a condition to reach smart mobility (the alternative C of Venn Diagrams for urban mobility). Neutral climate projects and shared accountable sustainability are strategic components to develop Mobility 4.0 (fleet & ride sharing, autonomous transport system, smart parking and connected vehicle). These local governments support cooperation and complementarity between sustainable modes of transport. Sustainable values are then used as an enabler to convince citizen, public administrations and politics to use integrated mobility platforms.

3.2 Smartainability and mobility strategy in Belgian local governments

Urban mobility planning is associated to smart city strategy and to long-range challenges. For this propose, local governments with a focus on smart mobility orient their strategy to smart solutions and to integrated mobility platforms. On the other hand, local governments with a focus on sustainability reinforce behavioural changes. However, local governments which do not distinguish between smart and sustainable mobility plan innovative actions with a strong impact on life quality. Mobility planning is supported by administrative structures and procedures. Findings show that the definition of sustainable mobility as a part of smart mobility impact on how mobility strategy is implemented. The alternative C encourages more collaborations with transport actors (train, buses, taxis,..) and transport start-ups to facilitate the development of a smarter mobility. These collaborations necessitate efficient mobility measurement systems to control how citizen support sustainability transition and digital transformation. However, measurement systems are less developed and up-dated in local governments with an orientation to alternative B and D.

To support the development of "smartainable" mobility, local governments with an orientation to alternative B organise different sensitizing campaigns to promote behavioural changes (use of bikes and public transport) and to initiate citizens to digital solutions (smart applications, autonomous cars). Values and symbols are more developed in the studied local governments with an orientation to alternative D.

Tab. 2: Presentation of means of transport in the studied Belgian local governments

Axes	*Alternative B: Smart means Sustainable approach*	*Alternative C: Sustainable as a part of smart approach*	*Alternative D: Smart as a part of sustainable approach*
Planning	-Obsolete mobility plans -Mobility projects are mainly focused on traffic and cycling -Anticipation of congestion challenges	-Mobility projects are updated according to sustainable challenges. -Mobility projects are mainly focused on sustainable solutions to support integrated mobility platforms. -Anticipation of future digital challenges	- Obsolete mobility plans -Mobility projects are mainly focused on bottom-up smart initiatives proposed by citizens and start-ups -Developing a strong sustainability culture
Smart city vision	-Starting to integrate a smart city vision	- Integration of smart city strategy	-Integration of smart city strategy
Collaboration and management	- Weak formal collaborations and decision-making - Strategic and organisational limits	- Formal collaborations based on coalition and interdependencies -Decentralisation is an enabler and a constrain	- Complex formal collaborations and decision-making - Strategic and organisational limits
Project monitoring	- Obsolete measurement systems and indicators -Informal controls on the use of bike, cars, parking and mobility applications	-Adapted measurement systems and indicators - Formal controls on the impact of mobility projects on sustainability -Formal controls based on digital platforms and tools	- Obsolete measurement systems and indicators -Formal controls on traffic congestion and on the use of sustainable transport.
Awareness campaigns	- Sensitizing citizens to sustainability and digitalization	-Focus on integrated mobility platforms (mobility 4.0)	- Sensitizing to inclusive citizen participation -Sensitizing to datafication and digital apps
Citizen participation	-Citizens perceive mobility projects as a danger for their routines and habits -Slow positive behavioural change	-Citizens are initiated to smart and sustainable solutions -Citizens are eager to contribute in the development of mobility projects	-Raising citizen collaboration and participation - Sustainability is perceived as a long-term solution -Slow positive behavioural change
Observed in	-Local governments in Wallonia	-Local governments in Flanders -Local governments in Brussels	- Local governments in Wallonia
Development of mobility strategy	Weak	Strong	Medium

To support the development of "smartainable" mobility, local governments with an orientation to alternative B organise different sensitizing campaigns to promote behavioural changes (use of bikes and public transport) and to initiate citizens to digital solutions (smart applications, autonomous cars). Values and symbols are more developed in the studied local governments with an orientation to alternative D. Citizens are initiated to digital and sustainable alternatives. To strengthen this, local governments encourage citizen participation and shared accountability

culture. Table 2 summarizes how mobility strategy is deployed in Belgian local governments according to how they align smart and sustainable approaches.

In order to develop a smart region, mobility is defined as a framework improving social and economic environment in local governments with an orientation to alternative C. For this propose, the development of integrated mobility platforms improve safety, international transit traffic, smart traffic flow system, road pricing and life quality. These findings conclude to a direct link between the vision of smartainability and to how mobility strategy is defined and developed. According to our case studies, local governments with a weak developed mobility strategy do not distinguish between smart and sustainable mobility. They develop different actions and values to sensitize citizens to new solutions, however, they face different strategic and organisational limits. Moreover, citizens perceive mobility projects as a danger for their culture (urban renewal, car usage) and routines (parking, speed limits).

Local governments with a medium developed mobility strategy are aware about their limits and integrate improvements through a strong collaboration with citizens. They focus on the development of a strong mobility culture to face mobility issues such as traffic congestion. To do so, local governments encourage bottom-ups initiatives and the development of smart applications to support mobility strategy in order to be greener, neutral and sustainable. Finally, local governments with a developed mobility strategy have more adapted measurement systems and indicators to anticipate future challenges. Citizens in these local governments are initiated to "smartainable" solutions and are eager to contribute in the development of mobility strategy. All public, private and civil actors collaborate to face sustainability challenges like pollution and CO_2 emission. Mobility strategy is then more oriented to future challenges and to more integrated mobility.

Conclusion

This paper contributed to understand how local governments combine between sustainable and smart approaches to develop urban mobility on their territory. Further, the development of urban mobility necessitates collaborations with citizens and start-ups to encourage bottom-ups initiatives. Current researches on urban mobility follow either a sustainable paradigm or a smart paradigm. There is few researches exploring the interdependencies between the two paradigms. Our case studies explored different approaches combining sustainability challenges (pollution, CO_2 emission) and digital solutions (integrated mobility platforms) to face mobility issues in Belgian local governments.

This paper explored how mobility strategies are defined and are impacted according to different smartainability approaches. However, our research faces different limits. The link between smart and sustainable approaches is not well defined in the literature review. Moreover, the Venn diagrams of urban mobility developed by Lyons is an initial model exploring the link between sustainability and smartness in the context of urban mobility. Further researches need to develop this model and to more deeply explain the components, limits and opportunities of the four alternative smartainable approaches. In addition, we do not identify a relevant research exploring the link between smartainability and strategy in the context of urban mobility. It is interesting to investigate deeply on how mobility strategy can efficiently be planned, controlled and administrated in different alternatives of a smart and sustainable vision.

Our exploratory case studies offer new insights for future research on the link between smartainability, strategy and active collaborations. It is interesting to investigate on the impact of citizen participation on the development of integrated mobility platforms with a strong sustainable impact. Moreover, researches on the link between smartainability and strategy are encouraged to explore other smart city dimensions such as governance, living and economy. The exploration of Venn diagrams of urban mobility developed by Lyons contributes to the understanding of the smartainability. However, this framework should be adapted and explored on other researchers related to the development of strategies in local governments or in the public sector.

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Contact

Djida Bounazef-Vanmarsenille

Smart City Institute. HEC Liège. University of Liège

35 rue Saint Gilles. 4000. Liège. Belgium

djida.bounazef@uliege.be

Nathalie Crutzen

Smart City Institute. HEC Liège. University of Liège

35 rue Saint Gilles. 4000. Liège. Belgium

ncrutzen@uliege.be

COEVOLUTION OF MARKET DE-GLOBALIZATION AND POLITICAL PARADIGM SHIFT

Hong-Jen C. Chiu

Abstract

Purpose: Co-evolving market de-globalization and political paradigm shift affect strategic risks. How could we characterize the strategic risks faced by MNEs? To address these research issues motivates this paper. We aim at developing a process model of managing strategic risks through the lens of social ties, organizational resilience, and institutional voids.

Methodology: This paper employs a conceptual framework development approach for analyzing strategic risks faced by commodity-based MNEs. The development of this model is line with the internal and external perspectives of the crisis process (Bundy et al., 2017).

Findings: First, there are threshold conditions for the diverse existing political ties, which could open new opportunities for new ties. Second, a firm's capability for ambidextrous learning contributes to organizational resilience as a whole. Third, there is an invert U-shape relationship between ambidexterity and cognitive-legitimacy performance. Finally, we suggest a refinement of "transnational solutions" for MNEs.

Research/practical implications: We extend the literature on risk management to take a resilience approach that emphasizes the great likelihood of joint adverse events in the cyclical commodity economies. Then, our focus on ambidexterity in managing strategic ties has implications for enhancing an MNE's social legitimacy abroad. Finally, our work sheds light on comparable constructs and propositions – i.e., ambidexterity versus "transactional confidence-enhancing" mechanisms (Gao et al., 2017).

Originality/value: This paper ought to be the first to advance van der Vegt et al.'s (2015) inquiry on how organizational resilience helps mitigate political risks. Our findings should also add new value to our understanding of the new mission for MNEs – i.e., integrate locally and adapt globally (Santos & Williamson, 2015).

Keywords: Social ties, organizational resilience, strategic risks, ambidextrous learning

JEL Codes: M16, L25, L72

Introduction

Natural and extractive resources industries are subject to intervention of political agencies or institutions, which make political risk management an inevitable focus of corporate survival and success (Robinson & Marino, 2015; Stevens et al., 2015). MNEs are increasingly exposed to macro-economic shocks, which interact with diverse political forces across national borders, industry sectors, and levels of governments (Choi et al., 2014).

Political risk is frequently characterized as low-predictability and simultaneous occurrence. It is necessary to adopt an organizational resilience approach to deal with massive negative impact of joint adverse events such as disasters and crises (van der Vegt et al., 2015). In specific, this alternative non-market approach (Dorobantu et al., 2017) calls for focusing on capabilities and capacities that create or retain resources in a form sufficiently flexible, storable, convertible, and malleable that enables risk management systems to successfully cope with and learn from the unexpected (Sutcliffe & Vogus, 2003). The new reality of risk management motivated this paper.

The potential consequences of such co-evolving market de-globalization and political paradigm shift could be the accelerating strategic risks faced by MNEs based on both emerging markets and advanced economies. Emerging markets are characterized as institutional voids (Khanna & Palepu, 2010), where the effects of alternative relational governance modes on firm performance may be different. In addition, when local companies win an increasing share of markets in emerging economies, MNEs need to let go of their pure-global strategies (Bartlett & Ghoshal, 1999) and embrace a new mission: Integrate locally and adapt globally (Santos & Williamson, 2015).

Overall, to survive transactional hazards and economic volatility, the commodity-based MNEs may need to draw on its ambidexterity in exploiting and exploring political ties at home and abroad for achieving social legitimacy. We propose three threshold conditions for the diverse existing political ties, which could open new opportunities for new ties. Then, we argue that a firm's ambidexterity in managing political ties affect positively legitimacy-based performance as a whole. Finally, we suggest three transnational solutions for managing sustainable political ties: global non-market competitiveness, multinational strategic flexibility, and worldwide ambidextrous learning.

1   Literature Review

When adverse events characterized as joint occurrence of external forces, the negative effect on a firm's strategy and performance may be massive -- i.e., strategic risk. The example could be the loss of a firm's relative position within a set of counterparts (Collins &Ruefli, 1992) financial crisis and extreme-weather disaster have become intensified in recent years, which make strategic risks more difficult to predict and manage. Thus, how to enable and mobilize strategic agility (Doz & Kosonen, 2008, 2010) to respond effectively to the unexpected is a daunting task for MNEs. Strategic agility is employed by corporate leaders to accelerate business model renewal, as shown in early success of Nokia in mobile phones (Doz & Kosonen, 2008). Building on the notion of strategic agility (Doz & Kosonen, 2010), Fourne et al. (2014) further extended this construct as follows: It refers to the capability creating and maintaining dynamic balance between sensing local opportunities, enacting global complementarities, and appropriating local value.

As an important component of a firm's non-market strategy (Dorobantu et al., 2017), political tie is broadly defined as a firm's resource to influence or manage political entities through campaign contributions, family tie, lobbying, and contributing to industry and trade political action committees (Lux et al., 2011). The political ties with government actors in the nonmarket arena can help a MNE align its operations with its host country legal environment by providing critical access to information and resources. Previous research has also demonstrated that political ties influence firms' market value, performance, and reduce political risk (Fisman, 2001; Peng & Luo, 2000). Herein, we focus the relationship between political ties and managing the political risk.

The legitimacy perspective on political risks has been brought back into international business research (Stevens et al., 2015). Legitimacy is the key survival factor in the process of firms' development. The judgments about firms' legitimacy can be a matter of life and death for an organization (Bitektine, 2011). This is particularly evident in commodity-based MNEs, because they typically operate in some of the most risky countries in the world, with correspondingly fragile and diverse institutions (Peng et al., 2008).

Nevertheless, the process of gaining legitimacy to manage sustainable political ties remains an open issue. Extant literature focuses on either exploitation or exploration (Stevens et al., 2015), but failed to develop an ambidextrous approach for striking a balance between exploration and exploitation for solutions. Motivated by filling in this research gap in sustainable development

of political ties, we propose an analytical framework that elaborates on the determinants and mediators of three types of legitimacy-based performance – i.e., pragmatic, moral, and cognitive legitimacy, respectively.

2   The Research Context: Natural and Extractive Resources

According to Dobbs et al.'s (2012) analysis on commodity-price indices of McKinsey Global Institute, there are three major drivers for the volatility of commodities – individual commodity price variance, correlation within the commodity group, and correlation across commodity groups. Among them, tighter correlations across commodity groups are the most important factor driving volatility higher than it has been in the past century. Due to its abundant supplies of a variety of commodities, South Africa is an ideal target to investigate these drivers of volatility.

As a promising land full of opportunities, South Africa has called attention to institutional investors and entrepreneurs around the world. South Africa's economy has been transforming from heavy dependence on commodities to balance growth driven by improved production and productivity in such industries as agricultural value chain, natural gas, advanced manufacturing, infrastructure, and service exports (Leke et al., 2015). Nevertheless, political stability and policy consistency can backfire without clear signals. A recent case is in the regulatory shift in the mining sector of South Africa, which is one of the world's most important platinum, gold and coal nations.

According to Forest (2016), South Africa's government surprised the industry with some controversial changes on April 15th: The government published a draft of a new Mining Charter for the country's industry, which contained some unexpected proposed measures. One of the biggest surprises was new rules for Black Economic Empowerment (BEE) requirements. The regulatory authority made a decisive declaration on the so-called "once empowered, always empowered" issue (Forest, 2016).

In specific, mining enterprises in South Africa are currently required to sell 26% of ownership to local BEE groups. But there's been a lot of confusion about what happens after that. For example, what if the black empowerment group then turns around and sells its share of the mining business to a non-BEE shareholder? Is it the responsibility of the mining company to go out and sell additional percentages to new BEE groups, in order to get back above the 26% threshold?

Miners have argued no by saying that if they met the 26% requirement, things are out of their hands if the BEE partner sells. One empowered, always empowered. But the proposed new mining charter disagrees. Here's what the new text prescribes: "Where a BEE partner or partners have exited, BEE contract has lapsed or the previous BEE partner has transferred shares to a non-BEE company, the mining right holder must within the three years transitional period from the date of publication of the charter review its empowerment credentials consistent with the amended 2016 mining charter." Such a rule would put miners on the treadmill — having to constantly replace BEE shareholders if old ones exit. And that's not the only change the new rules are proposing.

3 The Model and Proposition

We propose that the legitimacy building process is driven by exploit existing ties and explore new ties opportunities. The development of this model is line with the internal and external perspectives of the crisis process (Bundy et al., 2017): Stage I – pre-crisis prevention (threshold conditions and types of political ties); Stage II – crisis management (ambidexterity in mobilizing existing political ties or searching for new ties); Stage III – post-crisis outcomes (performance based on societal-level legitimacy).

3.1 Threshold Conditions and Types of Political Tie

Threshold condition usually refer to pre-existing particularistic ties, and already in an ongoing relationship between interacting actors (Tsui & Farh, 1997). Researchers have identified a lot of threshold condition such as family tie, kinship, or institution affiliation (Chen, Chen, & Huang, 2013). Further, such threshold condition can affect the types of political tie.

3.1.1 Family Tie and Political Coalition

Of all the threshold conditions, family ties are assumed to be strong and close, because they are driven by affective motives whereas impersonal non-family ties are weak and distant (Hwang, 1987), and such affective motives become even stronger in eastern countries, because of its collectivistic culture. There is also an assumption of strong trust, interdependence, and obligation between family members (F.Gu, Hung, & K.Tse, 2008; Luo, Huang, & Wang, 2012). The distinction between family tie and non-family ties dates back to ancient China when Confucius prescribed a governance frame work of five cardinal relations, such as paternalism, kinship, and pecking order (Chen et al., 2013). Such values stress family orientation and social

harmony, which favors longstanding relationships based on relational exchanges (Weidenbaum, 1996). Owing to these values, it is easy to form political coalition.

Proposition 1: Family tie is positively related to political coalition. The more family tie a born global MNE have, the more political coalition it has.

3.1.2 Social Network and Political Capital

Built upon information brokerage and network centrality, networks are vital to the discovery of opportunities, to the testing of ideas, to overcoming resource constraints, and to the providing the type of information that contributes to the reduction of uncertainty (Nerkar & Paruchuri, 2005). In addition, the larger scale and impact of adverse forces from external environments results from the higher density of global networks of stakeholders with differential bargaining power (van der Vegt et al., 2015). As a result, industry-specific assets with heavy sunk costs expose the commodity firms to economic and transactional uncertainty due to business cycles and institutional voids, respectively (Smit et al., 2017).

By allying with other organizations, these MNEs can access to the physical (Bonaccorsi, 1992) and informational resources (Coviello & Munro, 1995; Larson & Starr, 1993) needed. Sometimes, companies should take responsibility in order to become information brokerage, and become closer to network centrality. For example, in Africa, where environmental legislation is still in its infancy, Placer Dome environmental managers have assisted governments in developing new environmental regulations to help ensure responsible mining. Therefore, we believe

Proposition 2: Social network is positively related to political capital. The more social network a born global MNE has, the more political capital it likely has.

3.1.3 Institution Affiliation and Political Connection

Institutional voids in foreign markets could lead to transactional uncertainty (Khanna & Palepu, 2010), which further compounds revenue streams constrained by economic uncertainty arising from business cycles (Smit et al., 2017). When probability distribution of economic parameters' (e.g., employment, market demand) occurrence becomes unraveled, these types of uncertainties (e.g., governmental intervention) transformed into corresponding categories of risks (e.g., political risk). Transactional risks decrease as institutions in place create necessary conditions for properly functioning markets.

Institution affiliations may well lead to political connections, which could be achieved through the "partnership" type of non-market strategy (Dorobantu et al., 2017). However, such political connections could pressure the firm to comply with legal and regulatory forces, which lead to similarity in collective actions. DiMaggio and Powell's (1983) three types of isomorphism driven by institutional forces are relevant for managing political ties: Coercive, mimetic, and normative isomorphism. Strategic choices of the firm should take account of institutional transitions, as suggested by Peng (2003).

Proposition 3: Institution affiliation is positively related to political connection. The more institution affiliation a born-global MNE have, the more political connection it has.

3.2 Exploit Existing Ties

According to ambidexterity view, the intent of exploitation is to respond to current environmental conditions by adapting existing technologies and further meeting the needs of existing customers (Harry & Schroeder, 2000) . Exploitation for political tie mainly related to pre-existing particularistic ties, which are already in an ongoing relationship, such as family tie, social network, and institution affiliation. What MNEs should do is that deploying, leveraging and combining such existing ties. Take Placer Dome for example, it has contributed to the quality of life of its employees and local communities.

Proposition 4: The tendency of exploiting existing political ties can be either to deploy or to leverage existing new institutional contexts, or to combine incumbent ties with the new ones for a more comprehensive ties.

3.3 Explore New Ties

Besides exploiting existing ties to promote legitimacy-based performance, successful firms also have competence to explore new ties. Just as Oliver said, firm doesn't always accept environment passively. They could adapt, operate, collaborate and even change the environment (Oliver, 1991). Essentially, exploration is intended to respond to, as well as drive, latent environmental trends by creating innovative technologies and new markets.

Upon embarking on a new line of activity, particularly one with few precedents elsewhere in the social order, organizations often face the daunting task of winning acceptance either for the propriety of the activity in general or for their own validity as practitioners. Therefore, we believe that exploitation for political tie involves the use of some tacit, such as social exchange, social contracts, political allies, and coalition building.

Proposition 5: The tendency of exploring opportunities for new political ties may resort to either social exchange, or to social contracts, or to team up with political allies, or to build coalitions.

3.4   From Existing Ties to Explore Opportunity for New Ties

According to Katila and Ahuja (2002), exploitation of existing capabilities is often needed to explore new capabilities, and exploration of new capabilities also enhances a firm's existing knowledge base— Exploration and exploitation form a dynamic path of absorptive capacity (Katila & Ahuja, 2002). Therefore, MNEs have to utilizing the existing political ties to extent or develop new ties by use of socialization, lobbying, donation, or elections. Nevertheless, how can the firm explore new ties through existing ties?

In addition, finance major community infrastructure projects such as road and rail development, hospital and school construction, and housing development to improve the quality of life in the community. All these socialization, or lobby and donation – i.e., being related to the influence or coalition type of non-market strategy (Dorobantu et al., 2017) -- can contribute from existing ties to opportunity for new ties.

Proposition 6: Existing political ties can help explore new political ties through either socialization, or lobby and donation, or participation in elections.

3.5   Ambidexterity and Legitimacy-based Performance

Ambidextrous learning for innovative activities may proceed in such stages as structural, contextual, and spin-out sequentially (Benner & Tushman, 2003). Ambidexterity in managing political ties in this paper includes two parts: exploitative and explorative actions. Exploitative action refers to deploy, leverage, or combine existing ties; explorative action denotes activities aiming at building new political ties through social exchange, social contracts, political allies, and coalition building. In line with Gao et al.'s (2017) model of overcoming institutional voids, we propose that ambidextrous learning for exploiting existing political ties and exploring opportunities for new ties lead to better legitimacy-based performance.

Following Suchman's (1995) classification, this paper examines three aspects of legitimacy – i.e., pragmatic, moral, and cognitive – as the yardsticks for measuring commodity-based MNEs' performance. Skillful mobilization and leverage of in-house ambidexterity exploiting existing political ties and exploring new political ties are central to the legitimacy at the societal level, such as overcoming institutional voids typically in emerging markets (Gao et al., 2017).

First, pragmatic legitimacy rests on the self-interested calculations of an organization's most immediate audiences. Legitimacy may involve either affirmative backing for an organization or mere acceptance of the organization as necessary or inevitable based on some taken-for-granted cultural account. Jepperson (1991) suggested that such mindset be distinct from evaluation: one may subject a pattern to positive, negative, or no evaluation, and in each case (differently) take it for granted.

Proposition 7(a): Performance based on pragmatic legitimacy is positively affected by the intensity of ambidexterity in managing political ties.

Second, moral legitimacy involves an evaluative component, which rests not on judgments about whether a given activity benefits the evaluator, but rather on judgments about whether the activity is "the right thing to do" (Suchman, 1995). From the perspective on social contracts, moral legitimacy arises from business ethics that lays groundwork for moral ties between stakeholders. In specific, as an appropriate representation for supporting democratic governance, social contracts have been used to give legitimacy to practical implementation of laws and institutions (Axelrod, 1986).

Business ethics can be enhanced through balancing collectivism and individual on the one hand, trading off autonomy and compliance on the other (Donaldson & Dunfee, 1999). Moral agents are constrained by bounded moral rationality, such as the ability to discover and process morally relevance.

Proposition 7(b): Performance based on moral legitimacy is positively affected by the intensity of ambidexterity in managing political ties.

Third, cognitive legitimacy involves acceptance of the organization as necessary or inevitable based on some taken-for-granted cultural account (Suchman, 1995). We extend this line of argument by arguing that fairness and aggregate welfare nurture cognitive legitimacy, which gives sense to political organizations in terms of collective political culture. In the context of sustainable political ties, cooperative behavior between the firm and government should be based on deployment of resources to achieve necessary social goods.

As moral development moves forward from self-interest to moral autonomy, cognitive legitimacy becomes more elusive to obtain and more difficult to manipulate, but it also becomes more subtle, more profound, and more self-sustaining, once established (Dunfee et al, 1996).

The higher is the intensity of exploiting and exploring political ties, the greater performance based on fairness and aggregate welfare is:

Proposition 7(c): Up to a certain level, performance based on cognitive legitimacy is positively affected by the intensity of ambidexterity in managing political ties, then the impact decline – i.e., an invert U-shape relationship.

4   Discussions and Case Examples

To manage sustainable political ties, the commodity-based MNE needs to address the following transnational challenges. In line with Bartlett and Ghoshal's (1999) seminal work, we suggest the following transnational solutions for managing sustainable political ties. By sustainability, we refer to the impact of political ties on legitimacy-based performance in stable-state equilibrium (Bohn & Deacon, 2000).

To build capabilities for exploiting and exploring political ties is of paramount importance as shown in Table 1. The first type of such capability is global non-market competitiveness, which is characterized by dispersed and interdependent assets and resources. The managerial tasks center in the ways of legitimizing diverse perspectives and capabilities. The top management team must be able to balance the diversity of perspectives and capabilities within the organization. Such diversity could arise from social and institutional forces that distinguish non-market strategy from its market competition-oriented counterpart.

The second type of such capability is multinational strategic flexibility, which is characterized by differentiated and specialized subsidiary roles. Given the differences in the roles and responsibilities of organizational units, management must build a variety of flexible coordination processes that guide each organizational unit and task in a systematic fashion. Nevertheless, well-designed managerial systems and processes cannot counteract the enormous centrifugal forces inside out.

The third type of such capability is worldwide ambidextrous learning, which is characterized by joint development and worldwide sharing of political ties. The key managerial task is to build shared vision and individual commitments. The call for ambidextrous learning about integrating locally and adapting globally (Santos & Williamson, 2015) has been evident of the losing relevance of pure global strategy (Bartlett & Ghoshal, 1999). The context of such de-globalization landscape is that local companies win an increasing share of markets in emerging economies (Santos & Williamson, 2015).

In response to Santos and Williamson's (2015) call for a new mission for the MNE, Chiu and Dong (2016) proposed three routes for managing sustainable political ties: pragmatic, moral, and cognitive legitimacy. Pragmatic legitimacy rests on the self-interested calculations of an organization's most immediate audiences (Suchman, 1995). This involves direct exchanges between organization and audience on the one hand, and broader political, economic, or social interdependencies on the other. Organizational action nonetheless visibly affects the audience's well-being.

Moral legitimacy, unlike pragmatic legitimacy, it rests not on judgments about whether a given activity benefits the evaluator, but rather on judgments about whether the activity is "the right thing to do." Cognitive legitimacy, as noted by previous literature (Wuthnow et al., 1984), legitimacy may involve either affirmative backing for an organization or mere acceptance of the organization as necessary or inevitable based on some taken-for-granted cultural account. Here, we put forward some examples to illustrate how to build and manage sustainable political ties through three routes.

4.1 Case 1: Shenhua Energy Company: through pragmatic legitimacy

China Shenhua Energy Company is the largest coal mining state-owned enterprise in China, and the largest coal mining enterprise in the world. Although there is heavily environmentally and ecologically damaging, Shenhua Energy Company take full advantage of the effect of pragmatic legitimacy to build and manage their ties.

They announce that they can provide a number of economic benefits to a community, including providing employment to residents, making use of local services, and contributing funds to regional developmental projects. First, it provides employment to residents. For example, mining has long been regarded as the backbone of many regional economies, particularly in rural and remote areas, where it often serves as the sole source of income (McAllister, Scoble, & Veiga, 1999). Second, it can make use of local services, such as hire locally, utilize local services (eg, dry cleaning, catering, and transportation) and contribute to local pension funds. Third, finance major community infrastructure projects such as road and rail development, hospital and school construction, and housing development.

All of that would improve the quality of life in the community. With such pragmatic announcement, they legitimize their diverse environmentally and ecologically damaging problems, which in turn build and strengthen their ties with all the stakeholders.

4.2   Case 2: Rio Tinto Group: through moral legitimacy

The volatility of the external environment compounds the needs for flexible coordination processes. For Rio Tinto, one of the world's largest miners, one criticism is the problem of labor and human rights. In order to response to such criticism, they quickly announced they listened carefully to their stakeholders' needs and understood what drive them.

One example of this is Oyu Tolgoi in Mongolia, where they are focused on ensuring the project brings lasting benefits to the country and is sustainable over time. This means forging strong partnerships with communities that are built on trust, developing the local talent that can drive and support future growth, and stewarding the country's environmental resources with care (riotinto.com, 2015).

With flexible coordination processes to cope with both short-term and long-term responsibilities, the moral action of announcing they listened carefully to their stakeholders' needs convey the message that Rio Tinto Group is a responsible companies. Thus, audiences see it as valuable and worthy for support.

4.3   Case 3: Placer Dome: through cognitive legitimacy

To build and manage sustainable political ties, firms should also be joint development and worldwide sharing of political ties. For Placer Dome, a large mining company specializing in gold and other precious metals, has expanded its business across the country.

Responding to voice of NGO, in February 1998, Placer Dome adopted a *Sustainability Policy* in which is stated: "For Placer Dome, sustainability means the exploration, design, construction, operation and closure of mines in a manner that respects and responds to the social, environmental and economic needs …" Since then, the sustainability policy is implementing the environmental, social and economic principles of sustainability at all of its mines, each of which has advanced environmental safeguards, and has established positive relations with stakeholder parties. As a result, Placer Dome adopted the sustainability policy in one country first, and then implemented it at all of its mines, with sharing vision and individual commitments. Eventually build its sustainable ties with stakeholders.

Tab. 1: Building and Managing Sustainable Political Ties

Capability for Exploring and Exploiting Political Ties	Organizational Characteristics	Managerial Tasks
Global Non-Market Competiveness	Dispersed and interdependent assets and resources	Legitimizing diverse perspectives and capabilities
Multinational Strategic Flexibility	Differentiated and specialized subsidiary roles	Developing multiple and flexible coordination processes
Worldwide Ambidextrous Learning	Joint development and worldwide sharing of political ties	Building shared vision and individual commitments

Conclusion

The potential consequences of such co-evolving market de-globalization and political paradigm shift could be the accelerating strategic risks faced by MNEs based on both emerging markets and advanced economies. This paper develops a process model of managing strategic risks through the lens of social ties, organizational resilience, and institutional voids. Our arguments developed from this model include the following.

The main findings are in the following. First, there are threshold conditions for diverse existing political ties, which could open new opportunities for new ties. Second, firm's ambidexterity in managing political ties contributes to legitimacy-based performance as a whole. Third, there is an invert U-shape relationship between ambidexterity and cognitive-legitimacy performance. Thus, we propose three refined "transnational solutions"(Bartlett & Ghoshal, 1999) for managing sustainable political ties: global non-market competitiveness, multinational strategic flexibility, and worldwide ambidextrous learning.

Motivated by van der Vegt et al.'s (2015) inquiry on how organizational resilience could help mitigate political risks, this paper attempts to propose a non-market perspective for cyclical commodity economies. Our efforts aim at linking threshold conditions of managing political risk, types of political ties, ambidextrous learning about political-tie development, and then the legitimacy-based performance. Thus, his paper helps contribute to the theory-building attempt that re-orienting form vulnerability to resilience better captures the desirable outcome under economic and transactional uncertainty.

In specific, we intend to contribute such theory-building efforts in the following. First, we extend the literature on risk management to take a resilience approach that emphasizes the great likelihood of joint adverse events in the cyclical commodity economies. Second, our focus on ambidexterity in managing political ties has strategic implications for enhancing an MNE's social legitimacy abroad. Third, to echo the latest research attempt to overcome institutional voids (Gao et al., 2017), our work sheds light on comparable constructs and propositions – i.e., ambidexterity (exploiting and exploring) versus "transactional confidence-enhancing" mechanisms (offensive and defensive), which may ensure face/convergent validity of institutional voids-based research.

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Contact

Hong-Jen C. Chiu

Department of International Business

National Taiwan University

RM914, No.85, Roosevelt Road, Sec. 4, Taipei 10616, Taiwan

hongjen@ntu.edu.tw

MULTIMODAL TRANSPORT AS A SUSTAINABLE TRANSPORT FOR THE CHEMICAL INDUSTRY: PRIMARY QUALITATIVE RESEARCH

Jan Chocholáč – Jaroslava Hyršlová

Abstract

Purpose: Increasing transport performance, more traffic accidents and efforts to respect sustainable development make companies look for optimal transport solutions. The paper deals with the utilization of multimodal transport in the framework of transport of chemical goods in selected Czech Republic chemical industry companies. The primary objective of the paper is to map the motivation of the selected chemical industry companies for shifting the transport to multimodal transport.

Design/methodology/approach: The research was executed in the format of double round primary qualitative research. The sample consisted of chemical industry companies from the Czech Republic that met the following conditions as of the date of the start of this research: they were members of the Association of Chemical Industry of the Czech Republic, they were production companies that distributed large and significant portions of their production abroad. In the case of the logistic services providers (LSPs) we addressed companies that provided logistic services to chemical industry companies and had already cooperated with the Association of Chemical Industry of the Czech Republic.

Findings: Companies participating in this research have significant motivation for higher utilization of multimodal transport. The main reasons for this are increased volumes of sales and expansion to new markets. Customers' demands on products transport also gradually change. Reasons for utilization of other transport modes are continuing problems in road transport. Participating companies see significant potential in increased utilization of multimodal transport in the area of continental transports. Such increased utilization would contribute to significant improvement of transport situation in Europe and to mitigation of negative impacts of transport on the environment and on public health.

Research/practical implications: In the framework of this research there have been identified criterions that are decisive for implementation of chemical goods transportations. For further development of multimodal transport, it is essential to focus on reducing transport costs and transit times and on improving the availability of transport means.

Originality/value: This paper illustrates, on the example of selected chemical industry companies, the existing state of affairs in the area of utilization of multimodal transport and it maps the motivation of companies for shifting transport to multimodal transport.

Keywords: Multimodal transport, chemical industry, sustainable transport, sustainable development

JEL Codes: O18, R41

Introduction

The transport sector is very ambivalent, which is confirmed by Naganathan and Chong (2017) too. Authors stated that transportation systems facilitate the flow of goods and services globally, creating jobs and encouraging economic growth while generating negative impacts on the environment and society. The constantly-growing transport demand is reflected according to Edenhofer et al. (2014) in traffic congestion, as well as in higher energy consumption and the associated emissions. Carbon dioxide accounts for 75% of global greenhouse gas pollution and is projected to remain the largest contributor to global greenhouse gas emissions by 2050 (Edenhofer et al., 2014).

Institutions across the world are trying to implement sustainable practices to mitigate these negative impacts at international, national and regional level (Naganathan and Chong, 2017). Sustainable practices include three areas: the economic area, the environmental area and the social area by Mikulčić, Duić and Dewil (2017). Sustainable development must be equitable (interaction between the economic and the social dimension), liveable (the link between the environment and social needs) and viable (economic development must be in accord with ecosystems capacities) (World Commission on Environment and Development, 1987).

Research on environmentally sustainable transport was initiated more than twenty years ago, but the implementation and governance of sustainable mobility remain significant challenges worldwide (Zawieska and Pieriegud, 2018). Multimodal transport was considered as a sustainable transport mode already in 2000 according to Walton and Farrington (2000). Economic Commission for Europe (2001) defined multimodal transport as a carriage of goods by two or more modes of transport. The use of multimodal transport belongs to sustainable transport tools, because the modal shift and the increased use of rail transport have lower environmental impacts (Kos, Vukić and Brčić, 2017). Chemical companies manage the environmental aspects and impacts of their activities (Hyršlová, Vnoučková and Tomšík, 2015). They are also interested in logistics because the transport of chemical goods is connected with significant environmental risks (Cichosz, 2017). CEFIC (2007) stressed in 2007 safe and sustainable transport as a crucial condition to the future of European chemical industry. The issue of multimodal transport in the chemical industry is a very current topic, as evidenced by several studies from Poland, for example Cichosz, Nowicka and Pluta-Zaremba (2017a,b). Studies were focused on determinants of choice of multimodal

transport in chemical industry in Poland and on challenges to multimodal transport in the Polish chemical industry.

This paper deals with the utilization of multimodal transport in the framework of transport of chemical goods in selected Czech Republic chemical industry companies. The primary objective of this paper is to map the motivation of the selected chemical industry companies for shifting the transport to multimodal transport.

1   Methods

The research of multimodal transport of chemical goods was executed in the period from September 19, 2016 to November 11, 2016 in the format of double round primary qualitative research. A method of electronic structured questioning was used in the first round of this research and personal semi-structured questioning was used as the research technique in the second round of the primary qualitative research. The questionnaire for chemical companies and LSPs was composed of 30 open questions. Semi-structured questioning was implemented according to already prepared instructions and it was recorded; in case of need some areas were further expanded by deep and probing questions. The average length of one personal semi-structured questioning was approximately 60 minutes.

In total 19 questionnaires were sent out to chemical industry companies from the Czech Republic and to providers of logistic services in the first round of the primary research. Regarding the chemical industry companies this research includes those companies that met the following conditions as of the date of the start of this research: they were members of the Association of Chemical Industry of the Czech Republic, they were production companies that distributed large and significant portions of their production abroad. In the case of the LSPs we addressed companies that provided logistic services to chemical industry companies and had already co-operated with the Association of Chemical Industry of the Czech Republic for a long period of time. The response rate for the electronic structured questioning was 53%; 10 companies participated in this research – respondents were located across the entire Czech Republic.

30 experts from chemical companies and logistic services providers (LSPs) participated in the personal semi-structured questioning that followed the electronic structured questioning (second round of the primary qualitative research). These 30 people were top management representatives (5 respondents) as well as experts from the area of trade and logistics

management (25 respondents). Semi-structured questioning was realized in the form of a dialogue between two people (the respondent and the inquirer) in the companies participating in this research.

Research dealt with these questions:

- What is the importance of multimodal transport for respondents?
- What is the current share of multimodal transport in the total transport performance of the respondents?
- Is there existence of motivation for shifting the transport to multimodal transport among respondents?
- What criterions are important for shift the transport to multimodal transport among respondents?
- What are the most important arguments when LSPs promoting multimodal transports?

There are summarized the basic results of the research focused on the above-mentioned research questions in the following chapters.

2   Results

The results are divided according to individual research questions into subchapters 2.1 – 2.5.

2.1   Importance of multimodal transport

Figure 1 illustrates the importance of multimodal transport from the point of view of all respondents (that is chemical industry companies and LSPs).

Overall six respondents find multimodal transport important. Out of that four respondents find it very important. One respondent has neutral position towards multimodal transport (currently the relevant company changes its owner, strategy for logistics area was not known in the time of the research).

Fig. 1: Importance of multimodal transport (frequency of responses)
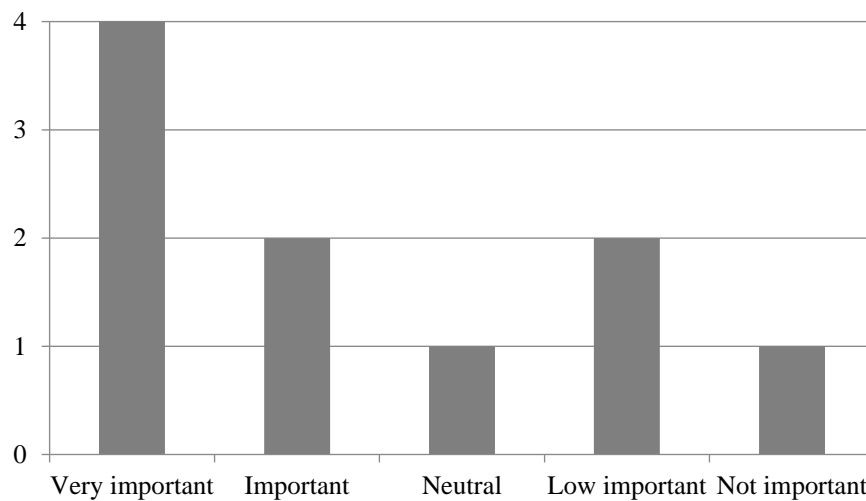
Source: authors

Three respondents do not find multimodal transport issues to be an important area for their business activities. They put forward the following main reasons for that:

- Raw materials and other materials are transported into the company from nearby destinations. Utilization of multimodal transport is thus not possible or it is not effective.

- Final products are distributed to customers located in nearby destinations. Also in this case utilization of multimodal transport is not possible at all or it would not be effective (with respect to time and economic aspects).

- In the sector in which the company operates multimodal transport is not utilized (and it is not expected that multimodal transport will be used in the future).

2.2 Share of multimodal transport

The following Figure 2 presents the current share of multimodal transport in the total transport performance of the respondents. The shares relate only to such transports that are implemented in relation with final products. Results for all respondents are included in this evaluation; it is both for chemical industry companies and for LSPs.

The share of multimodal transport in the transport performance differs significantly. Figure 2 includes graph from which it issues that 80% of the respondents report the multimodal transport share in total transport performance be smaller than 30%. Only 20% of the respondents utilize multimodal transport for more than 95% transports; one respondent does all transports in the multimodal transport regime.

Fig. 2: Share of multimodal transport according to individual respondents
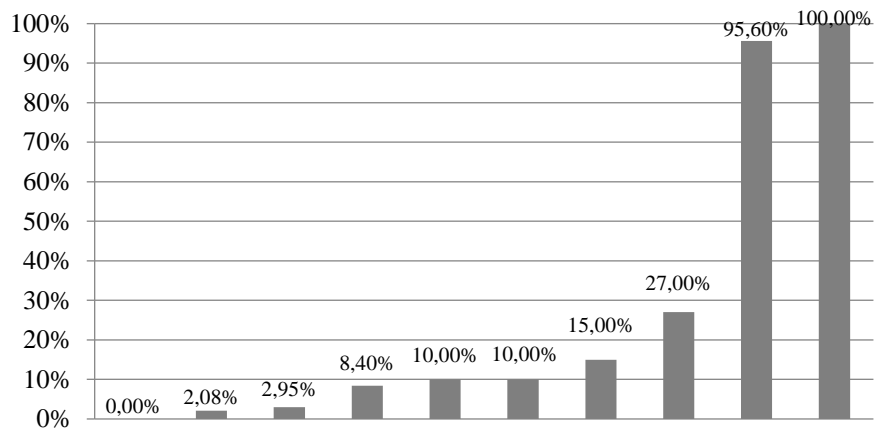
Source: authors

The average share of multimodal transports corresponds with the value 27.10%; higher share of multimodal transport is reported by only 20% respondents. The median value is equal to value 10%.

The following are the most used alternatives of multimodal transport of final products: road, rail and sea transport; road and rail transport; road and sea transport and rail and sea transport.

2.3   Existence of motivation of the chemical companies for shifting the transport to multimodal transport

For the chemical industry sector companies there exists a very strong motivation (for seven out of eight respondents) for more extensive use of multimodal transport; only one respondent does not consider utilization of multimodal transport since multimodal transport is not suitable for his type of business. Respondents provide the following main reason for use of multimodal transport:

- increasing volumes of imported raw materials,
- increasing volumes of exported final products,
- widening of their portfolio of customers,
- changing requirements of the side of customers regarding logistics solutions of transport,
- improving services provided by logistics terminals (more flexible loading and unloading),

- in many cases multimodal transport is the only possible solution in particular with orientation to out-of-Europe (more geographically distant) markets (like Asia, America and similar),
- effort to reduce transport costs,
- existing problems in road transport (insufficient transport capacity, congestions, traffic accidents and more dramatic impacts of such accidents, lack of qualified drivers and similar).

From the results it issues that the main reason for the development of multimodal transport are first of all growing volumes of sales and expansion to new markets; gradually also customers' requirements regarding transport of products has been changing. Further reasons why other transport modes are used are lasting problems in road transport and improving availability and services provided by logistics terminals.

2.4 Importance of criterions for shift the transport to multimodal transport

The following Table 1 summarizes the importance of the individual criterions for the decision about higher utilization of multimodal transports. This table shows responses provided by chemical industry sector companies.

The respondents evaluated the importance of the individual criterions. Value 1 means that the given criterion is seen by the respondent as not important at all, value 5 means that the given criterion is seen by the respondent as very important. Arithmetic averages, medians respectively, have been constructed based on the evaluation of the importance of the individual criterions by the individual respondents. Table 1 summarizes the results of the research into this area.

Tab. 1: Importance of criterions for shift the transport to multimodal transport (arithmetic averages and medians)

Criterion	Average	Median
Costs	4.750	5.000
Transit time	3.875	4.000
Availability of means of transport	3.875	4.000
Corporate social responsibility (CSR) strategy	3.250	3.500
Lowering CO_2 emission	3.000	3.000
Sector´s regulations	2.375	2.500

Source: authors

It is the view of the respondents that for the development of multimodal transport it is essential to focus on transportation costs, transit time and availability of means of transport. Motivation

for multimodal transport development is also the effort to profile respondents'companies as socially responsible companies. The respondents see production of CO_2 emissions and sector´s regulations to promote multimodal transport to be of less importance.

2.5   Most important arguments when LSPs promoting multimodal transports

LSPs when promoting multimodal transports in their business offers use most often the following arguments: transport costs decrease (average grade 5.0), transit time reduction (average grade 5.0), supporting CSR strategy (average grade 4.5), CO_2 emissions lowering (average grade 4.0), bigger transport safety (average grade 3.0).

In the following Table 2 there is done comparison of the most important factors for motivation to use more of multimodal transport from the point of view of chemical industry companies and LSPs.

Tab. 2: Comparison of criterion importance for shifting the transport to multimodal transport (arithmetic averages and medians)

Respondents	Companies of chemical industry sector		LSPs	
Criterion	Average	Median	Average	Median
Costs	4.750	5.000	5.000	5.000
Transit time	3.875	4.000	5.000	5.000
Availability of means of transport	3.875	4.000	--- ---	--- ---
CSR strategy	3.250	3.500	4.500	4.500
Lowering CO_2 emission	3.000	3.000	4.000	4.000
Sector´s regulations	2.375	2.500	--- ---	--- ---
Safety	--- ---	--- ---	3.000	3.000

Source: authors

It issues from Table 2 that chemical industry companies and LSPs see the individual criterions for the selection of transport mode in a similar way. Arguments provided by LSPs for selection of multimodal transport are in agreement with those criterions that are important for chemical industry companies. Both groups of respondents see as the most important the issue of transport costs (the average for chemical industry companies is 4.750 and for LSPs it is 5.000) and the issue of transit time (the average for chemical industry companies is 3.875 and for LSPs it is 5.000). Chemical industry companies, on top of this, point out the issue of availability of transport means for transport of chemical goods with use of multimodal transport (the average value is 3.875). LSPs also present multimodal transport as a logistics solution that contributes to increase chemical goods transportation safety. This safety criterion used as a motivation to use more of multimodal transport is seen as less important by the chemical industry companies.

Conclusion

The objective of this paper was to map the motivation of the selected chemical industry companies for shifting transport to multimodal transport. Ten important companies operating their business activities in the Czech Republic participated in this research. All of the production companies are members of the Association of Chemical Industry of the Czech Republic. They are significant chemical goods producers. Also LSPs that provide logistic services to chemical industry companies participated in this research. Companies have significant motivation for higher utilization of multimodal transport. The main reasons for this are increased volumes of sales and expansion to new markets. Customers' demands on products transport also gradually change. Reasons for utilization of other transport modes are continuing problems in road transport. Participating companies see significant potential in increased utilization of multimodal transport in the area of continental transports. Such increased utilization would contribute to significant improvement of transport situation in Europe and to mitigation of negative impacts of transport on the environment and on public health. For further development of multimodal transport it is essential to focus on transport costs, transit times and on availability of transport means.

Acknowledgment

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Contact

Jan Chocholáč

Faculty of Transport Engineering

University of Pardubice,

Studentská 95, 532 10 Pardubice 2, Czech Republic

jan.chocholac@upce.cz

Jaroslava Hyršlová

Faculty of Transport Engineering

University of Pardubice,

Studentská 95, 532 10 Pardubice 2, Czech Republic

jaroslava.hyrslova@upce.cz

EVALUATION OF THE CURRENT POSITION OF CSR IN THE LOGISTICS SECTOR

Simona Činčalová

Abstract

Purpose: The paper focuses on the evaluation of the current position of corporate social responsibility (CSR) in the logistics sector. Logistics plays a huge role within today´s economy (an important part of GDP). It reports author´s findings from a questionnaire survey. The aim of the research is to evaluate the use and scope of CSR implementation in medium and large enterprises operating in the NUTS 2 region, to identify the reasons for non-using of CSR policy in enterprises.

Design/methodology/approach: In order to gain the knowledge about using of the CSR concept in business practice, the primary quantitative research was chosen, in which a questionnaire survey was conducted and sent to 70 businesses in September and October 2017. There was a total of 11 questions, both closed, open and semi-open. The data of 29 respondents were supplemented by the theory in this field and documentary analysis, including internal documents, descriptions of internal processes, employee magazine articles. Based on the evaluation of the questionnaire, research questions were answered.

Findings: It was found that the most important motive for implementation CSR in a company is according to the surveyed companies "improving the reputation and image". On the other hand, the biggest obstacle to the introduction of CSR is "lack of time". This may be related to the lack of qualified staff. The most enterprises ensure the coherence of the CSR concept and the corporate strategy, but do not certificate CSR and are not going to do it. There were also described some CSR activities in three-bottom-line and its measurement.

Research/practical implications: Results are relevant for medium and big enterprises in the sector Transport, exactly for top management (as CSR makers). It suggests that concept CSR is one of the ways how to for example improve the reputation of the company. It is needed to link this concept to the business strategy. This topic deserves a future research and there is a great field for potential researchers.

Originality/value: The paper complements and extends findings of Czech and foreign studies in this field. There are lots of studies about corporate social responsibility, but this empirical analysis was conducted based on the research gap in the studies related to the Czech Republics´ enterprises in the logistics sector. This study has an originality value of using primary data collected by the author.

Keywords: Corporate social responsibility, logistics, Czech Republic

JEL Codes: M14, M3, M5

Introduction

At present, Corporate Social Responsibility (CSR) is becoming a topic that is increasingly being discussed. The public and the competitors are more aware of how the business behaves towards consumers, the social and the environment, the employees and the social needs of society. Successful companies are no longer enough to focus on making profits. Also, the popularity of social responsibility is growing in the Czech Republic, and the number of organizations involved in this concept is increasing. There are competitions of companies where social responsibility is the main measure, looking at how the enterprise is perceived by the public.

According to Jirásek (2007) "be good" is a sought after characteristic of a business - to be a good supplier, to be a good employer, to be a good neighbor, etc. It turned out that it may not be the biggest companies at all to take a significant place on this scale. Social responsibility not only does not stand against economic success but, on the contrary, belongs to it and acts as a motivating and reinforcing factor.

The goal of the paper is an evaluation of the current state of CSR in logistic sector. Some studies have evaluated CSR in other sectors and concluded that there is a need to complement other sectors (Martinéz et al., 2013; Lee et al., 2018). The logistics industry was chosen because of its importance (Qadir et al., 2017; Brzozowska et al., 2016), it can help businesses and also customers cut on the costs and time and it is an important part of GDP.

Finally, the author would like to mention a quote of Peter Drucker (Chandler et al., 2014), the founder of modern management, who is dealing with the topic of this paper: "Profit for a company is like oxygen for a person. If you do not have enough of it, you're out of the game. But if you think your life and about breathing, you're really missing something."

1   Theoretical background

The notion of "Corporate Social Responsibility" (CSR), although discussed over half a century ago, currently lacks a globally valid and unified global definition (see Tab. 1). According to Kašparová and Kunz (2013) this may be due to the fact that CSR is based on volunteering, it does not have strict boundaries, thus giving scope both for a broad discussion and for a very wide understanding and interpretation of this complex concept by individual interest groups. Mullerat (2011) even takes the view that if there is a certain unified and universally accepted consensus in understanding the concept of CSR, this is because the term CSR has different meanings for different stakeholders.

Tab. 1: Summary of definitions of CSR

Author(s)	Definition of CSR
Jakubíková (2013)	voluntary commitment of companies to behave responsibly towards the environment and the company where they operate
Petříková (2008)	all activities that are far beyond the most legitimate requirements as well as the activities through which the organization seeks to understand and satisfying all stakeholders in society
Čaník et al. (2006)	concept where the company voluntarily assumes co-responsibility for the well-being and sustainable development of modern society while expecting to maintain competitiveness and profitability
Business Leaders Forum (Kotler and Lee, 2005)	voluntary commitment of companies to behave responsibly in the context of their operations both in the environment and in the society in which they operate
European Union **(Kunz, 2012)**	voluntary integration of social and environmental considerations to day-to-day business operations and interactions with corporate stakeholders

Source: own elaboration

Alexander Dahlsrud, who has analyzed dozens of CSR definitions in his study "How Corporate Social Responsibility is an Analysis of 37 Definitions" (Dahlsrud, 2008), resulted in the definition of the five basic areas that were the most common in the definitions (at least 80%):

- environmental,
- social,
- economic,
- stakeholders,
- volunteering.

By synthesis of definitions from the literature, the author came to her own definition: CSR is a voluntary concept of socially responsible behavior beyond the statutory obligations of the enterprise, which encompasses the economic, social and environmental sphere and fulfills the goals of all stakeholders.

1.1 Three pillars of CSR

Whether social responsibility consists of three or four pillars, several authors have dealt with. One believes that the CSR concept is based on three pillars, others cling to the theory of four pillars. But one cannot say that one theory is wrong and the other one is correct, or one theory is better than the other. The author of this paper is inclined to theory of three pillars (see

Fig. 1), called three-bottom-line (Kunz, 2012; Zu, 2009; Mullerat a Brennan, 2011; Henriques a Richardson, 2004) as in Figure 1.

Fig. 1: Three-bottom-line of CSR
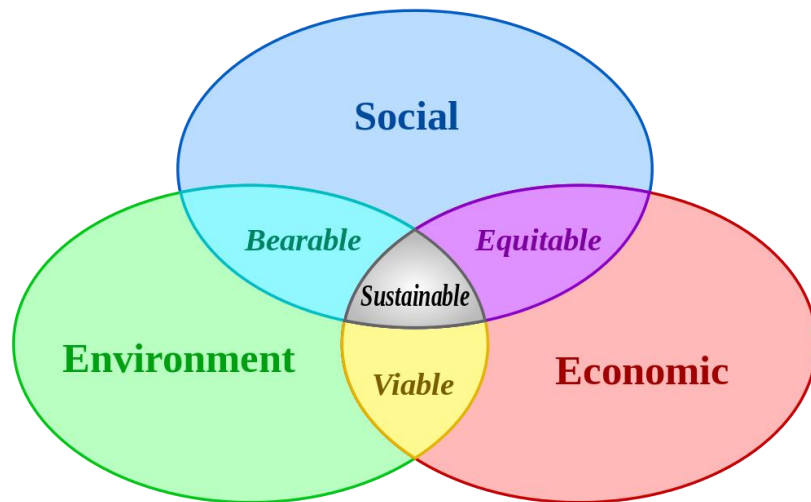
Source: Kunz (2012)

Within the economic sphere, attention is focused primarily on sustained earnings, which enables the company to fund CSR activities such as management and control of the organization, the fight against information misuse and corruption. In addition, organizations focus on timely fulfillment of commitments, consumer protection, transparency, and more. The social area includes the development of human capital, the reconciliation of the personal and working life of employees, as well as health and safety at work. The environmental area includes, among others, environmentally friendly production, ISO standards and waste management.

Some authors have already explored the relationship between CSR and various industries, also in the logistics. Lee and Seo (2017) were interested in the CSR from the perspective of the employees of logistics enterprises in Korea, as key stakeholders. They found that improving the concept of CSR in the company improves the behavior of the employees and their commitment to the organization and increases their positive attitude to work. Myšková and Oborilová (2015) state that the identification of activities that CSR management will support and develop is usually determined by the size of the enterprise and its financial stability. However, it is possible to use CSR effectively to improve the image of the company. It is important to define the activities to be supported, to determine their indicators and to determine the method of evaluation. The implementation of CSR described several authors, for example Srpová and Mísař (2015), Kornfeldová and Myšková (2012), Mísař and Pešek (2016) or Pulcová (2010).

2 Methodology

In order to gain knowledge about the use of the CSR concept in business practice, the primary quantitative research was chosen, within which a questionnaire survey was conducted. The aim of the research is to evaluate the use and scope of CSR implementation in medium and large enterprises, operating in the NUTS 2 region, to identify the reasons for non-using of CSR policy in enterprises. The suitability of the region's selection supports the fact that the two largest cities in the region, Pardubice and Hradec Králové, together with several other towns in the Czech Republic, have the lowest share of long-term unemployment. This is important because a social pillar is one of CSR parts. (CZSO, 2017)

The author chose the region where the University of Pardubice is located, so that the NUTS 2 Northeast Cohesion Region. It consists of Pardubický, Královéhradecký and Liberecký Region. Using the Magnus web business database (2018), author found that there are 70 medium and large enterprises (over 50 employees) in the Transport and Storage sector in the Northeast region. Middle and large businesses were chosen, because the smaller the enterprise, the more difficult it is to implement the CSR in organizational and personal terms.

The representatives of the sample for research can be statistically determined by the formula (Kozel, 2006):

$$n \leq \frac{t_\alpha^2 * p * (1-p)}{d^2}$$

where: n is a minimum range of choice is required,

t is the confidence coefficient for given α,

α is realiability,

p is an estimate of the relative frequency of the examined character in the base file,

d determines the required tolerable error in the research.

If the required reliability α = 0.1 is chosen, the confidence interval coefficient of 90%, tα = 1.65, with an acceptable error d = 10% with an estimate of the relative frequency p = 0.9, then the minimum number of elements in the sample, according to a formula (Kozel, 2006), should be at least 25 enterprises.

The questionnaire survey was conducted in September and October 2017 using contacts from the MagnusWeb business database. By addressing middle and top management, the return on questionnaires reached 29. This number meets the minimum scope and sample set can be considered as representative. The questionnaire itself was composed of 11 questions, there were open, closed and semi-open questions. The questions were focused on the use of CSR, the

benefits that led businesses to implement or barriers of implementation, linking CSR and business strategy, specific CSR activities and its measurement. It was inspired by the studies that they interviewed in other sectors.

The author has identified the following research questions:

- RQ1: What are the motives and on the other hand barriers of implementation CSR?
- RQ2: Is the concept CSR compiled on the basis of the corporate strategy?
- RQ3: How are the CSR activities evaluated?

3   Results

The first and key question in the questionnaire was whether your business applies corporate social responsibility (CSR). 93% of respondents (27 enterprises) replied that they are applying CSR concept. The remaining two companies said they did not use CSR but were considering introducing CSR in the near future.

Another of the questions concerned the motives (benefits) that led or could have led the company to introduce the concept into company policy. The most important motive was elected "improving the reputation and image". In Tab. 2 there are reasons and its average importance according to management of the enterprises (1 – the most important, 3 – medium importance, 5 – not important).

Tab. 2: Motives for introducing the CSR concept into the company policy

Motive for introducing	The scale (importance)
The company's belief that it is right	3.4
Effort to gain a competitive advantage	2.1
Increasing of profit, reduction of costs	2.4
Increasing customer loyalty	1.6
Improving the reputation and image	1.3
Public relations	2.1
External pressure	4.2
Attempt to attract and retain high-quality employees	1.9
Better image in the eyes of potential investors	2.5

Source: own elaboration

Then barriers making it difficult to implement the concept of CSR into company policy have been identified. While there are extant literature focusing on CSR, these literature focuses mainly on discussing the benefits of CSR. There is very limited literature that focuses on identifying and examining the barriers that are making difficult the implementation of CSR. The biggest barrier for our specified companies in the Transport and Storage sector seems to be "Lack of time", which nearly half of respondents said (see Fig. 2)

Fig. 2: Barriers of implementation CSR
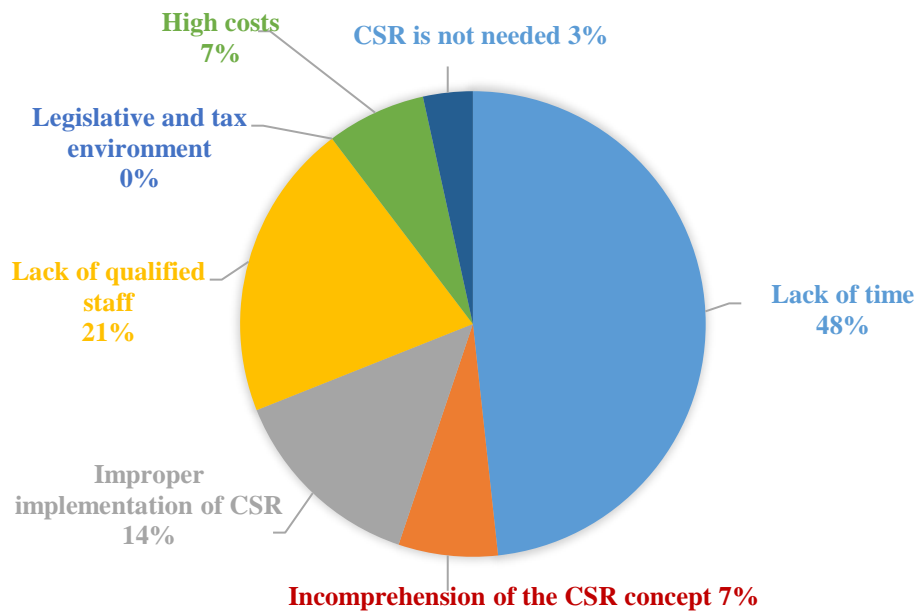
Source: own elaboration

Due to another question, it was found that more than 80% of enterprises ensure the coherence of the CSR concept and the corporate strategy (RQ2 confirmed). They said for example that:

- CSR is a part of their strategy,
- the vision (mission) is in line with CSR concept or compiled with respect to CSR policy,
- corporate values are described by CSR,
- rating systems, rewards are linked to CSR objectives.

The author used a Chi-Square test for independence, which compares two variables and explores that there is a relationship. The test was run for exploring the relationship between CSR and corporate strategy. The Chi-Square statistic is 7.5675. The p-value is 0.05943. The result is significant at the level 0.05. It means that there is a dependence between the CSR concept and the corporate strategy.

In the questionnaire CSR activities and its measurement were also investigated (see Tab. 3). The author thinks that these findings are not so breakthrough, because we can consider them the similar for all sectors.

Tab. 3: CSR activities and its measurement in three-bottom-line

CSR pillar	CSR activity	Measurement
Economic	Transparency, credibility Customer service Information on services Innovation and sustainability	Number of published indicators in the CSR report Customer satisfaction index Number of complaints and complaints Error rate in picking Timeliness of deliveries
Social	Employee involvement in decision making Financial and non-financial benefits Education, staff development Sponsorship Helping employees in a difficult life situation	Employee satisfaction Number of non-financial benefits Number of received prizes Sponsorship - amount of contributions provided
Environment	Saving energy, water Waste sorting and recycling Involvement of stakeholders in environmental policy	Energy, water consumption Quantity of emissions Unclassified and unused waste

Source: own elaboration

One of the possible variants how to ensure the social responsibility of companies across all the sectors is the certification of socially responsible standards that companies will try to reach to certify their social responsibility with the certificate. The author asked about certification CSR in the last question of research. None of the surveyed companies has CSR certification. Most businesses responded that they do not have it and they are not going to be certified. Just two companies said that they are going, but it also depends on the price and the conditions of the certification.

Discussion and conclusions

The article presents the evaluation of the current state of CSR in logistics through a questionnaire. Research questions were answered. It was found that the most important motive is according to the surveyed companies "improving the reputation and image". On the other

hand, the biggest obstacle to the introduction of CSR is "lack of time" (RQ1). According to the author, this may be related to the lack of qualified staff. The same opinions are presented in articles by Jurišová et al. (2012), Gurská (2013).

The most enterprises ensure the coherence of the CSR concept and the corporate strategy (RQ2). It was supported by a Chi-Square test, which has confirmed the theory by Lamberti and Noci (2012) about their relationship. But companies do not certificate CSR and are not going to do it. This idea is confirmed in the study of Czech chemical companies by Tetřevová (2018).

RQ3 was supported by several measurements. The CSR concept is the first step, but the second one, more important, is to evaluate it in all pillars. CSR measuring is the topic for several authors, for example Trnková (2005) or Paulík et al. (2015).

This study is significant in several ways. Firstly, it has contributed to the lack of previous studies on the current situation of using CSR in the Transport and Storage sector. Most notably this is one of the few studies that assess logistic companies. Secondly, the contribution identified various benefits but also barriers to the implementation of CSR. By understanding these barriers, top management of the companies can avoid or overcome by taking appropriate action. Policymakers may, on the other hand, formulate policies and provide support to logistic companies in the implementation of the concept.

There are, however, some limitations to this study. The applicability of the results may be limited to the context of Czech Republic. Additionally, the sample size was only adequate for analysis of this study, but insufficient for detailed analysis. The paper is primarily an evaluation of the current situation, so future research could focus on supporting CSR implementation and its correct measurement. Additional research on overcoming implementation-related barriers.

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Contact

Simona Činčalová

University of Pardubice

Studentská 84, 532 10 Pardubice 2, Czech Republic

simona.cincalova@student.upce.cz

VALUATION OF A SaaS COMPANY: A CASE STUDY OF SALESFORCE.COM

Benjamin Cohen – Michael Neubert

Abstract

Purpose: This paper seeks to identify the critical factors determining the valuation of software as a service (SaaS) companies. This newly created business model, namely software access and licenses as opposed to complete products, renders many evaluation metrics inapplicable. This creates a unique sub-industry of such companies for corporate valuation purposes. Salesforce.com is used as the focal company of evaluation, allowing use of and reference to actual data and prices. This paper aims to evaluate the accuracy and relevancy of specific valuation techniques and identify those best suited for a SaaS company.

Design methodology: Individual stock and market index data were collected from publicly available sources. The main stock in focus (CRM = Salesforce.com) was then analyzed using widely accepted evaluation equations, followed by advanced analysis techniques gathered from more recent academic literature and reputable online sources. The findings from these techniques are then discussed to compare valuation estimates as well as applicability towards the SaaS profit model.

Findings: This paper provides empirical insights on the impact of SaaS price-setting models on the valuation of firms using a SaaS business model. In contrast to relative valuation methods, cash flow-based valuation methods better reflect the impact of pay-per-use price-setting models and growth strategies on corporate valuation. The cash flow being generated by the SaaS firm creates value. The bulk of the valuation comes from the free cash flow growth rate being experienced and the expectation for continued growth in future quarters. These findings confirm our proposed theoretical model describing the strong mutual interdependence of business model, price-setting model, and corporate valuation method of SaaS firms.

Research/practical implications: The study results are relevant for researchers, investors, and financial managers of SaaS firms, who need to understand the impact of SaaS price-setting models on the valuation of firms using a SaaS business model and who need to choose the appropriate valuation method. Future scholarly work should include quantitative assessments of additional financial data of salesforce.com and other SaaS firms to provide greater clarification of the statistical significance of the variables of this study or to replicate it with other SaaS firms from different industries and countries.

Originality/value: The paper fulfills an identified need and a call for research to study the impact of SaaS price-setting models on corporate valuation using a single case study firm with a SaaS business model and contributes to the research about the influence of SaaS price-setting models on corporate valuation.

Keywords: SaaS, software as a service, corporate valuation, international finance, pay-per-use, price-setting models

JEL Codes: D40, D46, G11, G12

Introduction

The purpose of this paper is to identify the critical factors determining the valuation of software as a service (SaaS) companies. This newly created business model, namely software access and licenses as opposed to complete products, renders many evaluation metrics inapplicable. This creates a unique sub-industry of such companies for corporate valuation purposes. Salesforce.com is used as the focal company of evaluation, allowing use of and reference to actual data and prices. This paper aims to evaluate the accuracy and relevancy of specific valuation techniques and identify those best suited for a SaaS company.

The accurate valuation of companies is vital to ensure that stock markets are reliably efficient and that merger, acquisition, and divestiture events are handled fairly and appropriately. However, not all business models can be evaluated using the same criteria, nor will analyst companies fully adhere to the same set of valuation criteria. Due to these factors, as well as overall global economic stability and individual market crises, a multitude of valuation metrics and processes have been developed and continue to evolve through the emergence of new business industries and business models.

In particular, the emergence of companies employing the new SaaS business model has created a disconnect between the valuation methods used within this sub-industry and elsewhere. Because this collection of companies has flourished in recent years, thus becoming permanent additions to the corporate landscape, the valuation techniques warrant further understanding. By uncovering these processes, insights are sought to lead to improved accuracy of valuing this particular sub-industry.

For the purpose of bringing specific discussion points and values to this paper, the company Salesforce.com is chosen to be the focal company of evaluation. In actuality, any young and growing company in the sub-industry would suffice, and no particular bias towards this company shall be given. This paper aims to be objective and insightful towards the accurate portrayal and valuation of this and any other SaaS company.

For this purpose, this paper shall proceed by discussing the different price-setting models, strategies, and practices and valuation methods of SaaS firms in the literature review. Following this shall be insights found through the application of different valuation methods on the case study firm. This paper concludes by providing the overall comparison of public valuation methods found to be the most effective.

This paper originated from calls for research from Schoenberg (2006) and Weinhardt, Anandasivam, Blau, Borissov, Meinl, Michalk, & Stößer (2009). Schoenberg (2006) analyzed the approach to corporate valuation from the standpoint of an acquisitions company. His research focused on the importance of accurate valuation in order to fairly incorporate performance metrics in which to arrive at a price both parties would agree. Weinhardt, et al. (2009) focus on the difference in business models used in SaaS companies over existing technology companies. They directly call for further research comparing valuation methodologies based on business models implemented.

1 Literature Review

1.1 Valuation of SaaS firms

The valuation of a corporation is influenced by many different variables and each valuation method takes each different variable to a higher or lower (if at all) extent into consideration. This is especially important for the valuation of high-tech firms with innovative business models, like Salesforce.com as an example for a young, fast growing firm, which uses a SaaS pricing model for their cloud-based software products. Thus, this second and final part of the literature review focuses on the impact of a SaaS price-setting model on corporate valuation.

The selection of an appropriate valuation method depends on the lifecycle stage of each firm (Trichkova & Kanaryan, 2015). In every lifecycle stage, growth rates and profitability differ. The case study firm Salesforce.com can be characterized as a relatively young firm at the growth stages of its corporate lifecycle using suitable price-setting strategies, practices, and models. In this development stage, the revenue growth rate tends to be higher and the profitability is lower (Neubert & van der Krogt, 2017).

According to Newton & Schlecht (2016) revenue and especially free cash flow growth is more than twice as important for the valuation of SaaS companies as profitability (here: EBITDA margin). Gardner (2016) confirmed this finding in identifying the revenue growth rate as one of the key factors that go into assessing a firm's revenue multiple for corporate valuation. In the time period, in which this survey analyses the valuation of Salesforce.com, it is profitable but doesn't pay any dividends. Feld Thoughts (2013) presents a combination of revenue growth and profitability that states that a SaaS company's combined monthly recurring revenue (MRR) plus EBITDA profit margin should add up to 40% or above.

In addition, Smale (2016) discusses the typified classification of SaaS businesses as having annual profit (seller discretionary earnings, SDE) multiple within the range of 2.5x – 4.0x. This range is a function of many variables, most notably the age of the business, required time of owner involvement, growth trend of business and customer churn rate. Tunguz (2016) provides historical data tracking the enterprise value (EV) multiple of SaaS companies over time and identified during this time period sharp changes of the EV / forward revenue multiple void of any notable economic crises or widespread instability. Other key factors to assess the corporate valuation of SaaS firms are size of the target market, customer retention rate, gross margin, and capital efficiency (Gardner, 2016). Smale (2016) further elaborates that a large amount of intrinsic corporate value lies within intangible or qualitative measures of the firm. Examples of this include stability of the earning power, owner-specific business relationships, business traffic attributable to search engines and their algorithms, level of competition within the business niche, and type of customers targeted by the company.

Bancel & Mittoo (2014) present survey results of 356 European valuation experts with respect to the assumptions and estimation methods for their valuation practices. The results find that even when the textbook standard models for company valuation are used, the textbooks don't fully define how to derive all input variables and key factors (Festel, Wuermseher & Cattaneo, 2013). In addition, the company lifecycle is discussed as a means to justify the ease of transition between ownership or to create a sense of urgency (also compare to Trichkova & Kanaryan, 2015).

1.2   SaaS price-setting model

This survey has selected Salesforce.com as a single case study firm, because it is one of the most famous international high-tech firms using a SaaS price-setting model and due to its stock exchange listing, it grants access to high quality financial data.

SaaS is the abbreviation of software as a service. Instead of investing in Salesforce.com's customer relationship management software, clients acquire a subscription-based license of a cloud-based software package as opposed to a perpetual or term license. The license fee can be considered as an operating instead of a capital expenditure for the user.

This second part of the literature review focuses on the theoretical framework to describe the SaaS price-setting strategy, practice, and model of the case study firm.

For the purpose of this survey, the theoretical framework of Neubert (2017) and Cohen & Neubert (2017) (Figure 1) will be used to describe the SaaS of Salesforce.com as a pay-per-use price-setting model.

Fig. 1: Price-setting practice, strategy, and models
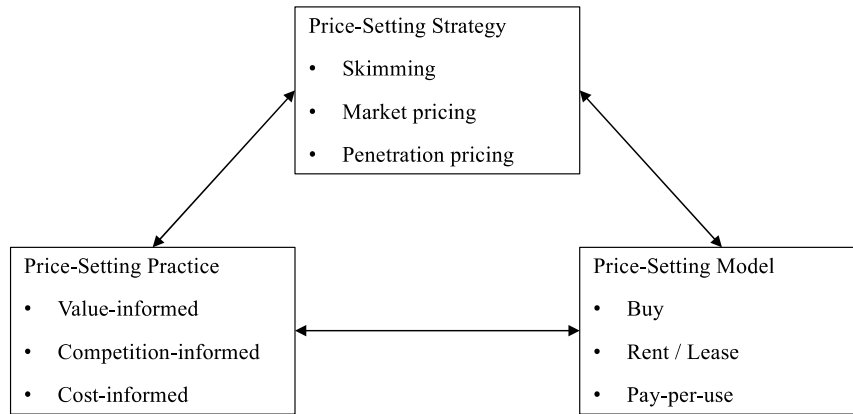
Source: Neubert (2017)

Accion (2015) presents a report showing the fundamentals of price-setting practices and how they apply to SaaS companies. The article defines the differences between the price-setting practices of cost-informed, competition-informed, and value-informed, then identifies the value-informed price-setting practice as the predominant strategy used by SaaS companies, with the competition-informed price-setting practices used in mainly mature markets. Salesforce.com operates as a pioneer and market leader in the customer relationship management software market using predominately value-informed pricing practices within their skimming based price-setting strategy.

Huang (2014), who performed an industry research covering the range of price-setting models offered, the pricing mechanisms are either usage-based, time-based, or a hybrid of the two. A pay-per-use license contract like the one of Salesforce.com can use a combination of fixed monthly licensing fees plus additional cost if the usage exceeds the defined limit (e.g. number of users) or the client asks for product adaptations or individualizations. Time-based license contracts consist of clients making extended time period reservations, typically for one to three years. Cloud-based SaaS service providers like AWS or Salesforce.com carefully balance their pay-per-use fees depending on different factors like for example data storage, data retrieval, or data upload volume (Deelman, Singh, Livny, Berriman, & Good, 2008).

As the literature research has shown, significant amounts of research have been made towards the three principle areas of this study; SaaS business models, SaaS price-setting practices, and

SaaS corporate valuation. However, no prior research has been performed that investigates the intersection of these three. Therefore, this survey contributes to the impact of pricing decisions on corporate valuation of SaaS firms using the following adapted theoretical framework (Figure 2).

Fig. 2: The intersection of SaaS business models, SaaS price-setting practices, and SaaS corporate valuation
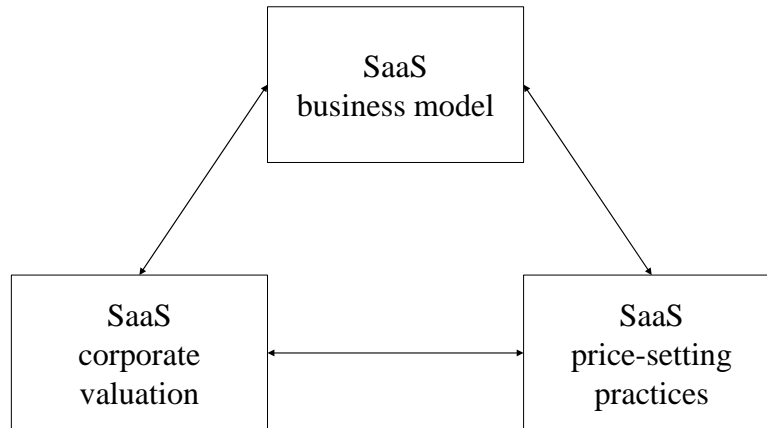
Source: author's elaboration

2 Research Methodology

This survey uses a single case study research methodology. Individual stock and market index data were collected from publicly available websites. The main stock in focus was then analyzed using widely accepted evaluation equations, followed by advanced analysis techniques gathered from more recent academic literature and reputable online sources, partially in comparison to selected peers. The findings from these techniques are then discussed to compare valuation estimates as well as applicability towards the SaaS profit model.

3 Corporate Valuation

Corporate valuation equations and metrics have been derived, defined, and further developed continuously since the advent of stock markets. Understanding a company's fundamental metrics and profitability became the basis of comparison with its peer companies. Most every modern economics textbook covers the breadth of these calculations. Therefore, without providing derivations or explanation for the following calculations, the standard valuation metrics are provided below.

3.1   Discounted Cash Flow

The standard valuation calculations can be separated into two main groups: the discounted cash flow (DCF) method (including variants), and relative valuation (RV) framework (Bancel & Mittoo, 2014). The first method involves calculating the net present value (NPV) for the stock's dividend, current cash flow, and forecasted cash flow growth. The summation of these three values is the resulting valuation of the company. Specific to Salesforce.com, there have been no dividends granted to date, thus related metrics each calculate to zero.

As seen in Exhibit 3, the calculations match considerably well with the actual price history. Because of the year-over-year equations being used, most of the short financial history is insufficient for calculating corporate value. However, in the four quarters that are computed the calculation accuracy is within 5%, substantially within the margin of error when taking into account non-financial sources such as news releases, macro-economic forces, and price change momentum.

The DCF method was successfully used to derive a corporate valuation or Salesforce.com of $78.91 per share using data through Q4 2017 fiscal quarter (31 January 2017). This estimation compares amazingly well to the stock price of $79.10 per share on the same day. This corresponds to a 0.24% difference.

Fig. 3: Chart comparing DCF-based valuation calculations to actual stock price
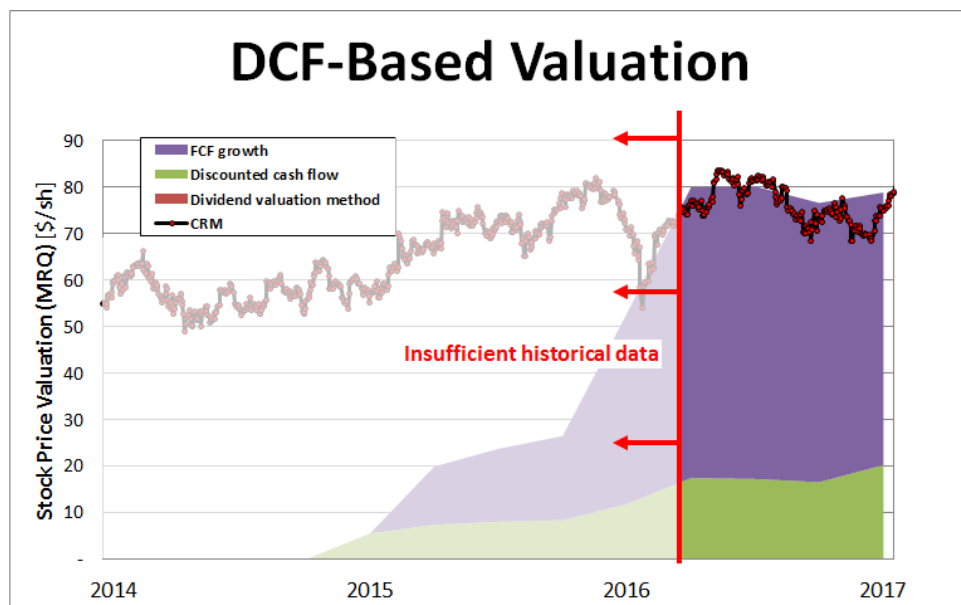
Source: author's elaboration

Although the cash flow being generated by the company has created value, the bulk of the valuation comes from the free cash flow growth rate being experienced and the expectation for

continued growth in future quarters, which is in line with the findings of Newton & Schlecht (2016). This important finding shows the shareholders and managers of SaaS software firms how to increase their corporate valuation. One growth driver is the use of a SaaS price-setting model. As the example of our case study firm Salesforce.com shows, every additional user or every additional activity a user performs (e.g. increase of required storage or download volume), immediately result in higher sales revenues.

3.2 Relative Valuation

Relative valuation does not provide a method of calculation for precisely valuing a company. Instead, it provides a range of value metrics of a company's peer group from which reasonable price estimates can be bracketed. The selected peer group consists of SAP, Adobe, Citrix, DXC, Blackbaud, Cognizant, and VM Ware (Figure 4).

With these estimations, it is possible to gauge if a stock is valued high, low, or on target relative to its peer/comparable companies. Caution is to be used with this method to ensure validity in company comparison, particularly taking into account the company size, sub-industry, business model, growth focus, lifecycle phase, and location.

The findings of the relative valuation suggest that traditional relative valuation methods will not work at this point in the company's lifetime with this peer group set. In fact, the relative valuation methods don't take into consideration the above-the-average expected free cash flow growth rate shown in the DCF valuation. Thus, the selection of an appropriate corporate valuation method for a SaaS firm depends on the stage of a firms' development (Trichkova & Kanaryan, 2015).

Fig. 4: Relative valuation comparison between CRM and seven comparable peer-group companies

MorningStar comparison between CRM and peer companies

Shareholder Equity	-	Salesforce CRM	SAP SE SAP	Adobe Sys ADBE	Blackbaud BLKB	Cognizant CTSH	Citrix CTXS	DXC DXC	VM Ware VMW
Shares Outstanding	M	711	1,199	495	48	589	151	283	407
Market Cap	$B	63.9	126.0	67.5	3.9	38.5	12.5	22.1	37.6
Enterprise Value	$B	-	-	-	-	-	-	-	-
Institutional Ownership	%	84.39%	3.71%	89.20%	0.00%	89.14%	0.00%	0.00%	39.09%
# Floating Shares	M	587	-	494	32	585	156	141	35
Short Int as % of Float	%	2.55%	0.00%	0.98%	20.05%	3.50%	4.19%	4.39%	67.90%
Beta	-	1.64	1.25	1.03	1.01	0.95	1.38	1.38	0.73
Financial Strength									
Total Current Ratio	-	0.83	1.20	1.95	0.68	3.03	1.28	1.15	2.27
Quick Ratio	-	0.75	1.14	1.86	0.22	2.83	1.16	1.03	2.19
D/A	-	0.11	0.11	0.14	-	-	0.27	0.35	-
D/E	-	0.27	-	0.25	1.42	0.08	0.78	1.16	0.19
LT D/E	-	-	-	-	-	-	-	-	-
Debt Ratio	-	-	-	-	-	-	-	-	-
Int Coverage	-	1.29	0.17	0.24	0.06	1.22	0.15	-0.00	0.58
Valuation (MRQ)									
Date	-	14 May '17	19 May '17	19 May '17	19 May '17	19 May '17	19 May '17	19 May '17	19 May '17
Stock Price	$/sh	$ 89.04	$ 105.08	$ 136.43	$ 80.34	$ 65.42	$ 82.79	$ 78.07	$ 92.52
P/E (TTM)	-	342.50	31.60	52.10	81.20	23.80	24.50		33.30
Forward P/E	-	58.10	19.60	27.40	34.30	15.40	16.20	9.50	18.00
PEG Ratio (5 yr)	-	2.30	2.50	1.30	2.50	1.40	1.70	0.40	1.90
P/Sales (TTM)	-	7.40	5.00	11.20	5.10	2.90	3.80	1.50	5.50
P/Book	-	8.40	4.20	8.90	15.60	3.90	7.20	11.60	4.60
P/Tangible Book	-	-	-	-	-	-	-	-	-
P/Cash Flow	-	28.80	22.60	28.20	23.90	21.80	12.70	12.90	16.50
Enterprise Value/Revenue	-	-	-	-	-	-	-	-	-
Enterprise Value/EBITDA	-	-	-	-	-	-	-	-	-
Book Value/Share	$/sh	-	-	-	-	-	-	-	-
Profitability (TTM)									
Gross Margin	%	73.38%	70.03%	86.04%	53.73%	39.36%	83.57%	25.70%	85.15%
Operating Margin	%	0.77%	22.08%	26.90%	8.29%	16.67%	19.77%	1.50%	20.29%
EBITDA Margin	%	-	-	-	-	-	-	-	-
Pre-Tax Margin	%	0.30%	21.17%	26.06%	6.92%	17.48%	18.99%	-2.31%	20.77%
Effective Tax Rate	%	-	24.94%	18.12%	9.29%	30.99%	17.97%		19.48%
Net Profit Margin	%	2.14%	15.89%	21.34%	6.28%	12.07%	14.03%	-1.44%	16.72%
Earnings per Share, EPS	$/sh	0.26	2.99	2.62	0.99	2.75	3.04	-0.78	2.78
Mgmt Effectiveness (TTM)									
Return on Asset, ROA	%	1.18%	7.94%	10.53%	4.29%	12.66%	8.83%	-1.33%	7.32%
Fin Leverage	-	2.34	1.78	1.72	4.48	1.37	3.09	4.36	2.06
Return on Equity, ROE	%	2.87%	14.49%	17.90%	20.29%	17.03%	25.27%	-5.24%	14.81%
Return on Inv Cap, ROCE	%	2.91%	14.46%	14.39%	9.05%	14.69%	15.04%	-1.24%	12.04%
Growth Rate (TTM)									
Earnings per Share, EPS	%	100.00%	-10.42%	60.00%	118.18%	27.78%	-68.52%	-30.00%	17.05%
Sales	%	26.78%	11.80%	21.56%	8.49%	10.74%	-19.74%	9.54%	8.83%
Dividend (MRQ)	%	-	-	-	-	-	-	-	-
Dividend (TTM)									
Dividend Yield	%	-	1.30%	-	0.60%	0.20%	-	0.70%	-
Payout Ratio	%	-	39.30%	-	48.50%	-	-	-	-
Annual Dividend	$/sh	-	1.18	-	0.48	-	-	0.56	-
Operating Ratios (TTM)									
Asset Turnover	%	55%	50%	49%	68%	105%	63%	92%	44%
Fixed Assets Turnover	%	479%	943%	761%	1,465%	1,074%	1,076%	774%	652%
Inventory Turnover	%	-	-	-	-	-	4,103%	-	-
Receivables Turnover	%	295%	372%	849%	882%	557%	731%	450%	407%
Unique Data		33	34	34	35	34	34	33	33

Range Coloring	Low: <80%	Low: 80%→99%	Within 1%	High: 101%→120%	High: >120%

Source: Morningstar 2017

As observed in the below graph (Figure 5), all six of the relative valuation metrics estimate a corporate valuation below the current stock price. These six relative valuation metrics are: Price-Earning-Ratio (PER), Forward PER, Price-Earning to Growth-Ratio (PEG), Price-Sales-Ratio, Price-Book-Ration, and Price-Cash-flow-Ratio. Thus, it can be assumed that the

traditional relative valuation methods don't reflect the full price paid at a stock exchange of fast growing high-tech firms.

Fig. 5: Relative valuation of Salesforce.com using six metrics from seven comparable companies
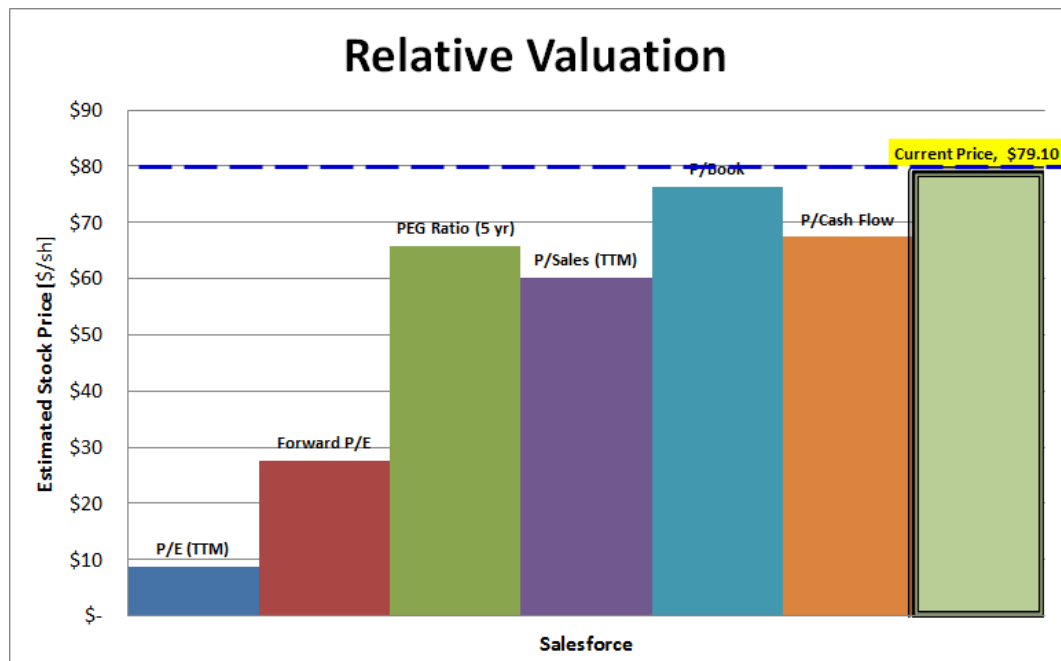
Source: Author's elaboration

Conclusion

The standard valuation calculations were successfully used to derive a corporate valuation or Salesforce.com of $78.91 per share using data through Q4 2017 fiscal quarter (31 January 2017). This estimation compares amazingly well to the actual stock price of $79.10 per share on the same day. This corresponds to a 0.24% difference.

The relative valuation process did not favorably estimate the valuation of Salesforce.com through comparison with comparable peer companies. The four closest comparisons estimate a valuation of $67.42 per share, or 17% difference with the price at the end of Q4 2017. This discrepancy is perceived to be due to the higher growth phase of Salesforce.com as compared to the comparable companies, and thus suggests that company lifecycle is of greater importance when selecting a peer set.

This paper provides empirical insights on the impact of SaaS pricing models on the valuation of firms using a SaaS business model. In contrast to relative valuation methods, cash flow based valuation methods better reflect the impact of pay-per-use pricing models and growth strategies

on corporate valuation. These findings confirm our proposed theoretical model describing the strong mutual interdependence of business model, price-setting model, and corporate valuation method of SaaS firms.

Although the cash flow being generated by the company has created value, the bulk of the valuation comes from the free cash flow growth rate being experienced and the expectation for continued growth in future quarters, which is in line with the findings of Newton & Schlecht (2016). This important finding shows the shareholders and managers of SaaS software firms how to increase their corporate valuation. One growth driver is the use of a SaaS or pay-per-use price-setting model. As the example of our case study firm Salesforce.com shows, every additional user or every additional activity a user performs (e.g. increase of required storage or download volume), immediately influences the cash flow.

The study results are relevant for researchers, investors, and financial managers of SaaS firms, who need to understand the impact of SaaS price-setting models on the valuation of firms using a SaaS business model and who need to choose the appropriate valuation method. Future scholarly work should include quantitative assessments of additional financial data of salesforce.com and other SaaS firms to provide greater clarification of the statistical significance of the variables of this study or to replicate it with other SaaS firms from different industries and countries.

The paper fulfills an identified need and a call for research to study the impact of SaaS price-setting models on corporate valuation using a single case study firm with a SaaS business model and contributes to the research about the influence of SaaS price-setting models on corporate valuation. There is a need for further research following this paper in applying the described valuation techniques towards other SaaS companies. With additional financial data from Salesforce.com, additional SaaS companies, additional corporate business models, and valuation techniques implemented in a future study, the process can be continually evolved for greater applicability and accuracy.

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Contact

Benjamin Cohen
ISM International School of Management
17, Boulevard Raspail, F-75007 Paris, France
benjamin.cohen@student.ism.edu

Michael Neubert
ISM International School of Management
17, Boulevard Raspail, F-75007 Paris, France
michael.neubert@faculty.ism.edu

PUBLIC E-PROCUREMENT SYSTEM FOR THE SMALL BUSINESS DEVELOPMENT IN RUSSIAN REGIONS

Olga Demushina – Natalia Filimonova

Abstract

Purpose: To investigate factors affecting development of public procurement practices with the participation of small businesses, and to analyse characteristics and accessibility of public e-procurement system in Russia for small business development.

Design/methodology/approach: To identify main areas for improvement in public procurement our research employed the following methods: factor analysis, multiply regression modelling, expert judgement method.

Findings: The most important factors affecting development of public e-procurement practices in regions of Russia: the total public procurement contract value, percentage of firms using the Internet, transparency of public purchases, and number of recorded economic crimes. The analysis of the e-procurement platforms allows to find out the following problems: lack of collaborative tools; most of the e-platforms are not involved in public procurement; the language and services can be complicated for some participants.

Research/practical implications: We can propose some areas of improvement in this field: adoption of measures helping to involve small businesses into public procurement process, creation of new tools for interaction between government agencies providing support to small businesses; enhancement of e-procurement platforms, namely reduction of their number, creation an aggregator Website, development of collaborative tools on the platforms, and simplification of services and tools providing by platforms.

Originality/value: The use of a combination of the research tools including economical statistical methods and analysis of procurement Web sites allowed to estimate public e-procurement system for small business development in Russia.

Keywords: E-procurement, small business, government support, regional development

JEL Codes: H57, C51, L26

Introduction

A necessity for small business development is determined by its important role in the socio-economic development of countries. Despite its importance small businesses face many problems. One of the ways to reduce effects of the negative factors could be public e-procurement.

E-procurement means online purchasing of goods and services through electronic channels which gives an excellent opportunity to make procurement processes faster and more innovative, as well as less expensive and eventually more attractive for all participants.

E-procurement system offers the following advantages for participants: reduction of prices and costs; decision-making process becomes more open and transparent; reduction of bureaucracy; facilitates saving expenses and time; increases the level of information and communication skills among users (Unctad, 2017).

Following the global trend of public services modernization and administrative procedure simplification the Government of the Russian Federation started work on establishing public e-procurement system in 2003 as a part of E-Government. Therefore, international experience in this field is of great interest.

The World Bank presented comparative analysis examining the quality of public procurement systems in 180 economies. They were accessed according to the following criteria: needs assessment, call for tender, and bid preparation score; bid submission score; bid opening, evaluation and award score; content and management of procurement contract score; performance guarantee score, payment of suppliers score. The results are presented in Figure 1 (The World Bank, 2016). We reduced the number of the countries to 5 by choosing only the BRIC economies that are all considered to be at a relatively similar stage of newly advanced economic development.

According to the study public procurement system in Russia has accumulated the most points in the category "needs assessment, call for tender, and bid preparation score". All the other results are worse comparing with the BRIC countries. It can be explained by problems and gaps in the public procurement system in Russia: lack of competition in public procurement (according to the evaluation report of the Ministry of Finance of the Russian Federation 94% goods are purchased from only one supplier (Unified Information System in the Procurement Area, 2017); small and medium-sized enterprise suppliers are insufficiently involved in the public procurement process (small and medium-sized businesses contracts account for 10,9 %

of all the contracts in public procurement); lack of regular control and monitoring the public procurement procedures.

Fig. 1: Comparative analysis of public procurement systems in 180 economies, scores

□India ■Brazil □China □USA ■Russia
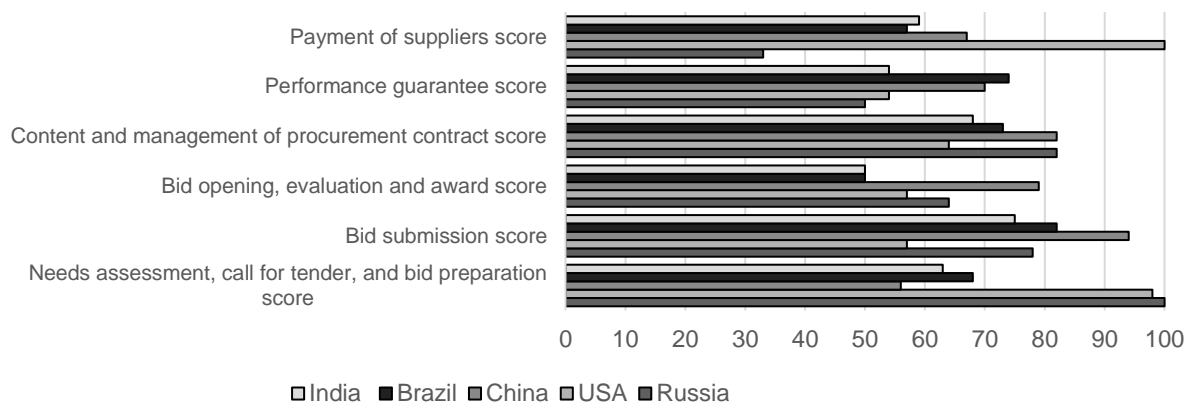
The Government of the Russian Federation tries to solve these problems. In June 2016 it presented the Strategy of development for small and medium-sized businesses. One of the most important aims is to increase purchases from small and medium-sized enterprise suppliers. According to the new rules not less than 18% of all the public procurement purchases must be made with participation of small and medium-sized businesses (Government of the Russian Federation, 2016). However this mechanism is new and requires further study.

The purpose of this paper is to investigate factors affecting development of public procurement practices with the participation of small businesses, and to analyse characteristics and accessibility of public e-procurement system in Russia for small business development.

1   Research methods of e-procurement for small business development

To find out main areas for improvement of public procurement our research included the following stages:

1. The most important factors hindering development of public e-procurement practices in regions of Russia were found out. The presented factor model was developed on the base of some international investigations in this field. The researchers refer the following phenomena to the most significant factors affecting public procurement: corruption in public procurement (Huda, Setiani, Pulungan, & Winarko, 2017); acceptance of e-procurement by SMEs and large companies (Alomar & de Visscher, 2017); use of information technologies in public procurement (Hashima, Saidb, & Nur Hidayah, 2013); transparency in public procurement (Svidroňová, Meričková, & Gondášová, 2016).

Based on these investigations we created our own model. We used the total public procurement contract value as a dependent variable (Federal State Statistics Service, 2015). Furthermore, we analyzed procurement contracts into which small businesses were engaged. As independent variables we chose the following indicators: percentage of firms using the Internet (%) which shows access of businesses to public e-procurement platforms (Federal State Statistics Service, 2017); transparency of public purchases in regions of the Russian Federation (Organizing Committee of the National Rating of Procurement Transparency, 2016); number of recorded economic crimes (illegal banking practices, pseudo entrepreneurship, money-laundering etc) in regions of the Russian Federation (General Prosecutor's Office of the Russian Federation, 2017). We investigated the data from 83 regions of Russia for the period from 2012 to 2014. The program SPSS was used to get the main descriptive statistics for the selected variables.

2. The second stage included multiple regression analysis to find out a correlation between the variables. We used the regression model presented below:

$$Y = B_0 + B_1 * INTACS + B_2 * TRANSL + B_3 * ECCRIM$$

where, Y - the total public procurement contracts value concerning small businesses, thousand rubles; B_0 - is an intercept; B_1, B_2, B_3 – are the slop/regression weight or the coefficient of the function, which represent a correlation between dependent and independent variables; $INTACS$ - percentage of firms using the Internet in regions of the Russian Federation, %; $TRANSL$ – level of transparency in public procurement in regions of the Russian Federation, points; $ECCRIM$ - number of recorded economic crimes in regions of the Russian Federation, units.

3. The third stage of the investigation included identification of the most significant e-procurement platforms on the base of the expert judgment method to evaluate their accessibility for small businesses as well as their most important qualities such as transparency and usability. All the used methods allowed to find out the most significant negative factors affecting development of public e-procurement practices in regions of the Russian Federation and to suggest ways of their improvement.

2 Results of the study

After conducting the analysis, we can conclude that there is a high degree of differentiation among the regions of the Russian Federation in the public procurement practices (Table 1).

On average the total public procurement contract value for small businesses accounts for 1371.57 thousand rubles, but in 50 % of the regions it is less than 681 thousand rubles. The

lowest value of this indicator is in Republic of Ingushetia, the highest value is in Moscow. On average 88.2 % of the firms use the Internet, the percentage is above average in 50 % of the Russian regions. The lowest value of this indicator is in the Chechen Republic, the highest value is in Moscow. According to the evaluation the level of transparency in public procurement in Russia on average obtained 1161.74 points. More than 50 % of the Russian regions demonstrate higher level of transparency. The lowest value of this indicator is in the Republic of Buryatia, the highest value is in Moscow. The average number of recorded economic crimes is 1570.3. The level of crime is lower than average in 50 % of regions of the country. The lowest value of this indicator is in the Chukotsky district, the highest value is in Moscow.

Tab. 1: Descriptive statistics

Indicator	Average	Median	Minimum	Maximum
The total public procurement contracts value concerning small businesses, thousand rubles	1371.57	681.016	0	35522.2
Percentage of firms using the Internet in regions of the Russian Federation, %	88.24601	89.35532	64.7	99.06188
Level of transparency in public procurement in regions of the Russian Federation, points	1161.747	1184	654	2000
Number of recorded economic crimes in regions of the Russian Federation, units	1570.289	1084	33	10282

According to this table, we can conclude that the presented indicators show a high degree of differentiation in the regions. We have built a regression model to evaluate factors affecting public procurement contracts value for small businesses:

$$Y = -8857.199 + 62.43 \cdot INTACS + 2.577 \cdot TRANSL + 1.036 \cdot ECCRIM$$

The research shows that the dependence of public procurement value on these factors is 39,9 %. Percentage of firms using the Internet belongs to the most significant factors.

ANOVA table (Table 2) shows F-test for our model. The analysis of the results shows that the model is statistically significant. The calculated F-value (14.22), which is significantly more than critical (2.65) for a P-value of 0.05, proves that the relationship between independent and dependent variables is meaningful.

Tab. 2: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	69783241.991	3	23261080.664	14.211	.000
Residual	386284481.499	236	1636798.650		
Total	456067723.490	239			

Since 2010 all governments in Russia must conduct open online-auctions where companies can submit requests for participating and bid against each other while public bodies chose goods of the best quality with the lowest price. Currently there exist 181 electronic public procurement platforms integrated with UES (Ministry of Finance of the Russian Federation, 2017). Despite the great number and variety of the existing platforms only a small part of them is deployed by government agencies. The data of the evaluating report of the Ministry of finance of the Russian Federation shows us that 99% of all public purchases took place via 47 e-platforms. So the other 134 platforms seem to be sophistication. What's more, 53% of all orders from public agencies were made via only 3 platforms that seem to be the biggest and the most significant in Russia. Therefore, although we examined all the available platforms, we present here the analysis of the three most important and popular web sites.

1. TEK-TORG electronic trading platform (http://rn.tektorg.ru/en/procurement/about). The platform was established in December 2012. The main activities of TEK-Torg are: organization of electronic trading platform (ETP) for holding of procurement and sales of goods, works, services, activity of the ETP operator, as well as development, maintenance, operation and support of software products and systems. Activity of TEK-Torg is mainly focused on the large companies of Fuel and Energy Complex of Russia and the companies with public ownership. The platform is devoted to purchase of goods and provision of services related to the oil and gas extraction as well as the maintenance and development of equipment.

2. E-procurement platform of the OJSC "Russian Railways" (http://etzp.rzd.ru/freeccee/main). The platform is developed by one of the biggest company in Russia OJSC "Russian Railways" with the aim to purchase goods and order provision of services for the needs of the company. It offers the following procedures: open tendering, open auction, request for quotation, request for proposal, submitting offer, preliminary selection.

3. Electronic trading platform of Gazprombank (https://etpgpb.ru/). The platform was created in 2012 by the Gazprombank, the state-owned Russian bank, the third largest bank in the

country. The platform aims to provide means to make purchases for needs of the Gazprombank and its corporate clients. Besides, it provides additional services such as: professional support and consulting, expert training and webinars, translation of tender documentation.

Investigation of the enterprises names list participating in e-bidding through the presented platforms shows that all these sites are oriented towards large companies which have more resources and possibilities to present themselves on the platforms. It's interesting to evaluate the quality of these platforms in terms of their accessibility.

All the presented platforms were examined according to the developed criteria. We evaluated possibilities offered by the platforms as well as their most important qualities such as transparency and usability to analyse characteristics and accessibility of public e-procurement system in Russia for small business development. The results are presented in Table 3.

Tab. 3: Comparative analysis of public e-procurement platforms in Russia

E-procurement platform	Feedback	Security (digital certificate and signature)	Online-help	Advanced search	Simplicity of the graphic interface and navigation system	Editorial content (news, FAQ…)
TEK-TORG	+	++	++	+	+	+
OJSC "Russian Railways"	+	++	++	-	+	-
Gazprombank	++	++	++	-	+ +	+

On the base of the comparative study we can conclude the following. All the presented platforms provide feedback opportunity to ask questions about procurement procedures. Besides, users of E-trading platform of Gazprombank can chat with online consultant on the webpage and get information immediately in real time. E-procurement platform of the OJSC "Russian Railways" gives opportunity to participate in surveys that help to accumulate users' opinions and improve procurement processes on the platform. On the other hand, the studied platforms do not provide collaborative tools (chat, shared agenda, forum, etc.). All the agreements and transactions on the presented platforms are protected through digital signature and digital certificate. All the presented platforms give access to a great variety of online and offline courses devoted to procurement procedures. As a user you can also watch videos teaching and training on procurement. The function of advanced search allows users to organize information, save time and get more specific data. This service is provided only by one website

- TEK-TORG electronic trading platform. As a general rule for any website, the navigation system must be simple to save users' time maximally. All the presented platforms have good usability and relatively clear navigation system. They offer a wide range of information which is well organized. But on the other hand, all the platforms use complicated professional language and bureaucratic terminology which can limit access to the content for some participants. Besides several tools can't be employed by non-computer science users. The first and the third platforms provide more tools which allows users to achieve their aims more quickly. E-procurement platform of the OJSC "Russian Railways" doesn't have any editorial content. The others platforms have FAQ-pages and reference links to legislative texts. Some visual tools on Electronic trading platform of Gazprombank are available such as interactive map where you can see geography of companies participating in public procurement through this platform.

Conclusion

Small business plays important role in economic and social development. In spite of it small businesses often face various problems due to their small size and specific characteristics of development. A lot of different tools are used to support small businesses all over the world. One of the most useful ways is participation of small businesses in public procurement. Use of electronic services facilitates access to public purchases and helps to save time and money in the procurement process.

The conducted analysis allows to find out some factors affecting public procurement process in Russia: percentage of firms using the Internet which shows access of businesses to public e-procurement platforms; level of public procurement transparency in regions of the Russian Federation; number of recorded economic crimes which reflects level of corruption.

The study shows that the dependence of public procurement on these factors is 39,9 %. Percentage of firms using the Internet belongs to the most important factors affecting public procurement process in Russia. E-procurement platforms are used to increase access of small businesses to public procurement procedures. The analysis of the e-procurement platforms allows to find out the following problems: lack of collaborative tools; the most of the e-platforms are not involved in public procurement which leads to lack of competition; the language and services can be complicated for some participants.

Based on the investigation we can propose some areas of improvement in this field: adoption of measures helping to involve small businesses into public procurement process, creation of

new tools which can allow interaction between government agencies providing support to small businesses; enhancement of e-procurement platforms, namely reduction of their number, creation an aggregator Website, development of collaborative tools on the planforms, and simplification of services and tools providing by platforms.

Acknowledgment

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Contact

Olga Demushina

Russian Academy of National Economy and Public Administration

8, Gagarin st., Volgograd. 400131, Russian Federation

Olga-demushina@yandex.ru

Natalia Filimonova

Vladimir State University

87, Gorkogo st., Vladimir. 600000, Russian Federation

natal_f@mail.ru

EDUCATIONAL INSTITUTIONS DEVELOPMENT:
TWO BASIC TYPES OF ORGANIZATIONAL STRUCTURE

Igor V. Denisov – Alexander L. Bobkov – Oksana V. Kuchmaeva – Oksana V. Savchina

Abstract

Purpose: The objective of this study is to prove the hypothesis implies that two types of organizational structures (sequential and parallel) dialectically replace each other, qualitatively changing in the process of organizations' growth, but at the same time at each new level of development organizations retain their defining properties.

Design/methodology/approach: In this context, educational organizations of similar size, as well as having similar (sequential or parallel) organizational structures form homogeneous groups. A common method for determining such groups is cluster analysis for identifying clusters. The secondary data about Czech private educational organizations for the study has been also used.

Findings: Cluster analysis revealed 7 clusters and after analyzing the average values of the variables in these clusters we allocated five groups. The first group includes 75 small private educational organizations with educational services being provided mostly in one place. The second group (37 organizations) consists of small networked educational organizations. The third group (259 organizations) - various educational organizations, usually providing educational services again in one place. The fourth group (3 organizations) includes large networked educational organizations. And, finally, the fifth group (3 organizations) - the largest educational organizations, providing educational services in one place.

Research/practical implications: The obtained results suggest that the general scheme of the evolution of private educational organizations can be presented as universal.

Originality/value: The research results generally confirm the hypothesis. In particular, in the process of conducting the study, significant differences in the effectiveness of the activities of educational organizations of comparable sizes are revealed. This may be due to both the specifics of data records in organizations and the type of educational services provided. The latter hypothesis is confirmed by an additional two-stage cluster analysis for quantitative and qualitative indicators.

Keywords: Organizational development, organizational structures, educational organizations, statistical analysis

JEL Codes: D86, I25, L2

Introduction

Among a broad range of earlier studies on organizational structures (Daft et al., 2017), one can single out a study held by Thompson et al. (2010), who notes that the organizational structure is determined by the underlying technology and that there are only three types of structures. In the first type individual elements of the organization are not related to each other, but each contributes to the whole. Visually, such elements can be represented in the form of a parallel structure. Another type of structure looks like a sequence of elements, in which the input of one element is the output of the previous one. The third type of structure is the mutual interdependence of all elements from each other. According to O'Shaughnessy (2013), organizations with a structure of this type necessarily include the first two.

In order to test the hypothesis on the pattern of the two basic types of organizational structures, education is chosen as an economic sector produced public goods (Marginson et al., 2007) in which organizational structures are the most stable and, as a rule, formed by individual tutors, small vocational training organizations, organizations specializing in certain levels of education (schools, educational centers, etc.) and large universities.

The authors of the article have previously conducted studies on the patterns of organizational structures development of educational organizations. In particular, research results in the Czech Republic held in 2017 showed that the development of this sector of the economy occurs by moving from sequential organizational structures to parallel and, then, again to sequential ones (Bobkov et al., 2018).

In this article, we will try again to prove the alternation of two basic types of structures, but the proof of their existence can be determined by another statistical method then previous studies.

Proving the hypothesis set implies implementation of the cluster analysis method, which is widely used to determine relatively homogeneous groups that combine elements of similar characteristics. This method is also used for determining the structure of higher education (Hanks et al., 1993). In the event of obtaining clusters that largely coincide with theoretical predictions the existence of objective trends (or pattern) in their formation will be proven. Since the vast majority of private educational organizations are organizations of vocation training, this could lead to some distortion being divided into clusters.

1 Organizational structure evolutionary model of educational institutions

In general, educational organizations activity can also be considered as a production process, involving the attraction of a potential student, the provision of educational services, and the issuance of a document on the results of training (a document on education, a diploma on upgrading qualifications, etc.). So, the educational organization can be considered as an enterprise that produces and sells educational services to customers or as Value Chain (Karvonen et al., 2012). This approach even allows the use of production functions (Hanushek, 2010).

In the extreme case, this process is realized by one person (for example a tutor). In this case the production structure can be considered as sequential, and to be itself as being at the first level of development (Denisov, 2008). In this example of product transformation – the educational process consists of a sequence of lessons in the teaching of one discipline. The reality of the existence of such firms confirms that in addition to a variety of primary, secondary and higher education organizations on the market, there is a significant number of individual teachers (for example, teachers of foreign languages, etc.).

In the process of improving the activities of individuals performing educational services, within a certain period, the limit of existing technological restrictions is reached. After that, the owner (and at the same time the only employee) of an educational organization of the first level of development is likely to have only one way to increase efficiency and reduce costs – the duplication of the main activity (the provision of educational services). Its structure acquires the characteristics of a parallel system. From the point of view of the implementation of the main process, it can be a small educational center in the sphere of vocational training, whose employees provide typical educational services, combining auxiliary processes such as marketing, keeping records, and so on.

The emergence of organizations of the third level of development means a qualitative change in the field of educational activities' organization. To implement a qualitative leap, the new organization should take advantage of the division of labor and the specialization of workers. The organizational structure of such an organization again becomes consistent due to the complexity of the educational services provided. Examples of such educational organizations are small schools, educational centers that train at several consecutive levels. At the same time,

the effectiveness of such organizations may significantly increase in comparison with organizations of the first and second levels of development.

After achieving minimum costs and maximum productivity using existing technologies, the organization of the third level in the process of its growth passes to the reproduction of business processes again. In this case, it will be expressed in expanding the network of educational centers or creating branches of schools or gymnasiums. As a result, there is an organization of the fourth level of development. This approach of capacity building that uses existing technologies can continue until an organization reaches the limit again. That is, at a certain point in time the amount of marginal revenue associated with the creation of a new center or branch will be equal to the marginal cost. Accordingly, the economic rationale of further expansion of the network will be lost.

In accordance with the hypothesis put forth by the authors, the development of educational organizations takes place through a gradual transition to the next level of development. And the logic of further development implies the transition from the organization of the fourth level of development (parallel structure) to the organization of the fifth level of development (sequential structure).

2   Materials and methods

To confirm the hypothesis, a cluster analysis of educational organizations in the Czech Republic is used, conducted using the IBM SPSS program. The initial data is obtained from the Albertina Gold Edition database (Bisnode Česká republika, a.s.). The research is conducted on private educational organizations, considering their financial and economic indicators. Financial indicators are calculated in the original currency CZK.

Taking into account the peculiarities of information presented in the database used, the study is purposefully limited by determining the first five levels for private educational organizations. In the process of grouping educational organizations with regard to the levels of development in accordance with the proposed hypothesis, the most challenging is the allocation of organizations of the first level of development (individual provision of educational services). This is due to the lack of legal status of a significant number of persons providing educational services. In other words, not all persons engaged in the provision of educational services are registered as individual entrepreneurs. Some are carrying out their activities on a private basis.

For the study, a total number of 588 private educational organizations are initially selected based on their business results for the 2015 calendar year. According to the results of primary processing, about 200 educational organizations are withdrawn from the further analysis due to the lack of necessary indicators. Thus, the final analysis is conducted for 377 organizations.

When conducting a cluster analysis, the following variables are selected, characterizing the activities of a particular organization:

X1 – age of an organization (full number of years);

X2 – average number of employees (people)

X3 – number of places for educational activity;

X4 – value of total assets (thousand CZK);

X5 – amount of depreciation deductions (thousand CZK);

X6 – labor productivity by value added (thousand CZK / person);

X7 – average number of employees per one place of educational activity (people);

X8 – amount of revenue per one place of educational activity (thousand CZK).

The calculation of the matrix of paired Pearson's conjugate coefficients has shown a definite relationship between all the analyzed indicators. This allows them to be used for cluster analysis and to test the hypothesis on the impact on the breakdown of the aggregate of educational organizations into groups, taking into account differences in the length of service, the number of employees, the number of branches and the indicators of economic efficiency.

Tab. 2: Matrix of paired Pearson's conjugation coefficients

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
X_1	1	0.165^{**}	0.170^{**}	-0.244^{**}	-0.123^{*}	-0.113^{*}	0.159^{**}	-0.104
X_2	0.165^{**}	1	0.222^{**}	0.553	0.630^{**}	-0.217^{**}	0.866^{**}	0.569^{**}
X_3	0.170^{**}	0.222^{**}	1	0.211^{**}	0.154^{*}	0.134^{**}	-0.254^{**}	-0.168^{**}
X_4	-0.244^{**}	0.553^{**}	0.211^{**}	1	0.640^{**}	-0.106^{*}	0.642^{**}	0.900^{**}
X_5	-0.123^{*}	0.630^{**}	0.154^{*}	0.640^{**}	1	0.224^{**}	0.762^{**}	0.535^{**}
X_6	-0.113^{*}	-0.217^{**}	0.134^{*}	-0.106^{*}	-0.224^{**}	1	-0.216^{**}	-0.112^{*}
X_7	0.159^{**}	0.866^{**}	-0.254^{**}	0.642^{**}	0.762^{**}	-0.216^{**}	1	0.684^{**}
X_8	-0.104	0.569^{**}	-0.168^{**}	0.900^{**}	0.535^{**}	-0.112^{*}	0.684^{**}	1

* Correlation is significant at the level of 0.05 (2-sided)

** Correlation is significant at the level of 0.01 (2-sided)

Since the characteristics are equally informative and meaningful for further analysis, the distance between the objects is calculated by the formula of a simple Euclidean distance:

$$\rho_E(x_i, x_j) = \sqrt{\sum_{e=1}^{k}(x_{ie} - x_{je})^2}$$

, where: x_{ie}, x_{je} – value of e indicator for i (j) object ($e=1,2,...,$ k), ($i\,j = 1,2,...n$).

Cluster analysis is carried out by the Word's method. Due to different units of measurement, the preliminary data standardization is carried out for the totality of studied indicators. Objects with missing data are excluded from the analysis, as well as objects with abnormally high values of value added and total assets against the background of other organizations.

The hypothesis on the equality of dispersions within and between clusters is rejected for all variables at 6 and 370 degrees of freedom. The value of p – the probability of error when assuming the hypothesis of dispersion inequality is extremely low, not more than 0.001 (the F-criterion is significant for all variables at a level of not less than 0.001). This suggests that the hypothesis about dispersion inequality is true and, accordingly, the clusters are formed correctly.

3   Results

The result of the cluster analysis is the breakdown of 377 private educational organizations into 6 clusters. The cluster distribution of analyzed educational organizations is shown in Fig. 1.

Fig. 1: Distribution of educational organizations by cluster
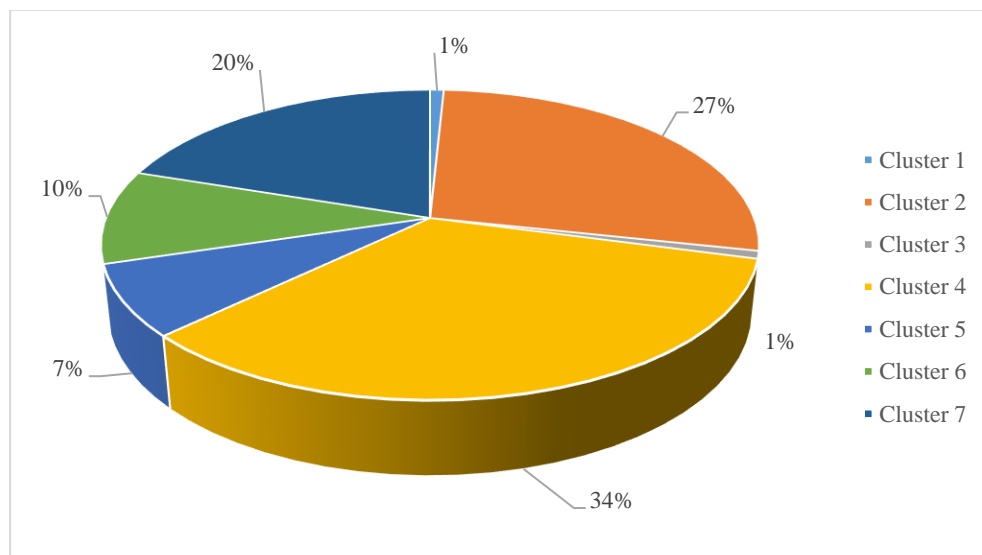
The results of the cluster analysis of private educational organizations are presented in Table 3.

Tab. 3: Average values of variables in clusters, sorted by the total assets indicator value

Cluster	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
7 N=75	3.4	2.1	1.2	1 188	104	782	1.9	2 744
6 N=37	8.7	1.0	1.9	4 067	318	3 048	0.7	4 789
2 N=104	8.7	6.5	1.2	7 018	295	609	5.7	9 083
5 N=28	16.5	1.3	1.3	7 454	254	2 662	1.2	8 077
4 N=127	18.7	13.1	1.3	7 472	333	382	11.7	9 015
3 N=3	13.7	126.7	8.3	37 851	589	281	22.0	11 435
1 N=3	5.7	139.7	1.0	540 701	19 946	736	139.7	216 667

The general overview of the cluster analysis results presented in table 3 reveal the obvious trend of alternating values of the indicator X_3 (the number of places for educational activity). For organizations within cluster 7, the value of this indicator is slightly larger than 1. For organizations within cluster 6, the value of X_3 increases almost to 2. Then, for organizations belonging to clusters 2, 4 and 5, its value is stabilized within 1.2 – 1.3. For organizations within cluster 3, the value of X_3 sharply increases to 8.3. Finally, for organizations within cluster 1, its value decreases again (to 1).

The presence of a regularity (pattern) in the change in the values of the indicator X_3 (the number of places of educational activity) confirms the hypothesis of the alternation of the sequential and parallel structure of the organization of production (operational) activity. The consolidation of the organizations in clusters 2, 4 and 5 into one group is due to both close values of the indicator X_3 and to similar values of the indicator X_4 (value of total assets), which may indicate the comparability of organizations included in corresponding clusters. Most clearly the patterns of changes in the values of the indicator X_3 are manifested for the largest educational organizations that are members of clusters 3 and 1.

With that, a detailed analysis of the results of cluster analysis requires further investigation. First of all, this concerns organizations that are members of clusters 2, 4 and 5. With comparable values of X_3 indicators (number of places of educational activity) and X_4 (size of total assets), the educational organizations that make up these clusters differ significantly in the average number of employees (X_2) and the amount of revenue per place of educational activity (X_8).

Based on the analysis of the mean values of the variable clusters 2, 4 and 5, we put forward the hypothesis that significant differences in the effectiveness of the activities of educational

organizations of comparable sizes (the average values of the indicator X_4 – the value of the total assets – they practically do not differ) can be related both to the peculiarities of personnel records in organizations (in small organizations, some employees can be recruited on a contract basis without inclusion in the staff of the organization and, accordingly, not being taken into account when calculating the indicator X_2 – average number of employees), and with the type of educational services provided.

First of all, it should be noted that the overwhelming majority of private educational organizations under study provide services in the field of vocational training. Thus, out of 377 private educational organizations analyzed only 16 (4.2%) provide services in higher education and 21 organizations (5.6%) – provide services in the field of general secondary and secondary vocational training. Thus, out of 377 private educational institutions surveyed, 340 (90%) provide supplementary education services.

To test the proposed hypothesis on the impact on the effectiveness of the activities of educational organizations of the type of educational services provided, we conducted a cluster analysis of quantitative and qualitative indicators (two-stage cluster analysis) of 377 private educational organizations. The most significant variables for clustering are the type of educational services provided, the average number of employees (people), the amount of revenue per educational activity (CZK thousand), and the amount of depreciation deductions (CZK thousand).

Cluster analysis have resulted into four clusters. The absence of the most important variables for clustering that characterize the structural changes in organizations (in particular, the number of places of educational activity) did not enable us to confirm or disprove the initially proposed hypothesis about the alternation of a consistent and parallel structure of the organization of production (operational) activity. At the same time, the grouping of clusters of educational organizations by the types of educational services provided confirmed the authors' hypothesis on the impact of this indicator on the results of financial and economic activity.

According to the results of the analysis, a total of 160 organizations providing other educational services are attributed to cluster 1, and about 43% of driving schools turned out to be in cluster 2 (126 organizations). In clusters 3 and 4 (82 and 9 organizations, respectively) are included organizations of tertiary education, general secondary education, education at schools of foreign languages with a predominant number educational organizations of vocational training (28% of

organizations with the activity type "secondary vocational schools" in cluster 3 and 22% of organizations with the "Technical and vocational secondary education" activity in cluster 4).

Conclusion

In general, the results of the cluster analysis confirm the hypothesis. As can be seen from the average values of variables in clusters, with the growth of the size of organizations (X_4), a consistent change in the number of places for the implementation of educational activities (X_3) is unambiguously observed. With that, the results showed the need for additional studies. In particular, a detailed analysis on the impact of the type of educational services provided on performance indicators of educational organizations is required.

It is also necessary to take into account the peculiarity of the information on educational organizations in the Czech Republic presented in the Albertina Gold Edition database. Out of 11,288 educational organizations of all forms of ownership, financial and economic indicators are represented only for 588 private educational organizations. Of these, 211 organizations had to be dropped in the process of research due to the lack of necessary indicators. That is, about 95% of state and municipal educational organizations are left outside the scope of the study.

Current research should be considered as one of the stages of proving the succession of sequential and parallel organizational structures and requires an in-depth study, including an analysis of the structure of specific educational organizations. Therefore, the next stage of the study, which can confirm the hypothesis put forward, can be a field study of a set of educational organizations at each level of development, including an analysis of the impact of various indicators on the effectiveness of their activities and a comprehensive analysis of their organizational structure. Nevertheless, the obtained results suggest that the general scheme of the evolution of private educational organizations can be presented as universal. So Government regulatory bodies in the field of education, in turn, can use this clustering to objectively determine the current situation, assess prospects and develop methods and strategies to facilitate the accelerated development of educational organizations in their region or the country as a whole.

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Contact

Igor V. Denisov

Plekhanov Russian University of Economics

36 Stremyanny Lane, Moscow, 117997, Russian Federation

idennis@rambler.ru

Alexander L. Bobkov

Plekhanov Russian University of Economics

36 Stremyanny Lane, Moscow, 117997, Russian Federation

a.l.bobkov@gmail.com

Oksana V. Kuchmaeva

Plekhanov Russian University of Economics

36 Stremyanny Lane, Moscow, 117997, Russian Federation

kuchmaeva@yandex.ru

Oksana V. Savchina

RUDN University

117198, Moscow, 6 Miklukho-Maklaya St., Russian Federation

savchina_ovl@rudn.university

CLUSTER ANALYSIS OF PE/VC MARKET IN CENTRAL AND EASTERN EUROPEAN COUNTRIES

Zbigniew Drewniak

Abstract

Purpose: The aim of the article is to present the PE/VC market in Central and Eastern Europe by country groups, which allows a more comprehensive analysis of it, the perception of investment potential and can help PE/VC funds to understand this diverse area.

Design/methodology/approach: The article uses cluster analysis and the k-means method to specify group of countries within CEE region. A similar analysis based on the entire PE/VC market in Europe was presented in research of Grzegorczyk (2015) and Drewniak (2014).

Findings: Grouping by the k-means method allowed to distinguish three groups of countries in CEE region characterized by different degree of development of the PE/VC market. The first cluster consists of one country - Poland, which can be considered a leader in terms of PE/VC investment in CEE region.

Research/practical implications: Conclusion section presents recommendations for PE/VC funds operating in Europe and interested in investments also in the CEE region. Grouping of numerous countries in this region may create new opportunities for perceiving this market.

Originality/value: The added value is the implication of the method that allows to analyse the PE/VC market from the point of view of groups of countries. Thus, it can contribute to increasing interest in investments in the Central Eastern Europe region and increasing its importance in investments compared to the entire European PE/VC market.

Keywords: Private equity, venture capital, cluster analysis, k-means method

JEL Codes: G24, C80

Introduction

Private Equity/Venture Capital (PE/VC) investments are still considered to be a modern source of financing for enterprises. Particular importance is attached to this form of financing in countries focused on the development of new enterprises and innovativeness. Such investments contribute to the creation of new enterprises that without such support could not develop a business concept and further market expansion. Barriers created on the market by traditional forms of financing can be overcome by PE/VC funds.

The main characteristics of PE / VC investments include a relatively long investment horizon and above-average investment risk, and hence, an above-average rate of return expected by investors. As a rule, PE / VC funds invest in non-public companies. However, the initial public offer (IPO) may be one of the disinvestment methods.

In addition to financial support, funds provide companies with smart capital in the form of knowledge, experience and business contacts. This may be particularly important for start-up or restructuring companies and reduce risk and increase the chance of market success.

Invest Europe defines Private Equity as a form of equity investment into private companies not listed on the stock exchange. It is a medium to long-term investment, characterized by active ownership. Private equity builds better businesses by strengthening management expertise, delivering operational improvements and helping companies to access new markets.

Many authors investigated the topic of importance of PE/VC investments and the impact on single companies and the economy as a whole. It is worh to mention: Bartlett (1999), D. Gladstone and L. Gladstone (2002), Gompers and Lerner (2006). In case of developing countries PE/VC funds supported many companies in their expansion being an important step in transformation especially in CEE countries (Klonowski, 2007; Rusu & Toderascu, 2016; Sato, 2013).

For many years, the strength of the European PE/VC market has been determined by several countries that have the largest share in the capital raised and in the value of investments. First of all, attention should be paid to the dominant role of the United Kingdom, Germany and France (Drewniak, 2014). For example in 2016 out of 74 bn euros of funds raised in Europe, as much as 41 bn was acquired in UK, 14 bn euros in France and almost 3 bn in Germany. The same conclusions can be drawn when analyzing investments made on the European market. In case of market statistics , out of 52 bn euros, almost 12 bn was invested in France, 8,4 bn euros in UK and 6,6 bn euros in Germany. In case of industry statistics , out of 51 bn euros invested

by PE offices, 14,6 bn euros was invested by PE offices located in UK, 14 bn euros by French PE offices and 5 bn euro by German PE offices. This confirms the significant role of these countries in the European PE / VC market. Among other significant players of the European market, it is worth mentioning the Scandinavian countries and the Benelux countries. The disproportion is one of the problems of the European PE/VC market, and the next is still the low share of venture capital investments not exceeding 10% of the value of PE investments in Europe (Invest Europe). Comparably, the importance of venture capital investments is much larger in the United States, where investments in early stage enterprises (seed and start-up) constitute a distinct segment of the PE market.

Finally, a very large group of European PE/VC market are the countries of the CEE region. Unfortunately, the importance of this market is marginal compared to the share of highly developed countries. Referring to the statistics, in 2016, only 0.6 bn euros were acquired in CEE region countries and investments were made for the amount of 1.6 bn euros, which is respectively 1% and 3% of the values of the European market in general. The EP funds analyze a group of CEE countries as a whole, including them or not in their investment policy. Nevertheless, every single country in the CEE region has its own needs, potential for development and can be an attractive investment opportunity, especially in the context of supporting enterprises at an early stage of development.

Within the CEE region, we can also find some disproportions, and try to highlight local leaders and even some groups of countries which may contribute to the analysis of this segment of the PE market as well as help European PE/VC funds to focus on this area of the market. Referring to the statistics of Invest Europe (former EVCA) the CEE region consists of the following countries: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, Slovenia and Ukraine and others like - Bosnia and Herzegovina, Macedonia, Moldova, Montenegro. These countries have a total population of about 170 million and registered a total GDP of €1.3 trillion in 2016. The statistics for Bosnia and Herzegovina, Macedonia, Moldova, Montenegro are incomplete, hence they will be excluded in the analysis.

1   Methodology, Data and Empirical Results

The k - means method belongs to the divisive methods of cluster analysis. The entire set of objects is divided in accordance with the general principle of maximizing variance between particular groups and minimization of variance within the studied groups. The idea of k-means

method was developed by Danielus in 50. who presented the iterative procedure of dividing the population into k groups, so that minimize the size of the intra-group variance. Cox (1957)in his work gave a function measuring the amount of losses related to the division of objects per k groups according to a one-dimensional variable with a normal distribution. A generalization for a multi-dimensional case was presented by G. S. Sebestyen (1962). The authorship of the k-medium method, however, is attributed to J. McQueen (1967), who considered the effectiveness of this method from the point of view of random selection of objects to selected groups (Grabiński. 1992).

The k-mean method represents a group of non-hierarchic algorithms, where it is necessary to specify the number of clusters.

This algorithm relies on moving objects from the cluster to the cluster until the variations within the clusters and between the clusters are optimized. It is obvious that the similarity in cluster should be as large as possible, while the separate concentrations should be as different as possible.

Dividing methods consist in dividing the entire set of objects in accordance with the general principle of maximizing variance between particular groups, at simultaneous minimization of variance within the studied groups.

K-means method can be described by the following algorithm:

1. Selecting of K points as initial centroids
2. Calculate the distance between objects and nearest centroid
3. Assign objects to clusters that minimizes the distance between centroid and the object
4. Calculate new centroids
5. Repeat steps 2-4 until no more assignements take place.

To calculate the distance between objects and centroids, the most common method is the Euclidean distance.

Than we minimize the sum of squared error defined as:

$$SSE = \sum_{i=1}^{k} \sum_{x \in C_i} dist(c_i, x)^2 \qquad (1)$$

where:

C_i – the ithcluster,

c_i – the centroid of cluster C_i,

x – an object,

k – the number of clusters,

dist – standard Euclidean distance.

We assume that the centroid that minimizes the SSE of the cluster is the mean. The centroid of ith cluster is defined as:

$$c_i = \frac{1}{m_i} \sum_{x \in C_i} x \quad (2)$$

where:

m_i – the number of objects in the ith cluster

Cluster analysis was carried out in accordance to 6 variables that was available in data sets from Invest Europe and refers to CEE countries. The data set is presented in table 1. The variables are the average values for four years of analysis covering period of 2013-2016. The following variables were taken into consideration:

X1 – average annual amount of capital invested (millions of euros);

X2 – average annual number of companies financed on single market;

X3 – average annual investment as percentage of GDP (percentage);

X4 – average share of VC investments in invested capital (percentage);

X5 – average annual amount of divestments (millions of euros);

X6 – average annual number of companies divested.

Four variables refers to investment activity and two refers to disinvestment. Unfortunately, due to the lack of data for some countries (especially Baltic ones and the Balkan countries), no variable refer to fundraising activity in single country.

Tab. 1: Statistical characteristics of diagnostic variables

Country	X1	X2	X3	X4	X5	X6
Poland	558	98	0.135	5	496	38
Czech Republic	157	15	0.096	5	231	10
Lithuania	67	36	0.176	22	28	5
Romania	114	18	0.07	3	76	9
Hungary	119	65	0.112	25	80	15
Estonia	37	17	0.201	20	16	4
Slovenia	26	7	0.093	31	27	1
Serbia	155	4	0.469	1	26	1
Croatia	29	6	0.063	13	9	1
Latvia	32	26	0.264	18	16	4
Bulgaria	18	9	0.046	40	86	4
Slovakia	15	16	0.014	35	7	2
Ukraine	13	4	0.013	18	44	2

Source: Invest Europe. (2017). Central and Eastern Europe Private Equity Statistics 2016. [ONLINE] Available at: https://www.investeurope.eu/. [Accessed 5 January 18], author's elaboration.

Most variables are absolute. Absolute data allows to present differences between PE/VC markets in the scope of key statistics and thus justify the need to group these markets. In the cluster analysis, however, these variables have been standardized. To bring the studied values to comparability, the standardization of them was based on the equation:

$$t_{ij} = \frac{x_{ij} - \overline{x_j}}{S_j} \qquad (3)$$

where:

t_{ij} – standardized values of j variable in i country,

x_{ij} – empirical value of j variable in i country,

x_j – arithmetic average of j variable,

S_j – standard deviation of j variable.

The calculations was carried out using Statistica Software. The chosen method was k-means clustering. Primary number of clusters was set as 3 and number of interactions was set as 10. Euclidean distance between clusters and analysis of variance was presented in table 2. And table 3.

Tab. 2: Euclidean distance between clusters

	No. 1	No. 2	No. 3
No. 1	0,000000	0,619087	6,124983
No. 2	0,786821	0,000000	8,631428
No. 3	2,474870	2,937929	0,000000

Source: own estimation based on data from Invest Europe.

Tab. 3: Analysis of variance

Variable	Between SS	df	Within SS	df	F	Signif. p
X1	11,22586	2	0,774141	10	72,50523	0,000001
X2	8,78483	2	3,215166	10	13,66156	0,001381
X3	4,40134	2	7,598665	10	2,89612	0,101808
X4	4,81081	2	7,189186	10	3,34587	0,077178
X5	9,86462	2	2,135382	10	23,09802	0,000178
X6	10,62026	2	1,379739	10	38,48649	0,000020

Source: own estimation based on data from Invest Europe.

Cluster analysis led to the specification of three groups of countries, that was presented in table 4 and on figure 1.

Tab. 4: Groups of countries specified through k-means cluster analysis method

Group	Members
1	Poland
2	Czech Republic, Romania, Hungary, Estonia, Serbia, Latvia, Lithuania
3	Slovenia, Croatia, Bulgaria, Slovakia, Ukraine

Source: author's elaboration.

Fig. 1: Map of CEE countries divided into three clusters
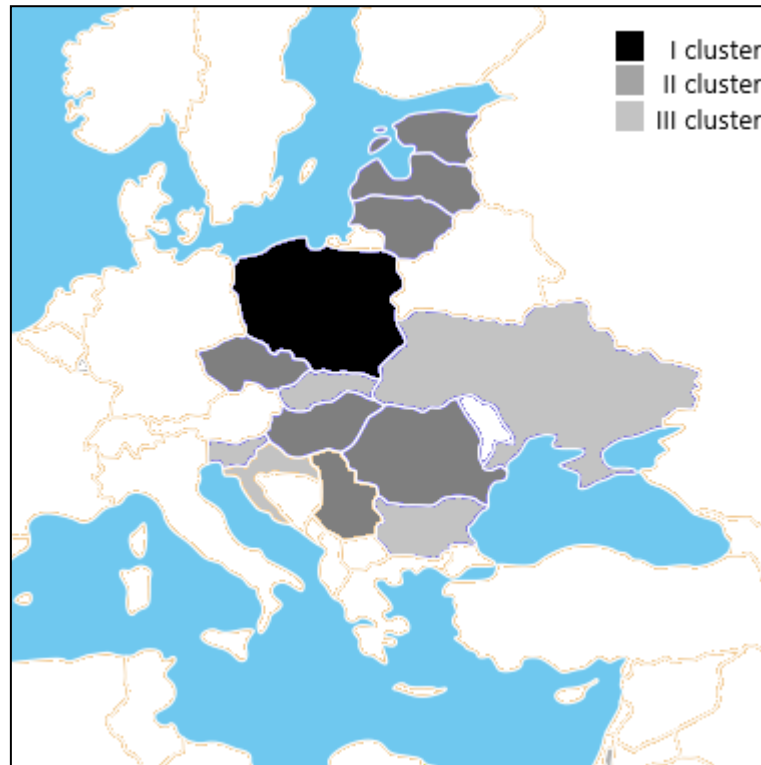
Source: author's elaboration.

2 Discussion

The cluster analysis showed that the PE / VC market is not homogenous and individual countries can be assigned to one of three groups. For each of these groups, we can determine the average values of selected categories and indicators describing the degree of investment and disinvestment activity, as presented in Table 5.

Tab. 5: Statistics in accordance to investment and disinvestment activity by specified clusters

Cluster	average annual amount of capital invested (mln euros)	average annual number of companies financed	average annual investment as percentage of GDP (in %)	average share of VC investments in invested capital (in %)	average annual amount of divestments (mln euros)	average annual number of companies divested
1	558	98	0.135	5	496	38
2	97	26	0.198	13	68	7
3	20	8	0.045	27	35	2

Source: own estimation based on data from Invest Europe.

First cluster consists of only one country – Poland. We can name this cluster as the regional leader. Polish PE/VC market represents 558 million euros invested in 98 companies annually.

This means over 41 percent of investment funds invested in CEE on average every year. The situation is similar in terms of disinvestment. In recent years, PE/VC funds operating in Poland carried out exits for the amount of 496 million euros on average annually. This refers to approximately 38 exits each year. Other factors such as location or developed capital market confirm the position of the leader on the PE/VC market in CEE. Very good location is an argument for funds intending to invest in the CEE region. The main PE / VC funds investing in this market and in the countries of the region have their headquarters in Poland, which confirms these conclusions. Fund managers see the potential of the economy, an importance of the capital market compared with other countries of the region and, finally, more and more attractive investment opportunities. Referring to the low share of VC investments, this is typical for developed economies, where investments are more capital-intensive and related to large projects. In fact, buyout investments dominate in Poland, with a low share of investments in the early stages. This does not mean that the funds do not see the potential of emerging entities, but look for this type of investment in other countries of the region.

Second group specified is the most numerous and consists of 6 countries: Czech Republic. Romania, Hungary, Estonia, Serbia, Latvia and Lithuania. These countries represent smallest PE/VC markets in comparison to Poland. The annual value of investments in these markets is almost 100 million euros on average, while average number of companies PE/VC backed annually reaches the level of 26. These markets have relatively higher share of VC investments (approximately 13% annually) in comparison to the biggest market in the CEE region. Lower investment activity on these markets also results in disinvestment activity. Funds operating in the countries of second group carry out 7 disinvestments per year on average, amounting to approximately 68 million euros. On the other hand, the countries belonging to the second group reach a high share of PE / VC investment in GDP – 0,2%. This is the highest value in analyzed clusters. PE/VC funds should investigate these markets in terms of looking for investment opportunities of both high value and those at early stages of development. In these countries, the possibilities of disinvestment are limited, which may be related to the insufficient development of capital markets in the context of the public offering.

Finally, the third group includes such countries like: Slovenia, Croatia, Bulgaria, Slovakia, Ukraine. The activity of PE / VC investors on these markets is the lowest, which is confirmed by statistical data. The average value of investments in the countries of this group is 20 million euros per year, and the number of enterprises financed is only 8. At the same time, the value of disinvestments reaches EUR 35 million with an average of two disinvestments per year. This

may mean declining activity of funds in these markets and greater investment focus on other countries of the region. Despite this, investments carried out on the markets of third group countries are largely related to financing enterprises at early stages of development. The share of VC investments is the highest here and is about 27% on average annually.

The analysis covered period of 2013-2016 basing on average data. Considering the long investment horizon that is characteristic for investments on the PE/VC market, no significant changes in the membership of individual countries to a given group should be expected. However, such shifts are possible but in the long term. It is also reasonable to analyze data based on average values from several years. In the case of the smallest PE/VC markets in CEE region, it happens that in some years there are changes in some variables, for example - the share of PE/VC investments in GDP.

Conclusion

Despite the small market share of the CEE region market in the entire European PE/VC market, it should be included in the investment policy of PE/VC funds operating in Europe. The cluster analysis allowed for the identification of one strong leader on this market - Poland. It is therefore an ideal place to create branches or representations of the largest PE/VC funds intending to conduct their activities in the entire CEE region. This is actually happening, it is in Warsaw that the most significant funds have their headquarters, which do not invest only on the Polish market, but also in other countries of the region. An additional argument may also be improving infrastructure, location advantage and, above all, the largest capital market among other countries in the region. PE/VC funds are increasingly looking for additional investment possibilities outside Western Europe. This is in line with the principle of portfolio diversification, which not only allows for limiting the risk, but also the possibility of generating a higher rate of return.

In countries belonging to the third cluster, PE/VC funds may seek investment at early stages of development, with high risk, but thus be able to generate an above-average rate of return. In countries belonging to the third cluster, PE / VC funds may seek investment at early stages of development, with high risk, but thus be able to generate an above-average rate of return. Those belonging to the second group also attract PE / VC investors. Expenditure on such investments is the largest in the region, taking into account the share of investments in GDP. Funds can look for investments here both in the early stages of development and in the mature stage (including buyout investments). By investing in Poland, the funds are focused on investing in investment

projects, hence here the buyout transactions prevail. The separation of three groups of countries also allows to support disinvestment decisions. Funds building the company's potential from the early stages of its development may create further development conditions for it through M&A transactions with other entities operating in more developed markets of the Group 2 countries or in Poland. A strong capital market in Poland also creates an opportunity for disinvestment through initial public offering (IPO) also for portfolio companies from all CEE region.

Future research could focus on recommendations for the development of the PE/VC market in individual countries, taking into account the visible disproportions. It is also reasonable to strengthen cooperation between PE/VC funds operating in the CEE region in terms of the investment and disinvestment process.

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Contact

Zbigniew Drewniak

WSB University in Torun

Mlodziezowa 31a , 87-100 Torun, Poland

zbyszekdre@poczta.onet.pl

INTERNATIONALIZATION OF COMPANIES THROUGH STRATEGIC ALLIANCE: A STUDY OF POLISH COMPANIES

Rafał Drewniak

Abstract

Purpose: The purpose of this article is to present the scope and the essence of internationalization of companies through cooperation within the frame of strategic agreements. The presented paper studies the role and the notion of strategic cooperation for internationalization of companies. The main aim of empirical research was to determine those resources and characteristics of potential partner company which are important from the perspective of internationalisation of companies declaring to cooperate. The discussion is based on an analysis of domestic and international literature references as well as own research.

Design/methodology/approach: The study involved 89 companies, belonging to one of the industrial clusters in Poland. The selection of companies for research was deliberate. 70 complete questionnaires were obtained, on the basis of which the conclusions were made with reference to the studied group. The research method was survey with electronic questionnaire as a research tool. It included questions concerning the characteristics of companies and the alliance, as well as an assessment of selected aspects of the agreement. Reliability analysis was done by estimating internal consistency using Cronbach's alpha coefficient. The scale used in the questionnaire is described in the methodology chapter.

Findings: What the researched companies expected the most from the partner companies was to enrich the alliance with experience in operations on foreign markets, knowledge and know-how, especially in the scope of technological resources, as well as to utilise the competitive position of a partner and their well-known brand. The researched companies most frequently selected the following benefits as the ones they gained from entering a foreign market through a strategic alliance: improvement in their competitive position, improvement in their management processes, achieving the effect of the economics of operation, implementation of innovation.

Research/practical implications: The existing papers study the theories and the practical aspects of companies' internationalization through strategic alliances. It allowed to get closer to the problems of building innovative and competitive potential of a company in the practical sense through the utilisation of resources of other entities within the scope of a strategic alliance. In particular, it includes the following: obtaining crucial resources (especially technological), distribution of operation costs among a larger number of partners and more elastic (faster) adaptation to the changing circumstances of international environment due to attributes, which are desired from potential allies in the context of entering foreign markets.

Originality/value: The undertaken issues concern the analysis of the factors determining internationalization of companies through a strategic alliance in the context of attributes of cooperating companies. Other research tends to concentrate on factors, which support or hinder foreign expansion or characterise its effects. Therefore, it is possible to gain advantage on the domestic market, which in turn creates better conditions for improving effectiveness and implementation of innovations.

Keywords: Strategic alliance, internationalisation, resource-based approach, innovation

JEL Codes: D74, F23, M16

Introduction

One of the theoretical foundations of alliance analysis is the concept of management globalisation, which most of all serves the function of explaining the genesis and purpose of establishing alliances. The process of internationalisation of a company is manifested in the production oriented towards global factors as well as international potential customer markets for the concept of managing it. Internationalization of companies, which is an effect of management on a global scale, has led to an expansion of various forms of cooperation between companies, both in the area of production, technology, research, production design, as well as in the scope of sales and services. Enterprises respond by entering foreign markets, motivated by both push and pull factors (Lloyd-Reason, 2003). Realization of this strategy makes it possible to obtain and/or complement missing resources. At the international level, such cooperation seems to be ~~of~~ strategic importance. In fact, one of the ways to obtain crucial competences and the access to distinctive resources is establishing a strategic alliance with a partner who has interesting and demanded resources. This solution does not require incurring such large costs as related to a takeover or fusion. At the same time, it eliminates the danger of dishonesty of copying (as well as possible legal consequences resulting from it), this also evades the problem of convergence of companies as a result of copying good standards. Combining various resources and abilities of companies as a result of establishing an alliance leads to an effect of synergy, triggers the process of mutual learning by partners, which undoubtedly creates added value and supports strengthening competitive advantages of allies.

1   Strategic alliances as a way to companies' internationalization

Alliance is defined as a voluntary, long-term cooperation agreement between at least two independent companies, which is concluded in order to achieve both mutual and individual objectives by sharing and/or creating necessary resources (Arino et al., 2001). It constitutes an instrument, which companies can use to obtain and/or strengthen their competitive advantage (Ireland et al., 2002). At the same time, with developing exchange and common development of crucial resources, companies engaging in such kind of agreements become increasingly dependent on one another, which affects the realisation of objectives assumed earlier. Strategic alliances can provide access to significant and valuable recources, including the ability to expand their capabilities and to optimize value (Bouncken and Fredrich, 2016 or O'Dwyer and Gilmore, 2018). It is therefore important that parties understand what potential partners are

seeking when considering an alliance (Contractor and Woodley, 2015 or Beamish and Lupton, 2016).

This situation means that companies must manage the agreement actively, in order to strive for regulating and settling any disputes between cooperating parties through concentration of resources based on the competitive potential of the allies, oriented to creating cooperation value (Dyer et al., 2008). It must also be emphasised that especially the complementary nature of resources is becoming a determinant of cooperation. This leads to a resource correlation of partner companies. Wernerfelt (1984) observed that a firm's growth emerges from the balance between exploitation of existing resources and development of new resources. He opined that international market diversification had a role in new resource building. However, internationalization can itself emerge as a firm resource for superior performance. Alliances are treated as a strategic tool, which offers partner companies various numerous benefits; however, they might also be the source of faults and inconveniencies for allies (table 1).

Tab. 1: Benefits and risks resulting from an alliance

Benefits (advantages)	Risks (disadvantages)
- access to resources: capital, rare skills, market and technological knowledge, production capabilities; these resources allow focusing on crucial competences; - economics of scope of operation: high costs of operation motivate to cooperate in order to increase the volume of production and sales; - sharing costs and reducing risks: distribution of risks and costs of joint undertakings among allies; - access to foreign markets: an alliance is one of the effective ways to enter new markets, including foreign markets; - learning and obtaining new knowledge: through an organisational process of learning in the scope of e.g. production, R&D work, know-how or technological capabilities; - quick operations on the market: thanks to complementary resources it is possible to increase the dynamics of operations and obtain competitive advantage; - increasing reputation: legitimisation of lobbying actions, which encourages accepting the policy which favours specific branches of economy; - barriers for competitors: obtaining competence and market power to neutralise the competition or block their entering the market; - evaluation of acquisition partners: better understanding of a potential candidate to be taken over and reduction of information asymmetry; - flexibility: larger degree of flexibility in operations and less regulations than in the case of a fusion or a takeover.	- losing possessed information: ownership of information (knowledge) might be lost for the benefit of a partner company, which is a competitor or which might become one; - complexity of management: degree of engagement of partners is related to the complexity of coordination of operations, which can often lead to conflicts, cause frustration and costly delays in operation; - financial and organisational risk: opportunistic behaviour of allies might undermine the logic of creating alliance value; - risk of being dependent on the partner: lack of balance in the strength of partners increases the risk of opportunistic actions and a hostile takeover; - losing decision-making autonomy: joint planning and decision-making might lead to losing decision and control independence; - losing flexibility: establishing an alliance with one company might prevent starting cooperation with others; - anti-monopoly consequences: benefits from an alliance disappear if they are questioned on the ground of anti-monopoly law; - barriers of learning: e.g. limited trust might hinder integration and utilisation of new knowledge; - long-term "life-span": despite establishing final objectives and deadlines in advance, internal and external events often result in a premature termination of an alliance.

Source: own work based on: Barringer and Hansen (2000); Das and Teng (2000); Glaister et al. (2003)

Strategic alliance is a way for companies to internationalize (Coviello and McAuley, 1999). Its advantages comprise access to financial resources, combined research efforts, product development and wider distribution channels. Most of internalization's effects have various outcomes for labour markets including the adverse effects for international labour migration, so it has both economic and behavioural component and it is a process and not an event (Glazar and Strielkowski, 2010). For some companies, especially those with their limited financial resources, home country focus and small geographic base, international activity is a significant step (Lu and Beamish, 2001). However, a multinational company is considered to be a company that conducts research, production, sales respectively other activities in different countries, not just where it has its headquarters (Zak, 2012). Alliances have become important due to stress on specialization and outsourcing by large firms, in the face of international competition. The crucial benefit resulting from the strategic alliance as a form of internationalisation is the fact that it requires limited resources and limited market knowledge. Whereas the critical risk consists in identifying the right joint venture partner and the fact that structuring successful partnerships can be problematic (Lu and Beamish, 2001).

2   Methodology

For the purposes of achieving the objective of this article, own research results are presented below, whose main objective was to identify the attributes of a partner company in the context of entering a foreign market in a form of a strategic alliance. The research was conducted in September 2017 on a group of 89 enterprises from one of the industrial clusters in Poland. 70 completed electronic questionnaires were received, on the basis of which the conclusions were made with reference to the studied group. The selection of companies for research was deliberate. This means that the companies were selected on the basis of general knowledge of the studied phenomenon and will provide optimal information from the point of view of the research objective. Survey was chosen as a research method with electronic questionnaire as a research tool. It included questions on the characteristics of companies and the alliance, as well as a section on the assessment of selected aspects of the agreement. To analyze the results of the study, methods of descriptive statistics were used. As a result of the conducted empirical research, it was possible to determine those resources and characteristics of a potential partner company which are sought for and valuable from the perspective of internationalisation of companies declaring to cooperate. In this case enterprises included in the survey were asked to assess the significance of certain attributes and resources of the alliance partner for internationalization. Regarding the assessment of selected attributes, the scale of 1 to 4 was

used, where 1-means that an attribute of a partner company is not significantly important, 2-little importance, 3-important, 4-very important. The companies could also point out 0, which means that some attributes are not referring (figure 1 and table 2). The research also allowed to characterise the effects of undertaken cooperation within alliances on foreign markets. In fact, surveyed companies were asked to assess the effects of internationalization through the alliance. This assessment was made on the basis of the following scale: 1-means no effect, 2-assessing the effect of a satisfactory degree, 3-good, 4-very good degree (figure 2 and table 3). In order to investigate the reliability, Cronbach's Alpha ratio was used. According to the Nunnally criterion, its value should be higher than 0,7 (Nunnally, 1978). The analysis of the reliability of the scales included in the questionnaire, carried out using the Cronbach alpha coefficient, confirmed their high level of internal compliance. The results of the survey should therefore be considered reliable, as confirmed by Cronbach's coefficient of 0,79 (in the case of the analysis of the attributes of the partner company) and 0,87 (for the analysis of the effects of alliances). However, it needs to emphasised that these results concern a short period of time in which the alliances were functioning (from 1 to 3 years). Therefore, the results – especially the ones concerning effects – need to be interpreted carefully. Finally, the conducted research was obtaining information concerning regions, where foreign cooperation was undertaken. The factors, which both favour and limit the process of internationalisation of the researched companies, were also identified.

3 Determinants of company internationalisation through a strategic alliance – research results

The companies included in the research mainly started or continued their foreign operations on the European Union markets or (to a lesser extent) on the markets of other European countries. Only 7% of the researched companies entered the markets of Asian countries. This situation results from the benefits related to the similarities among the EU markets, which surely made it easier to diagnose and commence operations. Those similarities concerned, among others, legal regulations, prevailing rules of business activities or free movement of persons and capital within the territory of EU. The crucial objective of the conducted research was to identify those attributes of a partner company, which were valued so high that they induced the companies to undertake cooperation and to enter a foreign market through a strategic alliance (figure 1).

Fig. 1: Attributes of a partner company which induce them to enter a foreign market through a strategic alliance (N=70)
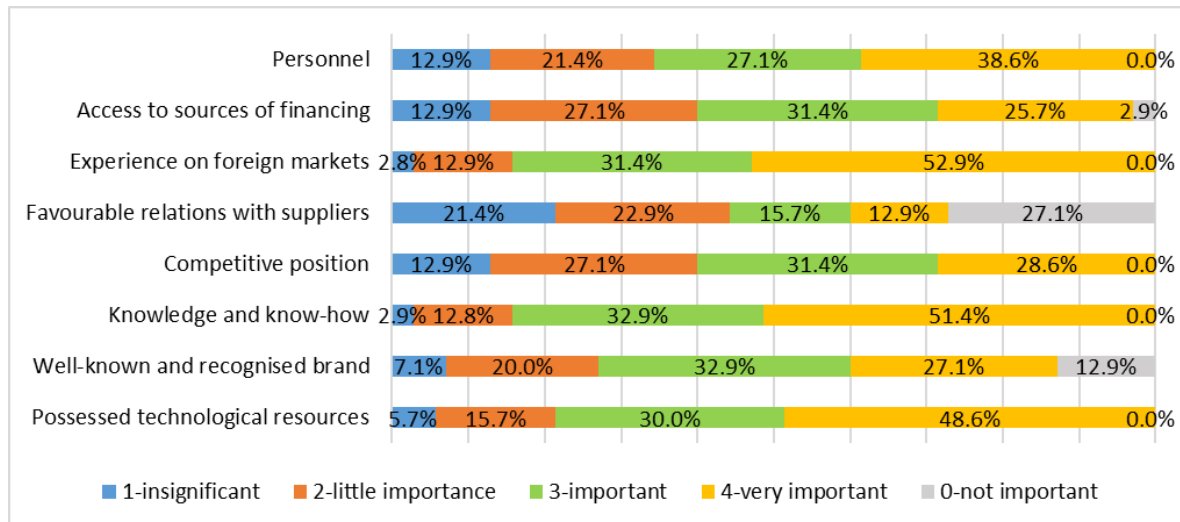
Source: own work based on conducted research.

What the researched companies expected the most from the partner companies was to enrich the alliance with experience in operations on foreign markets, knowledge and know-how (in both categories, 84.3% of indications were obtained as a very important and important attribute), having technological resources (78.6%), as well as to utilise the competitive position of a partner (60%) and their well-known brand (60%). It follows that the surveyed enterprises mainly look for experience and knowledge in the field of foreign markets and expect technological support. In turn, these resources are important for a competitive position and a strong brand. It can be concluded that there is a high awareness of the importance of these attributes in building a competitive advantage on foreign markets. Table 2 presents average scores of the given factors.

Tab. 2: Average scores of the researched factors, which induce to enter a foreign market through a strategic alliance (N=70)

Characteristics of a partner company	Average score
Possessed technological resources	3,21
Well-known and recognised brand	2,92
Knowledge and know-how	3,33
Competitive position	2,76
Favourable relations with suppliers	2,27
Experience on foreign markets	3,36
Access to sources of financing	2,72
Personnel	2,91

Source: own work based on conducted research.

Their values presented in the table 2 confirmed that companies were mostly interested in the ally's experience in operations on a foreign market, as well as in obtaining knowledge and know-how (score 3,33), which seems to be closely related to searching for resources (mainly technological) of a partner company. The important attributes, sought for as significant in terms of entering a foreign market, turned out to be a well-known and recognised brand of the ally, its personnel, competitive position and a favourable access to financing sources. A part of the conducted research was also to identify the benefits that the researched companies gained from internationalisation through a concluded alliance (Figure 2). However, these results must be interpreted carefully because of a different time period the researched companies have been on foreign markets (the researched companies have implemented the strategy of internationalisation through an alliance only for 1 to 3 years).

Fig. 2: Effects of internationalisation through a strategic alliance (N=70)
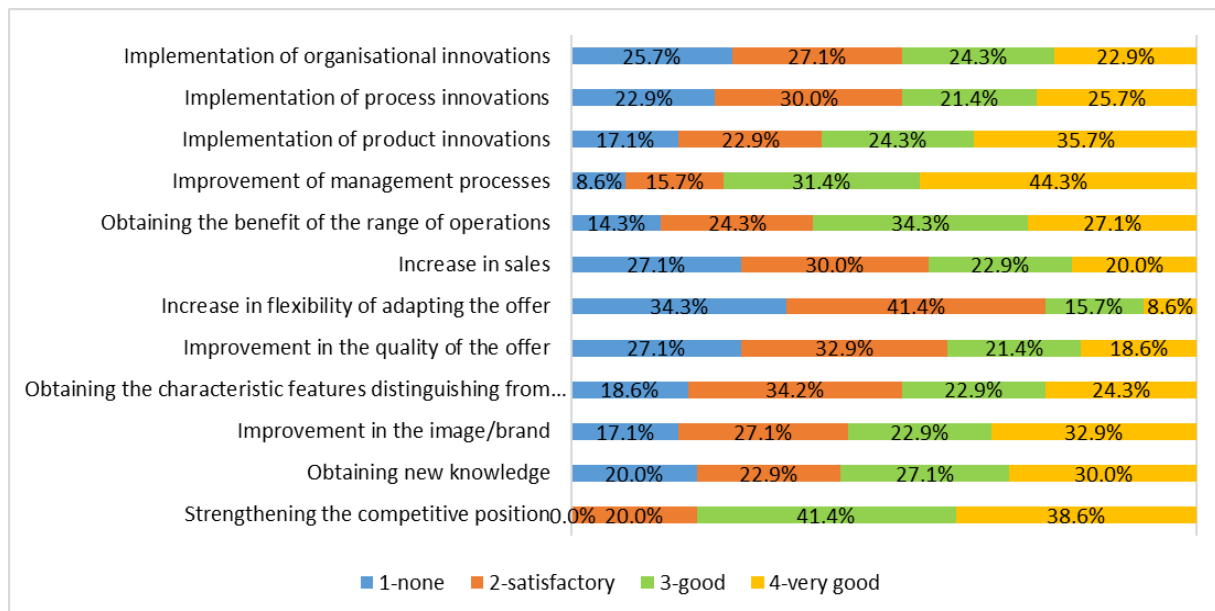
Source: own work on the basis of a conducted research.

The researched companies most frequently selected the following benefits as the ones they gained from entering a foreign market through a strategic alliance: improvement in their competitive position (80% selected this effect as achieved to a very good and good extent), improvement in their management processes (75.7%), achieving the effect of the economics of operation (61.4%), implementation of innovation: product related (60%), processes related (47.1%) and organisational (47.2%). In this sense, other research also points to the importance of innovative operations of large companies (which can also result from combining potential of cooperating companies). Analysis of Zemplinerova and Hromadkova (2012) shows that access

to subsidies has significant, yet negative influence on innovation output. The results of subsidies to R&D are re-distribution of resources, distortion of price signals and the change in behaviour of firms. Recipients of support may be cushioned and suffer by soft budget constraints. In addition, large companies have better chances to succeed in getting subsidies due to their political power (Zemplinerová and Hromádková, 2012). The necessity to have the ability of innovation for entrepreneurs is also highlighted by Lukeš (2013), when stating that what differentiates entrepreneurs from all other groups in their higher involvement in preparatory activities that start the implementation of new ideas.

What is interesting is that the researched companies revealed that improvement in the flexibility of the offer to meet clients' expectations is an effect, which is valued the least. This could result from the lack of flexibility in operations within the scope of cooperation and adapting to procedures established with the partner company, which concern selling an offer and objectives established earlier rather than considering the expectations of customers. The ability to flexibly adapt to the offer to the conditions of operation and the expectations of foreign clients may require time and new knowledge about the new sales market. In order to assess the benefits resulting from establishing a strategic alliance, the results of entering an alliance were evaluated. Averaged scores received in the scope of the effects of researched companies' cooperation are presented in Table 3.

Tab. 3: Average scores of the researched effects (N=70)

No.	Effects of internationalisation through a strategic alliance	Average score
1.	Strengthening the competitive position	3,19
2.	Improvement in management processes	3,11
3.	Implementation of product innovations	2,79
4.	Obtaining the benefit of the range of operations	2,74
5.	Improvement in the image/brand	2,71
6.	Obtaining new knowledge	2,67
7.	Obtaining the characteristic features distinguishing from domestic competition	2,53
8.	Implementation of process innovations	2,50
9.	Implementation of organisational innovations	2,44
10.	Increase in sales	2,36
11.	Improvement in the quality of the offer	2,31
12.	Increase in flexibility of adapting the offer	1,98
Average score for the group of researched companies		**2,61**

Source: own work based on conducted research.

As a result of the alliance, the most important was: strengthening the competitive position, improvement in management processes, implementation of product innovations, obtaining the

benefit of the range of operations, improvement in the image/brand and obtaining new knowledge. This means that the researched companies assessed the results of an established strategic alliance as good and influencing the strengthening of individual spheres of the value chain. Undoubtedly, achieving these effects was influenced by new skills and experience obtained through the transfer of knowledge and competences within the frame of an established agreement (they were one of the main sought for attributes of partner companies). Good effects were also obtained in terms of features distinguishing the company from competition, which were obtained as a result of the agreement. This concerns the diversity of product offer, applying unique technologies or utilising a more favourable sales network. The quality of offered products and/or services also were improved, which may result from combining the resources of partner companies in different spheres of operation and obtaining key skills and experiences in the scope of shaping the quality of the offer, including customer service.

Conclusion

Many authors conclude that alliance success depends on the allies potentials and their attributes (Sabidussi et al., 2017 or Hashai et al., 2015 or Contractor and Woodley, 2015). Modern companies operating internationally and seeking key factors for success in this area must consider in their strategies new methods of facing up to global conditions of operation. One of such forms might be internationalisation of operations through a strategic cooperation and mutual utilisation of the attributes of companies, which declare the will to cooperate. Obtaining and utilising resources crucial for the success of a company may include using the resources of their cooperator – as well as of their competitors. The conditions determining such practices are: the strive to minimise the risk of investment, obtaining crucial and sought for resources (mainly technological), distribution of operating costs among a larger number of partners and more flexible (faster) adaptation to changing conditions of an international environment. The confirmation of this thesis might be in the results of own research presented in this study, which indicate, among others, to key attributes of companies that are sought for by potential allies in the context of entering foreign markets. The obtained results indicate that conducted enterprises sought experience, knowledge of know-how and technology as key resources conducive to internationalization processes. It was also found that the internationalization through the alliance could be profitable - the company indicated that, they strengthen its competitive position, gained knowledge of the market, have also developed process and product innovations as a results of the cooperation. The effect of the synergy of joint operations results in the partners of an agreement achieving more benefits in the scope of strengthening their own

resources, contributing at the same time to maintaining and/or strengthening international competitive position. Undoubtedly, the presented research results do not exhaust the issues of internationalisation of companies through a strategic alliance and may be complemented with a wider spectrum of research in this scope. One of such areas might be an analysis of the effects of cooperation in an international scope as well as the scope of transfer of knowledge to domestic company branches and its effect on competitiveness on domestic markets. Bilateral exchange of knowledge, *know-how*, technologies and modern systems of management between cooperating companies on an international scale may also result in introducing improved products to the market. Knowledge management and knowledge transfer related to it are the conditions of competitiveness on a global market, which often constitutes active influence of entities on the global market. This process also noticeably influences the competitiveness of economies in which innovative companies operate. However, one needs to remember that because of the differences in technological development among Polish companies in relation to the foreign ones, international connections of a strategic alliance character rather serve the purpose of improving the competitive position. However, most certainly, strategic alliances allow for a flow of knowledge and new technologies, optimisation of processes taking place in companies, increase in the scope of operations, broadening of production and commercial offer, which result in having an opportunity to compete on international markets.

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Contact

Rafał Drewniak

Faculty of Management

UTP University of Science and Technology

Fordońska 430; 85-790 Bydgoszcz, Poland

rafal.drewniak@utp.edu.pl

EVALUATION OF MODERN TECHNOLOGIES SO-CALLED KEY ENABLING TECHNOLOGIES IN RELATION TO CORPORATE SUSTAINABILITY

Monika Dušková – Alena Kocmanová

Abstract

Purpose: The aim of the paper is to present concept of Key Enabling Technologies (KETs), as the modern approach for solving environmental and societal challenges of current society, and to design the evaluation model with indicator structure for complex assessing the contribution of KETs implementation to company performance.

Design/methodology/approach: The objectives are achieved thanks to the concise literature review related to KETs and the current systems of assessment innovations, corporate sustainability and KETs. The descriptive statistics and exploratory factor analysis is applied on the results of preliminary survey within Czech companies dealing with KETs. Then the evaluation model including aspects of corporate sustainability is presented.

Findings: The standard model of sustainable development for companies (environmental, social and economic aspects) is completed with technological aspects, crucial for KETs-performing companies. The factors are identified and confirmed by the exploratory factor analysis and the indicators structure is eliminated into the most important variables.

Research/practical implications: The practical application of the presented study lies in the design of the evaluation model for companies – practical tool, which can enable the monitoring of their performance in different aspects (not only financial, but also environmental, social and technological) thanks to implementing of KETs into their production processes.

Originality/value: The practical implication of the presented study is to evaluate the benefit of deployment of KETs into specific companies or industrial sectors, while up to now this evaluation has been regularly monitored only at level of countries (especially Member States of the European Union). The huge importance and related support are dedicated to these technologies, nevertheless their benefit to company performance, competitiveness respectively, has not been studied yet.

Keywords: Key enabling technologies, corporate sustainability, company performance, technology, innovation

JEL Codes: O32, Q55, Q01

Introduction

In modern society, enabling technologies are closely connected to terms like "competitiveness", "eco-innovation", "sustainable development" or "societal challenges" especially for European policy makers. Huge support for these technologies is provided by the European Commission each year, i.e. the biggest research and innovation programme Horizon 2020 has provided funding in amount 80 billion EUR for years 2014-2020 (European Commission, 2017).

Specific importance within modern technologies is dedicated to the so-called Key Enabling Technologies (KETs) particularly from the societal and environmental point of view. The monitoring of the KETs benefit is frequently studied for the European countries as a whole and the recommendation for further implementation of KETs is provided regularly for the policy makers by expert groups. Nevertheless, the impact on specific industry or companies has not been investigated yet. The presented paper offers solution based on the current evaluation systems for countries and the close connection of KETs to corporate sustainability assessment.

1   Key Enabling Technologies

The European Union sees the potential for increase competitiveness of the Member States and facing societal challenges in focusing at modern technologies and innovations. Based on the expert analysis, the most promising technologies are Key Enabling Technologies (KETs). KETs are rapidly developing technologies at the cutting edge. They have some specific features, which differentiate them from other technologies, such as high R&D intensity, high capital expenditure, highly-skilled staff, modern high-quality infrastructure and rapid innovation cycles (European Commission, 2012). KETs, are namely: *nanotechnology, micro and nano electronics, photonics, advanced materials, industrial biotechnology, advanced manufacturing processes*. Some of them are considered to be the General Purpose Technologies.

1.1   Relation to corporate sustainability and its evaluation systems

The sustainable development concept is widely accepted since the Rio Conference in 1992 and the Johannesburg Summit in 2002 (Speth, 2003). Applying it at level of particular company, the term "corporate sustainability" has emerged and radically new thinking concerning not only economic aspects but environmental and social of entrepreneurship has become necessary (please see Figure 1) (Dyllick and Hockerts, 2002).

Deployment of KETs in companies is closely connected to the concept of corporate sustainability, because of their huge effect on environment and society (either positive or negative) and this impact needs to be considered (i.e. author Purohit et al., 2017).

Fig. 1: The illustrative scheme of standard model of three aspects of corporate sustainability.
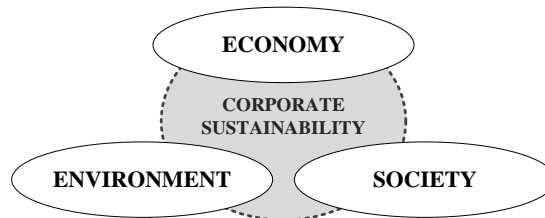
Source: own work

The monitoring and evaluating of the corporate sustainability approach in companies is subject of many studies. Generally, it can be sorted out into 3 groups (excluding metrics for specific purposes of companies and industry):

1. *international (or national) frameworks* - Global Reporting Initiative, the United Nations Commission on Sustainable Development Framework, OECD Guidelines for Multinational Enterprises, standards AA1000, SA8000 and standards by International Organization for Standardization (Siew, 2015, Labuschagne et al., 2005);

2. *Sustainability Balanced Scorecard* – innovated Balanced Scorecard reflecting the sustainability aspects (Hansen and Schaltegger, 2016);

3. *indexes, ratings and individual metrics* – composite sustainability index (Kocmanová, 2016), Dow Jones Sustainability Index, Asian Sustainability Rating, Ethical Investment Research and Information Service) (Siew, 2015).

1.2 Relation to innovation and its evaluation systems

Innovations are regarded as the driving force of the economic growth and competitiveness (European Commission, 2012; OECD, 2015). Moreover, there is discussed close relation between innovation and sustainable development within modern terms eco-innovations, sustainable innovations or open innovation (OECD, 2015; Hansen et al., 2009). The evaluation systems of innovation performance can be divided into 3 groups according to previous classification based on literature review:

1. *international (or national) systems* – Oslo manual (OECD, 2005) and other documents of OECD, Community Innovation Survey (Gault, 2013), Global Innovation Index, EU 2020 innovation indicator (Janger et al., 2017), statistical offices in countries that monitor the innovation performance;

2. *Innovation Scorecard* – modified Balanced Scorecard reflecting the innovation aspects including "input–process–output–outcomes" and "Stage Gate" approaches (Žižlavský, 2016);

3. *indexes, ratings and individual metrics* – i.e. input–process–output–outcomes and Stage Gate approach in Innovation Scorecard (Žižlavský, 2016), inclusion of science and technology aspect in innovation measurement "science–technology–innovation system" (Freeman and Soete, 2009), innovation capability (Saunila, 2017).

1.3   Evaluation systems of Key Enabling Technologies

There is an increasing interest of policy makers and industrial sector in monitoring the development and diffusion of the so-called enabling and emerging technologies as well as evaluating their social, environmental and economic impact (Gault, 2013). Regarding KETs, the only evaluating systems for countries are available. The complex model for the purposes of European Commission were elaborated in order to monitor the impact of KETs on European countries (Velde et al, 2015). The indicators structure is presented at Figure 2. The model is based on evaluation of KETs within the whole value chain in order to assess them complexly.

Fig. 2: The concept of evaluation of KETs at level of European Commission.

"Deployment Value Chain"					
Technology generation and exploitation				Technology diffusion	
New Technology	Competitive Innovations		Commercialisation	Application	
Patents	Production	Trade	Turnover	Production & Demand	Employment
KETs-related inventions	KETs-based components and intermediary systems		KETs-related firm activities	KETs-related value creation	

Source: Velde et al., 2015

2 Methodology

2.1 Questionnaire survey

The structure of indicators for the further preliminary survey was identified based on the literature review presented above. The international and national evaluation models were considered as a basic concept added by principles from both Scorecards. Finally, the specific features of corporate sustainability and innovation in ratings, indexes and other metrics were assessed and particularly evaluation system KETs and its whole concept were taken into consideration.

The sample of companies performing KETs were asked to assess the importance of each indicator. The questionnaire survey was realized on the sample of companies in the Czech Republic. Because of KETs are not included within NACE databases, it was necessary to ensure that the companies will be dealing with KETs. Two approaches were applied:

- official participation of company in association that groups the companies devoting to some of KETs and
- company that succeeded in funding programme, which is dedicated only to KETs performing companies.

In the Czech Republic, there are associations for nanotechnology (Nano Association of Czech Republic), biotechnology (CzechBio) and photonics (Czech & Slovak Society for Photonics) and some other communities of companies representing their interest in some of KETs (Nanoprogres, Gate2Biotech, Advanced Materials Industrial Association). The funding programme in the Czech Republic, which has supported only KETs, has been realized by the Ministry of Trade and Industry and it has been called TRIO programme.

2.2 Exploratory factor analysis

The exploratory factor analysis was applied on the gained data in order to find the relations between measured indicators and to reduce the numbers of indicators. Then the reduced group of indicators is represented by the latent variables (factors). Firstly, the preliminary analysis of data for factor analysis is applied according to Field (2016). It starts with correlation analysis that indicators with values of correlation coefficients greater than 0.9 should be excluded, because it could refer to multicollinearity. Moreover, the indicators with high number of correlation coefficients lower than 0.3 should be eliminated as well. Then, the diagonal

elements of the anti-image correlation matrix have to be checked in order to eliminate those indicators with coefficient value lower than 0.5.

The test, which can provide the information about relevancy of factor analysis, is Kaiser-Mayer-Olkin test (KMO test) and Bartlett's test (Field, 2016). The accepting values of KMO test are above 0.5 (the closer to 1 the better, i.e. lower diffusion in the pattern of correlations). The Bartlett's test has to be significant, i.e. the correlation matrix is significantly different from the identity matrix.

The number of factors is set according to the Kaiser's criterion, which says that only the factors with eigenvalues higher than 1 should be retained, and scree plot, which helps to find the inflexion point and the number of factors above this point should be retained (Field, 2016; Boslaugh and Watters, 2008).

The reliability of the factor analysis is finally checked by calculating Cronbach's Alpha. The acceptable value is at minimum 0.7 (maximal possible value is 1) and it tells how importantly the constructed solution with factors reflects the measured variables.

Besides factor analysis, the descriptive statistics is applied at the data from questionnaire in order to present the fundamental characteristics of all indicators.

3 Results

The further presented results of descriptive statistics and factor analysis are based on the questionnaire survey of 36 companies from Czech Republic that perform at least one of KETs. The respondents have answered the same question for each indicator: Is the indicator monitored in your company? The possible answers were "yes=4", "rather yes=3", "rather no=2", "no=1" and "do not know". The answer "do not know" was treated like missing value for the analysis.

3.1 Descriptive statistics

In Table 1, there are presented the all measured indicators with their basic characteristics. It is obvious that the group of economic indicators in the bottom of Table 1, especially "profit", cash-flow", "indebtedness" and "profit margin" are importantly monitored by most of respondents (high value of mean and low value of variance). On the other hand, the lowest values of mean (lower than 2) are for "usage of renewable sources of energy" and "donation for region, city, community". Other low monitored indicators are "indicator EVA", "gas pollution" or "expenditure on environmental protection". The highest values of variation, i.e. the highest disagreement of respondents, are exhibited by indicators "scientific publications",

"indicator EVA" and "average year of employees". The values of skewness and kurtosis reflect the similar results. Eight from forty indicators shows the negative skewness. These indicators are preferably not monitored (their means are lower than 2.5). Other indicators have positive skewness. The significant values of kurtosis (higher than +10) have these indicators: "number of employees", "cash-flow" and "indebtedness".

Tab. 1: The descriptive statistics of the indicators.

Group/Indicator		Mean	Min	Max	Std.Dev.	Coef.Var.%	Skew	Kurt
TECHNOLOGY	Patents	3.15	1	4	1.228	38.96	-0.953	-0.873
	Scientific publications	2.44	1	4	1.343	55.08	0.057	-1.847
	R&D projects	3.44	1	4	0.960	27.88	-1.681	1.752
	Grants for R&D projects	3.50	1	4	0.961	27.47	-1.631	1.180
	Cooperation with R&D institutions	3.47	1	4	0.896	25.81	-1.654	1.828
	R&D expenditures	3.67	2	4	0.676	18.44	-1.827	1.918
	R&D employees	3.36	1	4	0.962	28.61	-1.490	1.267
	Revenues from licences	2.35	1	4	1.226	52.07	0.186	-1.581
	R&D products	3.40	1	4	0.946	27.81	-1.576	1.557
	Revenues from R&D activities	3.30	1	4	0.918	27.79	-1.180	0.525
ENVIRONMENTAL	Gas pollution	2.14	1	4	1.302	60.89	0.457	-1.623
	Waste production	3.26	1	4	1.094	33.59	-1.369	0.520
	Material consumption	3.71	1	4	0.667	17.97	-2.750	8.110
	Consumption of dangerous substances under regulations	3.29	1	4	1.039	31.58	-1.397	0.779
	Water consumption	2.82	1	4	1.218	43.13	-0.390	-1.486
	Energy consumption	3.42	1	4	0.906	26.53	-1.444	1.108
	Usage of renewable sources of energy	1.72	1	4	0.960	55.67	1.126	0.233
	Expenditure on environmental protection	2.17	1	4	1.147	52.95	0.239	-1.523
SOCIAL	Number of employees	3.91	2	4	0.384	9.83	-4.503	20.828
	Number of employees - women	3.00	1	4	1.232	41.06	-0.712	-1.200
	Fluctuation of employees	2.84	1	4	1.128	39.75	-0.407	-1.254
	Average age of employees	2.67	1	4	1.322	49.57	-0.196	-1.787
	Customer satisfaction	3.31	1	4	0.931	28.11	-1.201	0.498
	Work conditions and occupational safety	3.76	3	4	0.435	11.58	-1.260	-0.443
	Donation for region, city, community	1.93	1	4	1.016	52.67	0.837	-0.347
	Communication with general public	2.43	1	4	1.104	45.38	0.016	-1.310
	Workshops and trainings for further education of employees	3.21	1	4	0.946	29.52	-0.895	-0.266
	Expenditure on increase of employees' skills	3.29	1	4	1.001	30.38	-1.221	0.305
	Work accidents and deaths	3.45	1	4	0.961	27.83	-1.783	2.175
ECONOMIC	Indicators ROE, ROA	3.07	1	4	1.303	42.43	-0.898	-1.074
	Indicator EVA	2.04	1	4	1.311	64.31	0.732	-1.316
	Profit	4.00	4	4	0.000	0.00		
	Cash-flow	3.94	3	4	0.239	6.06	-3.925	14.244
	Assets turnover	3.61	1	4	0.844	23.35	-2.338	4.800
	Indebtedness	3.76	1	4	0.606	16.10	-3.329	12.942

Liquidity	3.67	1	4	0.777	21.20	-2.723	7.278
Added value	3.64	1	4	0.653	17.95	-2.336	7.116
Profit margin	3.79	3	4	0.410	10.82	-1.523	0.335
Market share	2.97	1	4	0.918	30.91	-0.453	-0.672
Work productivity	3.34	1	4	0.827	24.74	-1.105	0.573
Average salary	3.41	1	4	0.911	26.74	-1.479	1.320

Source: own calculation

3.2 Exploratory factor analysis

The factor analysis was applied on the indicator structure presented in Table 1.

The technological indicators were analysed from the point of view of the KMO values in diagonal of anti-image correlation matrix and correlation matrix. The not sufficient KMO value is for "R&D expenditures" (KMO=0.378). The indicator "revenues from licences" has the KMO=0.675, but the coefficients in correlation matrix are all lower than 0.3. Finally, the KMO value for "revenues from R&D activities" is 0.395. These three indicators were eliminated one by one from the factor analysis and the KMO statistics increased to value 0.726 and Barlett's test is significant. The reliability of the solution is confirmed by the Cronbach's alpha, which is 0.807 (higher than 0.7).

For the environmental indicators, there were eliminated only the indicators "material consumption" (KMO=0.226) and then "energy consumption" (KMO=0.477). The KMO statistics increased from value 0.518 up to 0.660 and Barlett's test is significant. The Cronbach's alpha is 0.754 for environmental indicators.

Firstly, the indicator "number of employees" was eliminated from social group, because it has no variance. Then, "number of employees – women" was eliminated for low KMO value (0.352). The indicator "work conditions and occupational safety" was also eliminated because of KMO=0.554 and majority of correlation coefficients lower than 0.3. The KMO statistics has increased up to value 0.716 and Barlett's test is significant. The Cronbach's alpha is 0.807.

For the last economic group of indicators, the indicator "profit" was removed from the analysis because of no variance. Then, "indicators ROE, ROA" are eliminated (KMO=0.318) and "cash-flow" (KMO=0.459). The "indicator EVA" was also eliminated for low rate of all correlation coefficients. Finally, the KMO statistics increased for economic indicators up to 0.810 and Barlett's test is significant. The Cronbach's alpha is 0.807.

The scree plots indicate the number of factors for analysis (see Figure 3). For all groups but social, there is only one point above the inflexion point. The scree plot for social group showed inflexions that could justify 1 or 3 factors.

Fig. 3: The scree plot for groups of technological, environmental, social and economic indicators in factor analysis.

Technological

Environmental

Social

Economic
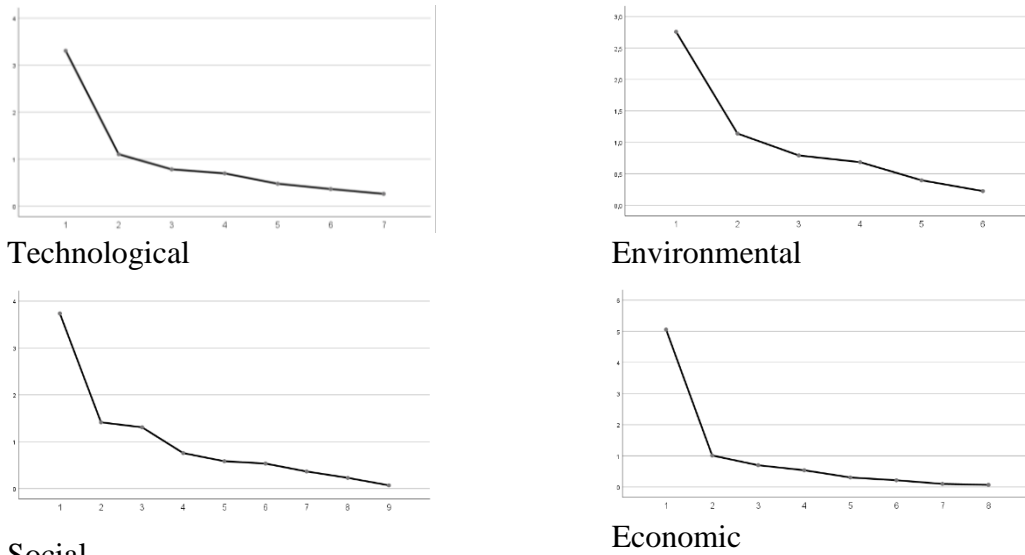
The resulted factor solution matrix (unrotated) is presented in Table 2 in which the factor weights lower than 0.4 are neglected. The indicators that cluster in one factor suggest that factor 1 represents "**technology**", factor 2 "**environment**", factor 3 "**society**" and factor 6 "**economy**" in full accordance to groups, which were initiated before analysis. The factors 4 and 5 extend the group of social indicators and they could relate to "**personal skills and communication**" (factor 4) and "**staff fluctuation**" and loyalty (factor 5).

Tab. 2: The unrotated solution of factor matrix.

Indicators	FACTORS					
	1	2	3	4	5	6
Patents	**0.764**					
Scientific publications	**0.659**					
R&D projects	**0.583**					
Grants for R&D projects	**0.721**					
Cooperation with R&D institutions	**0.767**					
R&D employees	**0.648**					
R&D products	**0.649**					
Gas pollution		**0.689**				
Waste production		**0.555**				
Consumption of dangerous substances under regulations		**0.637**				
Water consumption		**0.716**				
Usage of renewable sources of energy		**0.522**				
Expenditure on environmental protection		**0.887**				
Average age of employees			**0.607**		0.493	
Customer satisfaction			**0.674**			
Donation for region, city, community			**0.686**	0.486		
Communication with general public			0.492	**0.678**		
Workshops and trainings for further education of employees			**0.897**			
Work accidents and deaths			**0.820**			
Expenditure on increase of employees' skills			0.626	**-0.676**		
Fluctuation of employees					**0.732**	
Assets turnover						**0.872**
Indebtedness						**0.822**
Liquidity						**0.847**
Added value						**0.948**
Profit margin						**0.720**
Market share						**0.720**
Work productivity						**0.789**
Average salary						**0.588**
Cronbach's alpha %	**80.7**	**75.4**	**80.1**	**70.0**	**-**	**90.3**
Eigenvalue	**3.307**	**2.758**	**3.561**	**1.319**	**1.124**	**5.056**
% of Variance	**47.244**	**45.969**	**44.513**	**16.481**	**14.048**	**63.205**

Source: own calculation

Considering the results from Table 2, the complex indicator structure for evaluation of KETs was designed and confirmed. Besides broadly accepted indicators of environmental, social and economic dimensions, the new technological feature was identified and confirmed thanks to the preliminary survey. At Figure 4, the schematic drawing presents the new concept for evaluation corporate sustainability in KETs-performing companies.

Fig. 4: The illustrative scheme of standard corporate sustainability model completed for the purpose of companies performing KETs.
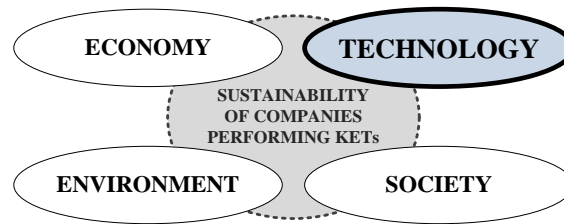
Source: own work

Conclusion

The aim of the article was to design the evaluation model with indicator structure for complex assessing of the contribution of Key Enabling Technologies to company performance in relation to corporate sustainability.

Based on concise literature review the indicator structure was identified. The design of the structure has covered the concepts of evaluation of corporate sustainability, innovations and KETs within international and national frameworks, standard and innovated Scorecard and some specific metrics and indexes. Then, the questionnaire survey on Czech companies was realized using the designed indicator structure. Finally, the descriptive statistics was calculated to present the collected data and the exploratory factor analysis was applied.

As a result, the structure of 40 indicators were reduced into 29 indicators logically grouped in 4 main factors, as it was expected, and 2 secondary factors. Besides the well-known and accepted aspects of corporate sustainability (environment, society, economy), it was shown that "technology" aspects play relevant role for KETs-performing companies.

The added value of this paper is, firstly, the outline of KETs technologies as modern enabling technologies, which require specific treatment for their evaluation including several different aspects. Secondly, the paper presents the complex but simple model for monitoring and evaluation of the KETs' benefit for the company performance.

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Contact

Monika Dušková

Department of Economics, Faculty of Business and Management

Brno University of Technology

Kolejní 2906/4, 612 00 Brno, Czech Republic

duskova@fbm.vutbr.cz

Alena Kocmanová

Department of Economics, Faculty of Business and Management

Brno University of Technology

Kolejní 2906/4, 612 00 Brno, Czech Republic

kocmanova@fbm.vutbr.cz

EFFECTS OF PUBLIC SUBSIDIES ON PRODUCTIVITY OF FIRMS IN THE CZECH FOOD INDUSTRY

Ondřej Dvouletý – Ivana Blažková

Abstract

Purpose: The previous studies report ambiguous effects of public subsidies on firm productivity. The aim of the paper was to assess the effects of public subsidies on the productivity of firms that were supported by the Czech Operational Programme Enterprise and Innovation (OPEI) in the EU programming period 2007-2013.

Design/methodology/approach: We used the data for 147 supported companies in the Czech food processing industry (72.4% of all beneficiaries within the industry) to calculate four indicators related to the firm productivity, i.e. value added, personnel costs, value added per personnel costs and production efficiency. We analysed the level and development of selected productivity indicators and then we applied the paired t-test to compare the productivity in the period before the intervention (2005-2007) with the post-programme period (2014-2015).

Findings: The obtained results suggest that participation of the Czech food processing companies in the OPEI did not lead to the higher productivity of the supported enterprises, both in terms of labour productivity and production efficiency two years after the end of the intervention.

Research/practical implications: The presented findings, therefore, suggest that there is no significant impact of the public support from the OPEI on the productivity of supported enterprises in the Czech food industry. However, it is worth mentioning, that the results must be taken as a preliminary since we have not accounted for the firm-level characteristics such as firm size. The changes in the productivity indicators might also take more time, and therefore it would be very relevant to investigate the effects also in the long run.

Originality/value: The presented study empirically contributes to the knowledge on the relationship between the allocation of the public subsidies and firm productivity from the perspective of the Czech agribusiness sector.

Keywords: Firm productivity, public subsidies, entrepreneurship policy evaluation, food industry, the Czech Republic

JEL Codes: M21, L53, L66

Introduction

In recent years, the food industry in the Czech Republic has been facing fundamental changes in production and processing both in terms of technology and economics including new technical approaches in food processing leading to novel food products, structural changes, changes in consumer behaviour and socio-demographic development (Blažková and Dvouletý, 2018). In the context of this development, innovation has become a key business success factor, whose relevance is growing also due to globalization and increased market competition. Innovation can be understood as a complex phenomenon that involves production, dissemination and translation of scientific and technical knowledge into new or modified products and services as well as new production and processing techniques. In the case of successful implementation, innovation brings significant growth in company's technical and economic efficiency, which is reflected in company's productivity (Špaček and Vacík, 2016; Menrad, 2004).

Promoting investment, innovation and technological progress belongs to important goals of the policymakers. They believe that, through the system of public subsidies and other policies, they could provoke additional private investments that would not occur without the public interventions (Carboni, 2017; Najib and Kiminami, 2011). However, the empirical evaluations of these interventions do not provide conclusive findings. For example, Cin et al. (2017) and Carboni et al. (2017) reported positive impacts of the public subsidies on firm performance and productivity. On the contrary, these positive outcomes were not observed in the recent empirical evaluations that were conducted by Čadil et al. (2017) and Dvouletý (2017). Therefore, this ambiguity requires further attention and more empirical evidence (Brown et al., 2017).

The current article aims to contribute to this ongoing debate on the example of the Czech food industry. The companies might benefit from a variety of European Union´s public support programmes. Agribusiness firms can draw funds especially through the Common Agricultural Policy (CAP) and from the European Regional Development Fund (ERDF), for details see European Parliament and the Council of the EU (2013). This article focuses on the outcomes of the Operational Program Enterprise and Innovation (OPEI) that was implemented in the last completed programming period (i.e. 2007-2013). OPEI intended to support especially small and medium-sized enterprises (SMEs) and its main objective was to increase their competitiveness and innovation performance (Ministry of Industry and Trade of the Czech Republic, 2013).

The aim of our paper is to assess the effects of public subsidies on the productivity of the Czech food processing firms that received a financial subsidy from the Operational Programme Enterprise and Innovation (OPEI) in the EU programming period 2007-2013. According to Latruffe (2010) and Rizov et al. (2013), productivity is a common indicator of competitiveness and thus, it can be properly used to investigate the impact of public support on firm competitiveness as the main declared target of OPEI.

The paper is structured as follows. First, we introduce the empirical approach towards the evaluation of OPEI and collected data. Second, we graphically show the development of productivity indicators of the supported firms in the Czech food industry for a period of years 2005-2015. In the third section, we use the paired t-test to compare the four productivity indicators of supported enterprises in the period before these firms received the subsidy (2005-2007) and after the end of the programme (2014-2015). Finally, we discuss the main findings and we offer suggestions for future research.

1 Empirical Approach and Data

Since the aim of our paper is to evaluate the impact of public support on the efficiency of enterprises in terms of productivity, we begin with the analysis of the development of selected productivity indicators over years 2005-2015. Then, we assess whether the Czech food companies that received financial support from OPEI *improved their productivity two years after the end of the public intervention* (for details about OPEI and allocation of the subsidies see Dvouletý and Blažková, 2017). Our empirical strategy is based on the paired t-test and we compare the productivity indicators of supported enterprises in the period before the programme, i.e. in 2005-2007, with the post-programme period, i.e. 2014-2015. We work with the four outcome indicators related to the firm productivity:

- Value-added (Value Added(VA))
- Personnel costs (Personnel Costs)
- Value-added per personnel costs (VA/Pers_Costs)
- Production efficiency (Production Efficiency), calculated as: Sales/Production Costs, where production costs include costs on sold goods, on consumption of material, energy and services

The value added is regarded to be valid in assessing the competitiveness of enterprises (Čadil et al., 2017; Arnold et al., 2006). Value added per personnel costs is then a relative indicator

that reflects the efficiency in terms of labour and it was used for example in a study by Cin et al. (2017). Personnel costs are included in the analysis, because they are related to the labour productivity and, moreover, they can be used as a proxy for the creation of new jobs which is one of the main declared targets of OPEI (Ministry of Industry and Trade of the Czech Republic, 2013). Finally, when using the production efficiency indicator, we evaluate the overall technical-economic efficiency of production (Klečka, 2008).

The presented variables have been collected from the financial reports of the supported companies. These reports have been obtained from the database MagnusWeb (Bisnode, 2017) and from the financial reports of the particular enterprises available in the trade register of the Ministry of Justice of the Czech Republic (Ministry of Justice of the Czech Republic, 2017) in order to obtain the largest possible sample. Based on the database of the CzechInvest (2017), we have identified 203 enterprises operating within CZ-NACE 10 (production of food products) and CZ-NACE 11 (production of beverages) that were supported by OPEI. Finally, we have ended with the data for 147 supported companies, which accounts for 72.4% of all beneficiaries within the industry.

2   Results

As mentioned above, the impact of the OPEI on its beneficiaries in the Czech food processing is evaluated in terms of productivity. We present the development of selected productivity indicators over years 2005-2015 in Figure 1. It can be seen that the supported companies recorded on average higher values of value added and personnel costs indicators, especially in the last years and after the end of the programming period. Once we look at the development of value added per personnel costs, which relates these two above-mentioned indicators, we can also see an increase in the last years, nevertheless, the increase is not that high as in the previous two graphs. Based on the graphical assessment we can expect a positive impact of the programme on the labour productivity of supported enterprises. When we look at the development of the production efficiency indicator, we can observe a dramatic decrease in the firm productivity during years 2008-2011 (for discussion see Mikan, 2012), however a slow increase after the end of the intervention. Therefore, we assume a low positive effect of the programme on the technical-economic efficiency of production.

Fig. 1: Development of Selected Productivity Indicators over years 2005-2015

Source: Tableau, author's elaboration

In order to verify the assumptions derived from the visual assessment, we employ the paired t-test. We compare the four productivity indicators of supported enterprises in the period before these firms received the subsidy (2005-2007) and after the end of the programme (2014-2015). We assumed that *the firms participating in OPEI reported on average higher levels of productivity two years after the end of the intervention*. The results of the t-test can be found in Table 1. The obtained findings show that the supported companies reported significantly higher values of value added and personnel costs compared to the pre-intervention period (at 5% level of the statistical significance). This might be an indication of a positive effect of the programme on increased production and employment. However, we were unable to confirm the statistically significant increase for the remaining two indicators (at 5% level of statistical significance).

Regarding the value added per personnel costs (labour productivity), this might be caused by the faster growth of personnel costs. When considering the overall technical-economic efficiency of production, the effects on the production efficiency are not statistically significant

as well. Nonetheless, the results of the t-test suggested positive differences for both relative productivity indicators. However, one also needs to point out that changes in the productivity indicators might take more time, then two years after the implementation of new production and processing techniques.

Tab. 1: Results of the paired t-test Comparing Productivity of the Supported Companies before (2005-2007) and after (2014-2015) they received a subsidy

Variable	Mean	Std. Err.	N	t-statistics
Value Added(VA)_1415	107,134.7	44,978.47	147	1.90
Value Added(VA)_0507	91,392.41	51,322.89	147	**p-value (H₁: Difference>0)**
Difference	**15,742.270****	8,267.72	147	0.029
Personnel Costs _1415	46,474.45	11,622.61	146	3.13
Personnel Costs_0507	37,105.68	10,552.07	146	**p-value (H₁: Difference>0)**
Difference	**9,368.769*****	2,995.08	146	0.001
VA/Pers_Costs_1415	1.809	0.080	142	0.21
VA/Pers_Costs_0507	1.787	0.133	142	**p-value (H₁: Difference>0)**
Difference	**0.022**	0.105	142	0.416
Production Efficiency_1415	2.591	0.365	146	0.82
Production Efficiency_0507	2.302	0.191	146	**p-value (H₁: Difference>0)**
Difference	**0.289**	0.354	146	0.208
Note: *** stat. significance at 1%, ** at 5%, * at 10%				

Source: STATA 14, author's elaboration

Conclusion

The previous studies (e.g. Cin et al., 2017; Čadil et al., 2017; Mary, 2013; Rizov et al., 2013; Latruffe et al., 2011) report ambiguous effects of public subsidies on firm productivity. The existing literature offers an explanation for both positive and negative effects of governmental interventions. For example, Rizov et al. (2013) note that the negative impact of subsidies on productivity may result from allocative (and technical) efficiency losses due to distortions in the production structure, inefficient usage of production factors, soft budget constraints and the allocation of the subsidies to the less cost-efficient activities and projects. On the other hand, the successful exploitation of the public resources may result in investment-induced productivity gains.

Given this ambiguity, we have tried to contribute to this knowledge by investigating the impact of the EU support (namely Operational Programme Enterprise and Innovation - OPEI) on the productivity of the supported enterprises in the Czech food industry. From a methodological point of view, our analysis is based on the t-test. The results suggest that participation of the Czech food processing companies in the OPEI did not lead to higher productivity of the

supported enterprises, both in terms of labour productivity and production efficiency two years after the end of the intervention.

Our findings, therefore, suggest that there is no significant impact of the public support from the OPEI on the productivity of supported enterprises in the Czech food industry. However, it is worth mentioning, that the results must be taken as preliminary at least for two reasons. First, the study had not controlled for the various firm-level characteristics such as firm size. For example, smaller enterprises might more easily implement new projects, processes and thus increase their productivity faster than large firms. Therefore it might be interesting to have a look at the productivity measures across the small, medium and large companies. Second, the changes in the productivity indicators might take more time, and therefore it would be very relevant to investigate the effects also in the long run (e.g. in 3-5 years).

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Contact

Ondřej Dvouletý

Department of Entrepreneurship, Faculty of Business Administration

University of Economics in Prague

W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic

ondrej.dvoulety@vse.cz

Ivana Blažková

Department of Regional and Business Economics, Faculty of Regional Development and International Studies

Mendel University in Brno

Zemědělská 1, 613 00 Brno, Czech Republic

blazkova@mendelu.cz

GENDER AND DIVERGENT THINKING - IMPLICATIONS FOR MANAGEMENT EXECUTIVES

Karolina Dyrla-Mularczyk – Arkadiusz Borowiec

Abstract

Purpose: The purpose of this paper is to analyze the reports from research on the relationship between divergent thinking and gender, as well as to present the results of own studies verifying the correlation between creativity and gender. Creativity is a highly desired personal competence on the modern labor market, especially due to its key role in the processes of creating innovative solutions. Simultaneously, it is believed that creativity as a trait constitutes basic economic capital.

Methodology: The analysis of current reports from scientific research has been conducted on the basis of articles available in Ebsco and Google Scholar databases. The study has been based on the Test for Creative Thinking – Drawing Production - TCT-DP. 80 trainers of soft training participated in the study. The research was guided by the theory of creativity and divergent thinking.

Findings: The own research has demonstrated that gender does not determine the level of creativity. However, reports from studies using neuroimaging techniques point to visible differences between levels of creativity in women and men.

Practical implications: This article demonstrates that the issue of the relationship between divergent thinking and gender is a complex phenomenon and sensitive to many co-occurring variables. Depending on the research methods used, the results of exploration differ from each other. The results of the survey show that the management should carefully approach gender differences in level of creativity. Gender should not be an argument for the employment of a person for a creative role.

Value: The article suggests that the problem of gender differences in terms of creativity is a multi-faceted problem. Gender should not, therefore, determine the scope or nature of tasks entrusted to employees by their supervisors or team leaders.

Keywords: Creativity, divergent thinking, gender differences

JEL Codes: O15

Introduction

There are numerous controversies surrounding the subject of differences and similarities between the sexes with regard to performing their professional roles. Over the years, the role of differences in cognitive skills, personality traits, cognitive styles, functioning in social life, etc. has been underlined. And as a result, employees have also been differentiated regarding the way of managing and their functioning in a team - all depending on their gender. In an organization whose goal is to increase the level of innovativeness, creativity is an important potential as a personal competence of employees. Research has shown that creative people are characterized by, among other traits, firmness, activity, independence, and moreover, they are leaders who posses a lot of knowledge, and they remain subjective (Stein, 1953). These are highly desirable features in an organizational reality. A question arises whether gender can differentiate employees when it comes to creative thinking. Potentially, knowing the differences between the sexes in terms of ability and strategies to solve complex problems and pursue creative activities can facilitate matching team roles properly and assigning tasks requiring specific abilities.

The first part of the article is devoted to the approximation of the concept of creativity and divergent thinking. The results of selected previous studies exploring the area of relationships between creativity and gender have also been recalled. Reference has also been made to the results of own research and they have been compared with reports from previous studies.

1 Creativity and divergent thinking

From a psychological perspective, creativity is understood as a personal disposition of an individual that leads to the creation of works that meet the criteria of novelty and value (Nęcka, 2000). Creative product (or process) is relevant and original (Runco, Jaeger, 2012). From the point of view of economists, creativity refers to basic economic capital associated with economic growth (Florida, 2010).

Creative thinking aims to solve problems and consists of the following stages: identification of the problem, searching for information, generating original and various solutions, and finally - the evaluation of the created solution (Amabile, 1988). Creative problem solving requires the presence of certain precise abilities (including communication, perceptual, visual and spatial ones). Creative thinking is of divergent character and in opposition to convergent thinking, it consists of generating various solutions to a given problem. Divergent thinking is far from being the "only right solution" for a given dilemma. The question is whether creativity is identical to

divergent thinking. Divergent thinking is understood as a cognitive component of creativity, standing in line with general competences and specific knowledge of an individual (Urban, 1996).

Guilford distinguishes a number of abilities related to divergent thinking, such as: fluidity, flexibility, originality (Guilford, 1978). Fluidity is the freedom to generate various ideas and solutions. The type of task and the material created determine the type of fluidity, which is why Guilford distinguishes verbal, associative, expressive and ideational fluidity (Guilford, 1978). Flexibility is the ability to produce ideas and solutions that are qualitatively different. Originality is defined as an ability to generate ideas and unique solutions. Other creative abilities include an ability to redefine or sensitivity to problems.

Over the years, the ability of divergent thinking was attributed to artists and humanists, and the tendency to convergent thinking (requiring a generation of one proper solution to a problem) - to people devoted to technical sciences.

2   Creative thinking and gender at the workplace

A creative employee is highly desirable in the job market. Managers are looking for creative employees. The characteristics of a creative employee consist of his specialist knowledge, creative skills and motivation. At each stage of problem solving, other of the mentioned properties are activated, for example, motivation turns out to be crucial in the initiation of the creative process, but creative abilities activate at the stage of generating solutions.

The level of creativity is clearly different when it comes to professional groups. The research illustrates differences in the field of creativity among managers and educators (Dobrołowicz, Feder, 2001). The first group is characterized by a higher indicator of nonconformity, creative behaviors, managers more often (compared to pedagogues) use heuristics. It turns out that women managers is characterized by a higher level of creativity in relation to male managers. However, this difference is small. There were no differences in creativity between men and women among pedagogues. The sex of an employee is not a determinant of the level of his or her creativity, and this level is significantly influenced by individual characteristics and the environment in which the employee operates. It is puzzling whether this regularity can be generalized to all professions?

Over the last several decades, a number of studies have been carried out exploring the area of relationships between divergent thinking and gender. Longitudinal studies carried out using the

Torrance Creative Thinking Test demonstrated that results in divergent thinking were more likely predictors of creative behaviors in men (Arnold, Subotnik, 1994; Cramond, 1994; Howieson, 1981). Studies have been carried out a series of studies involving the creation of various works (stories, collages, etc.) by the subjects (Amabile, 1983). These works were evaluated by experts in a given field (literature, art, etc.). There were no significant differences between the sexes regarding literature and the visual arts. Reports from studies demonstrate no differences in creativity between both sexes. Women, however, achieve slightly higher results in the area of verbal creativity (Baer, Kaufman, 2008). Women also rated themselves higher in terms of artistic talent (men - in terms of sports). It should be emphasized, however, that the study was self-evaluating in the area of 56 talents in terms of creativity. A meta-analysis of the relationship between creativity and gender shows that 50% demonstrate no differences between women and men (Baer, Kaufman, 2008). Studies conducted using Torrance Test of Creative Thinking - TTCT showed no statistically significant differences in the group of students in terms of originality and fluency of thinking (Bart, Hokanson, Sahin, Abdelsamea, 2015). The latest research using battery tests also shows no differences between the sexes (Tyagi, Hanoch, Hall, Runco, Denham, 2017). In turn, other studies report better results of women in divergent thinking (Lin, Hsu, Chen, Wang, 2011). Women are characterized by an intuitive cognitive style, men in turn - a sensual one. Women prefer a holistic intuitive thinking model, and men - an analytical one.

Research using modern brain imaging techniques sheds new light on differences in the level of creativity of both women and men. They also show that the processes of divergent thinking may be different in each sex. It has been demonstrated that women engage more brain regions in data processing, which results in the generation of new solutions (Ryman et al., 2014). Women achieve higher results than men in terms of their originality of thinking (Shi, Xu, Chen, Qiu, 2017). The results of voxel-based morphometry indicate that the relationship between the originality and the size of the gray matter of the brain differed among males and females in the left temporal-occipital intersection. Higher originality results in women were associated with the greater size of the gray matter in this region of the brain. On the other hand, higher originality results in men were associated with smaller size of gray matter. These findings suggest that left-sided temporal-occipital intersection plays an important role in gender differences regarding verbal creativity, because women usually outperform men in semantic processing, which is the main function of the left temporal region (Shi, Xu, Chen, Qiu, 2017)

An interesting issue remains the problem of creativity as an individual and / or social competence, especially in the context of organizational reality. One of the dimensions of the organizational culture (derived from national cultures) observed in a given community is the "masculinity-femininity" dimension (Hofstede, Hofstede, 2007). It should be understood as a dominance of a given element in a given culture. Thus, male cultures are those with material success and progress as goals, and men are expected to be tough and assertive. In turn, women's cultures focus on care and attention, which are also expected from men (Hofstede, Hofstede, 2007). Placing creativity in the "individualism-collectivism" dimension makes it approach the pole of individualism. Studies prove that in individualistic cultures one can observe greater creativity than in collectivist cultures (Walton, Kemmelmeier, 2012). An experimental study has shown that individualistic cultures facilitate divergent thinking in men provided the organization is not at risk (Walton, Kemmelmeier, 2012).

3   Own research

The aim of this study is to check the correlation between sex and creativity measured with the TCT-DP test. The group of respondents were trainers of soft trainings. Relatively few studies have been devoted to this professional group (as opposed to teachers, doctors, etc.).

Test for Creative Thinking – Drawing Production - TCT-DP (Klaus, Jellen, 1986) has been used for the purpose of own research. This test is widely used in scientific research (e.g. Sayed, Mohamed, 2013). The authors of the test based its construction on several assumptions. The tool should be universal so that people could use it regardless of age, intellect, origin, culture, etc. The test does not require any technical or artistic skills, it is simple and practical to use. The tool takes into account various components of creativity, both in the area of divergent and convergent thinking. The calculation of the results is based on both quantitative and qualitative aspects.

The test requires completing a drawing, which initially consists of a square frame and six graphic elements - five inside the frame, and one outside of it. Inside there are the following objects: a semicircle, a point, a wavy line, a right angle, and a dashed line. Outside there is a small square without one wall. The test has two versions, differing in the position of the elements in relation to the subject - in the second version the drawing is inverted by 180 degrees. The instruction encourages freedom in the method of execution, and the drawing time should not exceed 15 minutes. The evaluation of performance is determined by the following 14 criteria: continuations - use of ready-made elements in the drawing, additions - extension of

finished elements, new elements, line connections, thematic connections between elements, use of a square outside the frame, off-frame, perspective, humor and emotions present in the drawing, unconventional manipulation of the sheet, abstraction of performance, presence of figural-symbolic connections, non-stereotypical use of ready-made elements and the time devoted to work. These criteria refer to the assumptions of the previously referenced Guilford model (Guilford, 1978).

A hypothesis has been put forward that in the studied group gender would not differentiate the level of creativity. The study involved 80 soft trainers - 45 women and 35 men. The average age of the subjects was 30. The results are presented in the table.

Tab. 1: Descriptive statistics

	Min	Max	M	SD
Age	24	52	29,97	5,6

Source: Own research

The results of the subjects analyzed with the TCT-DP range between 5 and 60 points. Men scored an average of 30.31 points (SD = 15.55), women - 31.29 points (SD = 15.66). The results are presented in the table.

Tab. 2: Results

Gender	M	SD
Men	30,31	15,55
Women	31,29	15,66

Source: Own research

The analysis carried out with t-Student's test for independent samples showed no significant differences between men (M = 30.31, SD = 15.5), and women (M = 31.29, SD = 15.66), t (79) = 17,78; p > 0.05. Both women and men in the group of soft skills trainers demonstrated comparable levels of creativity.

Conclusions

One of the limitation of this studies is a relatively small group of studied persons. It would be valuable to compare the level of creativity of representatives of various professional groups related to business.

This study is one of many proofs of the lack of differences in the level of creativity in both sexes. But the comparison of test and research carried out using the latest neuroimaging

techniques brings different effects. The article emphasizes that the results of any research related to creativity and gender should be approached with caution. And managers should not be guided by gender when hiring creative positions.

The results of these studies on the relationship between creativity and gender are in line with the results of many of the studies cited in the paper. However, they stand in opposition to the results of studies where methods other than questionnaires have been applied. This may indicate some imperfection of paper-and-pencil tools and self-report tests that are not immune to autopresentation, and thus the results of such tests may not reflect the actual state. A comparison of the results of own research with the current ones demonstrates that managers and team supervisors should benefit from research reports from various scientific disciplines, including medical sciences, psychology and cognitive sciences. However, it should be taken into consideration that the subject of gender differences is controversial and it can not be unequivocally stated that representatives of a given gender are more creative than the opposite sex, which has also been indicated by other researchers (e.g.Abraham, 2016). Further research on creativity on the background of gender and professional differences is required.

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Contact

Karolina Dyrla-Mularczyk
Politechnika Poznańska
ul. Strzelecka 11, 61-845 Poznań, Poland
karolina.mularczyk@doctorate.put.poznan.pl

Arkadiusz Borowiec
Politechnika Poznańska
ul. Strzelecka 11, 61-845 Poznań, Poland
arkadiusz.borowiec@put.poznan.pl

AN ESSAY ON THE ENTREPRENEURIAL WAR MACHINE

Daniel Ericsson

Abstract

Purpose: The purpose is to present and explore Deleuze and Guattari's (1988) concept of the "war machine" in relation to the academic discourse on entrepreneurship in order to contribute with a nuanced understanding of the discourse's centrality in contemporary societies as well as its consequences.

Design/methodology/approach: The paper is conceptual in character and written in the form of an essay in order to capitalize upon the essay's tentative and reflective epistemology.

Findings: The academic discourse on entrepreneurship conceptualized as a war machine is found to be set up against the State apparatus and resisting State appropriation by 1) deprecating bureaucracy, 2) criticizing normative societal institutions, and 3) self-consciously mobilizing actors into a scholarly movement. The consequences of these forms of resistance are on one hand a discursive colonialization of the natural, and on the other hand the formation of a seemingly strong alloy between the academic discourse on entrepreneurship and neoliberal ideology/political agendas.

Research/practical implications: The academic discourse on entrepreneurship conceptualized as a war machine draws attention to the discourse's taken-for-granted notions about entrepreneurship as well as their consequences. As such the conceptualisation opens up for critical research on otherwise neglected or silenced empirical topics within research on entrepreneurship such as the formation of the academic discourse on entrepreneurship, the enrolment, socialisation, subjection and subjectification of researchers on entrepreneurship, and the discursive tactics of entrepreneurship researchers' visavi the State apparatus.

Originality/value: In line with the essayistic epistemology, the essay hopefully gives the reader the opportunity to reflect upon on neglected or silenced issues within the academic discourse on entrepreneurship.

Keywords: Discourse on entrepreneurship, the war machine, State apparatus, nomadology, essay

JEL Codes: M10, L26, L30

Introduction

The discourse on entrepreneurship undoubtedly has a central place in contemporary societies. It is materialized whenever politicians, from right to left, relentlessly praise entrepreneurship and make it part of their socioeconomic politics; whenever Ministries of Industry throughout Europe advertise new regional programs and initiatives to promote entrepreneurship; whenever entrepreneurs with no other experience than running their own business become municipal governors or take place in governmental parliaments; whenever the European Union elevates entrepreneurship into a "key competence" for life-long learning; and whenever Dragon's Den is aired at prime time.

Most distinct and with the highest efficiency, however, the discourse on entrepreneurship seems to run within the university community, to which it is tied to in an intricate symbiotic relationship. Under theoretical flag social scientists produce the arguments that nourish and legitimize the discourse on one hand; on the other hand the discourse willingly in return delivers new professorships, research grants and educational programs. It thus seems to function as a kind of perpetuum mobile of entrepreneurship both in scale and scope. For example, in Sweden, where the first professor in entrepreneurship was inaugurated in 1989, the Entrepreneurship and Small Business Research Institute (ESBRI) include over 400 thesis on entrepreneurship in their so-called "knowledge bank" (see www.esbri.se). 300 of these theses originate from the last decade, and scrutinizing them it seems as if they cover every aspect of human endeavors. Entrepreneurship not only ranges from undertakers via mom and pop grocery stores to multinationals; it is also argued to be a central feature of human existence, a human condition; a philosophy of life, a theory of knowledge, a pedagogy, an act of becoming…

One of the chief proponents of entrepreneurship within academia, and perhaps the one who has taken the lead in the grandiose attempts to elevate entrepreneurship from the soil of barefoot capitalism, is Chris Steyaert at University of St. Gallen. His main argument is that entrepreneurship is part of life itself: Wherever there are people there is entrepreneurship. In one of his texts he alludes to the old adage that "all the beauty of winter can be found in any single snowflake" (Steyaert and Katz, 2004, p. 194) and comes to the conclusion that entrepreneurship is exactly that, the beauty in life, and that this beauty can be perceived in every human interaction (ibid.). In another text Steyaert argues that entrepreneurship should be understood – and practiced – as a form of messianism, albeit without a Messiah (Dey and Steyaert, 2010).

In light of such appropriative ambitions, it is not surprising that researchers on entrepreneurship most often come to use a martial vocabulary. They urge their readers to mobilize for entrepreneurship (cf. Bill, Bjerke and Johansson, 2010); they talk about reclaiming the space in society that entrepreneurship once had (cf. Steyaert and Katz, 2004); and there are even those who call on their colleagues to take arms against all that stands in the way of entrepreneurship (cf. Perren and Jennings, 2005). But what is it that they are fighting against? Who is the enemy? And, to allude to the religious overtones, what kind of promised land is it that they want to restore?

1   Introducing the concept of the war machine

In order to answer questions such as these, the purpose of this essay is to present and explore the concept of the "war machine". This concept, it is suggested, could not only contribute with a nuanced understanding of the discourse on entrepreneurship; it might also open up new vistas for critical research on entrepreneurship (cf. Ericsson, 2010). The essayistic form is chosen to capitalize upon its reflective and tentative epistemology.

The concept of the war machine was introduced by Gilles Deleuze and Félix Guattari in their seminal book *A Thousand Plateaus* (1988). As part of their philosophical framework the war machine denotes specific types of movements and organizing activities that originate from the periphery (or the margin), and that oppose attempts of being subsumed under a centralized hegemony. Essentially the war machine is presented as an abstract machine – Deleuze and Guatarri (ibid.) depict it in terms of an "assemblage" of "points" and "lines", "objects" and "flows" traveling with "speed" – but one could here easily visualize concrete political, intellectual or artistic movements in opposition to dominating social norms, practices and organizations.

Within Deleuze and Guattari's framework the concept of the war machine is historically and materially connected to ancient nomadism and the nomads' ongoing transition to an itinerant territoriality. By this connection Deleuze and Guattari (ibid., p. 230) differentiate the nomadic war machine from the State, and present the nomadic war machine and the State as binary opposites: Whereas the nomadic war machine is built on self-organising and non-disciplinary principles, striving for autonomy in a decentralised manner, the State apparatus functions by means of discipline and hierarchy in order to preserve hegemonic status quo; and whereas the war machine embrace heterogeneity in a "smooth space", the State enforce homogeneity in a "striated space".

The binary opposition between the war machine and the State apparatus is furthermore construed as a rather harsh one since the two, at least conceptually, are directing their aggression towards each other. On one hand the war machine is smoothly but forcefully resisting the State's striation attempts; on the other hand the State seeks to appropriate or domesticate the war machine for its own striation uses, incorporating the war machine as a plug-in device to its own apparatus (ibid., p. 385). This is however not to say that the war machine seeks conflict, per se. War is just a potential, a slumbering resource utilised by the machine only in relation to a colonizing State apparatus:

> *"To the extent that war [...] aims for the annihilation or capitulation of enemy forces, the war machine does not necessarily have war as its object. [...] But more generally, we have seen that the war machine was the invention of the nomad, because it is in its essence the constitutive element of smooth space: this is its sole and veritable positive object. [...] If war necessarily results, it is because the war machine collides with States and cities, as forces (of striation) opposing its positive object: from then on, the war machine has as its enemy the State, the city, the state and urban phenomenon, and adopts its objective their annihilation. [...] speaking like Derrida, we would say that war is the 'supplement' of the war machine. [...] It is precisely after the war machine has been appropriated by the State in this way that it tends to take war for its direct and primary object."* (ibid., p. 417-418)

In instances of war, the war machine's resources are mobilised and turned into a mission machine, a machine of resistance in the meaning of a vanguard.

2   Exploring the academic discourse on entrepreneurship as a war machine

In light of Deleuze and Guattari's (1988) philosophical framework the academic discourse on entrepreneurship could very well be depicted as a nomadic war machine set up against an appropriating State apparatus. The reasons for this are (at least) threefold.

First and foremost the academic discourse on entrepreneurship tends to deprecate all that may be associated with classic bureaucracy (cf. du Gay, 2000). Order, centralization, hierarchy, meritocracy and impartiality, not to mention management, appear to the proponents of

entrepreneurship like a red rag to a bull. Wherever the discourse on entrepreneurship has paved its way, the bureaucratic principles consequently are turned upside down; and in entrepreneurship territories the anti-thesis to bureaucracy seems to rule, i.e. chaos, decentralization, heterarchy, cronyism and subjective discretion. Following this line of thought, the very idea of the State comes under fire, as well as all the public activities in society that are supported by this idea. The academic discourse on entrepreneurship thus seems to be intertwined with neo-liberal forces in society seeking to subdue and disarm the State apparatus by, for instance, advocating tax reductions and deregulated markets.

Secondly, the academic discourse on entrepreneurship tends to entail elaborated critique towards the institutions and institutional processes that in one way or the other have regulatory and normative functions in a State society. For example, Johannisson (2010) blames the educational system and the abstract "adult world" for choking young children's playful spontaneity and creativity, partly by exposing them to an overly disciplined and theoretical engagement with books and figures, partly by imposing limits on them and formulating rules for them to follow. That is not how to foster entrepreneurs, argues Johannisson (ibid.), it is to bring up bureaucrats. Entrepreneurship is instead about seeking contact with the inner child in you, to passionately embrace life and to go your own way, and therefore, claims Johannisson, provocation and disobedience must be brought forward as virtues in both theory and practice.

Thirdly, the social/societal turn within certain academic sub-discourses on entrepreneurship has been highly influential in decentering the importance of (economic) efficiency and functionalistic knowledge claims. On one hand entrepreneurial phenomena are here almost entirely disconnected from positivistic discourses on entrepreneurship in favor of a processual understanding of entrepreneurship; on the other hand phenomena "social" in character, not previously associated with entrepreneurship (or construed as being entrepreneurial) are embraced as essentially being of an entrepreneurial kind (cf. Ericsson and Persson, 2016, for a discussion). To a great extent these sub-discourses, perhaps most clearly represented by researchers within the so called "movements in entrepreneurship" (cf. Hjorth and Steyaert, 2010), thus rest upon an understanding of entrepreneurship that is highly in line with Deleuze and Guattari's (1988) nomadology (cf. Ericsson, 2010; Ericsson and Persson, 2016) and quest for a smooth space. As the movements in entrepreneurship entail research projects striving for (re)writing entrepreneurship (cf. Hjorth, 2001) and reclaiming lost spaces for entrepreneurship (cf. Steyaert and Katz, 2004), it seems as if these sub-discourses on entrepreneurship are construed as a war machine in a rather self-conscious manner.

3 Consequences of the entrepreneurial war machine

Both in terms of content and process there are thus indications that point in the direction that the academic discourse on entrepreneurship mobilizes a war machine – which, according to Deleuze and Guattari's (1988) framework, per se implies that there is a colonizing State apparatus trying to plug entrepreneurship into its own machinery. The already mentioned symbiotic relationship between entrepreneurship researchers and State funding and/or consecration is a telling example of this, and so are all political attempts to, so to speak, install entrepreneurship in society. Conspicuous in this regard is the former Minister of Education in Sweden who fought for making entrepreneurship part of the elementary school's curriculum for a decade before he succeeded to get a bill approved by the parliament stating that: "*The school shall stimulate students' creativity, curiosity and self-confidence and willingness to try out their own ideas and solve problems. Students shall have the opportunity to take initiative and responsibility, and to develop their ability to work both independently and with others. The school shall thereby help students to develop an approach that promotes entrepreneurship*" (Skolverket, 2011).

Under such circumstances the entrepreneurship war machine, as a plug-in device to the State apparatus, more or less infiltrates everyday life to the very extent that even the toddlers must toe the line of entrepreneurship. And as the war machine is moving in this colonizing direction the promised land of entrepreneurship emerges as a sanctuary for youths; it is a place for those who have managed to remain in their rebellious teens and for those who not have had to learn to control their impulses; it is a haven for those who do not allow any other than their own self dictate the terms of social interaction. The entrepreneurial infantry in this sense acquires an infantile character; the child and its innate entrepreneurship is put on a pedestal, and wherever the war machine is making progress all things cultural, all that is culturally mediated, is contested and put in sharp contrast to the natural and the original. As a consequence entrepreneurship is perceived of as something that cannot be taught, it is something that children lose and forget as they are being socialized on their way to adulthood.

This "colonizing naturalness" is however not the only consequence of the entrepreneurship war machine and the States' appropriation of it. In relation to the war machine's inherent critique of the State, the academic discourse on entrepreneurship also joins forces with New Public Management and economic market models hailing perfect competition. Concepts and phenomenon such as client-server models, outsourcing and public procurement/provision of public goods in this sense function as ideological vanguards to the war machine and its

appropriation by the State. And as these vanguards intersect with the infantile entrepreneurial infantry, a very hard ideological alloy is made of, on the one hand, neoliberalism and the Thatcherian rhetoric of *There is no Alternative!*, and, on the other hand, new romanticism and the Rousseauan plea for going *Back to Nature!* Melted together these slogans form an armor that makes the entrepreneurial war machine virtually indestructible. Not only does this armor make us stand before its rampage in speechless admiration, it also leaves us devoid of any critical questions about the discourse on entrepreneurship, its means and ends, and all its self-evident truths and practices.

Conclusion

Conceptualizing the academic discourse on entrepreneurship as a nomadic war machine, one could thus conclude that there is an entrepreneurial war machine sweeping over Europe (and perhaps also over the rest of the world). The machine is well-oiled and in great detail tuned for its one and only purpose: to establish a smooth space for entrepreneurship in which entrepreneurship is hailed as the proper and the right thing to strive for. The war machine enlists an army of entrepreneurship zealots ready to battle all those who dare opposing the machine's arbitrary right to conquer one territory after another, and like a Trojan horse it insinuates itself into our lives and into our minds. It colonizes us bit by bit breaking down our resistance and making us cherish entrepreneurship as the ultimate thing life has to offer. All in the guise of an assumed striating State. But what if this assumption is nothing but a discursive self-fulfilling belief?

Critically questioning the academic discourse on entrepreneurship as a war machine, the discourse's taken-for-granted notions about entrepreneurship as well as its more or less invisible formation come in focus. How are researchers on entrepreneurship enrolled into the academic discourse on entrepreneurship? How are they socialised into it? How are they subjected and subjectified? And what discursive tactics are they following visavi the deprecated State apparatus – an apparatus that in most cases ironically finance their research? Empirical topics such as these indicate interesting new vistas for future research on entrepreneurship and might contribute with additional perspectives on the present day predilection for entrepreneurship.

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Contact

Daniel Ericsson

School of Business and Economics, Linnaeus University

Unniversitetsplatsen 1, SE-351 95 Växjö, Sweden

Daniel.ericsson@lnu.se

ENTREPRENEURIAL PARENTS AND NETWORKS: PERFECT SUBSTITUTES OR FICKLE FRIENDS?

Manuel Feldmann

Abstract

Purpose: Parental influence on self-employment rates among their offspring has been the subject of a multitude of studies. Despite many theories on how parental self-employment translates into youth self-employment, researchers rarely tested its interaction with other drivers of self-employment such as networks. The following study investigates these effects, suggests an interpretation of the interaction and tests how robust both are against macro influences.

Approach: This study analyzes parental and network influences on self-employment with an original dataset for 11 European countries gathered in 2016 by the collaborative research project CUPESSE. In order to avoid confounding effects, this study builds on theory of planned behavior and supports the notion of entrepreneurial intention as the best proxy for future entrepreneurial engagement. Because of its cross-country structure, macro effects can be tested. According to the structure of the dependent variable, the study applies logistic regression techniques with Stata to identify relevant effects. In order to test cross-level interactions in a non-linear analysis, the model relies on multiplicative effects and country dummies accounting for all level-2 variance. Moreover, Eurostat macro figures were included.

Findings: This study finds that (1), having access to entrepreneurial networks can boost entrepreneurial intention even more than parental self-employment (2) having access to entrepreneurial networks and peer groups can substitute the parental effects in equivalent direction and size, and (3) the impact of the national rate of youth unemployment decreases network effects while parent effects are more robust.

Research/practical implications: The results suggest that entrepreneurial peer groups are an equivalent substitute for parental self-employment that policy makers could rely on when they want to foster entrepreneurship. However, current entrepreneurial networks are less stable and robust than family effects in countries with higher youth unemployment. Here, policy interventions might be a promising path to generate such stable networks with entrepreneurial role models also during economic crises.

Originality/value: This study contributes to the theoretical analysis of entrepreneurship in two ways: It compares parental effects with network effects along an existing framework and adds for the first time an interaction of intergenerational transmission with youth unemployment.

Keywords: Entrepreneurial networks, intergenerational transmission, self-employment, youth unemployment

JEL Codes: M2, M1, L26

Introduction & Theory

After decades of research on the individual determinants of becoming an entrepreneur[3], one of the best predictors is still being born a child to one of them (Lindquist, Sol, & Van Praag, 2015). Another stream of literature focuses on entrepreneurs' social capital, their networks and their role models. So when entrepreneurship is mentioned as means of economic development especially in the last post-crisis years, policy makers had better keep its empirical determinants in mind. Prior research however, has not yet looked at how these determinants interact and how sensitive they are towards macro developments. This paper intends to dig into both questions: How do different determinants of entrepreneurship interact and how much are they influenced by national economic figures?

Grilo and Thurik (2008) provide an overview of how the entrepreneurial process can be classified in its initial stages: conception, gestation, infancy, adolescence; nascent entrepreneurship; opportunity recognition and opportunity exploitation. Determinants of entrepreneurial activity may vary along these levels and stages. Other studies merely look at self-efficacy or intention as the main precedents of self-employment. In order to avoid confounding effects for the research object entrepreneurial networks, this study focuses on entrepreneurial intention (cf. Obschonka & Silbereisen, 2010) as the dependent variable. Otherwise, a cross-sectional study could not distinguish between networks formed before or after becoming self-employed. For entrepreneurial intentions and networks, timeliness or causality does not matter as much as long as both exist prior to entrepreneurial activities? Thus, it draws mainly on theory of planned behavior which classifies an intention to perform a behavior as the best predictor of such ((Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980; Ajzen, 1991). Hence, this analysis understands entrepreneurial intention as the best predictor of later entrepreneurial entry. This is in line with prior research that has established intention models as ideal for studying entrepreneurship (e.g. Krueger & Carsrud, 1993)

Many studies have elaborated on different mechanisms of this process of intergenerational transmission, e.g. financial capital (Dunn & Holtz-Eakin, 2000), human capital (Kim, Aldrich & Keister, 2006), social capital (Davidsson & Honig, 2003) and role models (Bosma, Hessels, Schutjens, Van Praag, & Verheul, 2012). Yet, in many cases, these studies rely on entrepreneurial intentions only, or do not compare antecedents of entrepreneurial activity such

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[3] [3] This study uses the terms entrepreneur and self-employed interchangeably. For the description of the identifying variable for entrepreneurship as well as self-efficacy and intention, see Section 1 Data.

as self-efficacy and intention to full self-employment. The link between social networks and entrepreneurship dates back to the beginnings of entrepreneurship studies, when researchers adapted Granevetter's (1985) theory of embeddedness to entrepreneurial analysis such that "group identity leads individuals […] to form new social ties and action-sets which increase the likelihood of entrepreneurial attempts" (Aldrich & Zimmer, 1986: 3). From this literature on networks and social capital as well as on role models (e.g. Bosma, Hessels, Schutjens, Van Praag, & Verheul, 2012), we can draw the notion that entrepreneurial networks may incur effects similar in function and extent to those of entrepreneurial parents. Hence, this paper compares both effects on entrepreneurial intentions. Moreover, an interaction effect is calculated to identify the two variables as complements or substitutes with regards to entrepreneurial intention. As parents are often part of social networks (cf. Greve & Salaff, 2003) the latter is assumed; hence, I hypothesize:

H1: Ceteris paribus, entrepreneurial networks and parents will affect entrepreneurial activity similarly; i.e. a positive correlation with entrepreneurial intention.

H2: Ceteris paribus, entrepreneurial networks and entrepreneurial parents will act as substitutes for entrepreneurial activity; i.e. a negative interaction effect of both with entrepreneurial intention.

Moreover, a large strand of literature has identified macroeconomic determinants of self-employment. While most studies focus on macro aggregates only, they offer two effects, presumably depending on the time lag between both: high unemployment as a motivation for self-employment (e.g. Fritsch, Kritikos, & Pijnenburg, 2015; Koellinger & Thurik, 2012) or as a means to combat unemployment (e.g. Dvouletý & Mareš, 2016). However, so far there has been no study on the effect of unemployment on intergenerational transmission of self-employment; which is surprising given the large differences across countries in the shares of self-employed whose parents were already self-employed (cf. Figure 2). Hence, this study assumes a macro effect not only on the level of self-employment but also on the effect of parental self-employment on the first. Due to the specific age structure of the data set (age 18-35), youth unemployment figures from Eurostat are used in the model. Figure 1, illustrates how the different variables of interest interact in existing literature and which effects are hypothesized in this study. According to prior evidence in existing studies, I assume a similar effect of youth unemployment on the effect of parental self-employment and entrepreneurial networks on entrepreneurial intention itself. Hence, I hypothesize:

H3: Ceteris paribus, youth unemployment will positively relate to the effect of entrepreneurial networks on entrepreneurial intention; i.e. a positive interaction with above-median entrepreneurial networks.

H4: Ceteris paribus, youth unemployment will positively relate to the effect of entrepreneurial parents on entrepreneurial activity; i.e. a positive interaction with entrepreneurial parents.

Fig. 1: Hypothesized effects
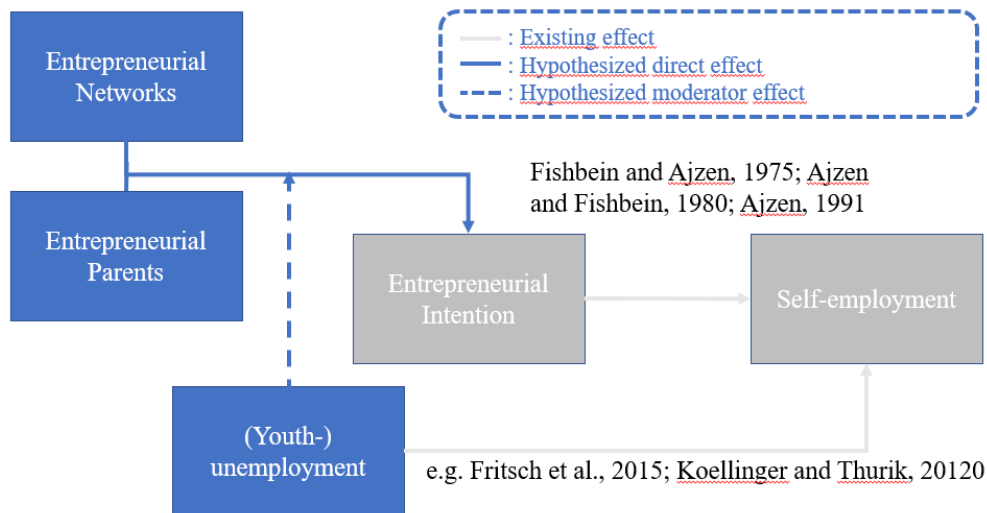
1   Data

The data come from an original data set of 11 European countries collected by the EU research project CUPESSE in 2016. The following countries are included: United Kingdom, Denmark, Switzerland, Germany, Austria, the Czech Republic, Hungary, Spain, Italy, Greece, and Turkey. From each country, a sample of more than 1,000 youths between 18 and 35 was drawn, which yields a total sample size of 20,008. The data set contains variables on socio demographics, youth, family, education, employment history, certain traits and values and detailed information from up to both parents. Macro data for youth unemployment figures were retrieved from Eurostat (Eurostat, 2018).

The next paragraphs will describe the specific measures considered for the analysis. The dependent variable is binary with a value of 1 for respondents who quoted they were more likely to "start own business or to become self-employed within the next three years" (question was answered on a 1-10 scale from extremely unlikely to extremely likely, values above 5 were taken for this dichotomous variable; n=2,520). All respondents with no such characteristic were included with a zero (n=15,328). As demographic controls, I included age, gender, and

education. Age is measured in years and ranges between 18 and 35, centered around the median of 27 years. Gender takes a value of 1 for females, 0 for males. Education is an ordinal variable and takes values from 1 to 7 for highest level of education achieved according to the ISCED 2011 classification, again this variable is centered around the median category of advanced vocational post high school education. Self-employed parents is a binary variable with a value of 1 if at least one parent was self-employed at respondent's age 14 or at the time of the survey, 0 otherwise; unfortunately, the survey data provides only insufficient representation of the time in between. However, two variables already give a better representation than just one in most other cross-sectional survey data. Entrepreneurial network is also a dichotomous variable with the value of 1 for an above-median number of "friends that run their own business", median value was "a few friends". Next, a factorial interaction effect of these two dichotomous variables is taken into account, both original variables have an inter-item correlation of 0.0567, hence, shared variance is not an issue. Figure 2 illustrates the distribution of both variables across the eleven countries in the sample.

Fig. 2: Respondents' entrepreneurial networks and parents
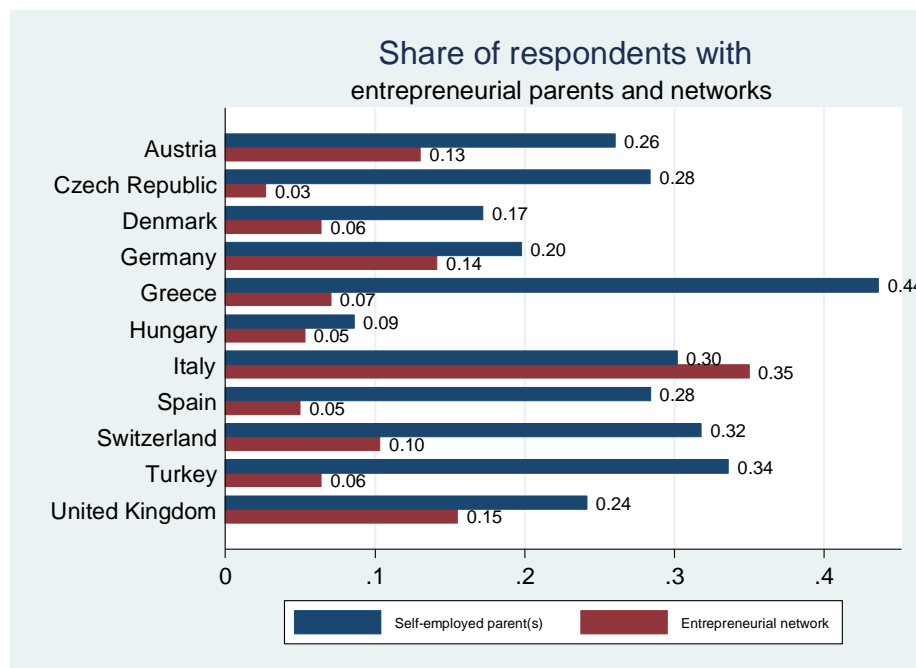
Lastly, the study controls for country-level effects. First, as required for unweighted cross-national samples, 10 country dummies include all variation at the national level. All effects are calculated with respect to a base level, Hungary, which has the lowest rate of entrepreneurial intention. Moreover, I included factors for cross-level interaction between national youth unemployment rates and entrepreneurial parents as well as networks. Here, I follow the

recommendations for country-comparative studies with a small number (<25) of macro units (Moehring, 2012). In these cases, fixed effects models are strongly promoted as an alternative to classic multi-level models which, in these cases, usually suffer from omitted variable bias and a low number of degrees of freedom. Standard logistic regression models in turn allow to control for random slopes (i.e. macro moderator effects) which I include as described above.

2 Analysis

As the dependent variable *Entrepreneurial Intention* is a dichotomous variable with values 0 and 1, I conducted a logistic regression. Due to the non-linear nature of such models where all effects are multiplicative and hence interactions of some sort, interpreting actual interaction effects requires specific measures. As suggested by Buis (2010), this analysis reports odds ratios which more aptly represent the non-linear nature of the model (for a similar methodological application cf. Bennet & Moehring, 2014). Hence, the report is to be interpreted in the odds of finding one person voicing entrepreneurial intentions for every person that does not, i.e. the constant reports a baseline odds of finding 6.31 entrepreneurially inclined persons among 100 persons in the sample where all other values are 0: that is 27 years old males in Hungary (base category) with upper vocational training and neither self-employed parents or above median entrepreneurial networks. All other odds are to be understood as multiplicative effects to this baseline odds ratio. To control for multicollinearity, I calculated variance-inflation factors. Mean VIF was 2.38 with even outliers such as the interaction effect between youth unemployment and parental self-employment with a value of 4.11 ranked far below the critical cutoff line at 10 (Hair, Black, Babin, & Anderson, 2010). Eventually, 17,848 observations were kept due to list-wise deletion, the model reported a Log. Likelihood of -21660.6, a Chi-Squared of 2,687.5, and a McFadden-Pseudo R2 of 0.0584.

2.1 Results

The following Table 1 presents the regression results. Model 1 shows only country effects, model 2 introduces the control variables, model 3 adds entrepreneurial parents and networks, finally model 4 presents interaction effects on top. This section will focus on the results of the full model including interaction terms.

Concerning the control variables, the effect of age was slightly negative, education slightly positive and being female reduced the odds of having entrepreneurial intentions by 27.9%, all of them highly significant. Entrepreneurial parents and networks do have strong positive and highly significant on entrepreneurial intention, as was expected. Although both variables are

analogously coded, coefficients are not easily comparable due to their different origins. Also, the rate of respondents with either entrepreneurial networks or parents varies widely across countries (see Figure 2). Yet, having above-median number of self-employed friends increases the odds ratio of entrepreneurial intention by 238.2% while having at least one self-employed parent does so only by 37.5%. Thus, hypothesis 1 is fully confirmed with some additional evidence in favor of networks. The interaction effect of both variables is significantly negative, suggesting a substitutive relation. Looking at the multiplicative effects, the odds ratios rise to 0.0615*1.375=.0845625 for respondents with self-employed parents, to 0.0615*3.382= 0.207993 for persons with above-median entrepreneurial networks and then only marginally to 0.0615*3.382*1.375*0.757= 0.21649471 when both apply. Hence, hypothesis 2 is fully supported. For a marginal comparison of the odds ratios, see Figure 3.

Fig. 2: Predictive Margin of odds ratios
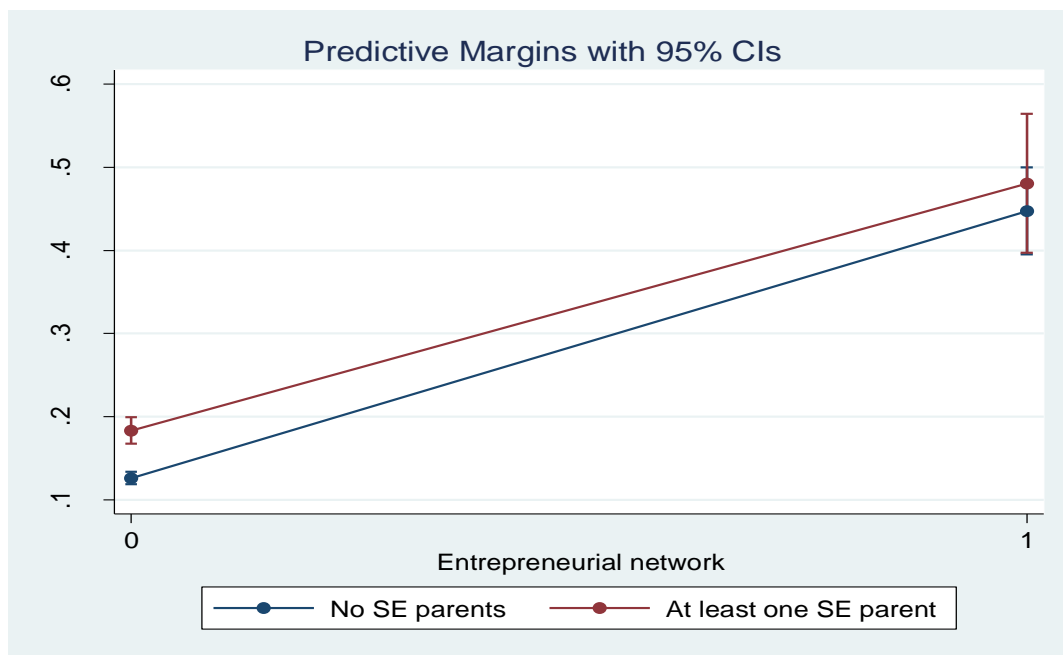
Both interactions with youth unemployment yield effects contrary to prior expectations and hypothesized direction of effects. The interaction of youth unemployment and entrepreneurial networks is negative and highly significant ($p<0.01$). The odds ratio of entrepreneurial intention which increases for entrepreneurial networks then decreases by 2.3% for every 1-percent rise in youth unemployment above the mean of 15.24%. Thus, hypothesis 3 is rejected. The interaction between parental self-employment and youth unemployment is negative yet insignificant. Therefore, hypothesis 4 must also be rejected.

Tab. 1: Logistic regression results

	(1)	(2)	(3)	(4)
main				
Age		1.000	0.989*	0.989*
		(0.05)	(-2.37)	(-2.35)
Education		1.075***	1.073***	1.072***
		(5.26)	(5.07)	(5.04)
Gender: female		0.712***	0.722***	0.721***
		(-7.75)	(-7.33)	(-7.37)
Self-employed parent(s)			1.286***	1.375***
			(5.12)	(5.79)
Entrepreneurial network			3.110***	3.382***
			(19.28)	(17.52)
IE: Network and SE parents				0.757*
				(-2.31)
IE: SE Network and youth unemployment				0.987*
				(-2.26)
IE: SE parents and youth unemployment				0.996
				(-1.03)
Constant	0.0596***	0.0724***	0.0631***	0.0615***
	(-22.92)	(-20.96)	(-21.80)	(-21.87)
Observations	17848	17848	17848	17848
Log lik.	-7120.1	-7074.6	-6883.9	-6877.3
Chi-squared	266.8	382.1	772.2	771.5
AIC	14262.2	14177.3	13799.8	13792.5
R2-McFadden	0.0201	0.0264	0.0526	0.0535
Country dummies	Yes	Yes	Yes	Yes

Odds ratios reported, Robust standard errors, Significance levels: $+ \ p < 0.10$, $* \ p < 0.05$,
$** \ p < 0.01$, $*** \ p < 0.001$

In summary, hypotheses 1 and 2 are confirmed, 3 and 4 yielded unexpected results and are thus rejected. First, entrepreneurial parents and networks do have effects similar in direction, however, network effects seem stronger. This seems to be in line with the initial sample distribution where 26% had self-employed parents but only 11% with at least "some self-employed friends". Second, the interaction effect suggests a substitutive relation. Thus, policy makers attempting to boost individual self-employment activity do not need to be discouraged by strong parent effects and can foster entrepreneurial network and peer group building instead as a viable and strong alternative. Moreover, cross-level interactions with youth unemployment yield surprising effects. First, both effects do not become stronger in countries with economic hardship and high unemployment. Hence, people with entrepreneurial intentions in these countries should be expected to draw their motivation less from their parents or peer group.

Second, entrepreneurial networks have a much lesser effect where youth unemployment is high. Possibly, seeing peers struggle in their businesses entrepreneurial intention negatively.

Lastly, the model calculates also multiplicative effects for participating countries' score in entrepreneurial intention (not reported in Table 1 for the sake of brevity). They suggest that the participating countries differ vastly with respect to intention rates. All countries but Switzerland deviate positively and significantly from Hungarian rates. Denmark and Germany show between 0 and 100% higher rates, Turkey, Austria and UK between 101 and 200% higher rates, Greece, Spain, Italy and Czech Republic between 201 and 300% higher rates. Especially the differences between the two Eastern European countries Czech Republic and Hungary asks for further investigation.

Conclusion

This study contributes to existing entrepreneurial literature in multiple ways: First, it clarifies the relation between entrepreneurial networks and parents in a large-scale representative cross-country survey. This supports prior evidence and policy makers' attempts to boost entrepreneurial activity via clusters and networks. Second, the study shows that family effects may be more stable and robust against macro effects than external effect, which may weaken argument 1 and its policy implications slightly. Third, the model replicates an approach for cross-country analysis recently suggested for country-comparative studies with low country numbers. Thus, it encourages scholars to stick to simpler but econometrically more suitable model structures for clustered multilevel data.

Future studies may investigate this relationship more closely. Also, country differences in entrepreneurial intention and self-employment require further explanations besides economic development. A comparison with necessity and opportunity entrepreneurship might be a possible avenue, or the public image of self-employed entrepreneurs. Moreover, this cross-sectional analysis should be validated with panel data to assess the causality and timeliness of effects more meticulously.

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Contact

Manuel Feldmann

Faculty of Political Sciences, Universität Heidelberg

Bergheimer Straße 58, 69115 Heidelberg, Germany

manuel.m.feldmann@gmail.com

OPEN INNOVATION AND INTERNATIONALIZATION: CASE OF BRAZILIAN COMPANIES

Paulo Feldmann

Abstract

Purpose: The aim of this paper is to demonstrate that even in countries with little innovation generation such as Brazil, there are still a few highly innovative companies. Due to the concept of open innovation and their internationalization level, these companies find good partners abroad with which they develop innovation projects. We selected five cases of Brazilian companies that have been successful in terms of innovation because they have used Open Innovation and they are international companies

Design/methodology/approach: This is a multiple case study. In order to identify the Brazilian companies which we investigated we used international organs or specialized media and considered the companies that had received recognition/prizes for being innovative. We carried out interviews with these companies in order to see how their innovations had been developed and we found that all of them used Open Innovation Concept.

Findings: It is possible to find highly innovative companies even in countries having hostile business environments as Brazil. Being strong internationally and favorable to open innovation are key factors for companies to achieve success.

Research/practical implications: This paper studies five Brazilian Companies and found that open innovation brings benefits to the companies operating internationally, and that emerging countries such as Brazil should increasingly stimulate those companies to have a wider global presence.

Originality/value: This article shows that there is a practical way to increase the production of innovation even in emerging countries where that production is often low, as in Brazil. This procedure is more appropriate to companies already operating abroad and that adopt the concept of open innovation. This concept makes it easier for those companies to find partners and to provide the expertise they lack.

Keywords: Open innovation, internationalization, emergent countries

JEL Codes: F23, N66, O32

Introduction

Currently companies are more aware of the importance of knowledge as knowledge leads to innovation. This knowledge is frequently located outside the company and in order to acquire it is necessary to collaborate with the party that detains it. These partnerships can generate innovation, and this is the basic principle behind the concept of "open innovation". As Henri Chesbrough (2012) mentions the essence of open innovation is to develop innovation within a partnership .In other words companies need to find the knowledge they are lacking and many times this knowledge exists in other companies. However, frequently this knowledge is not available in the country of origin of the company making it necessary to search for those partnerships around the world. The companies that already operate internationally are precisely the ones that find partners more easily to develop their innovations together. This happens because they are not limited to partners that exist only in their country. This article seeks to demonstrate how internationalization makes open innovation easier, and vice versa. We will give real examples from Brazilian companies considered highly innovative and that are adept at using open innovation while simultaneously enjoying international significance.

Brazil is not considered as having an innovative tradition. Brazilian backwardness in technological production is more clearly noticed in patent registration. Whereas in 2015 Korean companies registered 17,924 patents, Japanese 52,409 patents, and Indian 3,355 patents at USPTO (2013) – the main agency to that end –, Brazilian companies were responsible for only 323 new patents, representing less than 0.2% of the world's total for that year.

One of the causes, but certainly not the most important one, is low investments in research and development (R&D) done in Brazil. Suffice it to say that whereas Brazil spends 1.1% of GDP in research and development, the US spends 2.7%, Japan 3.5%, Israel 4.5%, and Korea 3.3%, according to "Global R&D Funding Forecast" (2016). Another bad indicator shown in the same report is that in these countries the investment is mostly done by the private sector, but in Brazil 75% of the investment is governmental. In addition, less than 25% of Brazilian scientists work in the private sector, but in the US, for example, this number is above 80%.

Brazil has been systematically poorly evaluated, and when the subject turns to the most innovative countries Brazil is always towards the end of the list. The last evaluation of "The Global Innovation Index-2015", published in 2015 by Cornell, Insead and WIPO placed Brazil in the 70th position. This index is composed of more than fifty variables, divided into seven broad sections: institutions (political and regulatory environments); intellectual capital and

research (basic and high education indexes); infrastructure (energy); market sophistication (credit access, capital markets and foreign trade); business sophistication (professional expertise, collaboration between industry and university); scientific production (computer per capita, patent generation capacity); and creative production (entertainment and cultural consumption, film production).

 Summarizing, Brazil fails in almost all criteria. That means that in this country the environment external to the companies is not favorable to innovation development. These factors discourage private companies to invest in R&D in Brazil. And there are plenty of reasons for that: absence of fiscal incentives for innovators; inoperative organs responsible for registration and inspection of patents; small number of engineers graduating per year; very low educational level of the population; small number of technological incubators, and many others.

Despite these obstacles, there are a few Brazilian companies that succeed in being innovative, and more: they are acknowledged worldwide as highly innovative companies. How is it possible that some companies are so innovative in a country that is at times considered hostile to innovation? This paper attempts to answer that question. We want to demonstrate that the few Brazilian companies that are globally recognized as highly innovative are precisely those which became international long ago, and that recently adopted the concept of open innovation.

## 1	Literature Review

For centuries, corporations have developed as autonomous entities. Their research departments were seen as strategic assets surrounded by secrecy, and the development of ideas as an expensive but inevitable cost. Technical and scientific advances have created a legion of top researchers available in the market. Their ideas and experiences can be bought for a reasonable price, and internet allows companies to connect to this network in the search of solutions for their innovation problems. The world has become the research laboratory of companies that want to boost competition and grow fast.

The concept of "open innovation" infers that knowledge, in a globalized era, is distributed around the world and that companies that wish to remain competitive must be extremely open to foreign ideas: from institutions, universities, other companies mostly, from everywhere. According to this philosophy, smarter and more open corporations, able to expand their intellectual tentacles beyond their borders, will fatally outrun self-centered companies.

Companies have increasingly realized the advantages (and in some cases the inevitability) of not keeping secret on the creation process of new products and services – a recent trend that has been gaining space worldwide. Instead of seeking for innovation exclusively inside their laboratories or with strategic suppliers, these companies venture into new territories running after new ideas.

The open innovation process is not limited to suppliers or university researchers. Partnerships for innovation very often happen with companies' costumers as well. The strategy of opening up to the world and multiplying teams involved in innovation is a way of meeting an increasing demand among consumers. Clients are more and more participative; they want to put forward suggestions and want to be heard. To incorporate the client into the creation process has been one of the main obsessions to some of the world's most innovative companies. It is an attempt to definitely break up the traditional industrial logic, in which companies lock their innovation portfolio away and then push their products into the market, a model that has been proved lengthy and costly.

In comparison to the old model, when secrecy was the rule, open innovation seems to be knocking down of corporative walls. However, they are still standing. Chesbrough (2012), the main author to disseminate the open innovation concept, said that "The art of open innovation is to know when and what should be shared" (p. 11).

It is worth noting an interesting phenomenon very similar to open innovation, theorized by Doz et al. (2001) long before Chesbrough. Doz stated that at the end of the twentieth century many companies, especially those depending on innovation to compete, considered the search for knowledge and innovation as the main strategic reason to operate out of their countries of origin.

Thus, a company whose country is not an equity holder or leading industries might seem to be in an inappropriate environment to enter in global competition. However, according to these authors, with knowledge that these companies needing to compete globally and not being found in their country of origin, they must develop skills to prospect, obtain and operate technology and market expertise abroad, which turns out to be a learning opportunity that might prove advantageous. The recommendation to go abroad is not new: - Bartlett and Ghoshal (1992) have also stated long ago "in the international business environment the innovation capacity is becoming the most important skill to have a competitive advantage" (p. 162). For these authors, a company should invest in internationalization in order to obtain more profit on

the innovations that it developed for its domestic market; they also highlight that one of the most important assets a company can have is its internal and external network.

To use the partnership network to develop innovations is also not a novelty and it was already recommended as an alternative strategy by Daniels and Daniels (1996). They mention as an example McDonalds' installation in Russia, where there had been a huge need for adapting the products to the new market, and the fundamental role the search for suppliers had in this case, due to the need of developing innovations together. According to them, "[...] successful companies trying to become global identify partners for strategic alliances to fill gaps in their core capabilities and create opportunities to share resources with their business partners [...] " (Daniels and Daniels, 1996).

Finally, one of the most important authors related to Open Innovation is Stefan Lindegaard (2012) who says that if a company is not organized to do in house research then this company should not even consider working with external partners. Among other reasons, the most important is because this company won´t know what to look for in those partners and on the other hand the possible partners won´t contemplate a company that has no tradition in research.

2   The Brazilian companies selected for the research

As previously mentioned, Brazil is not considered a country with a high production rate of innovations, mostly due to its hostile environment that does not favor or foster the search for innovation. Even so, it is possible to find some few Brazilian companies that are internationally recognized as being highly innovative. We will attempt to demonstrate how these truly global and engaged companies profited from a global presence to meet good partners and then thrive on introducing important innovations in their respective markets. This multiple case study had been done in the year 2015. In order to identify the investigated Brazilian companies we used international organs or specialized media and considered the companies that had won recognition/prizes by being innovative. We selected five Brazilian companies that have been awarded with prizes or international recognition for being innovative. Our research in the years 2014 and 2015 showed us that there were 12 Brazilian companies that had won international prizes for being innovative in those years. We had tried to contact all of them but only these five agreed to open their doors and allowed us to do the interviews. We carried out interviews with all these five companies using the multiple-case study following Yin (2014) methodology in order to investigate how they develop their innovations and we found that all of them are users of the Open Innovation Concept. The five companies are the following:

- Braskem – Mentioned by the magazine "Fast Company" in 2014 as one of the fifty most innovative companies in the world;

- Embraer and WEG – Both appearing in the list "The 2013 EU Industrial R&D Investment Scoreboard" issued by the European Commission in 2013;

- Natura and Oxiteno – Listed on Forbes 2013 among the most innovative companies worldwide.

As shown above, these five companies are internationally recognized as innovation developers, and are well ranked among the most innovative companies in the world, despite being originally from a country with low development of innovation such as Brazil. As we will demonstrate, they are innovative due to their internationalization, and use this fact to find appropriate partners and then develop innovation together within the concept of open innovation. We carried out the interviews with the respective Research and Development directors. The table below aggregates the most important data from these companies.

Tab. 1: Main figures and data relative to the Brazilian companies of the sample in 2016

companies	Revenue in US$ billion	Profit in US$ billion	Number of employees around the world
Braskem	9.24	- 180	Not informed
Embraer	5.16	179	16,000
Natura	1.76	91	4,900
Oxiteno	0.38	71	950
WEG	1.45	272	13,500

Source: EXAME Magazine – August of 2017

2.1 Braskem

The largest producer of biopolymers, Braskem is the leading thermoplastics resins producer in the Americas, mainly polyethylene, polypropylene and PVC, besides providing basic chemical products. Its products have application in a diverse range of economic sectors such as construction, food, automotive and consumer goods. It has a good reputation for producing the green polyethylene, also known as green plastic – plastic resin made of sugar cane ethanol. In Brazil it is considered one of the biggest supporters of open innovation, having many partnerships abroad, one of which established with the North American company of renewable products Amyris and the French tire manufacturer Michelin. All the three companies work in the jointly development of a very important product for tire manufacturing: the isoprene. The objective is to produce it from sugar cane and raw materials derived from cellulose. Amyris will share with Braskem the marketing rights of the renewable isoprene technology.

In addition to this international partnership for research and innovation in 2015, Braskem and the North American Genomatica signed an agreement in the biotechnology area. In this case, both of them researched the green butadiene, an alternative raw material for the synthetic rubbers market, whose demand is currently met by naphtha-based butadiene.

2.2 Embraer

Embraer is the only aeronautics company not based in a developed country that ranks among the global leaders of the sector. The third largest manufacturer of civil aircraft in the world and world's largest maker of jets of up to 120 seats. In Forbes' Global 2000, a ranking of the world's largest companies, Embraer is the only Latin American company in high technology area. At the present time, Embraer's technology cooperation network is composed by more than fifty universities, research institutes and funding agencies, involving more than 250 researchers from the scientific community. Companies all around the world also collaborate with the network.

It maintains seven operational units abroad: Nashville Fort Lauderdale (USA), Villepinte and Le Bourget (France), Alverca (Portugal), Harbin (China) and Singapore. Its technological research laboratory is based in Florida (USA) and its considered one of the world's most advanced.

About 30 years ago it was already looking for international partners to develop innovations. So, a group of the company's engineers spent almost two years in Italy, from 1983 to 1985, working with local manufacturers on a new model of defense aircraft, later known as AMX Line.

2.3 Natura

Natura success can be measured by the size of cosmetics market in Brazil: despite having 3% of the world's population, it accounts for 9% of the world's cosmetics market. The company is known for its ability to integrate scientific knowledge and sustainable use of the biodiversity.

In 2013 the company opened the Innovation Hub in New York (USA) that works like an *Innovation Team Group* to ensure agility on identifying relevant opportunities in different areas (cosmetics, health, technology, design, fashion, style and society etc.).

Since 2012 Natura takes part in the interdisciplinary research laboratory MediaLab in Boston (USA), a reference center in innovation, design, science and technology based in the MIT – The Massachusetts Institute of Technology. The company also works in strategic partnerships in Europe, with Lyon University (France), and Australia, after acquiring Aesop in the end of 2012.

By implementing a unit in Paris, it seeks to approach the world's leading research centers in cosmetics. Natura's French research center operates as the hub to establish new partnerships with European research groups.

2.4   Oxiteno

Brazilian chemical multinational part of group Ultra, Oxiteno operates in the Americas, Europe and Asia. It was founded more than 40 years ago, and is currently located in Brazil, the US, Mexico, Uruguay and Venezuela, with 12 industrial units and research and development centers. It has more than 400 products in the portfolio and supply a diverse market range such as cosmetics, industrial and housecleaning products, paints and varnishes, agrochemicals, oil and gas, and others.

The company also took over two specialty chemicals plants in 2012: American Chemical in Montevideo (Uruguay), and Pasadena Property in Texas (USA). The latter is one of the largest chemical production poles in the world, allowing the company to benefit not only from the attractive conditions of competitive raw materials derived from natural gas, but also the presence of other suppliers and universities with advanced expertise in ethylene oxide, which fosters the development of new researches that would not be possible in Brazil.

2.5   WEG

WEG is one of the global manufacturers of electric engines and electromechanical components. It operates in the areas of electrical machinery, command and protection, speed variation, automation of industrial processes, generation and distribution of energy and industrial paints and varnishes. The company, backed entirely by Brazilian capital, is one of the world's biggest manufacturers of electric engines and technology leaders in its sector.

One of WEG's most important projects is a new type of high power wind generator, in which the company is investing US$ 50 million. A special feature on this project is that it has been jointly developed with one of WEG's main clients, Tractebel, a Brazilian electricity producer backed by Belgian capital. The key advantage to WEG is the possibility of firstly trying and testing the new product with the client and only then going to the market with other power generation companies around the world. The internationalization process of WEG is closely related to its growth in research and development area and further development of countless innovations. That was made possible by an internationalization policy on acquiring well-operating plants abroad since 2000. A typical example of that initiative was the acquisition of EM, in 2012, based in Minneapolis (USA). By taking over the company, WEG gained expertise

in two-pole turbo generators largely used in oil and gas sector; areas that it did not comprehend in the past but fully operates at the present time.

3   Limitations of the study

The most important limitation is the size of our sample: only five companies. This is due to the fact that we decided to consider only Brazilian companies that had won international prizes for being innovative. All of our companies succeeded using Open Innovation because they were internationalized but it would be interesting to investigate companies that haven´t internationalized themselves to check if Open Innovation works in this other situation . Important to emphasize that we are dealing with companies from emerging countries. The recommendation for new studies would be to consider other emerging countries and companies that have their head offices in these countries and that are recognized as innovative and investigate if their companies are innovative because they use open innovation and also if they are internationalized too.

Conclusion and final considerations

Companies that adopt open innovation quickly notice and realize that there are plenty of information and knowledge available out there and very often out of their countries of origin. To pursue this knowledge is vital, but equally important is to carry out a knowledge map: companies are qualifying themselves in order to discover where knowledge they need is located and which, as we have already mentioned, is often abroad. The partnerships demand that joint training teams be geographically located near one another.

This paper has shown that in the studied cases of Braskem, Embraer, Natura, Oxiteno and WEG there is a significant relation between innovation and internationalization. These five Brazilian companies have established important operations abroad and, to face foreign competition, had to be innovative. Consequently, they shared the acquired expertise from foreign subsidiaries with R&D areas based in Brazil. Not to mention that as a result of the internationalization process they ended up establishing extremely important partnerships to succeed globally.

The advantages to Brazilian companies establishing international alliances are huge, and are easily exemplified by the fact that they are able to test the developments not only domestically, but also in their partners' market. Moreover, the business partner often ends up being pioneers on prospection and joint operation in new countries' markets, thus fostering its internationalization.

The search is more easily made when the company already operates in developed countries, since it is where they usually find their suppliers, universities and more skillful clients. Braskem Embraer, Natura, Oxiteno and WEG are successful in the search of specialist partners due to their wide international presence. To put another way, it is valuable to the international partners to rest assured that they are making a deal with a company already settled and operating in their countries. As a matter of fact, to put your trust in the partner is the key to open innovation be successful; and this reliability is more quickly developed between companies that have already set up commercial relations and then decide to jointly work in the search for innovation.

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Contact

Paulo Feldmann

Faculty of Economics and Business, Department of Business Administration

University of São Paulo

05508-900 São Paulo, SP, Brazil

feldmann@usp.br

INNOVATION CLUSTERING AND FIRMS' PRODUCTIVITY IN ITALY

Anna M. Ferragina – Giulia Nunziante – Erol Taymaz

Abstract

Purpose: In this paper we explore how firms' productivity is affected by agglomeration of firms, clustering of innovation and localisation of FDI in Italy. The analysis aims to provide a measure of spillovers on productivity from geographical and sectorial clustering of firms and from their innovation. Firm's absorptive capacity is also taken into account by interacting the variables of agglomeration and innovation at region-sector level with size and technology.

Design/methodology/approach: Spatial unit of analysis are provinces. Our sample is stratified by size, sectors and region and representative of the Italian firm population. Panel estimates for output by GMM system methodology are used to address simultaneity and endogeneity on inputs and reverse causality between agglomeration and productivity. We build specific indexes of agglomeration and innovation activity at territorial level. We also use indicators of innovation performed by domestic and by foreign multinationals at the spatial level of analysis adopted.

Findings: The estimation results support significant productivity enhancing agglomeration effects stemming from firms operating in the same sector and region, from innovation clustering at local level, and from higher output of foreign firms located in the same region. However, spatial spillovers are specific to technologically more sophisticated firms.

Research/practical implications: In policy terms there is evidence on the outcome that firms in the same industry benefit more from each other as they are more technologically similar, and the sector closeness matters as this may facilitate the flow and absorption of knowledge among firms. However, technology play a critical role and policies should pay specific effort to enhance the absorptive capacity of less technology sophisticated firms.

Originality/value: The specific additional insights are given by the adoption of a multidimensional approach, both at spatial and firm level, in the effort to catch at the same time regional characteristics of the economic systems and firm heterogeneity.

Keywords: Multifactor productivity, Size and Spatial Distributions of Regional Economic Activity, innovation, multinational firms

JEL Codes: D24, R12, O3, F23

Introduction

The aim of the proposed paper is to investigate how firms' productivity is affected by agglomeration of firms, clustering of innovation and localisation of FDI in Italy. The choice of Italy is based on the relevance that economies of agglomeration play in this economy due to the large diffusion of science parks, innovation clusters, incubators, and by an increasing role of multinational corporations (MNC) over the last decades.

We explore the role of spatial externalities by considering agglomeration economies and external knowledge spillovers. The questions investigated are the following. Do firms localised in clusters of production exhibit a higher productivity? How far concentration of innovation of firms in the same cluster is likely to increase productivity? How far firms benefit from the experience of large foreign multinational firms in the vicinity? We also control for the role of firms' absorptive capacity. Hence, we interact the main variables of agglomeration and innovation at region-sector level with firm size (measured by the number of employees) and innovation investment. These interaction variables reveal if large firms and innovation performers benefit more from agglomeration effects and knowledge spillovers.

The specific additional insights are the focus on agglomeration economies and innovation spillovers taking into account a multidimensional approach, both at spatial and firm level, in the effort to catch at the same time regional characteristics of the economic systems and firm heterogeneity.

We use an unbalanced panel of manufacturing firms for 2005-2010 merging AIDA with Capitalia survey Xth wave (manufacturing only). We focus on firm location in industrial districts, and urban areas and on several measures of innovation. Spatial unit of analysis are provinces. Our sample is stratified by size, sectors and region and representative of the Italian firm population. We adopt panel estimates of output by GMM system methodology controlling for time fixed effects. Using system GMM dynamic panel estimation techniques we try to address simultaneity and endogeneity on inputs and also the possible endogeneity between agglomeration and productivity.

The following part is organised as follows. After a literature review of the main strands of analysis and on the specific studies carried out on Italy on the topics of interest, we describe in section 2 the data. In section 3 we develop the analysis and in section 4 we describe our results by considering the specific empirical methodology and econometric specification carried out. The conclusions in section 5 summarise the results and emphasise the policy recommendations

regarding promotion of agglomeration, localised innovation and foreign investment which may support the structural transformation of the economy.

1   Studies on localisation economies in Italy

A robust strand of the literature on Italy focus on the so called "district effect", trying to quantify the Marshallian advantages (in terms of output premiums, growth performances or financial solidity) due to the location of firms into industrial districts with respect to the impact due to the role of "urban effects", i.e. premia to firms located in urban areas associated to externalities of the Jacobian type. Quite mixed results are achieved in the literature on these issues.

Di Giacinto et al. (2012) detect stable productivity advantages of firms located in urban areas (the reference period spans from 1995 to 2006), while observing a weakening of the advantages traditionally associated to Italian industrial districts. The weakening of the local advantages associated to industrial districts is indeed confirmed by other recent studies (Iuzzolino and Micucci, 2011; Alampi et al., 2012).

However, Buccellato and Santoni (2012), for the 2001-2010 period, carry out a more detailed analysis of productivity externalities in the Italian manufacturing industry, both within and between sectors, by aggregating the productivity levels of neighboring firms in a regression of firm level productivity over a set of territorial characteristics (including the degree of urbanization of the territory where the firm is located). The result is that the productivity premiums arising from increased productivity of neighboring firms are higher if compared to the premiums originating from an increased degree of urbanization of the territory. Moreover, the paper from Accetturo et al. (2013) confirms that agglomeration effects still play the major role in explaining local productivity premiums of Italian firms located in urban areas, with respect to firms' selection effects.

These analyses have prompted further recent studies on Italy focusing on innovation spillovers effects both at regional and at firm level exploiting spatial econometric analysis. Antonelli et al. (2011), Dettori et al. (2012), Marrocu et al. (2011), Moreno et al. (2005), apply spatial econometrics techniques and find important innovation spillovers at the regional level. Lamieri and Sangalli (2013) found a relevant impact of patents on total factor productivity (TFP) of Italian manufacturing firms using a spatial autoregressive model (SARAR), which allows for spatial dependence in both TFP and error terms across firms, with the purpose of checking for the spatial diffusion of productivity.

Cardamone (2016), adopting a SAR specification, shows that the productivity of each firm is affected by the productivity of nearby firms. Besides, R&D play an important role on Italian firm productivity. This, in turn, determines an indirect effect of R&D on firm productivity because of the effect of a firm's productivity on productivity of all nearby firms. Results also show that firm TFP is positively affected by R&D spillovers due to knowledge flows across firms within the same sector, i.e. intrasectoral spillovers, while there is no significant effect of intersectoral spillovers due to knowledge flows across firms in different sectors. Carboni (2013a and 2013b) recently used spatial econometric techniques to investigate the importance of sectoral proximity in promoting R&D investment and R&D collaboration among Italian manufacturing firms. The paper employs individual firm data in order to check the existence of industry spatial effects alongside other microeconomic determinants of R&D investment.

2   Data description

We use an unbalanced panel of manufacturing firms for 2005-2010 merging AIDA with Capitalia survey Xth wave (manufacturing only). We focus on firm location in industrial districts, and urban areas and on several measures of innovation. Spatial unit of analysis are provinces. Our sample is stratified by size, sectors and region and representative of the Italian firm population. The distribution by size classes testify the key role of SMEs in our sample (67%), the role of supplier dominated sectors (41%), the concentration of firms in the North (72.75%), the diffusion of local districts (44%) and the lack of internationalisation as testify the restricted presence of foreign multinationals (1.55%).

We first focus on describing the average firm behavior in terms of TFP and of innovative activities measured by intangible assets investment, aggregating firms according to size, localization in a district, Pavitt sectors, ownership (domestic or foreign). We observe that higher size, foreign ownership, belonging to sector more intensive in technology correspond to more intense innovation activities and output performance. Conversely, the firms localized in a district are less innovative and productive but this can easily be explained by the sectors of specialization which are typical of the Italian industrial district (the made in Italy sectors such as textile, clothing, and other traditional sectors).

3 Empirical methodology: geographical and sectorial clustering of firms, innovation spillovers and productivity

In order to test the effects of agglomeration economies and spillovers, a Cobb-Douglas production function is estimated as in equation [1] :

[1] $\quad q_{i,t} = \alpha_i + \alpha_{Lq}q_{i,t-1} + \alpha_K K_{i,t} + \alpha_{LK}K_{i,t-1} + \alpha_L L_{i,t} + \alpha_{LL}L_{i,t-1} + \alpha_M M_{i,t} + \alpha_{Lm}M_{i,t-1} + D_t + \Sigma\beta_j X_{i,j,t} + e_{it}$

where q is real output, K capital, L labor, M inputs, Dt a dummy for the crisis and e the error term. Subscripts i and t denote firm and time, respectively. αi's accounts for unobserved, time-invariant firm-specific effects. X is a vector of variables that explain total factor productivity, and it includes the variables that measure agglomeration effects and spillovers.

We use GMM-system method to estimate the production function that controls for the endogeneity of inputs, autocorrelation and heteroscedasticity.

The output variable of the production function is the value of production (sales adjusted by changes in final product inventories). Inputs of the production function are capital, labor and inputs. Capital is measured by depreciation allowances, labor by the average number of employees, and inputs by the value of all inputs (raw materials, parts and components). These variables are deflated by sectoral prices indices at NACE 2-digit level to find real output, capital and input.

The GMM-system model is defined as a dynamic model: it includes the lagged values of the dependent variable (output) and all inputs. The output and all input variables are used in log form. Therefore, the coefficients of input variables give us short-term factor elasticities.

In order to capture the effects of shocks related to the global crisis, all models include a crisis dummie, i.e., a dummy variable for each year.

A dummy variable for foreign ownership is included in the model to capture the effects of foreign ownership on productivity. Foreign firms are multinational firms, and are able to transfer technology from abroad, mainly from the parent firm. Also domestic multinationals are included as like foreign firms they are more likely to be more productive than national firms.

Technological activities of the firms are captured by intangible assets. Since the firm can generate new products and/or processes as a result of R&D investment and patent activities, the intangible asset variable is expected to have a positive coefficient, i.e., innovating firms are likely to be more productive.

Since the focus of our study is to analyze the effects of agglomeration and spillovers we use a number of proxy variables that are expected to capture them. We introduce to this purpose variables able to capture regional and sectoral spillovers from agglomeration, innovation performed by domestic and by foreign firms in the province/sector and spillover from the presence of foreign firms at province and at sector level.

We build specific indexes of agglomeration and innovation activity at the territorial scale, where the spatial unit of analysis is the province where a firm is located. We try to consider different externality transmission channels. We first consider spillovers between firms in the same industry/province (horizontal spillovers) to investigate upon the agglomeration premia. The set of proxy variables for agglomeration effects includes the share of the province in the total sectorial output (output_share_prov). If there are agglomeration economies in a sector, the firms located in a region where that sector is concentrated in would be more productive. Secondly, we consider the (log) numbers of domestic and foreign multinationals and of non multinational domestic firms in the same sector (defined at the NACE 2-digit level) and region (defined at NUTS 2 level) (nfirms_sect_prov_md, nfirms_sect_prov_mf, nfirms_sect_prov_nmn). These variables will have positive coefficients if agglomeration of firms leads to higher productivity.

An alternative set of proxy variables for firms' agglomeration includes the (log) of value added of domestic and foreign R&D performers in a given sector and region (md_val_added, mf_val_added, nmn_val_added). This set defines agglomeration in terms of output instead of the number of firms as defined in the first case.

Furthermore, we build indicators which allow to take into account innovation spillovers on productivity by considering the innovation performed by domestic, by foreign multinationals and by non multinational firms respectively in the different provinces (linnov_prov_md, linnov_prov_mf, linnov_ prov_nmn). We use the number of domestic and foreign innovation in the same sector and region to test if innovation performers are more likely to spillover knowledge and technology to other firms that operate in the same sector and region.

The impact which foreign firms play in the sector and in the province is also considered (foreign_share prov; foreign_share_sect). If there are spillovers from foreign firms within a sector, then the "Foreign share (sector)" variable will have a positive coefficient. However, if spillovers from foreign firm have a geographical dimension, then the coefficient of the "Foreign share (region)" variable will be positive.

We also introduce as a control a measure of base levels of regional attractiveness using value added per capita in the province (lva_pc). This takes into account initial regional factors. Finally, spatial factors/distance i.e. the distance between the center where the firm is located and the economic center of the country (dist_maintown) is included as indicator of remoteness and the railways network is used as proxy for the regional infrastructure (stations).

At firm level we control for size, capital, ownership status, and innovation measured at firm level by intangible assets (intangible_pro). The estimates include a dummy for the crisis years (crisis). We do not include sectoral and regional dummies, as these would control on average across the years for regional and sector effects and might absorb some of the regional and industry externalities we are trying to estimate.

All these variables are listed and explained in tab. 10. Note that with the exception of dummy variables (FDI and domestic multinationals) and share variables (Regional output share, Foreign share (sector) and Foreign share (region)), all variables are in log form. In tab. 11 the descriptive statistics for these variables give an overview of the mean and the standard deviation for the firm characteristics and the regional indicators.

As shown in the table, the share of foreign firms was 2%. The average number of national firms in the same sector and region is 9.77 (e2.28) while 1.6 (e0.47) is the number of domestic multinationals. The average number of foreign firms in the same sector-region is only 1.18 (e0.17). Although the number of foreign firms is small, the average sectoral share of foreign firms is 5%, and the average regional share of foreign firms is also 5%. There is also a significant difference between the number and the output of foreign firms this latter being 9.39. The average innovation of domestic (foreign) firms in the same province/sector is 3071 and 1480.

We also interact agglomeration and spillover variables with firm size (measured by the number of employees) and with the firm innovation variable. These interaction variables will reveal if large and more innovating firms benefit more from agglomeration effects and spillovers. For example, if large firms and more technology endowed ones benefit more, the coefficient of firm size-agglomeration effect interaction variables and of firm technology class-agglomeration variables will be positive.

4   Estimation results

In tab. 1 we present the results from the estimation of our models. We included agglomeration and innovation spillover variables in separate estimations to control for the effects of correlations between explanatory variables. In the first column we only consider the production function variables. Estimation results for production function are quite robust and sensible. The returns to scale parameter is around 0.8 for almost all models that indicates that there are mild decreasing returns to scale in Italian manufacturing. The coefficient of the lagged output variable is small (around 0.2), i.e., output adjusts quickly.

In column 2 in addition to the variables related to the production function (and the lagged labour, raw material, real capital input and dependent variable) the proxy for innovation (intangible asset investment) and the status of domestic or foreign multinational on the reference category of national firms are added. The expected signs and significance are obtained on all the variables. The coefficients of foreign ownership and innovation are statistically significant[4] in all models. Foreign firms in Italian manufacturing are around 23% more productive than domestic firms. As may be expected, the higher the intangible asset the more productive are firm.

 In column 3 we focus on considering a proxy for firm agglomeration: the number of firms at sector/province level. We find evidence of spillovers from the concentration of non multinational firms in terms of enhancing output and we find a negative impact from foreign multinationals and from the concentration of domestic multinationals.

In column 4 we do find evidence that overall innovation in the province/sector has a positive impact. In column 5 the estimates focus on three key variables: a proxy for agglomeration at province level and the share of foreign firms in the province and in the sector output. The indicator of agglomeration of activities in the sector is positive and significant. I.e. the share of that region in the sectors' total output, the share of foreign firms in the sectors' total output, and the share of foreign firms in the regions' total output. Therefore, for example, the "Foreign share (region)" variable shows if there are regional spillovers from foreign firms that benefit to firms operating in the same region but in different sectors, whereas the "Foreign share (sector)" variable shows if there are spillovers from foreign firms that are beneficial to all firms operating in the same sector irrespective of their location.

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4   Unless otherwise noted, "statistically significant" means statistically significant at the 1% level.

Estimation results show that there are pure agglomeration effects ("Regional share (sector))", i.e., if a regions share in a sectors' total output is higher, the firms operating in that region and sector are more productive. This is in line with what is asserted by some scholars. Laursen and Meliciani (2000) evaluate knowledge spillovers and innovation through an evolutionary economics approach and conclude that spillovers are often sector-specific. Moreover, there are additional spillovers from foreign firms to all firms operating in the same province but not to firms operating in the same region/sector, i.e., there are spillovers at the sectoral but not at regional level independent form each other.

As a robustness check for this result in the following estimate (column 6) we also adopt variables for agglomeration based on the concentration of the value added in the province/sector. The results indicate a positive impact but only as far as non multinational firms value added concentration is concerned.

Columns 7-12 include interaction variables that are used to understand if size (labour) and absorptive capacity (measured by technology intensity classes measured by splitting the sample in two classes according to firm intangible asset below and above the median) are important in benefiting from agglomeration effects and spillovers.

Some of the variables interacted with firm size have statistically and positive significant coefficients at the 5% level. It seems that the number of domestic multinationals operating in the same sector are more important for small firms than for large firms while agglomeration of national firms benefit the large firms more. The agglomeration of value added of foreign and domestic multinationals also favours the small firms more than the large ones and, the innovation of foreign multinationals favours small firms more.

Regarding the interactions with the class of technology to which the firm belong to (tech 1 class if lower than the average of intangible asset in the province and sector and tech 2 if higher), the estimation results show that innovation matter for benefiting from spillovers. It seems that less innovative firms benefit more from spillovers from foreign and domestic multinationals (Model 10), but technology activity enhances the absorptive capacity, i.e., absorptive capacity created by R&D activity do matter for spillovers from other domestic firms. These results may indicate that there could be spillovers specific to technologically more sophisticated firms.

As control variables we have in all the estimates the dummy for the crisis. In the estimates 2-12 a further control is the level of value added per capita to take into account the level of development and hence the attractiveness of the region, which might be the real factor pushing

output and agglomeration at the same time. Furthermore, we consider the distance from the main town and the number of railway stations in the province. The signs of he coefficient are in line with our expectations.

To sum up, we find evidence in favour of agglomeration spillovers at local level but these effects are stemming from national firms not from foreign firms. Firms also get premiums in presence of higher innovation in the province in the same sector carried out by neighbouring domestic firms confirming the crucial role played by innovation spillovers due to closeness between domestic firms. Hence, innovation spillovers spread positively between domestic firms within geographical and sectoral-based neighborhoods which suggests that firms operate in a cooperative environment. However, foreign firms' innovation has no significant impact.

To summarize, the estimation results for Italy suggest that:

- there are significant productivity enhancing agglomeration effects
- there are significant productivity enhancing spillovers between firms operating in the same sector and region
- spillovers emanating from multinational firms are weaker than those from non multinational domestic firms
- spillovers from innovation at local level are strong
- there are agglomeration and innovation spillovers specific towards more technologically sophisticated firms
- there seems to be evidence of spillovers specific to small firms.

Tab. 1. Production function estimation results for Italy (GMM-system)

		No interactions						Interactives with size			Interactives with tech dummy		
		GMM (1)	GMM (2)	GMM (3)	GMM (4)	GMM (5)	GMM (6)	GMM (7)	GMM (8)	GMM (9)	GMM (10)	GMM (11)	GMM (12)
Production function	Returns to scale	0.84108	0.87887	0.7882	0.78029	0.78391	0.7613	0.87361	0.80765	0.81943	0.78626	0.77982	0.75636
	Lag output	0.177***	0.226***	0.212*	0.203***	0.229***	0.183***	0.208*	0.192***	0.183***	0.210*	0.204***	0.180***
		(0.0223)	(0.0246)	(0.116)	(0.0234)	(0.0241)	(0.0237)	(0.115)	(0.0247)	(0.0257)	(0.116)	(0.0235)	(0.0236)
	Labour	0.189***	0.265***	0.182	0.179***	0.162***	0.173***	0.312**	0.226***	0.255***	0.181	0.178***	0.166***
		(0.0187)	(0.0217)	(0.117)	(0.0205)	(0.0209)	(0.0206)	(0.151)	(0.0277)	(0.0290)	(0.116)	(0.0207)	(0.0205)
	Lag Labour	0.00085	0.00577	0.00931	0.00989*	0.00951*	0.00720	0.00531	0.00775	0.00373	0.00926	0.00972*	0.00716
		(0.0048)	(0.00537)	(0.0133)	(0.00537)	(0.00540)	(0.00529)	(0.0129)	(0.00554)	(0.00562)	(0.0132)	(0.00539)	(0.00526)
	Capital	0.164***	0.175***	0.267***	0.263***	0.274***	0.257***	0.275***	0.275***	0.274***	0.266***	0.266***	0.255***
		(0.0141)	(0.0155)	(0.0695)	(0.0162)	(0.0167)	(0.0160)	(0.0594)	(0.0168)	(0.0171)	(0.0697)	(0.0162)	(0.0159)
	Lag capital	-0.163***	-0.175***	-0.248***	-0.245***	-0.255***	-0.237***	-0.259***	-0.256***	-0.253***	-0.248***	-0.247***	-0.234***
		(0.0136)	(0.0149)	(0.0605)	(0.0151)	(0.0156)	(0.0149)	(0.0556)	(0.0158)	(0.0161)	(0.0606)	(0.0152)	(0.0149)
	Inputs	0.480***	0.479***	0.404***	0.404***	0.405***	0.403***	0.368***	0.391***	0.382***	0.405***	0.403***	0.407***
		(0.0083)	(0.0101)	(0.0622)	(0.0116)	(0.0117)	(0.0115)	(0.0652)	(0.0122)	(0.0125)	(0.0624)	(0.0116)	(0.0115)
	Lag inputs	-0.0677****	-0.0969***	-0.0378	-0.0336***	-0.0406***	-0.0249**	-0.0357	-0.0281**	-0.0253**	-0.037	-0.0339***	-0.0248**
		(0.0110)	(0.0119)	(0.0726)	(0.0115)	(0.0116)	(0.0115)	(0.0662)	(0.0122)	(0.0125)	(0.0728)	(0.0116)	(0.0115)
Ownership	Foreign owner (dummy)		0.236***	0.376***	0.385***	0.361***	0.481***	0.293***	0.366***	0.426***	0.377***	0.387***	0.485***
			(0.0252)	(0.0808)	(0.0250)	(0.0249)	(0.0283)	(0.0849)	(0.0266)	(0.0323)	(0.0811)	(0.0252)	(0.0281)
	Domestic multinationals (dummy)		0.133***	0.272***	0.274***	0.264***	0.341***	0.196***	0.244***	0.269***	0.273***	0.277***	0.349***
			(0.0225)	(0.0728)	(0.0223)	(0.0223)	(0.0243)	(0.063)	(0.0226)	(0.0233)	(0.0728)	(0.0225)	(0.0242)
R&D	Intangible assets		0.0229***	0.0200**	0.0197***	0.0181***	0.0204***	0.0248***	0.0214***	0.0228***	0.0312***	-0.00437	0.0255***
			(0.00142)	(0.00786)	(0.00144)	(0.00149)	(0.00144)	(0.009)	(0.00157)	(0.00169)	(0.011)	(0.00462)	(0.00432)
FDI variables	Foreign share sector					0.0107							
						(0.0348)							
	Foreign share province					0.0379*							
						(0.0211)							
	Output share province					0.546***							
						(0.0319)							
Agglomeration	nfirms_sector_prov_md			-0.00928				-0.0151			-0.0115		
				(0.0122)				(0.0126)			(0.0291)		
	nfirms_sector_prov_mf			0.00179				-0.00148			0.00922		
				(0.0165)				(0.0216)			(0.042)		
	nfirms_sector_prov_nmn			0.0108				0.0171			0.0437**		
				(0.00821)				(0.0121)			(0.0219)		
	md_val_add_sector_prov						-0.00172***			-0.00185***			-0.000774
							(0.000391)			(0.000434)			(0.000926)
	mf_val_add_sector_prov						-0.00267***			-0.00171***			0.00118
							(0.000477)			(0.000539)			(0.00112)
	nmn_val_add_sector_prov						0.0361***			0.0306***			0.0383***
							(0.00196)			(0.00175)			(0.00290)
Innovation	innovat_prov_md						0.00338***			0.00277***			0.00711***
							(0.000664)			(0.000738)			(0.00137)

innovat_ prov_mf	-0.000618	-7.36e-05	0.00124
	(0.000496)	(0.000532)	(0.00120)
innovat_ prov_nmn	0.0156***	0.0139***	-0.00857**
	(0.00212)	(0.00201)	(0.00394)
nfirms_ md* labour			
		-6.91E-05	
		(5.83E-05)	
nfirms_ mf* labour			
		1.00E-05	
		(0.00013)	
nfirms _nmn* labour			
		-1.72E-05	
		(7.47E-05)	
md_val_add * labour			-2.10e-06**
			(9.75e-07)
mf_val_add* labour			-8.12e-06***

Interactive size (vertical row label)

	(1.82e-06)
nmn_val_add* labour	2.90e-06
	(3.32e-06)
innovat_ prov_md * labour	-3.76e-07
	(1.90e-06)
innovat_ prov_mf * labour	-5.78e-06***
	(1.30e-06)
innovat_ prov_nmn* labour	1.23e-06
	(4.69e-06)
nfirms_ md* tech	0.000409
	(0.00363)
nfirms_ mf* tech	-0.00085
	(0.00521)
nfirms _nmn* tech	-0.00501*
	(0.00286)

Interattive tech

md_val_add * tech								-0.000141
								(0.000125)
mf_val_add* tech								-0.000558***
								(0.000149)
nmn_val_add* tech								-0.000276
								(0.000346)
innovat_ prov_md * tech								-0.000518***
								(0.000187)
innovat_ prov_mf * tech								-0.000270*
								(0.000162)
innovat_ prov_nmn* tech								0.00365***
								(0.000572)
dist_main town		-0.00137***	-0.000919***	-0.00106***		-0.00144***	-0.00123***		-0.00135***	-0.00106***
	-0.00124**	(0.000137)	(0.000140)	(0.000136)	-0.00147**	(0.000148)	(0.000152)	-0.00124**	(0.000138)	(0.000135)
	(0.00056)				(0.00058)			(0.00056)	
Other variables Stations		0.000728***	0.000329***	0.000476***		0.000734***	0.000509***		0.000748***	0.000467***
	0.000964***	(9.59e-05)	(9.47e-05)	(9.29e-05)	0.000869**	(0.000103)	(0.000100)	0.000969***	(9.65e-05)	(9.23e-05)
	(0.00037)				(0.00034)			(0.00037)	

			va_pc								
va_pc			0.0698***	0.0680***	0.0400***		0.0718***	0.0448***		0.0679***	0.0394***
			0.0976***				0.0824***			0.0970***	
			(0.0155)	(0.0145)	(0.0145)		(0.0162)	(0.0155)		(0.0156)	(0.0144)
			(0.0293)				(0.0293)			(0.0294)	
Crisis			-0.0672***	-0.0750***	-0.0565***		-0.0690***	-0.0593***		-0.0684***	-0.0559***
			-0.0617***				-0.0638***			-0.0619***	
			(0.00567)	(0.00573)	(0.00553)		(0.00593)	(0.00596)		(0.00569)	(0.00550)
			(0.0142)				(0.0146)			(0.0143)	
Constant	4.274215***	3.598***		3.279***	3.262***	3.438***		3.306***	3.385***	3.458***	3.413***
			3.042***				3.145***			2.986***	
	(0.1309)	(0.137)		(0.191)	(0.190)	(0.185)		(0.200)	(0.199)	(0.199)	(0.185)
			(0.622)				(0.647)			(0.609)	
Observations	14,389	14,389		13,037	13,037	13,037		13,037	13,037	13,037	13,037
			13,037				13,037			13,037	
Number of firmid_op	3,228	3,228		2,951	2,951	2,951		2,951	2,951	2,951	2,951
			2,951				2,951			2,951	
Hansen J	96.86	77.09		94.61	95.97	94.85		94.43	94.05	94.83	95.63
			93.14				93.95			93.68	

Jdf	44	44		44	44	44		44	44		44	44
			44				44			44		
Jp	7.63e-06	0.00150		1.46e-05	9.86e-06	1.36e-05		1.54e-05	1.71e-05		1.37e-05	1.09e-05
			2.21E-05				1.76E-05			1.90E-05		
AR1	-4.108	-4.753		-4.796	-5.010	-4.474		-4.478	-4.236		-4.861	-4.411
			-4.936				-4.914			-4.908		
AR2	-0.344	-0.178		-0.730	-0.641	-0.795		-0.863	-1		-0.671	-0.801
			-0.692				-0.962			-0.745		
AR3	2.17	2.15	0.93	0.92	0.82	0.72	1.33	1.05	1.11	0.87	0.83	0.65

Standard errors in parentheses.*** $p<0.01$ **$p<0.05$ *$p<0.10$. All variables are in log form. Province output share, Foreign share (sector) and Foreign share (region) are in percentage

GMM instruments: gmm(l.lval_prod ldipendenti lkreal2 lmpreal, lag (2 .))

Conclusions and policy implications

We investigate what are the benefits of clustering by estimating the effects of aggregation and other localisation variables on firms' productivity. First of all, we considered how far intense competition and polarisation in clusterised areas is able to promote higher productivity. Our results emphasise positive externalities from foreign firms' agglomeration. Conversely the externalities from agglomeration of domestic firms are negative suggesting congestion effects. The estimation results also suggest a crucial role for foreign firms in terms of generating high FDI spillovers at the local level and that spillovers emanating from foreign firms are stronger than those from domestic firms in accordance with previous analyses (Ferragina and Mazzotta, 2014).

Important localised innovation spillovers are also found. Besides, there is evidence on the usual outcome that firms in the same industry benefit more from each other as they are more technologically similar and the sector closeness also matters as this may facilitate the flow and absorption of knowledge among firms. We also found the territorial and social redistribution of spillovers may be limited in particular from foreign multinationals. The likely reason is that firms that are opened to the foreign market are in general subcontractors which do not have total autonomy to conduct technological innovation. We also consider innovation spillovers by type of firms (SME/large, high/low innovating and hence with high/low absorptive capacity). Hence, we interact agglomeration and spillover variables with firm size (measured by the number of employees) and innovation variables. These interaction variables reveal that the innovation performers benefit from agglomeration effects and spillovers more than non

innovators, as in most of our estimations the coefficient of firm innovation-agglomeration effect interaction variable is positive. Another result is that agglomeration economies and innovation spillovers are more beneficial to small firms than to large ones.

In policy terms there is evidence on the outcome often found that firms in the same industry benefit more from each other as they are more technologically similar and the sector distance matters as this may facilitate the flow and absorption of knowledge among firms.

Additional answers to crucial policy questions may be derived from our analysis. Generally, it is argued that, in an open economy, agglomeration leads to higher efficiency. Our result mostly support this conclusion with the due caveat and firm specificity. Polarization of activities, is confirmed to be an enhancing factor of firm performances. However, recent decades witnessed an increasing unbalanced process of regional growth which led to large income and employment gaps across regions, consequent massive migration, concentration of population in large cities and along the coast, degradation and isolation of internal areas, environmental impoverishment and abandonment.

While a reallocation of resources to less developed regions could be costly and counterproductive given that regional tax incentives to poor regions may shift jobs away from territories that do not benefit from these incentives, rather than create new ones, the policy target for the government should be to invest in the transportation infrastructure, ease access to housing, and develop regional complementarities. Such policies would expand job opportunities for the people outside the coastal region and lead in the long term to a more sustainable convergence of standards of living among regions.

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Contacts

Anna M. Ferragina

DISES, CELPE, University of Salerno

Via Giovanni Paolo II, 132, 84084, Fisciano, Salerno, Italy

aferragina@unisa.it

Giulia Nunziante

University of Rome 2

Viale Columbia, 2, Rome, Italy

giulia.nunziante@uniroma2.it

Erol Taymaz

METU, Ankara, Turkey

etaymaz@metu.edu.tr

PREDICTIVE FACTORS IN STUDENT EVASION CONTROL: AN ANALYSIS WITH STRUCTURAL EQUATION

Douglas Filenga – Fábio Machado-da-Silva – Bruno Luz

Abstract

Purpose: The aim of this study is to improve the performance of small schools through the strategic use of information. The proposal consists of a new management model that is innovative and makes it possible to properly manage the resources to diminish students' intention to evade.

Design/methodology/approach: The data (N=214) were obtained through the application of a questionnaire sent electronically for 60 days in the second half of 2016. The instrument had four scales of five levels of agreement concerning their respective latent variables: Difficulty of Disciplines, Preference for Institution, Financial Situation and Intention to Evade. The test of the model was by Structural Equation with Partial Least Square (PLS) and analyzed Reliability, Convergent Validity and Discriminant with bootstrapping of 500 replacements.

Findings: The results indicate that the assumptions tested were supported. The Intention to Evade can be explained by the analyzed variables, and Difficulty of Disciplines is the variable that has the greatest predictive power. However, the variable Preference for the Institution presented Negative Correlation.

Research/practical implications: The study indicates that the students who participated in the research are unsafe in facing the Difficulties of the Discipline. There are also indications that such students consider work to be more important if they have to choose between working or studying, but when they study at an institution of their own choice, this helps to diminish their intention to evade. These findings suggest that actions related to psychological support should be associated with academic actions, including developing partnerships with companies to help their employees to study. Future investigations could investigate which actions and partnerships are most appropriate.

Originality/value: The value of this study is to provide a methodology to managers interested in using Structural Equation statistical models to generate information on how material, financial and symbolic resources should be used to reduce students' intention to evade and help the company achieve its goal.

Keywords: Structural equation, resource management, performance

JEL Codes: C31, L25

Introduction

Strategic management of data is critical to improving organizational performance regardless of the company sector or the computer program to be used (Olson and Wu, 2017). Statistical modeling means, therefore, the operationalization of a data-driven strategy to generate information that supports the successful decision-making process. The study of intention to avoid student is possible to be realized from the perspective of the strategic use of information with statistical models. It is assumed that the development of this intention is a consequence of the perception about what happens in the surroundings of school life and also in the socioeconomic and political context. This study sought to elucidate the factors and their correlations as predictors of student avoidance.

It was developed a conceptual model where nine variables and their correlations were positioned with the intention to evade. The review of the literature has revealed a gap as to what the aspects associated with this intention are, together. The analysis is a model of variance, not procedural.

1   Student evasion

It is possible to take appropriate measures, that is, to adopt managerial actions that more adequately control the rates of evasion, which are usually high (Machado-da-Silva, Meirelles , Filenga & Brugnolo Filho, 2014). Osborne and Gaebler (1997) propose modernization with a focus on efficiency rather than on an occasional one. But it was in the 1970s in the United States that the foundations were laid for constructing and proposing theoretical models aimed at explaining the predictive factors of student evasion. These bases are contained in postulates by Tinto (1987) and, who were adapted in the 1980s by Bean (1980, 1983). Obviously as a characteristic of every model, the issue of regionality occurs and this detail requires attention from the most attentive researchers, because it suffers the influence of culture, not to say too much. This need to contextualize research in relation to culture, for example, has already been identified by Cabrera, Castaneda, Nora and Hengstler (1992). The gap found in the literature review indicated a lack of studies focused on the intention and the Structural Equation method. And with a focus on intention revealed the lack of studies focused on the evasion process. For example, Bellatreche et al. (2011), suggest the use of Data Mining to deal with student evasion by analyzing student-related aspects, not organizational structure, inclusively. Baracho and Diesel (2016) reinforce the strategic use of information system to combat student evasion, but in distance courses and with mixed methodology.

1.1 Research Model and Data Analysis

For the construction of the model to be performed, in addition to the literature review, previous research with peers and professionals. We adopted the method of statistical modification in the construction of questionnaires with the use of Partial Least Squares (PLS) because it found support in the literature on strategic alignment (Luftman, Lyytinen and Zvi, 2017). Thus, a research model was developed and tested, Figure 1.

Academic, institutional, and personal factors are the three previously identified factors. As well as, 45% of student avoidance intent. Three hypotheses are tested. The first one on Academic Aspects: Difficulty of the subjects and Intention to evade. This correlation would be positive and statistically significant. Thus, the greater the student perceives the difficulty of the disciplines, the greater would be the intention to evade. H1: There is a positive and significant association between Discipline Difficulty and Intention to evade.

The second hypothesis is expected to have the opposite effect, the higher the level of preference for the school chosen to take the course, the less will be the intention to evade, due to the understanding that the school chosen is the first option compared to tend to behave in favor of their stay and not evade. H2: There is a negative and significant association between the relation Preference for the institution and Intention to evade.

The third hypothesis considers that the more students disagree with the stated statements about the prevalence of employment on studies, the lesser will be the intention to evade. H3: There is a positive and significant association between the relation Financial situation and Intention to evade.

The convergent validity confirms how much each sentence or affirmative of the scale used in the model is aligned with the others of this same construct (Hair al., 2005): AVE (Average Variance Extracted). The result obtained was high, ie well above 0.5 (Chin, 2001), for each constant variable in the data collection instrument used, according to Table 1. Obtaining this result results from a judicious process of scale construction which goes through the validity of face and content made by specialists, among other aspects, developed by the researchers. In addition to that the complete model had also been tested in another educational institution with satisfactory results, although not published. This result shows that the indicators (sentences of the questionnaire) that measure the variables present convergence and measure what they propose to measure: (AcDific 0,76) and, respectively, for Preference by the institution (PesPref 0,64), Financial situation PesSitFin 0.70) and Intention to evade (Intention 0.79).

The second statistical test is that of Discriminant Validity, which guarantees that the concepts measured are sufficiently unmistakable, Hair et al. (2005). Done by the criterion of Fornell and Larcker (1981), where the square root of AVE must be greater than the intercorrelations between the other constructs. Table 1 shows that the values of the diagonal (AVE root) are higher than the other intercorrelations, both the row and the column. The latent variables investigated are not confused with each other, that is, for the latent variable AcDific, the value obtained was 0.87; for Intent was 0.89, for PesPref was (0.80) and for PesSitFin was (0.84). All values are greater than 0.51; -0.13; 0.34; -0.30; 0.43 and -0.13 of the Correlation Matrix presented in Table 1. Due to the proximity of the values obtained for the mean and the median, it can be stated that the distribution of the data is approximately symmetrical, that is, they are within what is considered a "normal" distribution or that there are no values outside the curve or comparatively much (outliers).

The reliability of internal consistency was obtained by the Cronbach's Alpha, whose generally accepted lower limit is 0.7, but may decrease to 0.60 in exploratory research, as is the case (Hair et al., 2009, p 126). This value indicates that all the questions of each variable converge in the direction of measuring the construct to which they are destined. Greater accuracy in this value can be found in another parameter by Hair et al. (2005), to evaluate the confirmation of internal consistency as a measure that measures the reliability and robustness between the constructs of a multiple variable. Thus, indicators of each construct must measure and correspond to the construct with which they are related. In this parameter, this value is considered sufficient for searches when it is above 0.80. The values found are all satisfactory, i.e., AcDific 0.89; Intention 0.91, PesPref was (0.86) and PesSitFin (0.79), as in Table 1.

Reliability of the model is measured by the factor loads of each indicator, which should be greater than 0.7 (Fornell & Larcker, 1981). The loads of the indicators presented values higher than 0.7, thus demonstrating the reliability of the model. Regarding the procedure recommended by Hair et al. (2005) to seek to improve the validity and reliability of the model, among other aspects, eliminating indicators with values below 0.70, we have an exception made for PesSitFin1 (0,68) that given the high approximation with the minimum value (0.70) and that, in terms of rounding according to the mathematical criteria, the value of this factorial load can be considered as valid, therefore, it was decided in this research to maintain the construct with this indicator, since its withdrawal would not affect power very much predictive model, that is, from 38.2% to 38.7%, without loss of statistical significance. It also occurs that due to

the maintenance of this indicator, it is possible to replicate this study with a greater possibility that the data are equivalent.

Tab. 1: Validity tests of the model

Latent variable	1	2	3	4
1-AcDific	0,87			
2-Intenção	0,51	0,89		
3-PesPref	-0,13	-0,30	0,80	
4-PesSitFin	0,34	0,43	-0,13	0,84
AVE	0,76	0,79	0,64	0,70
Compound reliability	0,93	0,94	0,90	0,88
R²				0,38
Cronbach's Alpha	0,89	0,91	0,86	0,79
Average	2,16	1,65	3,97	2,60
Median	2,00	1,00	4,00	3,00
Standard deviation	1,19	1,12	1,25	1,38
Coefficient of variation	55%	68%	31%	53%

Note. AcDific: Academic aspects: difficulty of the disciplines; Intention: Intention to evade; PesPref: Personal aspects: Preference for the institution; PesSitFin: Personal aspects: Financial situation.

Source: Self-development

The quality of the model was confirmed by the high value evaluation obtained for the R^2. That is, the investigated model is able to explain about 38% (0.382) of Student's intention to evade that, as exposed, represents the possibility of interruption of studies. Respectively, by means of path analysis, this explanation can be perceived by the positive association between AcDific and Intent (0.392, $p < 0.001$) and also by PesSitFin and Intent (0.274; $p < 0.01$). While the relationship between PEsPref and Intent (-0.211, $p < 0.05$) is negative, as expected. The magnitude of the effects is represented by the coefficients and the statistical significance of these coefficients. The coefficients were obtained through the PLS (Partial Least Square) algorithm. In the arrows that link one construct to the other are the standard path coefficients (Betas). Within the Intention construct is the total effect - R^2. The path relations encountered were already described when it came to the quality of the model.

Fig. 1: Path Analysis
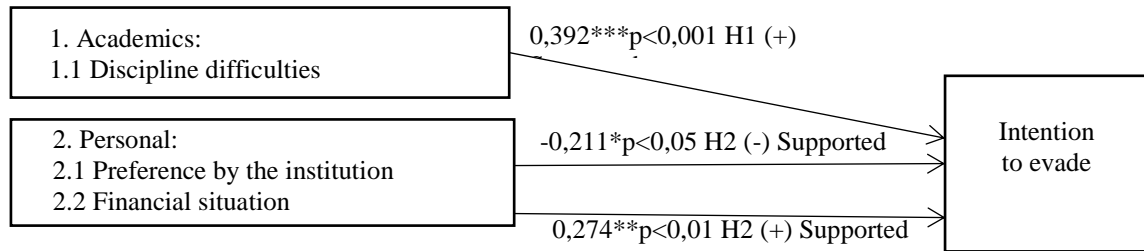
Source: Self-development

The Student t values obtained with the Bootstrapping analysis for the factor loads and for the standardized coefficients (Betas). The highest path value found for the relationship between AcDific and Intent (0.39) is highlighted, as this is the strongest association of the model. Such association, because it is positive, in a non-procedural model of variance, means that the higher the level of perception of difficulty in the subjects, the greater the level of intention to avoid the individuals analyzed. Thus, individuals assert that, faced with the possibility of facing the problems and challenges of the disciplinary difficulties, they would be willing to abandon their courses. This finding is very worrying, as it is not possible to lower the level of difficulty of the disciplines to avoid student avoidance. The quality of the course and the training of the students would be seriously compromised. Maybe the lesson method, for example, might be the case. Innovate the way you pass the content, without however overloading the teacher with the full and unlimited responsibility of class show or similar thing. There should be interest and above all energy expenditure with effort to learn, without this minimum, there is no class, technique or teacher who does miracles. If there is a reduction in the perceived level of difficulty of the disciplines which, either for a better and more adequate preparation with associations of different teaching-learning techniques, with efforts of both parties, the results may be satisfactory, but it must be discovered how to create mood in the students who do not see meanings and meanings in the work and, perhaps, of the studies too. This is another finding of the importance of multidisciplinary activities in some way contributing to this process.

It should also be taken into account in the formulation of proposals that the difficulty of the disciplines besides causing the intention to evade and is related to the difficulty in solving other problems, for example, social. The solution is not in the specific aspect of school education, but it depends on it, that is, education in itself is not the goal, but the process. That is if it is possible to separate one from the other. In this case, this was done only for the purpose of facilitating

the understanding of the narrative, since as a scientific study, one can conjecture, but not affirm what was not studied or simply point out simplistic solutions that are no more than a fallacy.

The association between PesPref and Intention (-0.21), because it is of a negative character, reveals that given a variation to a greater level of certainty that the choice by the educational institution is the right choice, in terms of being the preferred school , the lower the intention of avoidance of the course in progress. This finding of the study seems to indicate that the individuals tend to value their courses also in function of institutional aspects. It is at this point that the personal aspects merge with the institutional ones, because for an institution to be preferred by the students, potential or not, several managerial actions are necessary for this purpose, such as history, location and other positive management indicators. Thus, institutions interested in controlling the indices of intention to evade should be attentive to the aspects that develop the perception of preference by this particular institution.

The third relation studied is between PesSitFin and Intent (0.27) and reveals a higher valuation of studies than jobs in companies, since the greater the level of agreement with the affirmative statements related to the decision to choose between one or the other, their indications reveal that your priorities are in studying. It must be considered that the sample of this study is of individuals of approximately 20 years of age and, therefore, without major achievements in the world of work. They are workers, potential or at least a portion (32%) who, apparently, would not have much to lose if they kept studying and had to choose to prioritize such studies to the detriment of professional activity. It should also be taken into account that, as shown, only 32% of the sample already has a professional activity, although these activities have not yet been identified in detail, being able to be entrepreneurs, celetistas or statutory, not to mention size of organization and other conditions . This data is corroborated by the studies when considering the process of professional choice on the part of the students. Another fact is that because they are mostly young (80% of the sample is less than 25 years old), they probably still have ties to their relatives from whom they may be considered dependent. That is, they are supported by their families and do not have as much need to keep employees as they would have those who are already independent of their families. But it is interesting to know that there is a perception in these individuals about the importance of study in relation to work. For although they are not working, they indicate that they prefer to study. This allows us the possibility of interpreting this finding as being a belief that studying is associated with a condition of having a future job or a good perspective. Or even if the professional activity is painful and unsatisfactory, not to speak of money, that is, salaries and benefits.

Conclusion

The use of statistical models based on Structural Equation offers the manager an important work tool that, in this study, was focused on the students' intention to evade. The construction of models that demonstrate the strength of the variables that explain the intention to evade is fundamental to the achievement of the objectives of the organization, both financial and social value. Among the academic aspects investigated, the difficulty of the subjects was what was presented as the one with the greatest relation. This fact seems to indicate that there is an important gap to be filled by managers in understanding such motives for regular courses and that they also include aspects of the organizational structure in a relation with time and return on investment, since both are necessary in the teaching-learning process. On the part of the administrative staff, support for the educational demands is expected to reach the determined objectives - working with goals can be part of the measures adopted, but it is not the only, even the best solution. The faculty's perception of support staff readiness can act as a pre-disposition for innovation, adoption of new techniques or other measures that make for joint effort to minimize the intention to evade. This subject is so complex that, even if the intention to evade is reduced, there are other major goals in sight, such as improving the teaching-learning process. Thus, reducing the intention to evade is not the goal, but the better training of students. Or to show even more the complexity of this subject, to even improve or expand the role of the school in society as a form of citizens and not just a supplier of workers to the market, simply.

Regarding the limits of this study, they are related to the implementation costs of the actions suggested here and also in relation to the term of return of this investment. Future studies could investigate the use of this statistical model associated with the time demanded to obtain the return of the invested activity, that is, that the avoidance rates begin to reduce significantly. It is stated that an apathetic condition is not desired in any way and that there is no learning by osmosis. But how to create mood and disposition in the students? It may be that the perception of difficulty in the disciplines is even greater than the difficulty itself. But it is not known in depth if this occurs. And the influence must also be better investigated, or how this perception is formed. Perhaps because of a fragile and conscious school base, perhaps because of genetic aspects. There is a clear need for research on motivating factors in students so that they can overcome such difficulties and that this is no longer the predictive aspect in the intention to evade.

Another limitation and contribution is to seek a better and broader understanding of the apparent overlap of the personal and institutional factors present in the "Preferences" construct. As can

be inferred from the findings of this study, preferences are conditioned to the personal aspects of the model tested, but it seems that the formation of preference for an institution necessarily passes through institutional aspects that is, linked to location fame, for example. And these aspects were measured and tested differently. How could such aspects be merged into a revised model and measure, evaluate, and compare results? It is believed that it would be very opportune to the new researchers, studies and the literature available on the subject.

Finally, there is clear evidence that the theme that addresses students' intention to evade is a multifaceted theme such as those present in various areas of knowledge and that requires broader and deeper studies such as longitudinal studies and case studies. By longitudinal is meant the aspect of continuity and not the eventuality. That is, to measure regularly and from time to time the influence of the factors contained in the model, given the socioeconomic and political conditions of the context in which the institution and society are inserted. And case studies that do not seek to report diagnosed occurrences, but which are firmly in the judgment of a case study should have something unique and so unique that deserves to be investigated thoroughly what happens there and can serve as an investigation for the available literature on the theme.

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Contact

Douglas Filenga

Instituto Federal de São Paulo

Av. Mogi das Cruzes, 1501 - Parque Suzano, Suzano - SP, 08673-010, Brazil

filenga@ifsp.edu.br

Fábio Machado-da-Silva

Instituto Federal de São Paulo

Av. Mogi das Cruzes, 1501 - Parque Suzano, Suzano - SP, 08673-010, Brazil

fabiomachado@ifsp.edu.br

Bruno Luz

Instituto Federal de São Paulo

R. Zélia de Lima Rosa, 100 - Portal dos Pássaros, Boituva - SP, 18550-000, Brazil

Nogueira_luz@ifsp.edu.br

DIGITAL TOURISM PROMOTION AND E-MAIL MARKETING

Tamara Floričić

Abstract

Purpose: The paper represents the importance of the Internet market with a focus on email marketing promotional tools by means of which, through using databases, business entities, hotel companies and tour operators, with direct or indirect promotion, reach existing and new consumers. The determination of positions and trends, as well as the efficiency of the email promotion, so-called newsletter, is reflected as a goal of the research which explores the attitudes of the youth consumer segment as propulsive future consumers.

Design/methodology/approach: The research includes a theoretical review combined with presentation of chosen international practices that support the theory of an innovative marketing approach. The research also includes quantitative as well as qualitative methods which explore the attitudes of tourist demand through 153 questionnaires conducted in December 2017 processed by statistical methodology including chi-squared test, average values, ranking technique combined with creative thinking techniques and other scientific methods (January 2018). The total number of questionnaires was 175, 22 forms were invalid which presents response rate of 87,4%. Youth consumers were randomly chosen, and the location of the research was the town of Pula, Croatia.

Findings: Development of information technology and innovations has initiated new business processes in the tourism and hospitality business, as well as radical changes in business and communication with consumers, but also with other business entities. Special offers and promotions communicated through e-mail marketing boost demand and interest and result in customer purchases. The consumer group had to be analysed in respect of gender differences in order to conduct a successful e-mail promotion.

Research/practical implications: E- Mail marketing gives hotels the opportunity to reach many potential customers and it is based on data collected from website viewers which is translated into personalised emails about information they were just viewing on the website. The paper provides a deeper insight and enables companies to improve the results of e-mail marketing campaigns. Further research in the field of gender focus areas should be conducted together with an analysis of sending frequency combined with efficiency, as this has been recognised as a challenging issue.

Originality/value: This paper is a valuable contribution to existing research on how companies could reach new competitiveness by implementation of innovative E-marketing tools and strategies. The research also points to the importance of creative thinking focused on design of services in order to attract new demand and to communicate with different segments of potential consumers.

Keywords: Digital promotion, newsletters, hotel companies, innovative communication

JEL Codes: L83, L1, L2, M31

Introduction

Recognising the importance of digital marketing in modern turbulent business conditions, where innovative changes continually occur in the resource base, is of the key importance for realisation and retention of business entity competitive positions in tourism. Tour operators, agencies, hoteliers and other tourist service providers invariably get involved in globalisation trends and adapt their ways of operating and communicating with the market. They achieve new levels of flexibility, practicality, business transparency, conducting business in real time with current dispatch of reliable information and facilitated access to end users whose needs are known; services are personalised and enriched by added value. Digital marketing is an umbrella term for the basic tools of modern ICT technology in hotel marketing. They include social networks, web page design, e-mail marketing, optimisation of Internet search engines and marketing Internet search engines, meta search, video production, Internet page income management content marketing and application development. The aim and purpose of this research is directed towards determination of the theoretical factors and hypotheses, as well as towards implementation of sublimation of knowledge by which contributions are made to the development of science on the necessity to be included in digital communication trends. The conducted research on the sample of youth population considers the behaviour trends of both existing and potential recipients and consumers of the products and services offered by means of e-mail promotion tools. As one of the most important tools, newsletters have the power of reaching a large number of recipients, with a low sending cost and a flexible space for the message and offer content.

1   Digital marketing in the tourism and hospitality industry

Numerous authors analyse the importance of digital marketing as an innovative technology which, to the hospitality business and business entities within the tourism system, facilitates a wide accessibility at the international level. Cox and Koezler (2005) write about the importance of Internet marketing for hotels, restaurants and tourism, both from the aspects of large hotels and small and medium tourism entrepreneurship. Paulo (2000) and Samardžić (2010) and Dulčić and Petrić (2008) examine the importance of web marketing for the development of tourism destinations and for the hotels operating within the destination. It is noted that there are over three million email addresses in the world and around one million social network users. Panian (2000) analyses electronic business guidelines, while Marić (2006) examines new business processes within which also new technologies and innovations. As the Internet

technology is dynamic and in continuous and permanent change, innovations are being formed and applied to systems on a daily basis, from the development of user friendly applications in mobile telephony through the evolved web search engines to different innovative implementations of digital technologies in the hotel business, with finding of the optimal mix in the system of innovations in tourism (Brooker, Jope, 2014).

Hotels use this data for adaptation of their own web page, promotional actions, marketing events and other activities driven by clients' needs, tastes and priorities. Cox and Koezler (2005) examine the characteristics which an Internet page should have; from an attractive appearance, design in which hotel positioning is reflected, interesting aspects and distinctiveness which separates it from a multitude of competitive ones and consistency, clarity and efficient organisation which enables accessibility of the required information. Numerous web portals implement tools for marketing relationships with consumers, with which they gather data about the page visitors, users or clients and profile them in the CRM database.

As a tool of modern placement and sales channel management, CRM (Customer Relation Management) includes database management, direct marketing activities, users' history and loyalty programme activities. CRM database management includes the activities which are set from the operational level, through company operational functions, analytical level which is based on the analysis of tourist behaviour, benchmarking tool implementation and business intelligence. Information is facilitated through the web system, i.e. page statistics related to the topics and offers a guest visits intentionally.

Development of digital marketing focused on the youth segment is of a key importance for hotel companies which are inclined towards retaining of the existing and conquering of the new competitive positions. As Internet technologies' consumers, young people are exposed to different forms of digital marketing and susceptible recipients of e-communication innovative forms.

The classification of youth tourism travellers includes first of all students under 26 years of age, with a high level of education who, although having a low level of income, because they are still studying, demonstrate preparedness to work and save money on their journeys and before them, in order to increase their financial solvency and over half of them identify themselves as travellers, a third as "backpackers" and around a fifth of them as tourists (Pavia, Floricic, 2017).

The Millennials, as leaders of a new generation of consumers, tend to choose hotels and destinations that develop and invest in technology exposed hospitality, explores Floricic (2016).

The subgroup of Millennials, Generation Z and iGeneration, as a generation of young to middle - aged travellers, are considered as a group whose demand will form the tourism of the future. Their generational common points include: self-confidence, orientation towards entrepreneurship, awareness of healthy life and they are prepared to listen to and implement changes. When buying, they are guided by image and emotions, as well as by purchase of brands which reflect their expectations and their lifestyle and, in communication, they use multi-communication channels (Pavia, Floricic 2017).

1.1   E-mail marketing specialised companies

In consideration of cost effectiveness of engagement, economic companies in tourism often opt for external services which deal with e-mail marketing on their behalf (El Gohary, 2013). Apart from dispatching activities, specialised companies (http://mailchimp.com, bizcommunity.com, www.fishbowl.com) also keep statistics and monitor the productivity of certain newsletters in the sense of the number of bookings they generate. As at their disposal they have large contact databases segmented by business activities, interest groups and geographical and demographic criteria, they enable users to save money and time and offer production of original graphic illustrations. They shape promotional texts into simple, attractive postings, intended for both existing and new recipients - buyers in periodic or target marketing campaigns and messages themselves are compatible with all email programmes.

Due to globalisation processes, e-technologies reach all world geographic regions. The company bizcommunity.com attracts potential users, companies which, in different economic branches (multi-industrial) plan placements using modern Internet technologies. As a premium promotional and distribution website, it formulates and places its offers in the form of press releases, which are basically paid advertisements, but which reach different structures of a total of 332,000 consumers who realise 2.4 million page viewings. By presenting statistics, specialised marketing companies demonstrate their power and, using it, they are reaching new business entities which are investing in digital marketing. Potential consumers are offered information about the demographic sample, the amount of average salaries, a sample of population by gender, degree of education and by key groups of consumers which are classified as 1) Business professionals, 2) Target population 3) Decision makers, 4) Income available for expenditure, 5) Economically active consumers, 6) Technology fans and 7) Trend addicts.

Interest segments, affirmed by advertisers, PR specialists and advertising "copywriters" can be differentiated as follows:

1. Generally – all industry sectors globally
2. Marketing & Media Territory I
3. Marketing & Media Territory II
4. Retail sale
5. Finance and insurance
6. IT and telecommunication technologies
7. Education and training
8. Human resources, recruiting and employment
9. Tourism, travel and hospitality (hotel) business
10. Lifestyle – Lifestyle and entertainment
11. Law and legislation
12. Health and health care
13. Engineering and construction
14. Logistics and transport
15. Real estate and ownerships
16. Manufacture, local production and crafts
17. Sustainable development and social responsibility
18. Agriculture, horticulture and forestry
19. Energy and mining

The listed areas represent economic branches, but also interest spheres which are viewed by web page visitors, where they stay for a while, follow information and promotional campaigns related to the products and apply for newsletters. The consumers' listed activities, every visit to the page, uploading of advertisements, promotional messages and news enter the statistics, which are linked to the CRM base, where a consumer's profile is formed and differentiated.

In their analyses and statistics, specialised companies dealing in digital promotion promote important increases in income due to the implementation of innovative solutions. According to their budgets, small and medium-sized hotel companies decide on outsourcing services or carry out independently digital marketing activities for the purposes of increased profitability.

Tab. 2: Increase in the rate of conversion - realisation of marketing activity due to intensification of marketing activities

Hospitality measurement - % conversion – realisation final	1%	1.4 %
Bookings	200	280
Room occupancy "room nights"	400	560
Monthly income	80,000 USD	112,000 USD
Annual income	969,000 USD	1,344,000 USD

Source: https://www.hebsdigital.com/40-conversion-uplift, accessed on 04.11.2017

The activities conducted by the company HEBSDigital affect the increase in the conversion rate by 40%, which, on the illustrated example, ultimately equals an additional 384,000 USD in annual income.

1.2   E-mail marketing - newsletters – in the tourism and hospitality business and the youth demand segment

The goals of marketing using electronic mail are directed towards the creation of advantages among competitors, attraction of new clients, retention and intensifying of business with existing clients and reactivation of inactive clients and strategies, explore Koriyak et al (2015).

As a tool for communication with the market, hotel companies and tour operators develop newsletters in accordance with the market segments which are diversified according to the geographic criterion, as well as to interests and motivation. Using a special link on their own web page, a visitor is directed to application for the newsletter, where he/she chooses a language option for communication and preferences for tourism products, which is entered in the company CRM base. The segment groups are classified according to specific forms of special interest tourism and according to specific events and facilities for which tour operators or tourist agencies have a developed product, i.e. tourist package. As email message recipient contacts often change their email addresses, updated database keeping is of key importance (Cox, Koezler, 2005). Mass campaigns through e-mail, in the course of which messages are sent to thousands and thousands of e-addresses, frequently face resistance by recipients. Given that the unwanted e-mail marketing is perceived by consumers as a "spam" message, an attack on one's privacy, marketing through e-mail should exclusively be carried out with the users' consent, which can be made through personal request on the tourist company's web page.

Content-wise, Cox and Koezler classify the contents in e-mail marketing as: 1) Information about the product and service, the company and press releases, 2) Surveys and public opinion sounding, 3) Sales and special offers, 4) News on the website, 5) Answerphone and 6) Newsletters. Each of the listed e-communication forms should be inspirationally designed and content-wise carefully conceived, given that the first impression can affect reception, opening, reading and purchase or automatic rejection of the messages sent.

The characteristic of E-marketing is that it can prompt a "wow" effect with consumers, amaze them and direct them to purchase. Also, according to the research by the company Marketing.profs, creative and personalised e-mails which contain well-formed offers encourage the consumers to share them with other potential users, by which the user circle is widened and consumer loyalty achieved. Different types of communication activities, which have the role of the newsletter and which affect the occurrence of a "wow" effect, can be distinguished:

- Reconfirmation and acknowledgement – following newsletter application – as a gift - special offers, discounts / vouchers
- Booking confirmation, purchase with the confirmation number, which can be followed, detected in the supplier systems
- Encouraging sharing of the message content with close persons, additional vouchers for friends and family as a gift

- Sending emails as reminders of a cancelled booking, purchase, facilitating return to purchase subject to availability, with special benefits, discounts, free gift

- After-sales consumer care, communication and reminders, research on satisfaction with the booking made, reminder to complete the questionnaire about satisfaction with the booking process, additional service/benefit as a gift

- Personalised message "come back again" reflects care and expresses respect towards the consumer, stimulating him/her to return, with throwing in of a free extra service

- Thanking consumers with a short "thank you" message, with a personalised picture or message

- In contact requests, avoiding of the message "out of office" is recommended and posting of available period and clear instructions for the FAQ (frequently asked questions) part of the page are recommended

- Focusing on the topic, personalisation and selection of a special offer and gift in line with the message theme

- Nurturing of the relationship with consumers, recommendations and communication related to different new facilities, services, destinations and hotels, with offers of extra benefits, discounts and themed gifts.

By sending newsletters of a general or specialised nature and themed contents related to the chosen products (campsites, hotels, gastronomic days, public holidays and celebrations), hotel companies reach a wide circle of existing and potential consumers, whether it concerns B2B (business to business) or B2C (business to consumers). The conducted research points to the fact that, most often through their marketing services, hotels use e-mailing marketing tools and monitor the results and effects of that activity.

1   Research, results, discussion

For the purposes of analysing the importance of newsletters as an E-mail marketing tool, attitudes of young people, as a focus group who completed the structured questionnaire, have been examined. The research was conducted in December 2017 and the attitudes of 153 respondents were examined. The total number of questionnaires was 175, 22 forms were invalid which presents response rate of 87,4%. The respondent structure consisted of young people, divided into two age groups, up to the age of 20 years, of whom there were 95 respondents, making for 62.1% and over 20 years of age, 58 of them (39.7%). The difference in the focus of

interest pointed to the importance of differentiation of the group by gender, so, by random sample, 35.3% (N=54) of male population and 64.7% (N=99) of female population was included in the research and the interest area results will be presented further in the text.

Given the trend of youth population exposure to digital technologies, it is researched and determined how much young people are open towards the channels through which digital e-mail marketing can reach them as potential consumers. Young consumers are often on line, they are receivable to different tools of digital marketing and a successful campaign could reach them easily and produce higher conversion rate. They tend to use more addresses some of them specially reserved for different types of communication. This is explored using the question which calculates the number of e-mail addresses and the data obtained by the research follows below.

Tab. 3: Number of user e-mail addresses in youth population

Number of E-mail addresses	Male Population - N	%	Female Population - N	%	Total - N	%
0	1	1.9	0	0	1	0.7
1	15	27.8	26	26.3	41	26.8
2	23	42.6	59	59.6	82	53.6
3	7	13.0	12	12.1	19	12.4
4	4	7.4	0	0.0	4	2.6
5	3	5.6	1	1.0	4	2.6
More than 5	1	1.9	1	1.0	2	1.3
Total	54.00	100.0	99	100	153	100

Source: author's research

In further consideration of e-mail addresses, exposure of each of those addresses to receiving a newsletter was examined. Namely, the hypothesis of the question was that young people do not report every e-address they have for receipt of a newsletter, in order to keep one or a few of them exclusively for private and business activities and communication.

Tab. 4: Inclination of e-mail address application towards e-mail marketing

	Male Population -N	%	Female Population - N	%	Total - N	%
YES	9	16.7	8	8.1	17	11.1
NO	45	83.3	91	91.9	136	88.9
TOTAL	54.00	100.0	99	100.0	153	100.0

Source: author's research

The results point out that the female population, 91.9%, and 83.3% of men differentiate private and business activities from the consumer ones, while, looking on average at the level of the entire sample, the result of a mere 17 respondents shows that they receive all contents to all the addresses they use.

Tab. 5: Number of received newsletters - daily

No. of E-mail marketing newsletters	Male Population - N	%	Female population - N	%	Total - N	%
0	10	18.5	26	26.3	36	23.5
1-3	14	25.9	24	24.2	38	24.8
3-6	10	18.5	23	23.2	33	21.6
7-9	0	0.0	2	2.0	2	1.3
More than 10	9	16.7	7	7.1	16	10.5
I don't know	11	20.4	17	17.2	28	18.3
Total	54	100.0	99	100	153	100

Source: author's research

An examination of daily received newsletters shows that 69.9% of respondents receive between 3 and 6 newsletters per day, which represents a large number of messages within a short period of time and questions the possibility of a quality consideration of offers. The open-ended questionnaire also encouraged the respondents to make additional comments in the analysis of the theme, so 28 respondents (18.3%) stated that they often do not count newsletters, do not open them or directly channel them to their "junk mail" e-mail box. This also questions the actual purposefulness of e-mail marketing and points to the fact that companies which use that e-promotion tool should send newsletters more seldom, but with a more adequate content of interest focus, which has also been confirmed by the results of the table of attitudes (Table 7).

Table 6 explores the thematic aspects of newsletters that are in focus of interest of youth consumers. Research show that there is a significant difference between interest of male and female population so the gender differentiation while creating newsletter design and content should be taken in consideration. Topic that is described in subject line of e-mail marketing should be adjusted according to the gender interests as well as the benefits that are additionally offered in order to support and produce positive effects of conducted activity.

Tab. 6: Focus of interest of youth population and inclination towards the newsletter theme

Theme of Newsletter	Male Population - N	Rank	Female Population - N	Rank	Total - N	Rank
Travel / Tourism	4	7.0	32	2	36	2.0
Shopping / Clothes/ Cosmetics	11	4.0	76	1.0	87	1.0
Technology / Gaming	21	2.0	7	5.0	28	4.0
Sport / Gym / Health	24	1.0	11	4.0	35	3.0
Criminal /Drugs /Guns/War	3	8.0	0	0.0	3	11.0
Cars	5	6.0	0	0.0	5	9.0
Multimedia / Entertainment	20	3.0	6	6.0	26	5.0
Education	6	5.0	4	7.0	10	7.0
Finances / Business	4	7.0	12	3.0	16	6.0
Discounts	5	6.0	2	8.0	7	8.0
Social / Politics	2	9.0	2	8.0	4	10.0

Source: author's research

Evident differences have been noted in interests between the male and female population while exploring the theme of interest of respondents which was directed to the areas which they apply for and will apply for in future. The largest difference relates to the component of shopping (clothes, footwear, cosmetics), where, in the female population, it comes in the first place. The second next (travel and tourism) has half the supporters within the group, followed by the categories of finances in third place and sports contents in fourth. On the other hand, the male population in the first places interest in sports (sport, gym, health), in second, technology and gaming, third, multimedia and entertainment and shopping occupies 4th place on their scale of interests.

Tab. 7: Attitude and preferences of youth consumers – E-mail Marketing – Statements valuation

		S1	S2	S3	S4	S5	S6	S7	S8
Grade 5	- N	22	57	51	63	26	37	22	54
	%	14.4	37.3	33.3	41.2	17.0	24.2	14.4	35.3
Grade 4	- N	44	46	45	45	47	26	40	41
	%	28.8	30.1	29.4	29.4	30.7	17.0	26.1	26.8
Grade 3	- N	54	32	35	34	45	36	40	28
	%	35.3	20.9	22.9	22.2	29.4	23.5	26.1	18.3
Grade 2	- N	15	6	10	5	21	19	19	14
	%	9.8	3.9	6.5	3.3	13.7	12.4	12.4	9.2
Grade 1	- N	18	12	12	6	14	35	32	16
	%	11.8	7.8	7.8	3.9	9.2	22.9	20.9	10.5
Total	- N	153	153	153	153	153	153	153	153
	%	100	100	100	100	100	100	100	100

S1 – Newsletters are a reliable source of information about products and services.
S2 – Design of newsletters contributes to their attractiveness.
S3 – Quality of newsletters boosts the purchase and consumption.
S4 – Detailed product and service descriptions encourage the purchase.
S5 – Special offers and special discounts are welcome to be presented through newsletters.
S6 – I appreciate when I receive the birthday card, best wishes card as a sign of appreciation.
S7 – Wow effect of offer impacts my decision for purchase.
S8 – Free offers and complimentary coupons offered through E-mail marketing encourage me to buy.

Source: Authors' research

The research of attitudes and preferences was carried out using Likert scale of agreement, ranging between 1 and 5. The respondents evaluated 8 statements related to different newsletter aspects, from the content, design and quality, to special benefits and advantages which emanate from the e-mail marketing realisation. The highest levels of respondent agreements were generated by statements related primarily to the importance of a detailed product and service description which encourages the purchase (41.2% of respondents declared that they completely agreed and 29.4% that they agreed) and to the importance of conceptualisation, design and quality of newsletter photographs (62.7%), which contributes to consideration of special offers, services and bonuses and which encourage purchase (62.1%). The respondents attached the lowest level of agreement to the importance of a "wow" effect, which, in part, is conflicting with the theses presented in the theory review by theoreticians.

The chi-squared test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in categories of youth market interest about newsletter themes, products and services that are offered.

As one of the research goals is examination of the importance of newsletters in the tourism and hospitality industry, i.e. their effect on the intensification of purchase, the customers' reply to the interest in receiving tourist newsletters related to travel, hospitality business and other tourist services, is explored. The interest according to the gender and overall interest in relation to the expected variables are considered and the research is conducted using the chi squared test. The pricing aspect is very important in decision making about purchase, so the importance of special benefits, discounts and vouchers is also researched.

The testing was carried out using the chi-squared test, through the following variables:

- Focus of interest on travel, tourism and hospitality
- Focus of interest on pricing and discounts
- Pricing, discounts, coupons and free offers initiate additional purchase

The chi-squared test formula:
$$X^2 = \sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(O_{i,j} - E_{i,j})^2}{E_{i,j}}.$$
was used and the frequencies were calculated for the following frequencies, with significance 1.0, described with research questions.

Tab. 8. Preference for newsletters related for tourism and hospitality

	Male -%	Female-%	*Marginal Row Totals*
Obtained frequency	11	89	100
Expected frequency	40	60	100
Marginal Column Totals	51	149	200 (Grand Total)
Chi-squared test: 35.042		p-value:0	Degrees of freedom:1

Source: Authors' research

Male sample: N = 54	Female sample: N = 99	Total: N= 153
Male attitude: N = 4	Female attitude: N = 32	Total: N= 36
Male in total % = 7.4%	Female in total % = 32.3%	
Male in attitude sample: 11.1%	Female in attitude sample: 88.9%	

Although the expectations of the realisation of frequencies in examination of preferences for newsletters with the topic of tourism and travel were set for the benefit of the female population, the research results pointed to the fact that women's interest in the said topic in relation to men is much more pronounced; in the entire sample, men expressed a mere 7.4% of interest in the

tourism-related topics. This can form a platform for new, further researches into different interests conditioned by the gender differences.

Tab. 9. Focus of interest in special offers and discounts – importance

	Important to me -%	Indifferent -%	Not important to me-%	*Marginal Row Totals*
Obtained frequency	47.7	29.4	22.9	100
Expected frequency	40	20	20	100
Marginal Column Totals	87.7	49.4	42.9	200 (Grand Total)
Chi-squared test: 6.1			p-value: 0.04735892	Degrees of freedom:2

Source: Authors' research

According to the set expectations, the test result points to the importance of the placement of special offers and benefits using E-mail marketing. Namely, in consideration of the question using the Likert scale from 1 to 5, where agreement with statements "I completely agree" and "I agree" is measured, records 47.7% of respondents' answers which express agreement and, through further consideration, the question of how much the stated benefits affect expenditure, proves that the encouraged interest of the offered benefits often results in purchase.

Tab. 10. Influence of coupons and free offers received through newsletters for additional purchase

	Important to me -%	Indifferent -%	Not important to me-%	*Marginal Row Totals*
Obtained frequency	62.1	18.3	19.7	100
Expected frequency	60	20	20	100
Marginal Column Totals	122.1	38.3	39.7	200 (Grand Total)
Chi-squared test: 0.267			p-value: 0.87517332	Degree of freedom: 2

Source: Authors' research

The values obtained by the research correspond to the expected ones; consumers confirm that the offer of vouchers, special offers and discounts stimulate them to make new purchases and further expenditure, which has been also confirmed by small deviations in the Chi-squared test (0.267).

Conclusion

By implementation of Internet technologies in business and marketing of economic companies in tourism, powerful changes occurred in the structure of the tourism industry. Modern

technologies and Internet affect the decrease in organisational and distribution costs; they affect the reduction of the distribution chain, i.e. encourage transformation and disappearance of traditional and emergence of new mediators, primarily affirming the activities of the direct sale and direct e-communication using e-marketing tools, with a particular emphasis on newsletters. This problem area at the same time represents a platform for future researches and the knowledge, recommendations for the pre-orientation of traditional activities and activities of elementary implementation of the online promotion tools in a comprehensive and substantive digital communication in the tourism economy, as well as the use of all managerial tools, facilitated to economic companies in tourism, as their consumers, by modern digital technologies through specialised services.

This research has resulted in the knowledge which points to the diversified interests of the market youth segment. The need for creation of high quality entertainment, dynamic and interactive contents has been recognised, which, with its characteristics with core advantages of the offers themselves, for consumers will also represent added value in the sense of interesting reliable and adequate information and offers which guarantee value for money, respect of users, special benefits and with which a relationship of trust and long-term loyalty is created.

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Contact

Tamara Floričić

Juraj Dobrila University of Pula, Faculty for Economics and Tourism "Dr. Mijo Mirković"

Preradovićeva 1, HR- 52100 Pula, Croatia

tfloricic@unipu.hr

SOCIAL INNOVATION IN SMALL CATHOLIC LIBERAL ARTS INSTITUTIONS: FOSTERING SOCIAL INNOVATION AT SAINT ANSELM COLLEGE

Dina Frutos-Bencze

Abstract

Purpose: The purpose of the paper is to provide and describe programming trends regarding social entrepreneurship and social innovation in small Catholic liberal arts higher education institutions in the United States (US). These institutions are considered peer institutions for Saint Anselm College. In addition, the findings are contrasted with previously reported national trends. The Saint Anselm College case illustrates the process, advantages and challenges smaller institutions, that primarily serve undergraduate students, currently face.

Design/methodology/approach: National trends regarding social innovation and social entrepreneurship programming are contrasted with observed trends in a sample of 76 peer institutions (4-year, private not-for-profit, Roman Catholic institutions as classified in the Integrated Postsecondary Education Data System or IPEDS) for the 2015-16 academic year. Furthermore, only institutions with an undergraduate student enrollment between 1,500 and 3,000 were considered. Information from IPEDS , and web-based search of the selected institutions provided the basis of the analysis to ascertain the extent to which these institutions have developed social entrepreneurship and social innovation academic programs and centers (IPEDS, 2018).

Findings: Small Catholic liberal arts institutions in the US are more vulnerable to changing demographics and tend to have more financial concerns than larger public and private institutions. However, gradually they are embracing entrepreneurship related programming. Nevertheless, social entrepreneurship and social innovation programming has not increased significantly. In addition, we find that there is no streamlined approach for creating and/or developing such programming at these institutions. In the case of Saint Anselm College, the institutional context, administrative leadership and faculty have played a crucial role in establishing social innovation programming. The alignment of the institutions' mission can play a significant role in developing social innovation programming and initiatives.

Research/practical implications: This study raises a series of questions, insights, and possible helpful directions for the creation and implementation of social innovation programming initiatives in other peer institutions or similar size institutions. In addition, the paper provides a lens and context for existing work.

Originality/value: This study attempts to capture the emerging shift in embracing the concept of social innovation and social entrepreneurship primarily at small Catholic liberal arts institutions in the US. There is evidence that the slight shift is happening beyond these types of higher education institutions as it is increasingly becoming popular at larger research-oriented universities. The field of social innovation is still vulnerable and despite the proliferation of social innovation programming, it is difficult to discern whether this is a trend that will stay or whether it is a fad.

Keywords: Social innovation, social entrepreneurship, higher education programming, Catholic liberal arts institutions, United States

JEL Codes: O35, I23

Introduction

The interest in social innovation and social entrepreneurship has considerably increased in the past decade due to several trends such as the perceived weaknesses and failures of the dominant for profit enterprise model, the prolonged global recession of 2008, and the pressure to decrease public sector expenses. Despite the increased interest in social innovation and social entrepreneurship research in this field is still in a nascent stage (Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017; Phillips, Lee, Ghobadian, O'Regan, & James, 2015). There is still the need to develop a shared understanding of not only the terminology, but also the links and role social innovation and social entrepreneurship have in higher education.

There is still a significant lack of research into the process of social innovation and social entrepreneurship programming in higher education. Recent studies have closed this gap by exploring aspects of innovation programming in higher education institutions in the UK (Hewitt-Dundas & Roper, 2018); how modern learning environments link the pedagogic, spatial and technological/digital realms in sites where social and educational innovation can coexist (Stahl, Dobson, & Redillas, 2018), and developing frameworks for social entrepreneurship education embedded in competing institutional logics (Pache & Chowdhury, 2012). On the other hand, considerably more research has been conducted about business innovation, particularly technological innovation (Surikova, Oganisjana, & Grinberga-Zalite, 2015).

The birth of the academic field of social entrepreneurship is commonly traced to the late 1990s. This period was primarily characterized by activities and new courses at graduate schools of business, with early leadership from Harvard, UCLA, UC Berkeley, Georgetown, Stanford, and Duke, among others. However, as early as 1980, Bill Drayton the founder of Ashoka provided seed funding for entrepreneurs with a social vision (van der Have & Rubalcaba, 2016).

Over the past decade, student and institutional interest in social innovation and social entrepreneurship educational programs has increased. This has implications that blend into the curriculum, co-curriculum, campus culture, institutional strategy, branding, PR efforts, budgets, staffing plans, and often the creation of new centers, offices, positions and roles on campus (Kim & Krampetz, 2016). The outcomes of social innovation are diverse and can range from new institutions, new social movements, new social practices, to different structures of collaborative work. Regardless of the source of social innovation, the concepts of social action and social change seem to be at the core of the process (Cajaiba-Santana, 2014).

The purpose of the paper is to provide and describe programming trends regarding social entrepreneurship and social innovation in small Catholic liberal arts higher education institutions in the United States (US). The Saint Anselm College case illustrates the process, advantages and challenges smaller institutions, that primarily serve undergraduate students, currently face. The paper is structured as follows: first, the concepts of social entrepreneurship and social innovation are described in the context of liberal arts education and previously reported national trends. Second, the analysis of a sample of 76 peer institutions and the findings are described. Finally, conclusions and recommendations are provided.

1   Social Innovation and Liberal Arts Education

Colleges and universities have differing missions and priorities. Institutions prioritize, to different degrees, learning and teaching, research, and knowledge transfer according to their external environment demands and requirements. The Association of American Colleges and Universities (AAC&U) states that liberal education is a philosophy of education that empowers individuals with broad knowledge (e.g. science, culture, and society) as well as provides in-depth study in a specific area of interest. In the United States, a liberal education can be achieved at all types of colleges and universities because it is an approach to learning that prepares individuals to deal with complexity, diversity, and change (AAC&U, 2017). As shown in Figure 1, the AshokaU national survey about social innovation trends indicates that the mission of an institution, student demand and faculty leadership are the top three influential factors that drives social innovation programming.

Fig 1: Most Influential Factors that Drive Social Innovation
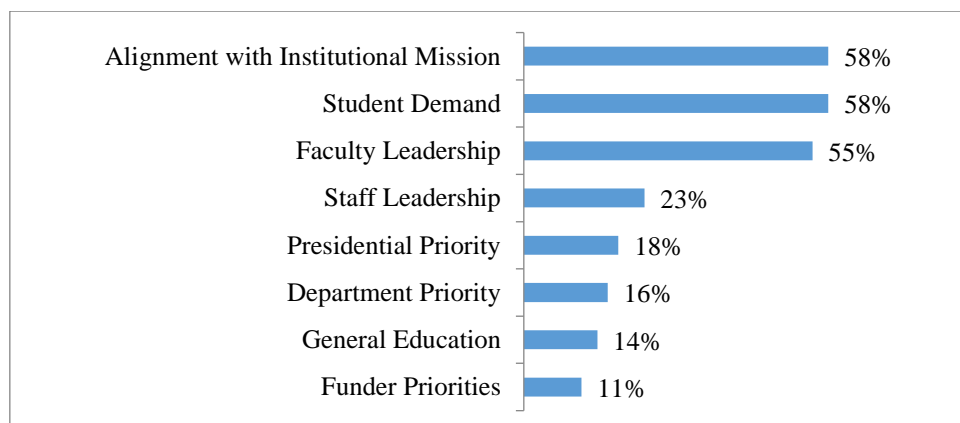
Source: 2014 Trends in Social Innovation Education-Chapter 6 (AshokaU, 2014b)

The idea of social innovation is well suited to liberal arts colleges because it combines the passion of a social mission with an image of business-like discipline, innovation, and determination commonly associated with high-tech pioneers or business people. However, innovative and entrepreneurial approaches can also be used to solve social problems.

As of December 2017, the National Center for Education Statistics IPEDS database displayed 232 Catholic institutions (4-year, Private not-for-profit) of higher education in the US. The Association of Catholic Colleges and Universities reported a higher number for the 2014-15 period, which indicates recent closures (ACC&U, 2018). These closures most likely signal a trend of private college consolidation. Institutions feeling particular pressure are small Catholic colleges, in the Midwest located away from Catholic population centers. Of the 232 Catholic (4-year, private not-for-profit) institutions in the IPEDS database, 20 institutions are founded or operated by the <u>Order of Saint Benedict</u>. A liberal arts college, such as Saint Anselm College, founded by Benedictine monks, is a particular type of institution, often small, often residential, that facilitates close interaction between faculty and students whose curriculum is grounded in the liberal arts disciplines (ABCU, 2018; IPEDS, 2018).

The increasing marketization of undergraduate higher education is an additional pressure for these institutions. Small colleges and Catholic institutions alike need to begin thinking outside the box and looking at new and creative ways to recruit student populations, provide affordable tuitions, and create academic programs that can help carve out more unique identities instead of blending into the crowd (Seltzer, 2017).

Although the concept of social entrepreneurship has gained popularity in the last 30 years, it still means different things to different people, which can be confusing. Many times social entrepreneurship is exclusively associated with not-for-profit organizations or for-profit start-ups. Others use it to refer to business owners who integrate social responsibility into their operations and strategies (Dees, 1998). While social entrepreneurship is still a popular term, social innovation is also becoming increasingly popular and relevant. While on the surface this shift can seem minor, it actually signals a big shift in attitude and tone. Entrepreneurship can be polarizing for non-business disciplines who feel it does not relate to them. This is especially relevant in liberal arts colleges where business departments and/or schools of business are smaller and less influential. Innovation, on the other hand, expands the tent for a variety of disciplines and approaches to social impact. This expanded definition of social innovation allows students from a range of backgrounds and skills to participate, rather than just those who self-identify as founders of new ventures (Phills, Deiglmeier, & Miller, 2008).

The various educational approaches to social change ranging from civic engagement and service learning to social innovation and philanthropy offer valuable perspectives and different strengths for addressing a spectrum of social challenges. Figure 2 below illustrates the regional trends in the use of the terminology in the US based on AskokaU survey (AshokaU, 2014a). The survey recorded responses of 236 institutions (response rate of 25%). Approximately two thirds of the institutions were in the US, while one third represented institutions from other countries. Among the US submissions, there was a representative mix of public and private institutions (62% private, 36% public). Institutions surveyed in the Southwest region lead in the use of social innovation as a term.

Fig. 2: Top Terms Most Frequently Used by Region
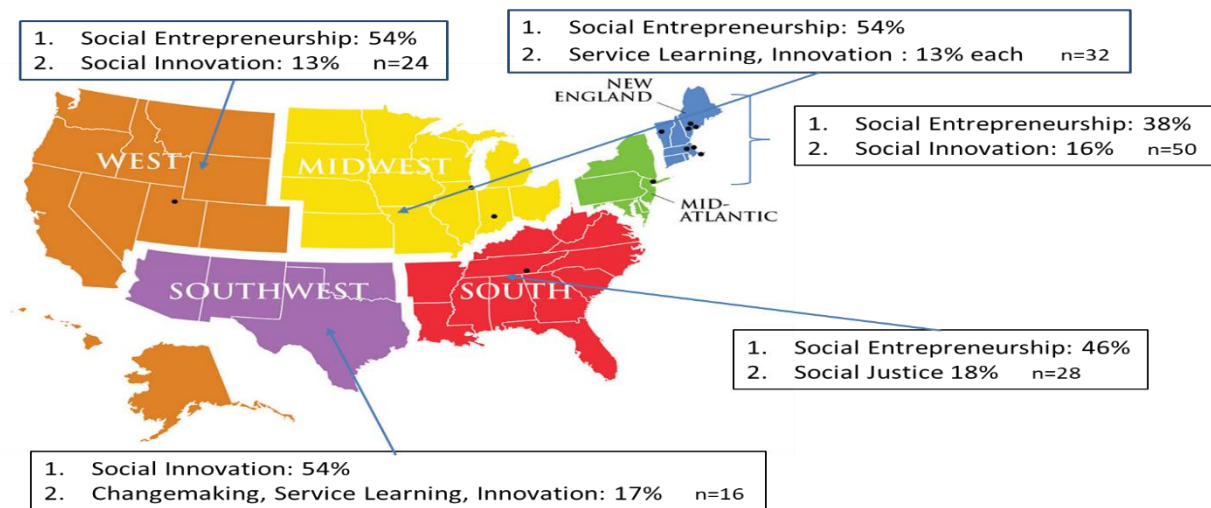
Source: Trends in Social Innovation Education-Chapter 3 (AshokaU, 2014a).

2   Results

The undergraduate (UG) enrollment at Saint Anselm College is around 2,000 students. Thus, the main criteria for selecting peer institutions was the following:

- Institutions classified by IPEDS as Roman Catholic, 4-year, Private not-for-profit. Most recent available data for the 2015-16 academic year was obtained.
- Institutions with UG student enrollment between 1,500 and 3,000.

Using these criteria, a sample of 76 peer institutions was obtained. Some of the information collected for all 76 peer institutions is shown in Table 1. The table only includes 21 institutions: 10 institutions have a lower UG enrollment than Saint Anselm College, and 10 have higher UG enrollment than Saint Anselm College.

The lack of publicly available data for private higher education institutions can be a challenge for researchers. To overcome the relative scarcity of reliable data and to test for construct validity, multiple sources were cross-checked in order to establish a chain of evidence and obtain a comprehensive view of the selected institutions (Dul & Hak, 2007; Yin, 2013). Data sources included IPEDS, press releases, social media, marketing materials when available, and institution websites. The information from these sources was systematically collected, coded, carefully vetted and corroborated. Finally, specific information was requested via email directly when links or email addresses were provided in the respective websites. For analysis purposes, a database of relevant events, in other words, the *what, when, where,* and *why* was created. Following previous studies, events such as the timing or year of establishment of an academic program was recorded. Whenever possible, the motives or the *why* were also coded. Such information was mainly extracted from the institutions' websites, which have an inherent bias because the purpose of such information is to highlight the strengths and accomplishments of the institution.

Most of the peer institutions are located in the Midwest and Northeast regions of the US. Regarding entrepreneurship programming, Figure 3 illustrates the types of academic programs offered by the institutions in the sample. The type of programs offered most frequently are Concentrations and Minors in entrepreneurship. MBAs in entrepreneurship or with entrepreneurship tracks are offered by 8% of the institutions in the sample. Figure 3 also highlights the fact that half of the institutions in the sample (33 or 50%) do not offer any programming related to entrepreneurship, social entrepreneurship or social innovation. In general, institutions with entrepreneurship programming explicitly connect it to the institution's mission. The skills provided by these programs are highlighted as well. Institutions located in more urban locations tend to have business outreach centers associated with the academic entrepreneurship offering. Only 4% of the peer institutions offer social entrepreneurship and social innovation minors or certificates.

Tab. 1: Excerpt of information collected for peer institutions

Name	Region	Website	Total Student population	UG students	Programs	Related Offices/Activities
Belmont Abbey College	South	www.belmontabbeycollege.edu	1523	1523	Entrepreneurship concentration	
University of St Francis	Midwest	www.stfrancis.edu	3864	1620	Entrepreneurship Major	St. Francis Business Incubator
Saint Vincent College	Northeast	https://www.stvincent.edu	1836	1646	Entrepreneurship minor	
St Bonaventure University	Northeast	www.sbu.edu	2040	1652	No	
Aquinas College	Midwest	www.aquinas.edu	1764	1654	No	
Mount Aloysius College	Northeast	www.mtaloy.edu/	1785	1720	No	
Mount St Mary's University	Northeast	www.msmary.edu	2186	1729	Entrepreneurship Major/Minor	
Notre Dame College	Midwest	www.notredamecollege.edu	1985	1802	Entrepreneurship minor	The Enterprise Development Center
Thomas More College	South	www.thomasmore.edu	1964	1826	No	
Saint Michael's College	Northeast	www.smcvt.edu	2226	1902	No	
Saint Anselm College	Northeast	www.anselm.edu	1930	1930	No	Social Innovation Initiative
College of Saint Benedict	Midwest	www.csbsju.edu	1958	1958	Interdisciplinary and Pre-Professional Programs-Entrepreneurship	
Salve Regina University	Northeast	www.salve.edu	2746	2124	Social Entrepreneurship Certificate/Masters in Innovation and Strategic Mgt.	
Assumption College	Northeast	https://www.assumption.edu	2607	2189	No	
Marymount University	South	https://www.marymount.edu	3369	2323	Social Entrepreneurship minor	
Stonehill College	Northeast	www.stonehill.edu	2481	2481	Entrepreneurship minor	Nonprofit Incubation Space
College of the Holy Cross	Northeast	www.holycross.edu	2720	2720	No	
St Thomas University	South	www.stu.edu	4662	2752	MBA Global Entrepreneurship	Institute of Global Entrepreneurship
The College of Saint Scholastica	Midwest	www.css.edu	4351	2790	No	
John Carroll University	Midwest	sites.jcu.edu/	3523	3038	Entrepreneurship minor	The Edward M. Muldoon Center for Entrepreneurship

In general, there is a sense that within higher education silos between different divisions often exists. The lack of a common terminology can also negatively affect the creation of social innovation programs/initiatives. Furthermore, duplicative staffing structures tend to stall the development of new initiatives. As result, there is often limited collaboration among faculty and staff, and a lack of clarity for students seeking well-defined pathways. Consequently, students' ideas and energy may be scattered. They may never get involved in addressing social

challenges; or they may move too quickly, proposing new innovations without fully understanding the context or the existing players.

Fig. 3: Academic Entrepreneurship Offerings in the Sample Institutions
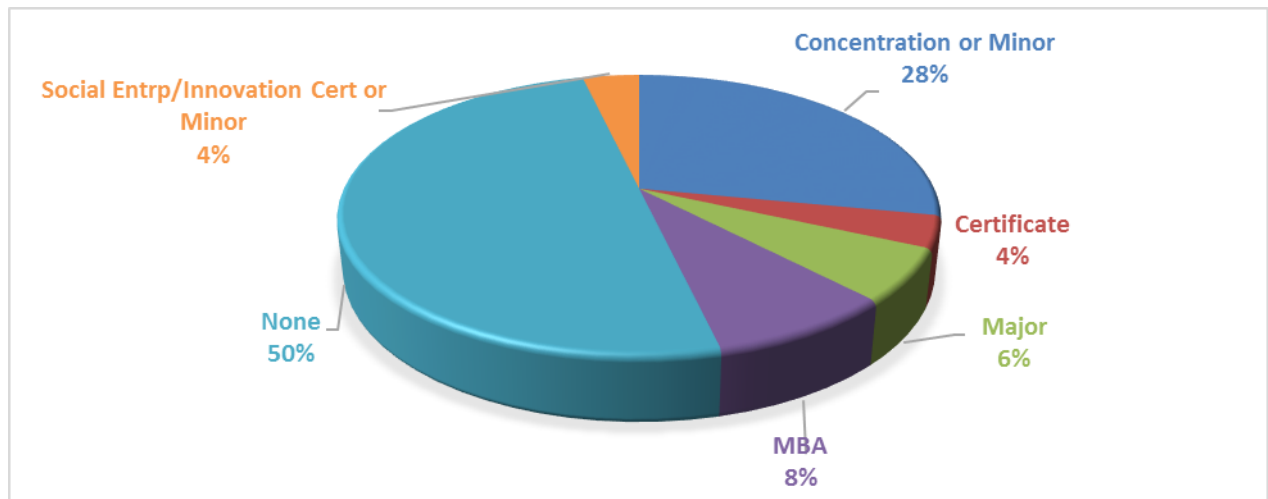
3   The Social Innovation Initiative at Saint Anselm College

At its core, social innovation is collaborative, integrative, interdisciplinary, and inventive. The institutional leadership and architecture must mirror these characteristics in order to move forward. As described earlier, Saint Anselm College is a 4-year, private not-for-profit, Catholic, Benedictine college that has attained a reputation of excellence for its liberal arts and professional programs. The college is an essential economic and civic partner in the state of New Hampshire. Initiatives specifically aligned to the college's mission *"...providing all its students a distinctive liberal arts education that incorporates opportunities for professional and career preparation. It does so in a learning community that encourages the lifelong pursuit of the truth and fosters intellectual, moral and spiritual growth to sustain and enrich its graduates' personal lives, work, and engagement within local, national, and global communities"* are the preeminent New Hampshire Institute of Politics (NHIOP), the Center for Ethics in Business and Governance (CEBG), and the Meelia Center for Community Engagement (Saint Anselm College, 2018). These entities promote shared leadership, mutually beneficial engagement in the local community and beyond where transformative experiential learning, engaged scholarship, and public service take place.

Social innovation at the College had been present in a scattered manner for at least 5 years. Faculty in the sociology, psychology, philosophy, and criminal justice departments had long been engaged with local community initiatives. Several faculty had also incorporated the design

thinking methodology in their courses to solve social issues. However, these efforts and interests were not always cohesively shared throughout the campus. On the other hand, the administration of the College had been interested in exploring social innovation as they deemed the concept to be closely aligned with the college's mission and possibly a source of revenue as well. In this sense, Saint Anselm College is in alignment with other national and international institutions regarding the driving factors for social innovation programming as shown earlier in Figure 1 (AshokaU, 2014b).

The Dean's office fully supported an *ad hoc* faculty-working group to continue to explore the concept. One of the first tasks of the working group was to gauge student interest in social innovation opportunities both locally and globally. Initially, the faculty-working group focused on a series of events designed to promote engagement and networking opportunities for students interested in social entrepreneurship. At the outset, the term social entrepreneurship was used, but feedback from students indicated that the term social innovation resonated more with the College's population and it was less polarizing than social entrepreneurship. The majority of the student population consists of non-business majors, indicated that the term social innovation better reflected their interests and aspirations. This is in alignment with the national AshokaU surveys, but not with the peer institutions in the sample.

Even though the social innovation events were well attended, it was clear that a more stable structure to support social innovation was required. The process to determine the best institutional structure required time and communication with the stakeholders. In the fall of 2017, the College's social innovation initiative was formalized and became part of the Center for Ethics in Business and Governance (CEBG). Three key insights from the process were the following: first, it is crucial for faculty and administrative leadership to work together; second, a heightened awareness that an integrated educational framework offers depth of content and breadth of experience for students is necessary; third, capitalize on the synergies and overlaps uncovered within the current institutional structures and programs. Based on these insights it was determined, just as many other institutions, that social innovation is best served when it is associated with an existing center.

The results presented in Figure 4 below suggest that various models are employed to coordinate social innovation initiatives. The majority of the peer institutions in the sample with entrepreneurship related programs house such programs in their academic divisions, e.g. business departments or business schools. The Ashoka survey reports that the majority of institutions associate such programs with a dedicated center or office. The discrepancy observed

in our sample is possibly due to the lack of financial resources small Catholic institutions tend to have. Thus, entrepreneurship and social innovation programs are developed by faculty within various departments, but predominantly by business departments. Unfortunately, the data offers little insight on which structures are most productive for supporting social innovation on a college campus. Instead, the findings suggest that while the growth of social innovation in higher education has been impressive, the overall current levels are still low (AshokaU, 2014b).

Fig 4: Support Structure for Entrepreneurship, Social Entrepreneurship and Social Initiatives
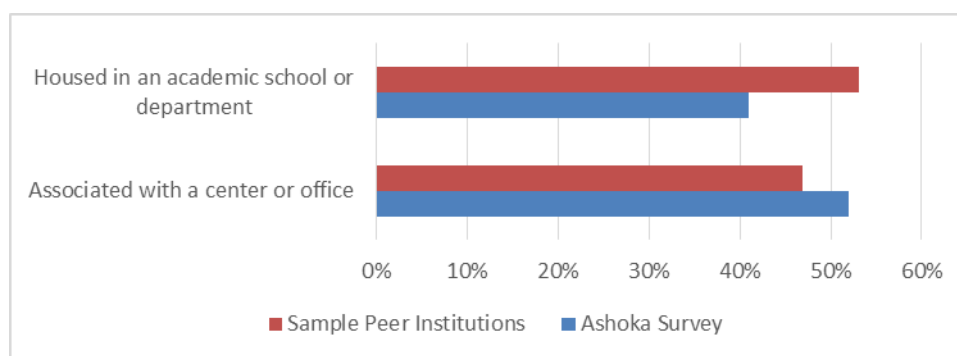
Source: Sample data and the 2014 Trends in Social Innovation Education-Chapter 6

As the social innovation programming continues to evolve, in addition to the networking events already in place, the first social innovation pitch competition of the college will take place in the spring of 2018. The incorporation of social innovation concepts to the curriculum is the next step. Once again, this will require time and a lot of communication with the appropriate stakeholders. Isolated courses can be created, but ideally, the social innovation concepts should be embedded throughout the curriculum. The possibility of offering a minor in social innovation or certifications will also be explored.

Recurring themes in the sample peer institutions and the national Ashoka survey institutions are the obstacles to the growth of social innovation education. The results vary by institution and range from lack of awareness, lack of strategy and clear action plan, lack of a cohesive vision, and lack of funding. In the case of Saint Anselm College, currently there is partial funding for start-up programming and the extensive alumni network of the college has been very helpful. Nevertheless, the lack of funding may become an issue later on.

Conclusion

Social innovators and entrepreneurs are not new. However, the framing and mobilization of social innovation as a concept has generated a lot of clout in terms of increased visibility, viability, and empowerment for individuals who are interested in social change. In the same way, the academic principles of social innovation are not new, per se, to the institution of higher education. However, mirroring the work of social entrepreneurs, a blended platform of social innovation education provides an opportunity to reorganize in order to optimize the impact of programs and initiatives. Many large public and private higher education institutions in the US have embraced entrepreneurship programming and have incorporated social innovation programming as well. Nevertheless, smaller institutions, especially Catholic liberal arts institutions have been lagging behind national trends in terms of offering entrepreneurship and social innovation programming. Despite the seemingly natural alignment between the missions of such institutions with the social innovation conceptual framework, financial concerns and lack of resources remain as the main obstacles. The process and experience of Saint Anselm College regarding the creation and implementation of social innovation programming provides several insights that may be useful for other peer institutions. Overall, it is important to continue to study such processes in order to determine what has worked and what could work better, to explore new models and retrofit structural designs at our colleges and universities.

The changemaker framework Ashoka U has developed is very useful but by no means the only one. From the Saint Anselm college experience it is certainly clear that student input is fundamental not only regarding the use of the appropriate terminology (social innovation vs. social entrepreneurship), but also to inform programming. Ashoka U, established by Ashoka.org, has supported colleges and universities as they embed the values and culture of social innovation across their institutions. For example, the Ashoka designated *Changemaker Campuses* participate in a rigorous selection process that requires the support of senior leadership, evidence of strong student and faculty interest, a long-term funding strategy, and a plan for how the institution will uniquely contribute to solving global problems. These institutions serve as models for other colleges and universities pursuing excellence in social innovation education (Alden Rivers, 2015; Ashoka.org, 2018).

According to Hoidn and Kärkkäinen (2014) , and Marina Kim and Erin Krampetz of AshokaU (2016) to further develop existing frameworks, models and processes, social innovation in the higher education context would greatly benefit from the incorporation of some of the following concepts:

- **Systems Thinking Approach:** Since this approach requires mapping the stakeholders involved and understanding how incentives are aligned, it is useful for identifying new ways of addressing complex problems.

- **Design Thinking Methodology:** The methodology can bring a fresh perspective to an existing problem or issue (Brown & Wyatt, 2010).

- **Financial Sustainability:** Social innovation aims for a triple bottom line of economic, social, and ecological value, which requires securing and aligning all kinds of resources to ensure ongoing sustainability.

- **Impact Measurement and Assessment:** Formative and summative assessments are of utmost importance because they offer critical information to guide continuous feedback and improvement (Hoidn & Kärkkäinen, 2014; Kim & Krampetz, 2016).

While social innovation has served as an empowering framework for many educators and students, every approach to teaching social change has strengths and weaknesses. Indeed, social innovation has its fair share of risks, including the focus on new and potentially unproven ideas; a propensity for action, perhaps without all the information required to act responsibly; and a possible bias toward a deficit model focused on addressing community problems rather than embracing community assets. All of these issues represent key vulnerabilities in developing university-based programs, and are noted in several recent articles and blogs (Kim & Krampetz, 2016).

Acknowledgment

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Contact

Dina Frutos-Bencze

Economics & Business Department, Saint Anselm College

100 Saint Anselm Drive, Box #1692, Manchester, NH 03102-1310, USA

dfrutosbencze@anselm.edu

INNOVATION AND OPTIMIZATION OF THE OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM IN A SELECTED INDUSTRIAL ENTERPRISE – A CASE STUDY

Anna Gembalska-Kwiecień – Bożena Skotnicka-Zasadzień

Abstract

Purpose: The presented article attempts to optimize and innovate the Occupational Health and Safety (OHS) management system in the industrial enterprise in order to reduce the number of potentially accidental events, occupational diseases, accidents at work, and thus to improve work safety at each position. It also presents the developed activities, procedures and instructions thanks to which the OHS management system in the enterprise was introduced.

Design/methodology/approach: The implementation process according to the standard consisted of several stages: beginning with the preparation and publication of Health and Safety Policy to the enterprise's employees by the enterprise's Management Board. Health and Safety Policy included the main objectives set by the highest management. The next step was to order the enterprise's Management to perform a preliminary review to assess and analyze the current status of health and safety at work. As a result of the analysis of the studied processes in the enterprise's occupational safety and health management system, those fragments of processes that could and should be improved have been identified.

Findings: Documents of the internal OHS management system were created, professional risk management procedures were defined and methods for preventing and reacting to accidents and failures were developed. The enterprise developed methods for monitoring the occupational health and safety at work, investigating accidents at work and the method of conducting internal audits. The preventive correction procedures in the occupational health and safety management system were established.

Research/practical implications: The development of specific procedures has made it possible to systematize the occupational health and safety system in force at the enterprise, which will consequently optimize the improvement of safety, and introduce a continuous monitoring and improvement process that should further improve the work safety of the enterprise. The most important elements of the implemented occupational health and safety system in industrial enterprise were the development and publication of a security policy by the enterprise's Management Board, in which the care for employees and their safety was clearly and unambiguously declared.

Originality/value: The article uses an approach that focuses on innovation and optimization of OHS management in the industrial enterprise. Specific actions, procedures and instructions have been developed to allow a more creative and innovative approach to the difficult subject of occupational safety.

Keywords: Innovation, optimization of the Occupational Health and Safety system, safety management systems, accident at work, human factor

JEL Codes: Z1, O15, O3

Introduction

Occupational Health and Safety are the basic factors that have a significant impact on the successful development of any business. Care for work safety is also required by applicable laws, economic benefits and professional ethics. Therefore, the subject of improving work safety in the enterprise is constantly valid and important (*External documents*…; Gembalska-Kwiecień, 2017b, 2017c; Lewandowski, 2000).

This article attempts to optimize the OHS management system in the industrial enterprise in order to reduce the number of potentially accidental events, occupational diseases, accidents at work and to ensure safe and hygienic conditions at every workplace (Kontogiannis et al., 2017). In the discussed enterprise dealing in the production of district heating boilers, the implementation of the Occupational Health and Safety management system based on the PN-N-18001:2004 standard was started where the traditional system was previously based (*Konstytucja Rzeczypospolitej Polskiej*…; Polski Komitet Normalizacyjny, 2001). The implementation process according to the standard consisted of several stages: beginning with the preparation and publication of Health and Safety Policy to the enterprise 's employees by the enterprise's Management Board. Health and Safety Policy included the main objectives set by the highest management. The next step was to order the enterprise's Management to perform a preliminary review to assess and analyze the current status of health and safety at work. As a result of the analysis of the studied processes in the enterprise's Occupational Health and Safety management system, those fragments of processes that could and should be improved (*External documents*…; Gembalska-Kwiecień, 2017a; Polski Komitet Normalizacyjny, 2004a) have been identified.

Actions, procedures and instructions were developed thanks to which the next stage of implementation of the Occupational Health and Safety management system in the enterprise was initiated (Gerbec, 2017). The structure and responsibility of each level in the enterprise were determined. The Management Board in the declaration provided the appropriate means to improve safety throughout the enterprise, and undertook to organize appropriate training for all employees of the enterprise in the field of the Occupational Health and Safety. Documents of the internal OHS management system were created, professional risk management procedures were defined and ways of preventing and reacting to accidents and failures were developed.

The enterprise has developed methods for monitoring the health and safety at work, investigating accidents at work and the manner of conducting internal audits. The preventive

correction procedures in the Occupational Health and Safety management system were established. The procedures implemented in accordance with the PN-N-18001 standard enable optimization of the implemented Occupational Health and Safety management system in the industrial enterprise (*External documents*…; Polski Komitet Normalizacyjny, 2004a).

1 Development of an innovative and optimized health and safety management system

The industrial enterprise is a renowned enterprise in Poland dealing with the production of heating boilers. In 2013, the process of integrating the Quality Management System according to PN-EN 9001 and the Environmental Management System according to the PN-ISO 14001 standard was completed. In 2016, the enterprise implemented the OHS Management System according to PN-N-18001 for safety and hygienic work conditions, which was confirmed by a certificate (*Konstytucja Rzeczypospolitej Polskiej*…; Polski Komitet Normalizacyjny, 2001, 2004a).

One of the first actions in the enterprise related to the implementation of the Occupational Health and Safety management system based on the PN-N-18001 standard was to plan and conduct a preliminary review. During this review, the subject for analysis was:

- knowledge of applicable legal requirements and standards regarding health and safety at work and compliance with these requirements,
- the occupational health and safety management system adopted at present, the way of functioning and the degree of compliance with the adopted requirements,
- knowledge of existing threats and associated risks,
- causes of accidents at work and failures,
- actions taken by the enterprise in the field of health and safety and their comparison with the best practice and functioning of other enterprises,
- the use of resources for managing occupational safety and health.

As a result of the review, the information needed to plan and implement the health and safety management system was obtained. During the initial review, an initial audit was also carried out by an external enterprise. The conducted audit covered all points of the PN-N-18001 standard. The inaccuracies found in the PN-N-18001 standard contributed to the development of procedures in line with the standard in order to improve and optimize the entire Occupational Health and Safety management system (Polski Komitet Normalizacyjny, 2001, 2004a).

As a result of the involvement of the enterprise's top management, a health and safety declaration was established. The enterprise's health and safety declaration expresses the commitment of the Management Board to:

- prevent accidents at work and potentially accidental accidents,
- prevent occupational diseases,
- constant improvement of health and safety,
- meet the legal requirements in the field of health and safety,
- provide adequate resources to achieve the above goals,
- raise qualifications and responsibility of employees in the scope of health and safety.

The declaration was taken into account in setting general and specific health and safety objectives, its content was agreed with employees' representatives and it was announced to all employees.

The enterprise's management through Social Labor Inspectors and trade union organizations conducts permanent consultations with employees regarding their Occupational Health and Safety at workplaces. Crew representatives take part in the work of the Occupational Health and Safety Committee. Each employee has the opportunity to submit their comments regarding health and safety at work.

In accordance with the legal requirements, the Management Board of the enterprise has determined the procedure of consulting with employees and/or their representatives for all activities related to occupational health and safety. In terms of the procedures, it has been specified as follows:

- changes in the organization of work and equipment of work stations,
- ways of introducing new technological processes as well as chemical substances and preparations,
- assessment of occupational risk occurring during specific work, and informing employees about this risk,
- creating the OHS service or entrusting the service to other people
- appointing employees for first aid,
- assigning employees with personal protection equipment and work clothing and footwear,
- employee training in the field of occupational health and safety.

The industrial enterprise implementing the Occupational Health and Safety Management System carried out a preliminary review, during which it has identified and analyzed the legal

requirements in force, has also identified hazards and reviewed occupational risk assessments occurring at individual work stations. It has reviewed the hitherto proceedings in the field of Occupational Health and Safety. For the implementation of general and specific objectives, the enterprise committed to annually develop a health and safety improvement program in the enterprise. For the correct implementation of the Occupational Health and Safety Management System in the enterprise, the Health and Safety Policy was created (*External documents…*; Polski Komitet Normalizacyjny, 2004a).

2 Implementation and functioning of an innovative health and safety management system

The Management Board of the enterprise, in accordance with its health and safety declaration, undertook to provide the necessary resources for the functioning and supervision of the Occupational Health and Safety Management System. These will be physical, technical and financial resources, ensuring health and safety at work at individual positions. The Management Board of the enterprise, in accordance with the undertaken obligations, will take care of the knowledge and skills of the personnel in the field of health and safety, through training plans and raising knowledge. An appropriate level of health and safety knowledge will be provided through programs and employee training throughout their employment in the enterprise. In the scope of employee training in the organization, a procedure was developed to determine the principles of training on Occupational Health and Safety in the entire enterprise. The first information about the operation of the Occupational Health and Safety Management System and the assumptions of the Health and Safety Declaration in the Enterprise must be obtained by every employee at the time of admission to work. Information on hazards and occupational risk assessment at the workplace should be provided to every employee, and the person responsible for this should be the immediate supervisor. The procedure should be introduced to improve knowledge in the field of Occupational Health and Safety at the enterprise.

As a part of the Occupational Health and Safety Management System, the enterprise adopts and analyzes comments, ideas and information related to occupational health and safety from employees and their representatives and provides them with relevant answers. The rules and procedure of conduct within the scope of communication within the enterprise have been defined in an appropriate procedure. The purpose of this procedure is to improve the flow of information within the entire enterprise in the field of Occupational Health and Safety.

Documents of the Occupational Health and Safety Management System include (Polski Komitet Normalizacyjny, 2004a):

- OHS declaration,
- procedures for the OHS Management System,
- general and work OHS instructions.

The basic elements of the Occupational Health and Safety Management System should be documented by the enterprise in a form appropriate to the users' needs (electronic or in the form of a paper). Therefore, procedures were established for the supervision of documents required by the standard (Polski Komitet Normalizacyjny, 2004a).

The highest management in the enterprise has established the procedure called "Occupational risk management", which provides a method of conduct in the field of identification of hazards related to health and safety and occupational risk assessment related to the work carried out in individual facilities of the enterprise. The purpose of the procedure is to determine the procedure for identifying threats occurring at the workplace and during assessing and limiting occupational risk. The procedure describes the principles of hazard identification and assessment of the associated occupational risk as well as it defines the method of informing employees about occupational risk and methods of safe work performance. Occupational risk assessment in the enterprise is carried out using the "STER" program (Polski Komitet Normalizacyjny, 2000, 2004a; Russell, 2002). Data obtained from the results of measurements of harmful factors and information received from managers of organizational units serve to assess occupational risk. The updating of the occupational risk assessment is carried out once a year and also in every case when the information used for the evaluation may lose its validity. The procedure also provides a way to update the list of threats, as well as the selection of significant threats.

Regarding prevention, preparedness and response to accidents at work and failures, all actions taken in the Occupational Health and Safety Management System should be directed towards the active prevention of threats. Each hazard should be identified and the related risk should be mitigated against adverse effects. Therefore, to describe the readiness and proper response to accidents and failures at work, the enterprise has developed the procedure "Identification, response and prevention" (Polski Komitet Normalizacyjny, 2004a; Parker, 1998).

The procedure determines:

- identification, assessment and constant update of emergency hazards,

- rules of conduct in emergency situations,
- reviews and amendments to emergency instructions,
- rules for practical exercises to respond to failures.

The developed procedure is used to determine the responsibility of persons and how to deal with emergencies. The relevant activities described in the procedure should be reflected in the emergency response plans and in the Occupational Health and Safety instructions, each of which must foresee the emergency procedures for individual types of work and related hazards.

3   Checking and corrective and preventive actions in an innovative health and safety management system

In order to improve and eliminate irregularities in corrective and preventive actions, a corrective and preventive action card should be introduced in the examined enterprise, which will streamline this process and allow it to be monitored.

The next stage, according to the standard of the Occupational Health and Safety Management System, is the review of the ordinance. Until now, this stage in the enterprise was held every two years and had no precise documentation needed by the Top Management to undertake a proper assessment of the operating OHS system.

In connection with the improvement of the entire OHS system in the enterprise, the procedure "Review of the OHS management system" created (*External documents…*; Polski Komitet Normalizacyjny, 2004a; Zeng et al., 2007) was developed. The procedure includes a specified time interval in which the system will be reviewed, who will be responsible in the enterprise for its preparation, and what documentation will be needed for a proper review. The Management Board of the enterprise will commission a full preparation of the review to the Occupational Health and Safety Executive, where the person responsible for preparing the review was previously the Occupational Health and Safety Specialist. The attorney will prepare the full documentation needed for this review, and then he will prepare plans for improvement in the occupational health and safety management system, and present them to the Top Management. The result of such a management review should be:

- assessment of the ability of the Occupational Health and Safety management system to meet the general needs of the enterprise, including the employees of the organization and the organization's authorities,

- assessment of the need for changes in the Occupational Health and Safety management system, as well as changes in health and safety policy and objectives,
- assessment of progress in achieving all Occupational Health and Safety objectives and implementation of corrective actions.

Conclusion

The Occupational Health and Safety Management System, based and implemented in accordance with the Polish Standard PN-N-18001:2004 in the industrial enterprise, has allowed for the optimization of processes taking place in the entire Occupational Health and Safety Management System. In conducted innovations, including new procedures that were created to improve OHS conditions, were developed in line with the standard and introduced into the management system. Currently, all these processes are measurable and thanks to that it is easier to control them. All procedures implemented in the process of innovation and optimization operate in the enterprise and are the most important procedures in the field of OHS protection.

The development of the above procedures allowed to systematize the Occupational Health and Safety system in force at the enterprise, which will consequently optimize the improvement of safety, also introduced a continuous monitoring and improvement process which in the further operation of the enterprise should effectively influence the improvement of work safety.

The most important elements of the introduced Occupational Health and Safety system in the industrial enterprise, are, as it was recognized:

- developing and announcing a security policy by the enterprise's Management Board, in which the care for employees and their safety is clearly and unambiguously declared,
- implementation of production tasks in a manner that guarantees safety,
- increase in the level of security in the subordinate production departments and reduction of losses due to accidents at work and potentially accidents and breakdowns,
- unification and systematization of documentation created in OHS departments,
- increasing the effectiveness of training, education and supervision, which are important aspects of reducing occupational risk.

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Contact

Anna Gembalska-Kwiecię́ń

Faculty of Organization and Management, Silesian University of Technology

Institute of Production Engineering

41-800 Zabrze, Roosevelta 26 str., Poland

Anna.Gembalska-Kwiecien@polsl.pl

Bożena Skotnicka-Zasadzień

Faculty of Organization and Management, Silesian University of Technology

Institute of Production Engineering

41-800 Zabrze, Roosevelta 26 str., Poland

Bozena.Skotnicka-Zasadzien@polsl.pl

CHANGE MANAGEMENT TOWARDS DIGITALIZATION AND INNOVATION

Patricia I.T.F. Girrbach

Abstract

Purpose: The issue of this paper is the conceptualization of a digital transformation concept which supports both, digitalization and innovation. This is caused in the reason that organizations need appropriate circumstances in order to cope with challenges concerning digital transformation. Thus, this paper provides practical starting points in order to support firms in terms of their change towards digitalization.

Design/methodology/approach: The paper is based on practical experiences, literature research and expert interviews concerning digitalization in companies. First of all benefits as well as resulting challenges arising out of digitalization will be presented in order to show the importance of digital issues for companies. Grounded on these insights a transformation model for the digital turnaround will be created based on theoretical issues such as change management or sensemaking.

Findings: The concept provides practical implication and measurements for a structured change. Hereby companies should first of all focus on the corporate culture due to the fact that culture is the most important enabler or hinderer for any kind of change. This includes the modification of the corporate´s vision, values as well as the behaviour of executives and proper working condition as well. Moreover, digitalization will be linked to information management in order to underline the importance of the so called horizontal integration due to the fact that networking is the basis for cooperative change processes (Spath, 2013).

Research/practical implications: The paper includes implications for the change management towards digitalization and innovation. The provided digital transformation concept serves as a guideline for managing the challenges in terms of digitalization and innovation processes.

Originality/value: This paper fulfils an identified need in order to cope with the current issue digitalization that will change our whole life rapidly and extremely. In order to be prepared organizations, need to know how to deal with the challenges concerning digitalization. Only if they are prepared, e.g. by using a digital transformation concept companies are able to see not only the challenges but also the chances evolve out of digital issues.

Keywords: Digitalization, innovation, change management

JEL Codes: 010, 033

Introduction

The world as we know has been shaped by three major technological revolutions. Currently, our society and economy is facing a new and incremental upheaval named digitalization and industry 4.0 (Riedl et al., 2017). In order to face the relating challenges and to use the chances arising out of digitalization, companies have to be prepared for a digital transformation. In this context the term 'digital transformation' describes the transformation from partly digitized business models into fully digitized ones (Riedl et al., 2017). Hereby digital transformation represents a major challenge for business management in a way as all industrial revolutions and incremental innovations did before (Riedl et al., 2017). Therefore the aim of this paper is providing a guideline in order to support organisations by their change towards digitalization.

In this context first of all the term industry 4.0 will be concretized. Afterwards potential benefits as well as resulting challenges arising out of digitalization will be presented in order to show the importance of digital issues for companies. Subsequently a transformation model for the digital turnaround will be created. This transformation model is based on theoretical concepts such as change management or the concept of sensemaking. The model provides practical measurements for a structured change towards digitalization. Hereby companies should first of all focus on the corporate culture due to the fact that culture is the most important enabler or hinderer for any kind of change. This includes a modification of the corporate´s vision, values as well as an appropriate behaviour of executives and proper working condition as well. Moreover the involvement of external stakeholders is crucial. Hereby links between digitalization and information management will be shown in order to underline the importance of the so called horizontal integration of external stakeholders.

1   Industry 4.0 – What is it?

Industry 4.0 represents the fourth industrial revolution on the way to an Internet of Things, Data and Services. According to Germany Trade and Invest it refers to the technological evolution from embedded systems to cyber-physical systems. Decentralized intelligence enables the creation of intelligent object networking and independent process management, especially with the interaction of the real and virtual world which is a crucial new aspect of manufacturing and production. Therefore industry 4.0 represents a paradigm shift from centralized to decentralized production. Hereby technological advances constitute a reversal of conventional production process logic in the sense that industrial production machinery no longer simply processes a certain product, rather the product communicates with the machinery to tell it exactly what to

do. By connecting embedded system production technologies and smart production processes industry 4.0 paves the way to a new technological age which will not only radically transform industry, production value chains and business models (e.g. constructions like the "smart factory"), but also our daily life.

In this context the Internet of Things, services and Data enables a real-time capability of production and autonomous objects, mobile communication and real-time sensors allow new paradigms of decentralized control and ad hoc design of processes.

Fig. 1: The internet of things
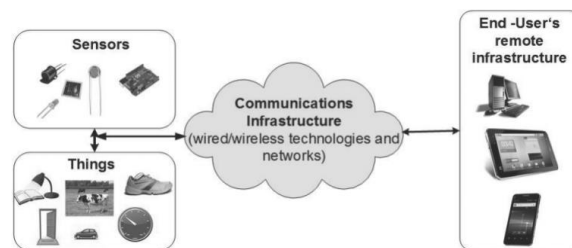
Source: Bruzgiene et al. 2017

The Internet of Things (IoT) is an important part of the future internet paradigm. It will rapidly change the development of technologies as well as the provision of services. Especially the capability of objects regardless whether physical or virtual things to identify and communicate with each other at any time based on communication technologies gives organizations the possibility to provide advanced services over global infrastructure in different areas of manufacturing as well as in everyday life (Bruzgiene et al. 2017). Industry 4.0 utilizes different design principles which are interoperability (including cyber-physical systems), virtualization, service orientation, modularity, decentralization as well as real-time capabilities (Datex Canadian Office, 2017).

2   Benefits of industry 4.0

In the following the key benefits of Industry 4.0 will be summarized (i-SCOOP, 2017). First of all industry 4.0 enhanced productivity through optimization and automation thus it consequently reduces costs, increases profitability and reduces waste, because automation prevents errors and delays. Moreover it allows speeding up production to work more in real-time along the overall value chain, where speed is crucial for success and customer satisfaction. Furthermore it provides real-time data for a real-time supply chain in a real-time economy. As a result it enhances the timely adaption of processes and increases flexibility in general. In this

context speed is not only a benefit concerning optimization, automation and enhanced productivity, but also in many other ways as well. Even if many productivity improvement benefits are rather about the internal goals of costs and process optimization they support at the same time also enhanced customer-centricity. Especially nowadays concerning industry fast processes are crucial for organizational success with regard to the matter of alignment, costs and value creation. Besides, customers simply expect it.

Industry 4.0 enables higher business continuity due to advanced monitoring and maintenance (i-SCOOP, 2017). For instance when an industrial robot gives up, production is affected; costing money and moreover unhappy customers, and sometimes production can be fully disrupted. Beside reputation can be damaged. Industry 4.0 allows that industrial assets are connected and can be monitored through the Internet of Things. Therefore issues are tackled before they even happen thus the resulting benefits are huge. Assets can be proactively maintained, real-time monitoring and diagnosis becomes possible.

Industry 4.0 enhances the quality of products due to real-time monitoring; the IoT-enabled quality improvement and collaborative robots ensure a better quality of products and prevent errors (i-SCOOP, 2017).

Moreover industry 4.0 improves working conditions caused in the fact that robots will take of former physical work (i-SCOOP, 2017). Monotone activities will be reduced and employee's freedom will be increased by different working models. Beside that working conditions in offices, plants or warehouses will be improved in general based on real-time temperature, humidity and other data. Furthermore better communication and collaboration possibilities, a focus on ergonomics, clean air and clean factory initiatives will provide better working conditions for employees.

Additionally Industry 4.0 enables customization and personalization for the consumer in a new dimension (i-SCOOP, 2017). Digital tools have changed consumer behavior and preferences. Consumers have become more demanding, among others with regards to fast responses and timely information.

Scalability and agility are expected in manufacturing enabled by Big Data, robots and cyber-physical systems to predict and meet seasonal demand, fluctuations in production, and the possibility to downscale or upscale (i-SCOOP, 2017). Therefore adjustments are more predictable, and can be handled better due to increased visibility, flexibility and a possibility to

leverage assets in function of optimal production requirements from a perspective of scale and time.

3   Challenges concerning industry 4.0

The jobs of employees in industry 4.0 will change for sure. Therefore the fourth industrial revolution needs qualification (Spath, 2013). If products communicate with their producing machines, then Cyber-Physical Systems (CPS) is in the game. If mechanical engineers use virtual tools then interdisciplinarity and software competence are in demand. Without qualification for this organizations won´t cope the challenges in terms of digitalization. Therefore in the context of digitalization companies should develop the skills of their employees or improving their already existing abilities (Spath, 2013). According to a current Fraunhofer study it is clear that the role of human beings will not just be to use automated subsystem. This is caused in the reason that people do not only have motor skills, but also thinking, associative and sensory abilities which can´t be copied easily by robots. These skills should be used by companies especially in the complex and innovation-driven area of digitalization. People are flexible and able to handle an insane abundance of tasks within a very short time. Therefore employees will be crucial for the organizational success even and in particular in the future with regard to indusry 4.0.

Moreover companies focusing on Industry 4.0 must pay attention to the entire life cycle of products and manufacturing. Concerning the entire value chain and manufacturing operations many external stakeholders should be involved. These stakeholders need information about processes, regardless of where they sit in the supply chain. Customers want good products fast. They have increased expectations regarding quality, services and products that should be delivered on the exact time they want. Therefore real time information and transparency along the whole supply chain is required, including all the way up to manufacturing and beyond.

This is the only way to react quickly enough to the needs and future demands of customers. And indeed a current Fraunhofer study states that the majority of companies already recognized that the rapid response to customer requirements will be of great importance for future success (Spath, 2013).

As a consequence it is pretty clear that industry 4.0 requires a change. A change concerning qualification of employees, the integration and cooperation with external stakeholders like suppliers, customers or even schools and universities in order to tackle problems to satisfy

consumer needs, to speed up the production process or to create new innovative solutions for upcoming problems concerning digitalization.

4   Change Management towards digitalization

Digitalization and Information Management belong to each other. Digitalization requires information management and the other way round. In terms of the creation of a digital transformation concept existing concepts of Information Management should be considered. This is caused in the reason that digitalization, digital transformation or digital business strategy include tasks and methods which occur in already existing Information Management frameworks (Walchshofer and Riedl 2017; Heinrich et al. 2014; Krcmar 2015; Bharadwaj et al. 2013; Matt et al. 2015)

According to Riedl digital transformation represents a challenge for companies on two levels (Riedl et al., 2017). On the one hand companies focuse on business innovations or new ways of generating revenue due to digital issues. From this point of view firms has to tackle problems concerning necessary changes in processes, products, as well as new business models. On the other hand firms have to face challenges of the process of digital transformation itself, This is caused in the reason that different business models, new innovatvie products and digital-oriented processes require a changed corporate culture, too. In the following the last aspect will be focused.

Consequently in order to gain the mentioned benefits organizations need a change in their culture based on an appropirate plan and framework. As a starting point it is important to understand the preparation for digital challenges as a process which needs goal-oriented change management. Not understandable as a process that will end by reaching a special goal but rather than a process of contious improvement. Thus an appropriate digital transformation concept should not be limited by focusing on the changing company. Moreover it should also pay attention to other stakeholders like suppliers, customers, institutions, schoccls and universities in order to support digital transformation. In the following selected aspects out of the Digital transformation concept will be focused.

Fig. 2: Digital transformation concept
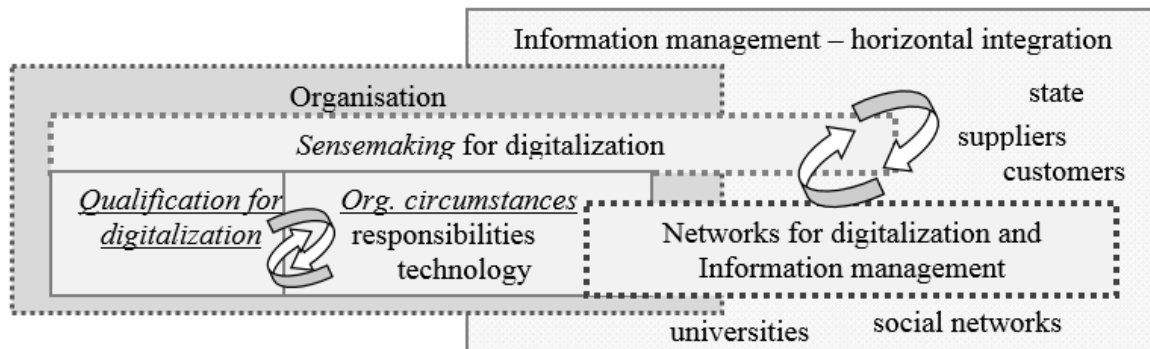
Source: own figure (2018)

4.1   Sensemaking in terms of digitalization

Sensemaking is essentiell in order to involve employees, suppliers, customers, universities and research organizations into the digital transformation. Internal Sensemaking creates a sense of urgency because if people don´t understand the necessity of digitalization they won´t invest effort to contribute (Kotter, 2011). By making employees aware of the need and urgency for change especially in terms of the success of the entire organization, support will be created. This implies a very honest and open dialogue and maybe sometimes already a change in the organizational communication culture.

Furthermore Sensemaking transfers digital-oriented objectives and values into the organizational knowledge base and anchors them there (Zahn et al., 2008). This includes first of all an appropriate modification of the company vision, which acts as a starting point for institutionalizing digital-oriented values and norms (Lehner, 2006). Formulating a clear vision will help internal and external stakeholder to understand what the organization is trying to achieve within a certain time frame (Kotter, 2011). Visions supported by the top management make digital transformation processes more concrete, beside they are the basis for changing the corporate culture towards a digital-oriented one.

Linking the adopted vision to strategies will help employees as well as external stakeholders to understand their contribution to the common aim. Hereby it is important that digital-oriented values (cooperation, openness, trust) and standards agree with the new vision. On this basis a digital transformation strategy should be created and communicated (Riedl et al., 2017). Hereby the behavior of CEOs must provide a seamless match. Thus it is important to ensure the support by promoters which are on the one hand CEOs and on the other hand special groups

within the organizations. In this context organizations should not establish only project teams but responsible advices for digitalization. Especially concerning digital-oriented change this is mandatory due to the fact that there are many continuous issues concerning anchoring responsibilities or establishing networks, qualifying people or implementing technical infrastructure. In this context it could be worthable to establish a Chief Digital Officer for the change process towards digitalization (Riedl et al., 2017).

If possible, this coalition is made up from employees working in different jobs and positions in order to enable that all employees can identify themselves with the team members and rely on the group. The groups function as sounding board, which enables an open communication to stuff and external stakeholders like customers or suppliers what is crucial for a digital transformation process.

4.2   Integration for digitalization

Digitalization needs networking. Especially new digital collaboration forms require intensive cooperation. In this context digital issues such as the blockchain technology can improve the efficiency of supply chains dramatically (Bauernhansl, 2014), (Bousonville, 2017). Blockchain technology allows a complete permanent documentation of all transactions along the entire supply chain, increased transparency, real-time information about flows of goods and involved actors as well as new forms of autonomous control of logistics systems (such as intelligent machines) (Material Handling & Logistics, 2018), (Casey and Wong, 2017), (Samuels, 2017), (Roth, 2016), (Schlatt et al., 2016). Therefore blockchain technology creates a new transaction quality, which makes deliveries more secure, cheaper and faster. Based on blockchain logistics as the process of planning, realizing and controlling the efficient flow of materials and products and the related information from delivery point to receiving point can be improved dramatically (Pfohl, 2018), (Wöhe, 2016). Thus transactions supported by digital means can be conducted faster, in less time and more secure. But for this the cooperation between al participants along the entire supply chain is crucial. Therefore according to Riedl information management is essential which is able to support companies in terms of the exploration and design of digital transformation (Riedl et al., 2017). Therefore information management is essential for organizations in order to ensure the best possible use of information for the organization's goals (Krcmar, 2015). Networking is the basis for the horizontal integration in production (Spath, 2013). Just-in-time principles should be widely used and the use of production-on-demand will ensure that the capacity is sufficiently flexible. Industry 4.0 creates the basis for this by CPS and relating real-time information concerning processes or customer demands. Due to the fact

that consumers increasingly want possibilities to have a direct interaction with a brand and its manufacturing capability the whole traditional supply chain will change. Digital platforms to customize products, shortened routes between production and delivery, possibilities to co-create and so on will take place. Customization happens in a consumer environment and in a B2B context as well such as adding a custom feature or adapting any characteristic of the product. Industry 4.0 needs the creation of a stronger and more connected horizontal value network due to the fact that for organizational success early data collection is essential (i-SCOOP, 2017). Whether it concerns product data or information about other processes across the horizontal value chain understood as the path from supplier and production to end customer or other stakeholders. Early information ensures improved customer service. Further advantages are improved planning, increased productivity and customer satisfaction, higher speed and so forth. Firms need the involvement and cooperation of all partners' across the entire supply chain. They need to avert a lack of transparency and accountability across complex supply chains (Casey and Wong, 2017). In this context horizontal integration helps organizations in terms of horizontal coordination, collaboration, realizing cost savings or value creation, based on information.

Digital-oriented modification of the organizational infrastructure creates cooperation structures, involvs customers and enables cooperation with partners like universities, schools or research institutions (digital networks) and suppliers (digital supply chain networks). Thus they are important in order to support organizational learning and an imporvement of the qualification of stuff. Through the integration of external stakeholders improvements towards digitalization are possible because stuff, suppliers, universities and customers are important sources of knowledge and ideas in order to create digital-oriented innovations which fulfill the requirements of the market due to the fact that companies receive important innovation-relevant information both on changed customer requirements as well as on market or social trends. Thus stakeholder collaborations enhance organizational know-how and thereby they also improve organizational skills which are the basis for any kind of innovation (Habisch et al., 2008b). Stakeholder dialogues and networks serve as a learning platform and enable efficient knowledge management by incorporating, for example, user-specific knowledge in terms of digitalization (e.g. by research institutions and so on) or using the collective intelligence of the network. Industry 4.0 requires a close international network between industry, science and universities (German Trade & Invest, 2017). Than industry 4.0 can solve some of the nowadays challenges, e.g. by increasing resource or energy efficiency due to intelligent systems.

Therefore it is essential for the success of digital-oriented transformation processes to establish communication as well as collaboration networks in order to talk about digitalization, possible common projects and incorporating opinions or proposals concerning digital issues such as ideas for new digital products and services. Therefore companies have to establish networks which enable a direct exchange with external stakeholders in order to get relevant information. Concerning Industry 4.0, smart factories, supply chains, informed customers it's all about data, from the actual operations to the delivery of a product to an end customer and beyond. Accordingly success depends on data.

Conclusion

Digitalization will change industry extremely. In order to face relating challenges and to use the chances arising out of digitalization, companies have to be prepared. Therefore this paper drafts a transformation model for the digital turnaround which supports both, digitalization and innovation. Therefore this paper provides practical starting points in order to support firms in terms of their change towards digitalization. Further research questions could investigate potential problems concerning the implementation of digital issues or the digital turnaround itself which can be conducted according to the provided transformation model. In this context especially empirical studies could be useful in order to find best practise procedures or to avert upcoming implementation problems such as motivation or qualification lacks in terms of internal as well as external stakeholders in advance.

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Contact

Patricia Girrbach

Karlshochschule, International University

Karlstraße 35, Karlsruhe, Germany

pgirrbach@karlshochschule.de

DIGITALIZATION AND ITS CONTRIBUTION TO SUSTAINABILITY IN TERMS OF THE SOCIAL DIMENSION

Patricia I.T.F. Girrbach

Abstract

Purpose: Sustainability and digitalization will determine economy in the future. But the crucial question is to what extent are both concepts related, are the CEOs of companies aware of this and where are obstacles concerning reaching sustainable social objectives by digitalization? In contrast to most approaches, digitalization will be rather understood as a social phenomenon than a technological issue in the first line. Thus, the study will investigate the social aspect of both topics.

Design/methodology/approach: The paper is based on own qualitative depth interviews with managers of companies just as e.g. Lufthansa, Deloitte and Bosch. The empirical study deals with the specific question if top managers see digitalization as chance for sustainable aims and if so where they see problems for transformation on the operative level.

Findings: This paper connects digitalization and sustainability on the social level. Interesting findings are that top managers are aware of the social dimension of digitalization. Moreover, they recognise the benefits arising out of digitalization especially for their employees and social objectives of sustainability. But they also mention that there is a gap between what they want and what stuff is willing to contribute due to several reasons. They assess that as the real big challenge concerning the digital organisational turn.

Research/practical implications: By connecting sustainability and digitalization this paper provides important implications in order to understand digitalization as a social phenomenon as well as a chance for reaching social aims. Moreover, it decovers obstacles occurring in practice what is important for top managers. Only if they are aware of this they can implement measurements in order to minimize or to prevent those obstacles in their own company

Originality/value: The added value of this work is that in contrast to previous work, digitalization and sustainability are linked at the social level. Moreover obstacles concerning the digitalorganizational turn are approached.

Keywords: Industry 4.0, digitalization, sustainability, change management

JEL Codes: 010, 033

Introduction

Sustainable Development is a concept that dominated the economic area in the past. Today the focus shifted away towards digitalization, the new hot topic. If companies focus only on digitalization for economic issues, important aspects such as social issues will lessen. Therefore the aim of this paper is showing the contribution of digitalization to social objectives of sustainability. The paper will answer the question to what extent both concepts are related. Besides it will be approached if top managers are aware of the contribution of digitalization to especially social objectives and if they are willing to support the digital turn. Moreover obstacles concerning reaching sustainable social objectives by digitalization will be investigated. In this context digitalization will be rather understood as a social phenomenon than a technological issue in the first line.

1   Connecting sustainability and digitalization on the social level

Sustainability is based on an economic, environmental and social dimension. Sustainability needs digitalization in order to face current challenges in the next years (Osburg and Lohrmann, 2017). Digitalization supports sustainable objectives in different ways. It offers various solutions to optimize production in terms of environmental, social as well as economic aspects. In the following the social dimension will be focused. The objective of the social dimension is to contribute to aspects such as occupational safety and health or psychologically aspects such as the general well-being of humans.

In terms of digitalization only technical issues are often focused. But the main point for the success and implementation for all new technologies are human beings, their acceptance and resulting proper behavior. Consequently it is not just the technology that enables new forms of management and organization (Anderson et al., 2017); to a much greater degree new digital forms of management and organization require appropriate new values. Digitalization seen as a social phenomenon appears in the collaborative, networked creation of values, especially in terms of the old dichotomy which sees producers on the one side and consumers on the other (Reichel, 2018). The digital economy shifts away from that point of view. It can be seen as an economy of networked prosumers and co-producers that can be described by the term next economy (Reichel and Scheiber, 2009; Reichel, 2015)

Concerning organizational transformation processes especially two stakeholder groups are important for enabling the mentioned digital turn. The first group is the top management. Without the support of the CEOs no organizational turn will be initiated. The second important

stakeholders are employees. Without their support no initiated transformation process can be conducted on the operative level. Thus the resulting question is are top managers aware of the contribution of digitalization to social aspects, are they willing to implement digital aspects and if so where the obstacles are concerning digital transformation processes.

2   Contribution of industry 4.0 to the social dimension of sustainability

In the following the benefits of industry 4.0 in terms of resource efficiency in a broader sense and consequently to sustainable objectives will be explained. The common resource efficiency focuses only on input factors like materials or energy. Resource efficiency in a broader sense includes further aspects in order to cover more important input aspects for sustainable issues, such as time (economic aspects) or effort for employees (social aspect) (Girrbach, 2015). In this context is efficiency the amount of resources contained in a product in relation to the amount of resources required for its manufacturing. Therefore resource efficiency can be raised by using fewer resources in the production process while it generates the same output than before. To concretize resource efficiency resources in a more specific kind of view and in a broader sense should be differentiated. Resources in a more specific kind of view contain only energy and material. Resources in a broader sense comprise also time, capital and human effort as well as physical and mental stress[5]. In contradistinction to resource efficiency in a more specific kind resource efficiency in a broader sense comprises all these types of resources which can be reduced by digitalization (see figure).

Fig. 1: Resource efficiency in a broader sense
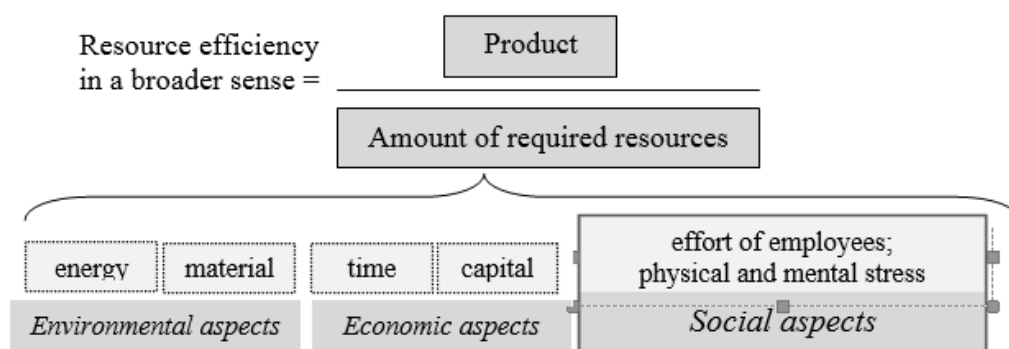
Source: Girrbach (2018)

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[5] Some authors focus only employees as resources which should be minimized. Regarding sustainable production as a part and a way to a sustainable development this can't be satisfied, because the social dimension of sustainability would be unheeded. Therefore the author focuses only the minimizing of human efforts, not of employees themselves.

In the following the contribution of digitalization to social aspects will be focused. Digitalization contributes to social objectives due to several reasons. Social aspects refer first of all to occupational safety and health. This multidisciplinary field concerns the safety, health, and welfare of employees at work. Occupational safety and health programs foster a safe and healthy work environment in order to protect employers who are affected by the workplace environment (Boyd, 2003). Moreover physical and mental stress should be reduced.

Fig. 2: The digital turn in companies and its requirements
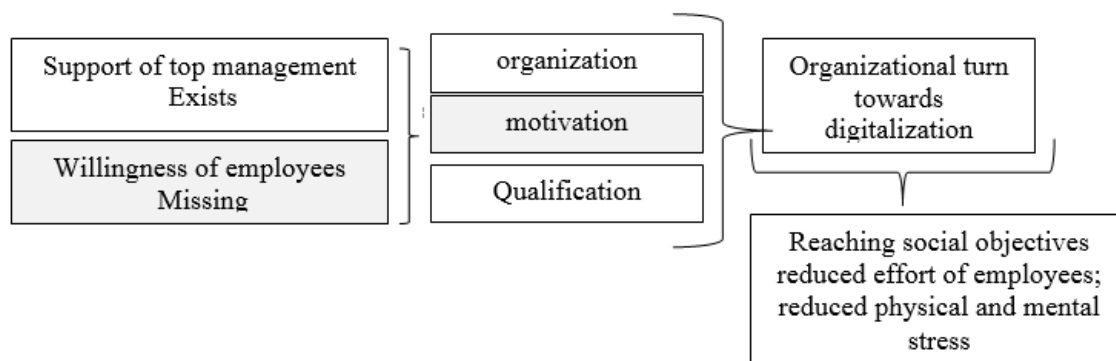
Source: Girrbach (2018)

First of all digitalization contributes to occupational safety and health due to improved automation through the entire production process in all areas of manufacturing (Boston Consulting Group, 2016). Thus digitalization ensures an improvement of working conditions caused in enhanced occupational safety because robots will take of former dangerous work.

Moreover workstations are adapted ergonomically. Consequently the physical health of employees as well as their physical effort can be reduced. This results in increased resource efficiency in a broader sense.

Furthermore working conditions in offices, plants or warehouses can be improved based on real-time temperature, humidity and other data what contributes to the well-being of employees from a physical point of view.

From a psychological point of view digitalization enables improvements, too. Because robots take of monotone work thus monotone activities will be reduced. Therefore digitalization improves the satisfaction of stuff caused in more interesting tasks. In general digitalization ensures mobile and agile working options. Thus employee's freedom will increase by new working models enabled by digitalization.

In terms of the satisfaction and motivation of employees digitalization contributes to social issues by new innovative education concepts, e.g. by Virtual Reality. Virtual Reality becomes important concerning the qualification and education of stuff. Digital tools can support employees in order to be prepared for practical tasks. Virtual Reality allows a simple efficient communication of complex topics. It ensures an intuitive, interactive and stronger psychological involvement of the employees.

Companies benefit from the increased digitalization of the workplace through increased productivity, a more mobile and agile workforce, and higher flexibility and adaptability (Buchanan et al. 2018). This contributes to social aspects. Moreover it is important to cope with the required flexibility and adaptability in an increasingly complex marketplace (Buchanan et al. 2018). By improving social aspects industry 4.0 enables higher productivity of processes (The Boston Consulting Group, 2016).

3   The study and empirical insights

It is pretty clear that sustainability and digitalization are the topics that will determine economy in the future. In this context the paper already clarified the question to what extent both concepts are related and what are possible contributions of digitalization in theory. But the crucial question is are managers aware of this, are they willing to support the digital turn in their company and where do they see obstacles concerning the digital turn.

In order to investigate these questions a qualitative study was conducted. It is pretty clear that a qualitative study is not about the generalization of the problems but about specific insights. Therefore the aim of this paper focused only on the social part of sustainability based on certain categories like the importance of digitalization for the company, the possible advantages arising out of digital issues especially for employees from a social point of view (better working conditions, better qualification concepts and so on) and possible ideas in order to handle these problems. Consequently specific research questions were:

1. Is digitalization already a topic in companies?
2. Do managers see any advantages arising out of digitalization for employees?
3. Which are the challenges in terms of the digital turn?
4. Are there any measurements or possible solutions to handle the digital turn?

This research questions were answered by depth interviews. The study was carried out with leading managers of different companies such as Lufthansa, swisslog, Bosch or Deloitte. In summary, ten depth interviews were conducted.

Concerning the selection of companies the author paid attention that companies of different branches were selected. Moreover it was important that small, medium sized as well as large firms were represented. Interview partners were managers in higher and leading positions such as CEOs and responsible persons in terms of digitalization. The interview partners were selected based on their relevance concerning digital issues in their company as well as on their position within the company and the time they already spend in the relating firm. The interview partners were contacted by mail if they are willing to attend at the study. The depth interviews themselves were telephone interviews as well as personal interviews. The personal interviews took place in Karlsruhe at the Karlshochschule. All interviews had a duration between 30 minutes and one hour. The interviewer was professor Girrbach who recorded the interviews. The base of all interviews was a questionnaire which functioned as orientation. This questionnaire was categorized as following.

- The first category focused on general information about the interview partner (name, position,..) and the relating company (size, revenues, products,..).
- The second category focused on digitalization and if it is important for the company.
- The third category focused on possible advantages of digitalization in terms of social aspects and effects on employees.
- The fourth category approached challenges in terms of the digital turn in the firm
- The last category asked for possible solutions for the addressed problems in order to handle the digital turn.

The second category focusing on digitalization and its importance included questions such as "Is digitalization already a topic in your company and if so in which context?" One interview partner answered this question as following; "our company discussed the topic digitalization and industry 4.0 already years ago. In the top management level there exists an agreement for the digital turn since 10 years (…)." Other managers also attest that they see a clear contribution of digitalization in terms of social, economic and environmental objectives, too. That is in accordance with theory (Casey and Wong, 2017). Moreover all managers confirm that they are willing to support the turn towards digitalization and that industry 4.0 is a huge topic on the top management level since the last years. Therefore one recondition for the digital turn seems to be fulfilled according to the exposed findings. That is important because the support of the top

management is essential for any kind of change (Kotter, 2011; Lehner, 2006). They need to make sense in terms of the organizational turn (Zahn et al. 2007). In this context the values of the top management are important. For a digital turn new values are necessary such as e.g. openness concerning new ideas, project-oriented thinking as well as the willingness to give execution power to employees on the operative level. The majority mentioned that these preconditions already exist. This was explained by the fact that the top management normally consists out of managers with a project-oriented background thus they are familiar with this kind of leadership. Besides it was mentioned that nowadays the top management includes often a mixture of managers in terms of the gender, the age or the nationality (Deloitte). This fact contributes to openness and flexible thinking in a positive manner. Consequently according to the interviews the support and required values already exist – at least at the top management level.

Concerning the third category specific questions were e.g. "Do you see any advantages arising out of digitalization for your employees in terms of social aspects and if so can you concretize them?" Answers were that "digitalization can improve the working and qualification situation of stuff (…). First of all the effort arising out of physical work can be reduced. Moreover qualification concepts based on concepts like Virtual Reality enable better and easier learning." The responsible person for digitalization of Deloitte emphasized that "(…) digitalization can contribute to social aspects due to the fact that boring and monotone activities can be reduced (…)."

The fourth category approached challenges in terms of the digital turn in the firm. One interview partner answered this question as following: "However we have problems arising out of the acceptance of some employees (…) on the operative level, because they seem to be afraid in terms of digital issues and changes arising out of digitalization especially in terms of their working place (…)." An interview partner of another company said: "Honestly I think sometimes people accept or prefer bad but well-known working conditions such as monotone or hard work better then working conditions they do not know before." Thus an important finding is that the majority of the interviewed managers emphasis that the willingness of the employees on the operational level is missing sometimes. This is surprising due to the fact that digitalization contributes especially to social aspects in terms of the employees. The managers argues that employees are afraid, e.g. that they lose their job or that they could not master the challenges in terms of digitalization.

The last category focusing on solutions included specific questions such as „Do you see possible solutions or measurements for facing the mentioned challenges?" One interview partner answered this question as following: "Honestly we do not have a solution yet. Maybe we have to demonstrate the advantages arising out of digitalization in a better way than before (…)." In this context the interview partners recommend that it is crucial to support employees, to offer various options for qualification and to make clear that they won´t lose their job. It is important to show benefits of industry 4.0 and to make clear that digitalization will not eliminate jobs but change them into a new much better kind.

Fig. 3: Categories of interest

Category of interest	Answers of interview partners
Is digitalization already a topic in companies?	"Our company discussed the topic digitalization and industry 4.0 already years ago." "In the top management level there exists an agreement for the digital turn since 10 years (…)."
Do managers see any advantages arising out of digitalization for employees?	"Digitalization can improve the working and qualification situation of stuff (…)." "Physical work can be reduced." "Qualification concepts based on concepts like Virtual Reality enable better and easier learning." "Digitalization can contribute to social aspects due to the fact that boring and monotone activities can be reduced."
Which are the challenges in terms of the digital turn?	"We have problems arising out of the acceptance of some employees (…) on the operative level, because they seem to be afraid in terms of digital issues and changes arising out of digitalization especially in terms of their working place (…)." "Sometimes people (…) prefer bad but well-known working conditions such as monotone or hard work better then working conditions they do not know before."
Are there any measurements or possible solutions to handle the digital turn?	"We do not have a solution yet." "Maybe we have to demonstrate the advantages arising out of digitalization in a better way (…)."

Source: Girrbach (2018)

Conclusion

Sustainability and digitalization are the topics that will determine economy in the future. Therefore this paper investigates to what extent both concepts are related, if challenges exist and if the managers of companies are aware of obstacles concerning reaching sustainable social objectives by digitalization. The paper connects digitalization and sustainability on the social level and conducted depth interviews with small, medium-sized and large companies as well.

It can be summarized, that digitalization is a topic at top management level for years. Moreover managers see advantages arising out of digitalization for employees such as the reduction of monotone work, better working conditions and more freedom. So they recognize benefits arising out of digitalization especially for social objectives of sustainability. Besides they are willing to contribute and to support the digital turn. However challenges in terms of the digital turn arising out of the missing acceptance of employees exist. Concerning measurements to handle the digital turn some interview partners answered that maybe possible advantages should be explained in a better way, but that till now they do not have a concrete solution. Normally only hard factors such as the technological equipment were focused in the first place not soft factors like the support of employees. Nevertheless managers attest that the support of employees is crucial for the digital turn. Thus managers are aware of the social dimension of digitalization. One interview partner said it like that "The best technical equipment is nothing without people who are willing to use it." Other current studies attest that stuff will be needed in other areas in order to handle the processes which will increasingly be complex (Spath, 2017). Employees are more important than ever. Consequently it can be summarized that employees as well as their support on the operational level is more important than ever. Unfortunately sometimes this precondition is not fulfilled in practice. Consequently there is a gap between what top managers want and what stuff is willing to contribute due to several reasons. Managers should be aware of the digital challenges, because no company can become more digital without its employees. Forthcoming research could focus on finding out measurements in order to reduce the existing fear of stuff in terms of digitalization. A resulting particular research questions could focus on concrete measurements or starting points for companies in order to face these challenges.

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Contact

Patricia Girrbach

Karlshochschule, International University

Karlstraße 35, Karlsruhe, Germany

pgirrbach@karlshochschule.de

ENDOGENOUS DETERMINANTS OF THE ABSORPTION
OF PROCESS INNOVATIONS
IN FINANCIAL SERVICES COMPANIES

**Waldemar Glabiszewski – Dorota Grego-Planer – Katarzyna Liczmańska-Kopcewicz –
– Maciej Zastempowski**

Abstract

Purpose: The need for raising the level of innovativeness and competitiveness caused by the increasingly stronger competition forces companies to seek new sources of getting and new ways of introducing and exploiting innovations. In the case of services providing companies, due to the domain of their activity, process innovations are of particular importance. Their transfer from the environment is a complex and difficult undertaking, and its success is conditioned by the absorptive capacities possessed by the company. Therefore, the main research objective of this article was to identify key absorptive capacities that are endogenous determinants of the effectiveness of the process of the absorption of process innovations in the activity of Poland's financial companies.

Design/methodology/approach: The empirical part of the article was written on the basis of research findings obtained in 2015-2016 by means of an online survey using a CSAQ-a. It was sent to the heads of 155 commercial financial sector companies registered in Poland, namely all banks, property and life insurance companies, investment funds and universal fund management companies. In total, 111 entities filled in the online survey questionnaire. In the conducted study an attempt was made to assess the direction and strength of dependence between the level of development of specific absorptive capacities of financial companies and the scale of the effects achieved as a result of the absorption of process innovations.

Findings: Personal and organizational absorptive capacities of financial companies in Poland analysed using Pearson's correlation coefficient, remain in a positive and strong linear relationship with their effectiveness achieved in the scope of the absorption of process innovations.

Research/practical implications: The endogenous determinants of the effectiveness of financial companies in the field of the absorption of process innovations diagnosed in the course of ongoing research and analysis should constitute for them the basis for determining the priority directions of investments undertaken to supplement and improve their absorptive capacities. They can also become a starting point for undertaking an empirical search for further determinants of effective absorption of process innovations or verification of their impact in other sectors.

Originality/value: The presented outcome of the performed research identifies the key absorptive capacities that determine the effects obtained in the process of absorbing technological innovations, taking into account the specific conditions prevailing in the service sector.

Keywords: Absorptive capacity, absorption, process innovations, financial companies

JEL Codes: G20, M10, O32

Introduction

Fierce competition on the financial markets increasingly enforces the development of innovativeness in companies operating there. By exerting pressure on the use of advanced technologies and providing innovative services, competitive markets compel even well-stablished companies to reach for already available technological solutions, and, therefore, to absorb them. Absorption of innovations stemming from the environment has become today an integral part of any company's activity (Liczmańska-Kopcewicz, 2017). However, making such a transfer effectively, in particular a technological (process) innovation one, is quite a challenging task.

The transfer of technological innovation, especially of an entire technological innovation, is a very complex and challenging undertaking that is burdened with high risk and, therefore, it is not always completed successfully (*Knowledge*, 2000). Reaching a success is conditioned by numerous factors (Walter and Heinrichs, 2011) and, according to the resource-based view of the firm (which in the 1990s became the dominant school of strategic thinking in business management) (Barney, 2002), the leading role is played by the company's intraorganizational absorptive capacity.

Absorption of technological innovations requires the involvement of many different and specialized capabilities that make up the company's absorptive capacity but are not a fundamental component of the competences used by them in their core business. Developing and providing them requires making additional time-consuming and capital-intensive investments, and thus maintaining special care and consideration while acquiring them. Therefore, the desirable directions of improving absorptive capacities should be defined precisely, including a precise definition of their target range as well as of the quantity and quality of their elements. It is worth remembering that there are clear, characteristic and lasting differences occurring in the scope of sources, implementation methods as well as in conditions of technological changes made within the sphere of services and other branches of the economy (Tidd and Bessant, 2013).

In view of the above, the main research objective of this article is to identify key endogenous factors of the effectiveness of the absorption of process innovations in the activity of financial companies operating in Poland. Its accomplishment, based on the results of surveys carried out in the Polish financial companies sector, will lead to providing an answer to the question about intra-organizational resource-related factors that determine the success of an undertaking

narrowed to the absorption from the process innovations environment. Thus, the question remains about which elements of absorptive capacity should particularly be assured in order to achieve the assumed effects as a result of acquiring and implementing the desired process innovation?

1   The concept of absorptive capacity - theoretical background

The concept of absorptive capacity in its mature form is applied today in the theory of knowledge management and learning organization. According to its assumptions, an organization's absorptive capacity is understood as its ability to continually enrich itself with useful knowledge that increases its innovation through the ability to identify changes taking place around and initiate creative reactions adequately (Glabiszewski, 2016). Therefore, the concept of absorptive capacities exposes the importance of external knowledge, treating it as a critical element in building a company's innovativeness. The role of absorptive capacity is to determine directly the quality of activities undertaken within the innovation process, starting from acquiring knowledge from the outside, through its integration with the knowledge already possessed, and finally applying it creatively (Nonaka and Takeuchi, 1995).

Absorption of technological innovations assumes three basic, though internally differentiated and structured stages. Namely, these are acquisition of a new technology, its assimilation and application (Cohen and Levinthal, 1995). Their realisation requires the involvement of many different and specialized capabilities that make up the company's absorption potential. The absorption potential should therefore include all of the organization's capacities to evaluate the new knowledge and then to acquire, integrate and use it in cooperation with the environment (Bosch et. al., 1999; Glabiszewski and Grego-Planer, 2016). In the sphere of the absorption of technological innovations, the absorption potential should be expressed by the ability to carry out an effective transfer, *i.e.* one in which the chosen desired technology is acquired, then properly adapted and implemented, and ultimately used in a way that enables the company to earn achievements (Glabiszewski, 2016).

Subject literature indicates various proposals of capacities used in the process of absorbing knowledge and innovation. These include specific combinations of knowledge, skills, experience and attitudes of employees (for instance, attitudes that are entrepreneurial, motivated and prone to undertake a specific action, open to new knowledge and changes), as well as human resource management systems, culture and organizational structure, intra-organizational communication, relations with entities from the sectoral and cross-sectoral environment,

technological know-how, and infrastructure used (Walter and Heinrichs, 2011; Trott, 2008; Zastempowski, 2010; Bosch et. al., 1999; Minbaeva et. al., 2003; Child et. al., 2005).

However, these proposals do not specifically address technological innovations and do not take into account the specificity of services providing companies. Also, they usually do not represent a holistic approach to absorptive capacities as a coherent system. Therefore, it is justified to continue to search for and verify the real determinants of success in the process of absorbing technological innovations leading to their comprehensive application.

2   Methodology and Hypotheses

The empirical part of the article was written on the basis of research findings obtained in 2015-2016 by means of an online survey using a CSAQ-a Computerized Self-Administered Questionnaire, in which the respondents filled in a digital version of the survey questionnaire available online. It was sent to the heads of 155 commercial financial sector companies registered in Poland, namely all banks, property and life insurance companies, investment funds (TFI) and universal fund management companies (PTE). In total, 111 entities filled in the online survey questionnaire, constituting 71,6% of the population under study. Analysis is based on the results from 37 TFIs, 28 banks, 20 property insurance companies, 17 life insurance companies and 9 PTEs.

The research conducted was the primary source of data essential for realizing the article's main empirical objective, which was identifying key endogenous factors of the effectiveness of the absorption of process innovations in the activity of financial companies operating in Poland. In order to accomplish the formulated main objective, the authors formulated two specific objectives:

1. identification of resource-related factors made by innovation absorptive companies based on a literature review;
2. assessment of the impact of the degree of development of specific absorptive capacities of Poland's financial companies on the level of direct and indirect effects obtained as a result of the performed absorption of process innovations.

In attempting to accomplish their specific objectives, and at the same time the article's main objective, the authors formulated and empirically verified three research hypotheses:

H1: The degree of the development of personal absorptive capacities of Poland's financial companies affects positively the achievement of the expected level of effects of the absorption of process innovations;

H2: The degree of the development of organizational absorptive capacities of Poland's financial companies affects positively the achievement of the expected level of effects of the absorption of process innovations.

The hypotheses formulated above are the result of scientific considerations based on the assumptions of the concept of learning organization, according to which an enterprise using its existing capabilities should acquire and exploit as part of its activities the resources of new knowledge embedded in its environment as well as ready-made solutions to obtain measurable benefits. Therefore, it is assumed that the absorptive capacities possessed condition the scale of effects achieved as a result of the transfer of innovations, which should not be limited only to the implementation of the acquired novelty, but also to the obtainment of the resultant and desired market and financial benefits.

The desire to verify the view on the impact of certain absorptive capacities of companies on the effectiveness of their on-going process innovation transfers in the reality of the Polish financial sector prompted the authors to undertake a research problem contained in the hypotheses presented above. In order to verify them, statistical and descriptive analyses of the obtained research results were carried out. The observations and conclusions reached are discussed in the next part.

3   The impact of absorptive capacity of financial companies on the level of their effectiveness in the area of the absorption of process innovations

A direct effect of the absorption of process innovations desired by the company is its adaptation for use in order to increase activity efficiency and effectiveness (Glabiszewski and Zastempowski, 2017). This is most often reflected in costs reduction or in improving quality, flexibility or efficiency achieved through processes supported by it, which should result in an increase in the market value of the proposed offer. This, in turn, gives grounds for obtaining indirect effects, whose main manifestation should be achieving the desired market results, in particular, achieving an increased market share and, in consequence, improving financial performance, *i.e.* generating higher profits. It is the willingness to achieve these target effects that drives companies to take action to absorb process innovations. However, the degree of their

achievement is shown by means of a measure of the effectiveness of these activities, which is conditioned by the level of excellence of absorptive capacities used for this purpose.

In order to assess the effectiveness of the absorption of process innovations in financial companies operating in Poland, we asked the management of those companies to determine the extent to which during the last three years they were able to achieve the individual effects underlying the decision to launch these pro-technological undertakings. For this purpose, a percentage scale was applied, where 0% meant that the effect was not achieved at all, and 100% that it was achieved completely, *i.e.* at a level consistent with expectations. The obtained results, being arithmetic averages of the assessments made, are presented in Table 1.

Tab. 1: The degree of effects achievement in the absorption of process innovations

No.	Effects of the absorption of process innovations	Average grade
Total of direct effects		**66.7**
1	Increased level of quality of ongoing business processes	78.9
2	Increased level of operations flexibility within ongoing business processes	70.0
3	Increased efficiency of business processes	61.0
4	Reduced costs of ongoing business processes	56.8
Total of indirect effects		**65.1**
1	Increased market share	65.7
1	Improved financial performance	64.4
Total of all effects – total efficiency		**66.1**

Source: authors' elaboration based on survey results

The highest percentage (*i.e.* 78.9%) of answers given by the surveyed managers related to the achievement of goals with regard to the increase in the quality of business processes implemented in the sphere of operating activity. On the other hand, the lowest percentage of answers (*i.e.* 56.8%) concerned achieving cost-effectiveness. In-depth interviews with respondents indicate that the surveyed companies, due to the strong pressure evoked by tough market competition, focus their attention and resources on improving the particularly important area of activity that is the customer service process. As is known, a significant increase in quality caused by new technologies is not necessarily accompanied by a decrease in costs, since cost and qualitative competition strategies are usually an alternative to each other.

It is also worth noting that the direct effects of the absorption of process innovations were achieved to the degree that was very similar to that of the indirect effects, which should be deemed a desirable phenomenon. This means that the direct effects allowed the obtainment of the indirect effects, which should be treated as target ones. The direct effects of the transfer of

technological innovations should not be considered the main goal of the entire technological venture, as they should be reflected in strategic objectives of companies, especially market and financial ones (Iyengar, 2015). The level of their achievement declared by the surveyed managers is almost identical (65.7% and 64.4%) and, what is quite interesting, it ranges between the level of achievement of cost and qualitative direct goals.

The presented results do not prove the full effectiveness of financial companies operating in Poland in the area of the absorption of process innovations (see more in: Glabiszewski, 2016). Since they do not achieve all of the intended effects (total effectiveness achieved was at the level of 66.1%), there are rational premises to improve this sphere of pro-innovation activity, *i.e.* to increase their capacities to carry out effective innovation transfer. However, it should be performed in an intentional and effective manner, and thus justified due to the achievable results. Therefore, in the further part of the study we made an assessment of the direction and strength of the impact of the elements (selected during the literature studies) of the absorptive capacity of the examined financial companies on the level of the effects of their pro-innovation absorptive activity. To this end, Pearson's correlation coefficients were estimated for the degree of development of specific absorptive capacities as well as for the degree to which all expected effects were achieved as a result of the absorption of process innovations (the so-called total effectiveness). The results obtained in this respect are shown in Table 2. The degree of development of absorption capacities used for calculations was estimated based on the evaluation of top management indications using a percentage scale, where 0% meant that given capacities were not developed at all, and 100% that they were developed to a maximum – in other words, the capacity was fully developed.

The obtained values of Pearson's correlation coefficients indicate the existence of a positive, strong, and relatively moderate dependence between the variables under study. In principle, all identified elements of absorptive capacity should be considered as significant endogenous determinants of the absorption of process innovations in financial companies operating in Poland. In other words, the examined absorptive capacities have a real impact on the level of effects obtained by financial companies in the process of absorbing technological innovations.

However, the effectiveness of the analysed area of pro-innovation activity is particularly affected by the development of these capacities, in relation to which a strong linear relationship ($r \geq 0,6$) was identified. Both in the category of capacities attributed to individual employees as well as those having a general organizational effect, a strong impact was diagnosed in five out

of eight analysed components. The other three of each category have a moderate, though significant influence.

Tab. 2: Correlations between the degree of development of absorptive capacities of financial companies and the effects of the absorption of process innovations

No.	Elements of absorptive capacities	Total effectiveness
		r
Personal absorptive capacities		**0.68†**
1	employees' experience in the area of the absorption of process innovations	0.71†
2	motivation to introduce innovative changes, in particular technological ones	0.71†
3	entrepreneurial attitudes of employees	0.68†
4	employees' aptitude for learning	0.65†
5	interpersonal skills of employees	0.62†
6	employees' aptitude for communicating with other employees	0.59†
7	knowledge and technical skills of employees	0.58†
8	openness and readiness to absorb new knowledge	0.56†
Organizational absorptive capacities		**0.60†**
1	pro-innovation motivational system (providing incentives to undertake innovative activity)	0.67†
2	pro-innovative recruitment system (promoting employees' qualifications in the field of innovative activity)	0.65†
3	pro-innovative organizational culture (focused on inspiring and making innovative changes)	0.65†
4	pro-innovative training system (raising qualifications in the field of innovative activity)	0.64†
5	pro-innovative employee evaluation system (providing assessments of innovative activity)	0.62†
6	know-how and technological infrastructure	0.59†
7	multiple and positive relations with entities from the sector environment	0.46***
8	an efficient flow of intraorganizational communication	0.43***

*** $p \leq 0.01$; † $p \leq 0.001$

Source: authors' elaboration based on survey results

The greatest impact on the level of effects obtained in the process of absorbing technological innovations - as it turns out - has the previous experience of employees gained during the absorption processes already undertaken and their internal motivation to introduce innovative changes, especially technological ones, their entrepreneurial attitude, willingness to learn as well as interpersonal skills. In turn, in the area of general organizational capabilities, pro-innovation targeted personnel management systems and pro-innovative organizational culture are of the greatest importance. Therefore, especially those resources should set priorities for financial companies in the sphere of supplementing and improving absorptive capacities.

The obtained research results prove that also aggregated variables, *i.e.* personal absorptive capacities and organizational absorptive capacities, remain in a positive and strong linear relationship with the so-called total efficiency in the scope of the absorption of process innovations. Thus, it should be recognized that there are no grounds for rejecting H1 and H2 hypotheses accepted in the research proceedings, which means that the degree of development

of both personal and organizational absorptive capacities of Poland's financial companies positively affects the level of the absorption of process innovations expected by them. These dependencies are presented in Figure 1.

Fig. 1: Relations between absorptive capacities and the effectiveness of financial companies operating in Poland
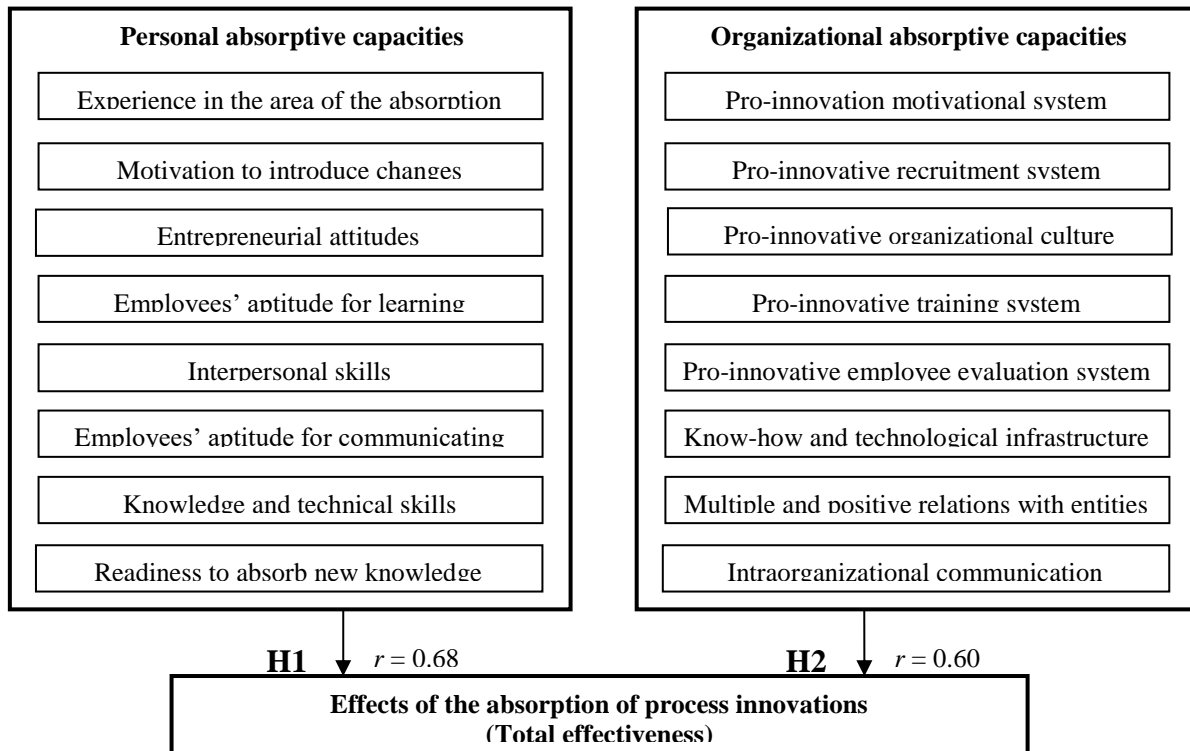
Source: author's elaboration based on survey results

The diagnosed dependencies indicate that the more developed absorptive capacities financial companies have, the more they are satisfied with the effects of their application, *i.e.* the results obtained from the absorption of process innovations. It is therefore justified to further develop their identified absorptive capacities, both personal and general organizational ones. Nevertheless, one should be aware of the fact that the analysed efficiency is undoubtedly influenced by many other factors, not only endogenic, but also exogenous.

Conclusion

In today's economic reality the increase in technological innovativeness in a company appears to be a prerequisite of its market success, and ultimately also financial. This is all the more justified in the case of companies operating in a strongly competitive environment, which undoubtedly is a characteristic of the Polish financial sector. Obtaining this growth is

increasingly difficult, especially when basing only on one's own capabilities. Obtaining and effectively implementing sublime solutions available in the environment is also very demanding. It requires the use of properly configured and developed absorptive capacities to ensure satisfactory results.

Based on the results of own research, it should be recognized that the effectiveness of financial companies operating in Poland in the field of innovative activities narrowed to the absorption of existing process solutions in the environment is determined by specific absorptive capacities presented in the study. They are provided by individual employees or by the organization within a holistic approach, and therefore they should be perceived in the dimension of an individual employee or the entire organizational system co-created by numerous staff and tools supporting their activity (Barney, 2002). Ensuring their development leads to an increase in the degree of the achievement of the goals that financial companies set for themselves while taking action to absorb process innovations. Therefore, investments undertaken by them to improve these capacities become justified, since they are a source of their innovation and competitiveness growth.

To enhance the scientific and applicational value of the conclusions and recommendations formulated above, it seems necessary to continue empirical research aimed at further identifying of specific absorptive capacities that are key determinants of the effectiveness of financial companies in the scope of absorption that should not be limited only to process innovations.

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Contact

Waldemar Glabiszewski

Faculty of Economics and Management Sciences, Department of Enterprise Management

Nicolaus Copernicus University in Toruń

ul. Gagarina 13a, 87-100 Toruń, Poland

waldemar.glabiszewski@umk.pl

Dorota Grego-Planer

Faculty of Economics and Management Sciences, Department of Enterprise Management

Nicolaus Copernicus University in Toruń

ul. Gagarina 13a, 87-100 Toruń, Poland

dgp@econ.umk.pl

Katarzyna Liczmańska-Kopcewicz

Faculty of Economics and Management Sciences, Department of Enterprise Management

Nicolaus Copernicus University in Toruń

ul. Gagarina 13a, 87-100 Toruń, Poland

kliczmanska@umk.pl

Maciej Zastempowski

Faculty of Economics and Management Sciences, Department of Enterprise Management

Nicolaus Copernicus University in Toruń

ul. Gagarina 13a, 87-100 Toruń, Poland

mz@uni.torun.pl

THE INFLUENCE OF THE KNOWLEDGE AREA ON THE RANKING OF DETERMINANTS OF ACADEMIC ENTREPRENEURSHIP

F. J. Miranda González – F. I. Vega-Gómez – A. Chamorro Mera – J. Pérez Mayo

Abstract

Purpose: The study of academic entrepreneurship has become a prolific area of research in the last 20 years, coinciding with the interest shown by political and university authorities. This interest is the result of the contribution made by this entrepreneurship, particularly through spin-off creation, economic development, employment and the image and resources of the university. However, according to the literature, the founding of spin-offs varies with the subject area of the researcher, this being one of the main factors influencing the propensity to create companies.

Design/methodology/approach: The main objective of this research is to identify the structure of preferences of academics and their ranking, to understand the influence of the determinant factors of the entrepreneurial intention of academics. To this end, a qualitative study has been carried out involving 42 academics from Spanish universities in order to identify the determinant factors of this segment, along with a quantitative study using the conjoint analysis method and involving 1,726 researchers, whose purpose was to identify the ranking of these determinant elements.

Findings: The contributions of this study to the research area are important from both a theoretical and practical point of view. Firstly, the methodology used for the quantitative analysis has not been used before in this scientific field. Secondly, the results of the qualitative analysis show that the determining factors of entrepreneurial intention are the same regardless of the research area of the academic. Finally, this study concludes that these determining factors are valued and ranked very differently depending on the academic area, thus demonstrating the existence of differentiated segments within academic entrepreneurship.

Research/practical implications: This study offers a series of important practical implications, particularly in the aspect referring to policies for the promotion of academic entrepreneurship.

While the determinant factors of entrepreneurial intention are the same for all academics, a differentiation in valuations and rankings can be observed depending on the area in question. This aspect implies that several segments can be created, so those responsible for public and university policies must take into account these different valuations in order to promote entrepreneurship in those areas that they consider strategic or priority given their line of specialisation.

Originality/value: Firstly, the conjoint analysis method, tested and widely used in other areas, has never been used for the study of academic entrepreneurship. This methodology is very useful given its ability to divide the decision into several important attributes and to classify the preferences, thus offering a new perspective for the analysis of the results in this area. Secondly, of all the factors cited by the literature as determinants of academic entrepreneurship, this study manages to identify six, therefore offering an interesting original contribution to the literature.

Keywords: Spin-off, academic entrepreneurship, knowledge transfer, research area, conjoint analysis

JEL Codes: M13, M10

Introduction

Academic entrepreneurship has become an important driver of development in those parts of the world where knowledge transfer has been made relevant (Etzkowitz et al., 2000; Etzkowitz, 2013), not only for the region in which they are based but also for both the university from which they come and the society they serve. This new perspective results in a widening of the functions of universities, giving rise to universities that can no longer be just about education and research, but instead must now also be entrepreneurial universities, thus creating what has been defined as the triple function of the university and the triple helix of its relationships, since it must be perfectly coordinated with the government in the area in which it operates and with industry (Etzkowitz, 2008).

The key element for the development and success of this new model of the entrepreneurial university is undoubtedly the academics, who must evolve from their traditional functions to other innovative ones relating to entrepreneurship, particularly proactivity in the commercialisation of their results, giving rise to a new type of scientist known as an "academic entrepreneur" (Meyer, 2003). This academic entrepreneur is understood to be that expert scientist in a specific area who is capable of creating economic value through the transfer of their research, creating a practical application which is marketable (Etzkowitz & Viale, 2010).

However, as has been mentioned, the academic entrepreneur is a new role and a new function to be fulfilled by the scientist, carrying out tasks that are not recognised as part of their job and that receive no accreditation or allocation of work time, which is why there must be a series of elements that create the push toward this entrepreneurship. This entrepreneurship is directly defined as the intention of the academic to be an entrepreneur, identifying intention with action.

In the next sections, the aim is to identify the determinants of this entrepreneurial intention within the Spanish academic sector and how these factors are ranked according to the knowledge area to which they belong, using conjoint analysis as the methodology.

1 Conceptual framework

The discussion and research on the elements influencing academic entrepreneurship, that is, the intention to create a "university spin-off" (USO), has been quite extensive in the literature on this field during the last twenty years (Miranda et al., 2017). The elements that influence the entrepreneurial decision are usually divided into two blocks: the personal or individual factors of the entrepreneur and those that are contextual or environmental (Goethner et al., 2012).

Within the first block of factors, what stands out are the researcher's age, gender, professional and research category and experience and family environment (Gonzalez-Pernia et al., 2013; Hayter, 2015; Ramaciotti & Rizzo, 2015), while in the second block we can find elements such as the university culture, internal rules and regional development (Di Gregorio & Shane, 2003), as well as the scope of the research (O'Shea et al., 2005).

This last element, on which this study focuses, is particularly relevant, since the literature postulates that there are differences between study areas in terms of the propensity to be an entrepreneur and transfer the results. Given the important role played by academic entrepreneurship in recent years and the proliferation of programmes implemented by public administrations and universities themselves, the study of these differences is absolutely necessary.

According to studies such as those of O'Shea et al (2005), areas such as science and engineering are more likely to create USOs, with their entrepreneurial intention being greater, while other studies have added health sciences to these two areas, particularly related to biotechnology (Debackere & Veugelers, 2005).

In short, the review of the literature demonstrates the influence of the individual and contextual factors on the entrepreneurial intention of academics. However, we must highlight the lack of existing studies that analyse the opinion of academics about the different contextual factors and, therefore, rank them according to their influence on entrepreneurial intention. This study tries to fill this gap in the knowledge.

2   Methodology

The purpose of the study is to analyse the conditions that can most influence the predisposition of Spanish academics to create a USO. The application of the Conjoint Analysis technique has been deemed appropriate to achieve the stated objectives. This technique analyses the preference structure of individuals through an experiment that simulates the real decision making they face when having to choose between various products or situations.

In contrast to research studies that request a direct and independent evaluation of each attribute comprising a product, the Conjoint Analysis technique is decompositional. Individuals are asked to give an overall evaluation of different products, each characterised by different levels of a set of attributes. That is, it simulates a real selection scenario where the individual evaluates a product as a whole and not each of its attributes separately. From these overall evaluations,

the technique allows us to identify the weight or relative importance of each of the product's attributes.

The stages required to carry out a study with Conjoint Analysis are as follows:

- *Stage 1: Selection of attributes comprising the product or decision being analysed.*
- *Stage 2: Selection of attribute levels.*
- *Stage 3: Selection of the data collection procedure.*
- *Stage 4: Selection of stimuli. Each of the products presented to respondents for evaluation is a stimulus.*
- *Stage 5: Way of administering the questionnaire or data collection.*
- *Stage 6: Selection of the method for estimating partial utilities or partworths.*

Following Hair et al. (1999), the following "composition rule" tends to be used to calculate the total utility of each stimulus or product for the individual. This is the sum of the partworth utilities corresponding to each of the levels of the attributes that make up this stimulus.

$$U_{ijk} = \sum_{i=1}^{p,q,r} \sum_{j=1}^{3} V_{ij} * D_{ij}$$

, where:

U_{ijk} = Total utility that the stimulus characterised by level i of attribute j provides to individual k.

V_{ij} = Partial utility (partworths) or importance assigned to level i of attribute j.

D_{ij} = Dummy variable that takes the value of one if the stimulus possesses level i of attribute j, and zero otherwise.

$´p, q, r$ = Levels corresponding to attributes 1, 2 and 3, respectively.

The importance of an attribute can be defined as the difference between the partworth utilities associated with the levels of the attribute. The greater the difference, in absolute terms, between the highest and lowest partworth utilities, respectively, the more important the attribute. That is:

$$Im\,pi = \left|\max(\beta_{ij}) - \min(\beta_{ij})\right|$$

$$\forall_i = 1, \dots I; \ \forall_j = 1, \dots K$$

The researcher can identify the importance of an attribute in relation to the rest, i.e., its relative importance, through the importance of each attribute and using the following expression:

$$R\,Im\,pi = Im\,pi \div \sum_{i=1}^{I} Im\,pi * 100$$

The first step in applying this technique is to identify the attributes that define the product. This research was designed to identify which conditions can influence the decision to create a USO. Although the literature review provided us with some suggestions, it was deemed appropriate to carry out a qualitative study to help us select them.

During two training workshops on university entrepreneurship, participants were asked to reflect on the advantages and disadvantages of creating a USO, under what circumstances they would do it and what factors would prevent them from doing it. A total of 42 lecturers from 9 universities participated in these workshops.

After gathering these opinions, six types of condition were selected that may influence the predisposition to create a USO and these constitute the attributes to be included in the Conjoint Analysis. Each can be presented in a positive or a negative way (table 1). Four of these conditions can be controlled to a large extent by university governing bodies and/or public organisations responsible for R&D policies:

- Researcher benefit. This refers to the ease of obtaining resources for research through the USO, such as allowing them to apply for certain public grants.
- Curriculum benefit. This refers to receiving recognition in the professional promotion systems for being part of a USO.
- Teaching reduction. This refers to the chance to reduce the teaching obligations of the founders of a USO for a certain period of time.
- Support programmes. This refers to the training and advice on entrepreneurship offered by the university.

The other two conditions chosen as attributes for the study refer to aspects that cannot be controlled through university policies but are instead specific to each business: economic benefit expected to be obtained and the personal cost in terms of additional working hours.

Tab. 1: Attributes and levels

Attributes (conditions for becoming an entrepreneur)	Levels
Personal benefit	An increase in my income is expected in the short-term
	No increase in my income expected
Researcher benefit	Facilitates obtaining of resources for research
	Does not facilitate obtaining of resources for research
Curriculum benefit	Being a partner of a USO is valued in the professional promotion systems
	Not valued in professional promotion
Support programme	There is institutional support at my university for creating a USO
	There is no institutional support at my university for creating a USO
Teaching reduction	There is a system that allows the partners of USOs to reduce their teaching workload for some time.
	There is no system to reduce teaching workload
Personal cost	Creating a USO would lead to an increase in my working hours
	Creating a USO would see my working hours maintained

Another methodological issue to resolve is choosing between various procedures to construct the stimuli that must be evaluated by the survey respondents. This decision will be largely determined by the statistical software used. The CONJOINT module of the program SPSS was used in our research, so the procedure chosen is the traditional full profile method. In this way, the survey respondent must evaluate a unique set of stimuli, where each stimulus is defined by all the previously selected attributes or conditions.

The next step is to choose the data collection procedure, which involves making two decisions. The first concerns the number of stimuli to be shown to survey respondents. In our case, the complete factorial design would have involved presenting the 64 possible stimuli (2*2*2*2*2*2) to the survey respondents. However, this would lead to an information overload, negatively affecting the quality of their response. For this reason, an orthogonal fractional factorial design has been used, which has reduced the number of stimuli to just 8.

This set of stimuli verifies the condition of orthogonality, i.e., it guarantees that each of the levels of the attribute appear the same number of times in this set.

The second decision refers to the way of carrying out the valuation of the set of stimuli presented to the survey respondents: ranking or evaluation (classification). In our case, the second option was chosen and the survey respondents had to evaluate the attractiveness of the 8 stimuli using a progressive scale from 1 (low incentive to create a USO) to 7 (high incentive). The stimuli were presented to the survey respondents through an online questionnaire, which also included questions relating to the personal details of the academic.

To carry out the research, a database of almost 33,000 academics from the 82 Spanish universities was created and a census study was carried out. Responses were obtained from 5.2% of the population (table 2). The estimation of the model was carried out through an Ordinary Least Squares regression model.

Tab. 2: technical data for the study

Study group	Academics employed in Spanish universities: 32,969
Sample size	1,726 academics
Geographical scope	Spain
Fieldwork	January 2017
Type of survey	Online

Source: own research

Responses were obtained from academics from 50 universities and from 16 out of the 17 Spanish regions. 52% of the academics participating in the study have public servant status whereas the remaining 48% are private employees. In terms of the years of professional experience, 7% of survey respondents have less than 5 years, 31% have between 5 and 15 years and 62% have over 15 years.

3 Results

The conjoint analysis has yielded the results presented in Table 2, which show the preferences and utilities assigned to each of the determining factors by the 1,726 academics. Moreover, the results on the preference and ranking of the relevant attributes presented in figure 1 have been obtained using this analysis.

The reliability of the model has been evaluated through Pearson's r and Kendall's Tau statistics. Given that both indicators have values very close to 1, we can state that the model has an adequate fit.

Tab. 3: Utilities by knowledge area from the Conjoint Analysis

		Basic Science	Engineering	Social sciences	Life sciences
Personal costs	Maintenance of my work hours	.069	.113	.080	.091
Personal benefit	Increase in my income	.716	.809	.781	.746
Teaching reduction	Teaching workload reduction	.096	.153	.139	.118
Curriculum benefit	Valued in professional promotion	.327	.344	.340	.339
Support programme	With institutional support	.345	.302	.287	.291
Researcher benefit	Facilitates obtaining of resources for research	.290	.354	.349	.350

Source: own research

Fig. 1: Preferences of the academics by knowledge area
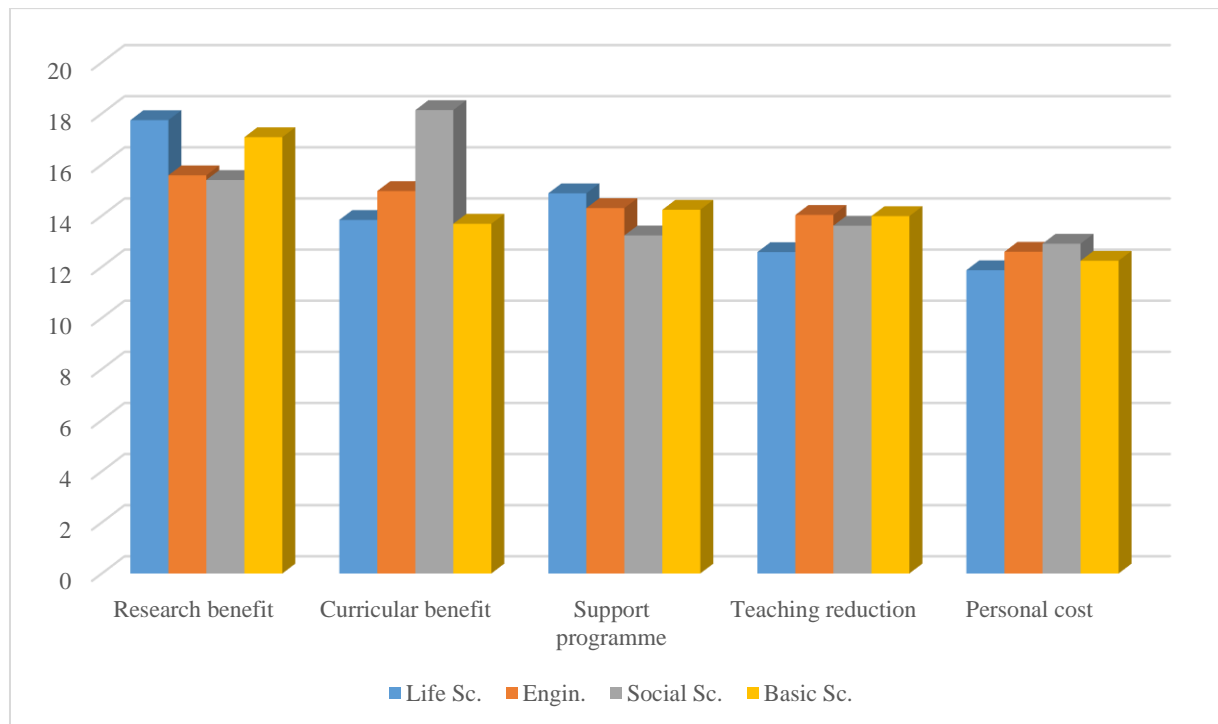
Source: own research

As can be seen in Figure 1, we can highlight a series of differences between the valuations and preferences that academics make of the different determinant factors of entrepreneurship.

Personal benefit is identified as the most relevant factor, that is, the most influential factor for all areas when making the entrepreneurial decision. This fact contradicts most of the literature in this field, although it is in line with that proposed by Lynn (1991), who established that this element was second in the ranking of importance when making the entrepreneurial decision.

We can also highlight the valuation of the research benefit by the different areas, that is, the possibility of obtaining greater research independence thanks to the resources provided by the entrepreneurship. In this aspect, it is the researchers in the area of social sciences who rank this element lower in their order of preference. While this factor is the second most important for the rest of the areas, for social sciences it is the third most important. In keeping with this result, we have the valuation of the curriculum benefit aspect. In this area, it is the academics in the social sciences who value this element most highly in their order of preference, it occupying second place, while for the rest of the areas it is in third, fourth or even fifth position.

Support programmes are important for life sciences and for basic sciences, while they are less valued by the other two areas. Finally, all areas agree that personal cost is the least important factor.

In short, it can be seen that the valuation and ranking of the determining factors varies depending on the knowledge area, thus demonstrating the existence of different segments of academics.

Conclusion

The study carried out on 1,726 academics shows that the preferences in the determinant factors of entrepreneurial intention depend on the knowledge area in which these researchers work.
It has been shown that there are areas that value the curriculum benefit factor more highly (such as social sciences), while others value the research benefit (understood as research independence) or the existence of support programmes more, as is the case for basic and life sciences. This finding has important practical repercussions, since both the managers of universities and those who prepare laws on entrepreneurship must take into account these differences in order to promote that segment of entrepreneurs established as strategic. Similarly, the existence of segments can be beneficial when it comes to narrowing down the possible benefits to be offered and focussing public policies.

Moreover, this research reveals that, far from the traditional postulates of the literature in this field, economic benefit is a determining factor of entrepreneurial intention. In fact, this factor is ranked in first place for all the areas analysed, with its valuations always being the highest of the six factors.

An important theoretical contribution is also derived from this study, in the area of the methodology. This contribution consists in the application of a new system of analysis capable of dividing the entrepreneurial decision into several elements and presenting different choice scenarios very similar to the real ones, namely conjoint analysis. This technique provides the interesting option of being able to measure the preferences of the respondents through choosing a series of possibilities into which each of the alternatives has previously been broken down.

Acknowledgement

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Contact

Francisco Javier Miranda González

Universidad de Extremadura

Avenida de Elvas, sn, 06006 Badajoz, Spain

fmiranda@unex.es

Francisco Isidoro Vega-Gómez

Universidad de Extremadura

Avenida de Elvas, sn, 06006 Badajoz, Spain

fvegagomez@unex.es

Antonio Chamorro Mera

Universidad de Extremadura

Avenida de Elvas, sn, 06006 Badajoz, Spain

Chamorro@unex.es

Jesús Pérez Mayo

Universidad de Extremadura

Avenida de Elvas, sn, 06006 Badajoz, Spain

jperez@unex.es

THE IMPACT OF ENTREPRENEURIAL MANAGEMENT ON THE PARTICIPATION OF SMALL AND MEDIUM ENTERPRISES IN THE INTERNATIONAL MARKET

Mehrdad Goudarzvand Chegini

Abstract

Purpose: The purpose of this research is to investigate the impact of entrepreneurial management on the cultural aspects of entrepreneurship, growth orientation, and philosophy of reward, management structure, strategic orientation, and the tendency of resources for the participation of small and medium enterprises in the international market.

Methodology: The data of the research have been elicited using a standard questionnaire. The population of the study includes the board of directors and the managers of the small and medium companies in Rasht Industrial Park in Iran. The analysis of the data has been carried out by software. The hypotheses have been investigated through chi-square test.

Originality/value: One of the most significant public policies of many of the countries in the world is to internationalize small and medium enterprises. A fundamental logic in support of internationalizing small and medium enterprises is that internationalization is suitable for small companies.

Findings: The research findings revealed that among the components, entrepreneurship culture and resource orientation have the highest rank and importance. It means that senior managers in these companies possess adequate ideas to produce new products and services and have a tendency toward using external resources.

Result: The results show that entrepreneurial management has a positive significant impact on the participation of small and medium enterprises in the international market.

Keywords: Entrepreneurial management, internationalization, small and medium enterprises

JEL Codes: L26

1   Introduction

Entrepreneurship is the creation of new corporations and creating jobs is essential for discussions about economy and its structure. An independent entrepreneurship consists of creative performances formed by people who are performing free from the existing corporation (Chrisman, 2012). The terms *business owner* and *entrepreneur* are sometimes used interchangeably because of their close meanings, so we can regard the words *business owner* and entrepreneur synonyms (Moghimi et al., 2008). These days' entrepreneurship as the stimulus of economic development can have an important role in the economic development of countries, job creation, and social convenience (Karadeniz, 2006). In this regard, the creation of small and medium enterprises (SME) and supporting them are one of the main priorities in economic development plans in many developed and newly developed countries, because small and medium enterprises play a significant role in the creation of entrepreneurship opportunities and providing a proper bed for innovation and the increase of export (Nyroun, 2005).

Research indicates that small businesses tend to have a higher failure rate as compared to large organizations, although they are commonly perceived as an engine of a country's economy (Bloch & Bhattacharya, 2016; Lo et al., 2016).

The characteristics of entrepreneurial personality are involved in the business start-up process (Shane, 2005). Kim Smith believes that creating incentives such as value creation for society requires the need for succession and wealth in individuals to become entrepreneurs and develop small and medium-sized businesses (Smith & Petersen, 2006). Frederick Hess argues that the human capital crisis and the development of entrepreneurship and business development can only be solved through the process of training entrepreneurial skills (Hess, 2006). Beware that the role of knowledge, especially learning and trying to find new knowledge, are important elements in understanding the creation of entrepreneurial businesses. The key to successful businesses is to create new knowledge to build and maintain a competitive edge (Benger, 2006). In his research on entrepreneurship development in Bahrain, Ghulam Mostafa Khan concluded that the Entrepreneurship Development Program in Bahrain's small and medium-sized organizations was only possible through appropriate government-led educational programs and government-reciprocal cooperation between universities and universities. (Gholam Mostfa Khan, 2007).

Many failure researches of SMEs reveal that their characteristics which include reactive, fire-fighting mentality, resource limitations, informal strategies, flexible structures, and lack of strategic planning processes may have contributed to their failures (Gnizy et al., 2014).

The main logic behind the internationalization of small and medium enterprises is that internationalizing is very good for small enterprises and small enterprises are useful for economy. The participation in international markets creates a group of job opportunities for small businesses such as bigger markets and new places in the market, the possibility of accessibility to saving as a result of scale and technologic advantages, rise of technical suitability, a method for distributing risks, reduction and division of costs such as research and development expenses, and in most cases a higher access to financial resources (UNIDO, 2004). The entrepreneurial competency acquired can assist firms in becoming proactive in terms of gaining first-mover advantages which can facilitate firms to acquire premium market segments and predict the market ahead of competitors. This is important to be exercised, particularly with the increasingly competitive global market (Mohamad Radzi et al., 2017).

Sharma and Chrisman (1999) believe that entrepreneurship is the act of creation, recovery or innovation of a corporation, which occurs in or free from the existing corporation. Entrepreneurial activities that happen in the existing corporation are called corporate entrepreneurship. Entrepreneurs are individuals or groups who act independently or under a corporate system, create corporations, or seek innovations and recovery for an already existing corporation. Entrepreneurial management is described as a group of presented behaviors by the management that expand entrepreneurial activities in a company (Chrisman, 2006).

In this research, the aspects of entrepreneurial management include culture, growth orientation, philosophy of reward, management structure, strategic orientation, and resource orientation.

Culture consists of a collection of values, beliefs, perceptions, inferences, presumptions, and ways of thinking in which the corporation members have commonalities. Culture in the entrepreneurial sense is based on structures and functions of this part. Since entrepreneurship means value creation, entrepreneurship concisely means managing the process of creation and distribution of cultural products and services in an innovative way to create and recreate cultural value (Naranjo-Valencia et al., 2011).

Progress is an important trigger for corporations to increase new activities in a way that developing markets potentially suggest entrepreneurship opportunities which can lead the corporations to the increase of entrepreneurship activities. Progress requires important changes

in entrepreneurial strategy, because rivals and other powers in the market are trying to have a change in their structure, and consequently new challenges are formed in businesses (Karimi et al., 2011).

Another corporate factor which encourages entrepreneurship is the appropriate use of rewards. Reward and encouragement enhance the motivation of individuals for innovation. The proper use of reward can improve the manager's inclination to deal with incredible and risky entrepreneurial projects. Corporate innovation is defined through preparing rewards according to performances, suggesting challenges, increasing commitment, and improving individuals' innovative ideas by companies (Ibid).

The management structure in corporations can be centralized or decentralized, the dimensions of which include the state of being official or unofficial, centralization or decentralization, complexity or simplicity. An entrepreneur can manage according to the conditions in the corporation (Sirvastava Dabas, 2012).

A strategic entrepreneurship consists of entrepreneurship activities and strategic management, which are essential for creating value. If entrepreneurship is perceived as a description and creation of new opportunities and strategic management as the transformation of these opportunities to competing advantages, entrepreneurship opportunities can be seen as a strategic behavior for creating value (Karaus et al., 2011)

In describing corporate growth, Penrose (1959) emphasizes the significance of human resources and physical resources, which are mediated by managerial abilities. Resources can be combined and developed over time for creating unique abilities to increase competing advantages. Experimental studies show that corporations of different ages and sizes are mixed by different resources. The sort of the demanded resource for a corporation depends on the context. For a new corporation, growth and change necessitate providing new resources or changing current resources according to the market strategy or the proper environment (Ibid).

The literature of small employment is so vast that this vastness has caused different countries to have different definitions for it. These descriptions are different based on traditional, demographic, and cultural structures and the degree of development. According to Undo's definition (2004), companies are categorized into three groups. Companies having fewer than 10 employees are regarded as micro enterprises, companies having 10 to 49 employees are considered small enterprises and companies having 50 to 249 employees are called medium enterprises (UNIDO, 2004).

Small and medium enterprises affect the globalization of economy through entrepreneurship and creating job opportunities and the increase of income (Hitt, 2001). Globalization involves economic and industry integration with the rest of the world, removing restrictions on imports and foreign investment (Paul, 2015).

Internationalization is a gradual process in which an enterprise expands its international trade relationships and this means all the activities and operations that a company performs with parties in the international environment. Export performance and internationalization have considerably attracted the attention of various scientists. Various studies have been conducted on the identification of the determining factors in the behavior of export companies. Small and medium enterprises in international markets are typically more specialized. In his studies, Hamilton has shown that technologic competitions have strong and important effects on the export performance and internationalization of enterprises and they are the most important determining factor in the export performance and internationalization of small and medium enterprises (Rundh, 2011).

The role of entrepreneurial management as an independent variable in terms of entrepreneurial culture, growth tendency, reward philosophy, management structure, strategic orientation and resource orientation. The dependent variable in this study is the entry of small and medium sized businesses into international markets.

Despite the diversity of internationalization theories, the investigation of empirical studies of internationalization indicates that none of the theories and models can perfectly explain the internationalization of small and medium enterprises, thus, the combination of these theories and models is suggested to understand the process.

Therefore, the researcher aims to answer the question that what the role of entrepreneurial management as an independent variable is within the dimensions of entrepreneurship culture, growth orientation, reward philosophy, management structure, strategic orientation, and resources orientation for the participation of small and medium enterprises to international markets, as the dependent variable.

Fig. 1: Analytical research design
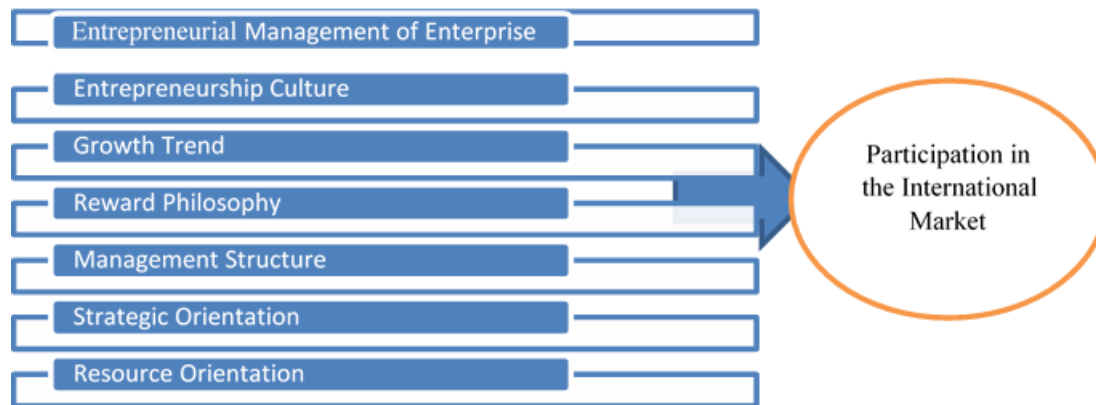
Source: Stevenson et al. (2011)

1.1 Hypothesis

H1. There is a meaningful relationship between the entrepreneurial management of small and medium sized businesses and their entry into international markets.

H2. There is a meaningful relationship between the trend of the management structure and the entry of small and medium sized businesses into international markets.

H3. There is a meaningful relationship between the philosophy of reward and the entry of small and medium sized businesses into international markets.

H4. There is a meaningful relationship between the trend of growth and the entry of small and medium sized businesses into international markets.

H5. There is a meaningful relationship between the culture of entrepreneurship and the entry of small and medium sized businesses into international markets.

H6. There is a meaningful relationship between the tendency of resources and the entry of small and medium sized businesses into international markets.

H7. There is a meaningful relationship between the strategic orientation and the entry of small and medium sized businesses into international markets.

2   Methodology

From the point of view of methodology, this study is correlational-descriptive. In terms of the type of observation and the degree of control, this research is a kind of field study and regarding the scope of application, it is a practical research. The statistical population of the research comprises all the companies located at Rasht Industrial Park in Iran and according to the definition by the Ministry of Industries and Mines of Iran, these companies are ranked as small and medium enterprises and count to 168. In this research, Cochran's limited population formula was used to obtain the sample size.

$$n = \frac{z^2_{\alpha/2} \cdot s^2_x \cdot N}{e^2 \cdot N - e^2 + \left[z^2_{\alpha/2} \cdot s^2_x\right]}$$

$$n = \frac{(1/96)^2 \cdot (0/251)^2 \cdot 168}{(0/05)^2 \cdot 168 - (0/05)^2 + (1/96)^2 \cdot (0/251)^2} = 75$$

, where

n = sample size,

$z^2_{\alpha/2}$ = the amount of dependent variable according to standard normal distribution with the probability level of five percent (a=0.05), s^2_x = population variance, e^2 = measurement error

The instrument for data collection is a standard questionnaire with closed-ended and multiple-choice items in the Likert scale. The reliability and validity of the questionnaire were established. The research hypotheses were tested using descriptive and inferential statistics.

According to the research hypotheses, Chi square test was used to measure the significance of the hypothesis.

3   Findings

During the research process, first, the completed questionnaires were collected and the descriptive data required to test the hypotheses were extracted using computer software's and then these data were analyzed using software and converted into usable data in two phases. The first step, which was the descriptive analysis, the data collected were presented in the form of a descriptive statistics table and in the second step, inferential analysis, the hypotheses were

investigated using the Chi-square test. Finally, the confirmation or rejection of the hypotheses have been discussed according to the statistical results.

Tab. 1: Description of research variables

Descriptive Statistics	N	Min.	Max.	Mean.	Std. Deviation	Var.
Management Structure	75	2.38	5.88	5.835	1.812	3.285
Reward Philosophy	75	2.67	9	5.991	1.725	2.979
Growth Orientation	75	3.33	10	7.144	1.876	3.52
Entrepreneurship Culture	75	3	8	4.924	1.023	1.048
Resource Orientation	75	3.28	8.38	4.922	1.024	1.050
Strategic Orientation	75	3.67	8.23	5.565	.0922	.852
Entrepreneurial Management	75	3.86	7.33	5.620	.896	.804
Internationalization	75	3.33	10	7.144	1.876	3.52

As mentioned in Table 1, each variable is described in terms of descriptive minimum and maximum, mean, standard deviation, and variance.

Tab. 2: Testing research hypotheses

Variables	N	Chi-Square	df	Cramer's V	Sig.
Entrepreneurial management and internationalization	75	10.547	2	.459	.005
Management structure and internationalization	75	6.796	2	.369	.033
Reward philosophy and internationalization	75	6.763	2	.368	.034
Growth orientation and internationalization	75	6.203	2	.352	.045
Entrepreneurship culture and internationalization	75	7.308	2	.382	.026
Resource orientation and internationalization	75	6.675	2	.365	.036
Strategic orientation and internationalization	75	6.622	2	.364	.036

As you can see in Table 2, the significance level is lower than 0.05 (0.005 < 0.05), therefore, there is a meaningful relationship and all the hypotheses are rejected. Also, the strength of each of the relationships are specified in terms of a percentage according to Cramer's V.

The positive, significant relationship between the entrepreneurial management of small and medium enterprises and their participation in international markets, counting to 45.9 percent, indicates the reality that the higher the tendency toward entrepreneurial management in the small and medium enterprises of Rasht Industrial Park, the higher will be their participation in international markets.

The positive, significant relationship between the management structure of small and medium enterprises and their participation in international markets, counting to 36.9 percent, indicates the reality that the higher the tendency toward management structure in the small and medium enterprises of Rasht Industrial Park, the higher will improve their participation in international markets.

The positive, significant relationship between the growth orientation of small and medium enterprises and their participation in international markets, counting to 35.2 percent, indicates the reality that the higher the growth orientation in the small and medium enterprises of Rasht Industrial Park, the higher will go their participation in international markets.

The positive, significant relationship between the entrepreneurship culture of small and medium enterprises and their participation in international markets, counting to 38.2 percent, indicates the reality that the higher the tendency toward entrepreneurship culture in the small and medium enterprises of Rasht Industrial Park, the higher will rise their participation in international markets.

The positive, significant relationship between the resource orientation of small and medium enterprises and their participation in international markets, counting to 36.5 percent, indicates the reality that the higher the tendency toward resource orientation in the small and medium enterprises of Rasht Industrial Park, the higher will be their participation in international markets.

The positive, significant relationship between the strategic orientation of small and medium enterprises and their participation in international markets, counting to 36.4 percent, indicates the reality that the higher the tendency toward strategic orientation in the small and medium enterprises of Rasht Industrial Park, the higher will improve their participation in international markets.

The research findings revealed that among the components, entrepreneurship culture and resource orientation have the highest rank and importance. It means that senior managers in

these companies possess adequate ideas to produce new products and services and have a tendency toward using external resources.

Discussion and Conclusion

The research findings indicate that there is a meaningful relationship between entrepreneurial management of small and medium enterprises and their participation in international markets. Also, from the mentioned aspects of entrepreneurial management in small and medium enterprises, entrepreneurship culture and resource orientation were stronger than others. Considering that management structure, reward philosophy, growth orientation, and strategic orientation are weaker, the reader can devise the techniques suggested below to improve them:

A. Management structure as one of the dimensions of entrepreneurial management in the process of participation of small and medium enterprises in international markets is at a weaker level, therefore, the suggestions below can be offered to the managers of these companies:

   1) Creation of an organic organizational structure with features such as decentralization, unofficial state, lenient and unofficial control

   2) Use of a domain of operating styles (from very official to very unofficial) in the company

   3) Emphasis on situational obligations and the individual's personality to determine the proper occupational behavior

   4) Toleration of staff's deviation from regulations and emphasis on fulfilling the job even if the official procedures are not met

B. Reward philosophy as one of the dimensions of entrepreneurial management in the process of participation of small and medium enterprises in international markets is at a weaker level, therefore, the suggestions below can be offered to the managers of these companies:

   1) Establishment of an evaluation and reward system based on the level and quality of individuals' participation in the creation of value and wealth

   2) Determination of job positions and promotions for individuals based on the level and quality of individuals' participation in creation of value and wealth

C. Growth orientation as one of the dimensions of entrepreneurial management in the process of participation of small and medium enterprises in international markets is at a weaker level, therefore, the suggestions below can be offered to the managers of these companies:

   1) Recognition of growth as a higher target in the determination of the goals for the enterprise

   2) Aiming at a fast and high growth in the company

Strategic orientation as one of the dimensions of entrepreneurial management in the process of participation of small and medium enterprises in international markets is at a weaker level, therefore, the suggestions below can be offered to the managers of these companies:

Defining business strategy based on the existing opportunities in the environment and not on the existing resources required to exploit opportunities.

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Contact

Mehrdad Goudarzvand Chegini

Department of Public Management

Islamic Azad University, Rasht branch, Rasht, Iran

goodarzvand@iaurasht.ac.ir

MINING FIRMS AND SUSTAINABILITY REPORTING IN GHANA

Robert Ebo Hinson – Anne Renner – John Paul Kosiba – Frederick Okyere Asiedu

Abstract

Purpose: Despite the significant contribution of mining to Ghana's development, little is known about sustainability-reporting disposition of players in the Ghanaian mining industry. The objective of this study is to assess the sustainability-reporting performance of selected mining firms operating in Ghana. This study therefore offers one of the rare works, from the Ghanaian context that documents how mining firms seek to turn the tides on the negative publicity regarding sustainability issues through disclosures.

Design/methodology/approach: We employed a multiple case study approach, where more than one unit of analysis (case) was studied as the research design. The study involved two sets of cases: foreign and local. The foreign case consists of six firms: AngloGold Ashanti, Goldfields, Newmont, Perseus Mining Limited, Azumah Resources and Pelangio Exploration Incorporated. The second case has four local mining companies: Bloomfield Mineral Resources, West Line Mining, Western Precious Metals and Ghana Manganese Company (GMC). Archival data were gathered via the websites of the mining firms studied. We analysed the data using pattern matching.

Findings: The findings indicate that in Ghana, foreign-owned mining firms tend to report more on their sustainability initiatives than their local counterparts. Furthermore, we noted that foreign-owned mining firms operating in Ghana disclose more environmental sustainability information irrespective of the size of firm.

Research/practical implications: Our findings suggest that sustainability reporting practices among local mining firms are still at the embryonic stage and they need to adopt standardised guidelines for reporting their sustainability initiatives. The study's major limitation was the emphasis on only the online reports of the firms. Further studies could be conducted where a combination of media reportage such as printed reports, newspaper articles, and magazines are examined in addition to the company websites. Again, for reasons of generalisation, future studies can be conducted on the sustainability reporting idiosyncrasies of all the mining firms operating in Ghana.

Originality/value: This study through multiple case research design has documented how well mining firms in Ghana are faring on the sustainability reporting ladder because most studies on sustainability in the Ghanaian literature have focussed on reporting in tertiary institutions (e.g. Hinson et al., 2015) and the environmental costs of mining activities (Boachie, 2012).

Keywords: Sustainability-reporting, mining firms, Ghana, online sustainability communication

JEL Codes: L72, Q56

Introduction

Sustainability reporting is on the increase in terms of the number of firms disclosing their sustainability initiatives and the depths of the reports produced. Many firms in recent times report comprehensively about their sustainability initiatives in order to get validation from their stakeholders (Thijssens, Bollen & Hassink, 2016). Businesses in the extractive industry are under the threat of continuity owing to the prejudices about the dangers posed to lives and the environment by the industry. On the other hand, the sector is seen as a partner for economic development as it contributes significantly to the GDP of countries in which mining is prevalent. In an attempt to effectively handle the enormous pressures on the mining industry, firms have realised that reporting on their social responsibility initiatives will enhance their legitimacy (Azapagic, 2004). To achieve the specific purpose of engaging in sustainability reporting, firms have been encouraged to use some guidelines such as the GRI, CDP, etc. Azapagic (2004) also provides some useful sustainability indicators guidelines which are specifically directed toward the mining industry.

Some prior studies such as Eweje (2007) have noted that the size of a firm has always been a factor in determining the likelihood of firms reporting their sustainability initiatives. Eweje (2007) for instance discovered that large firms are more likely to disclose their sustainability initiatives and even provide comprehensive sustainability reports to their stakeholders due to their greater visibility than smaller firms. Other issues such as employee safety due to the nature of the industry have compelled mining firms to disclose their sustainability practices (Azapagic 2004).

The objective of this study is to assess the sustainability-reporting performance of selected mining firms operating in Ghana. We analysed the sustainability reports based on Azapagic's (2004) framework of foreign and local firms; small and large mining firms in Ghana through a case approach. This provided a good foundation for investigating sustainability-reporting. Furthermore, despite the significant contribution of mining to Ghana's development, little is known about sustainability-reporting disposition of players in the Ghanaian mining industry in the academic literature. Most studies on sustainability in the Ghanaian literature have focussed on reporting in tertiary institutions (e.g. Hinson et al., 2015) and the environmental costs of mining activities (Boachie, 2012). This study therefore offers one of the rare works, from the Ghanaian context, that documents in detail how mining firms seek to turn the tides on the negative publicity regarding sustainability issues through disclosures.

Conceptualising Sustainability

Sustainability has been conceptualised variously in the literature. Elkington's (1994, 95) triple bottom line approach - profit, people and planet (representing economic, social and environmental sustainability respectively), appears to be one of the most prominent based on his argument that apart from the profitability of the firm, businesses should also be concerned with the wellbeing of employees and the community in which they operate, ensuring that their activities do not harm the environment in any way. This study relies on Elkington's (1994) conceptualisation of sustainability. Following from this, many of the frameworks that have sought to measure sustainability performance of firms have relied on these three dimensions (e.g. the GRI G4 framework, and Azapagic, 2004).

1 Theoretical Framework

Stakeholder and legitimacy theories are two lenses through which scholars tend to view the disclosure of mining firms' social and environmental impacts (see Gibson & O'Donovan, 2007) which in the case of mining firms include employees, trade unions, contractors and suppliers, customers, shareholders, creditors, insurers, local communities and authorities, governments and non-governmental organisations (NGOs) (Azapagic, 2004). Both theories are useful in explaining the sustainability reporting of mining firms. First of all mining firms have a vast array of stakeholders to satisfy, and are at the same time under pressure to be socially responsible. Hence in order to legitimise their existence, they do not only engage in CSR, but actively disseminate information on sustainability to these stakeholders through various media such as annual reports, and increasingly corporate websites. The legitimacy theory establishes a social contract between a company and the community of its location. It requires companies to validate its existence with sustainability initiatives

1.1 Sustainability Reporting in the Mining Industry

There are specific frameworks that guide sustainability reporting such as the global reporting initiative's G4 initiative, however, most of the well-known guidelines like the GRI and sustainability reporting guidelines for the mining sector and the one by Azapagic (2004) have all relied on the three dimensions of the triple bottom line frame; people (social), planet (environment) and profit (economic).

Beyond the pressures for sustainability reporting, studies reveal that sustainability reporting and the extent of it among mining companies is a function of the country of origin, size of the firm

(number of employees, number of subsidiaries, and turnover). Based on the above literature, we put forward the following propositions:

P1. Foreign-owned mining firms are likely to disclose more thorough sustainability information than local mining firms.

Many stakeholders like local communities, NGOs and government agencies like the Environmental Protection Agency have accused mining firms for wasting and destroying water bodies and for greenhouse emissions (Azapagic, 2004 643). We therefore maintain that because of the pressures to be environmentally responsible, mining firms will report comprehensively on the environmental initiatives.

Following the above literature, we again propose that:

P2. Mining firms will provide a comprehensive report on their environmental sustainability.

1.2 Research Framework

This study adopts Azapagic's (2004, 649 - 652) framework to explore the sustainability reporting profiles of mining firms operating in Ghana. Although many sustainability-reporting frameworks exist, we have chosen this because of its focus on sustainability performance of the mining sector, which is the focus of this study. Additionally, the framework uses a comprehensive set of indicators, which is based on the Brundtland definition of sustainable development and the Global Reporting Initiative's (GRI) framework. Azapagic (2004, 649-652) categorised the sustainability disclosures of mining and minerals companies into the following areas:

1. Economic indicators
2. Environmental indicators
3. Social indicators

The three indicators listed above were adopted because mining firms' sustainability activities fall within these as compared to other classifications of sustainability.

1.2.1 Economic Indicators

The economic indicators assess the economic performance of mining firms' local and global bases. The economic indicators include net sales and cost of raw materials. These indicators also measure the cost of employment as a ratio of net revenue. In all, Azapagic proposed twenty-four (24) indicators that measure mining firms' economic performance.

1.2.2 Environmental indicators

The environmental indicators measure the effects of the operations of the mining firms on the environment. Some of the indicators measure biodiversity issues, water conservation, greenhouse emission issues, etc. These issues are of outmost concern to many stakeholders of the mining sector. There are sixty-three (63) indicators measuring environmental impact, 35 of which are adopted from the GRI framework and the rest developed by Azapagic (2004, 649) in order to reflect some of the peculiar traits of the mining industry. Some indicators include total waste extracted, total water used, summary of energy policy, rate of depletion of mineral reserves, total land area required for extraction activities, number and type of environmental accidents etc.

1.2.3 Social indicators

The social indicators measure mining firms' approach to health and safety of employees and members of the communities in which they operate. The indicators also measure issues such as compensation for diseases, employment to local community members, etc. (Azapagic, 2004, 652).

2 Methodology

In a study on sustainability reporting in Ghana, Amoako, Lord and Dixon, K. (2017) used a case study, which was Newmont. This study employed a multiple case study approach where more than one unit of analysis (case) is studied (Yin, 2014), as the research design. This was to enable us have a compelling evidence of sustainability reporting in the mining sector in Ghana (see Yin 2014, 9). Based on a case study approach, Hinson (2011) analyzed the CSR reportage of four banks in Ghana. This study involved two sets of cases: foreign and local. The foreign case consists of six firms: AngloGold Ashanti, Goldfields, Newmont, Perseus Mining Limited, Azumah Resources and Pelangio Exploration Incorporated. All these are foreign firms operating in Ghana

The second case has four local mining companies: These four indigenous companies include Bloomfield Mineral Resources, West Line Mining, Western Precious Metals and Ghana Manganese Company (GMC).

The data for this study were sourced from the archives of the websites of the firms under studied. Yin (2014, 84) asserted that archival data is a rich source of data for case study. We searched on the 'sustainability and social responsibility tabs' of the corporate websites of the

firms we studied to retrieve the sustainability reports of the firms. We also employed key words like sustainability report, environment, social responsibility, community support, corporate responsibility and conservation in our search to identify any report on sustainability by these firms. We discovered that these firms use their websites to report their sustainability. We therefore extracted the reports for analysis. Since we adopted an existing framework, we decided to use pattern matching analysis technique, which Yin (2014, 108) recommends for case studies that utilise an existing framework. Using Azapagic's (2004, 649-652) sustainability indicators, we counted the absence and presence of the indicators in the reports. In all, there were 130 sustainability indicators or themes which these firms could report on. The scores were then added up in order to arrive at a total score per mining company. We employed various mechanisms to ensure the trustworthiness of the research process and the findings of this study. Two of the researchers did the analysis separately after which the results were compared and reconciled. Two other members of the research team also crosschecked the results against Azapagic's (2004) sustainability indicators and they were found to be consistent. The next section presents the findings of the study.

3   Findings

The findings of the study are presented based on the propositions of this study. The first part of this section contains findings on the sustainability reporting of foreign-owned and local-owned mining firms. The second section comprises the outcomes on the environmental disclosures of the mining firms. The final part presents findings on the sustainability reporting of foreign mining firms and local mining firms.

3.1   Sustainability reporting: Foreign versus Local mining firms

The findings indicate that the six foreign-owned multinational firms (AngloGold, Goldfields and Newmont) in case one disclose far more sustainability information than the two local firms in case two. Out of the 130 sustainability indicators proposed by Azapagic (2004, 649-652), the foreign firms scored higher than the local firms. Among the six firms in case one which are foreign firms, Pelangio Incorporated scored ten(10) points, Golden Star had twenty-five(20) points, Asanko Gold scored twenty-five(25) points, AngloGold scored the t twenty-seven (27) points, followed by Newmont with thirty-three (33) while Goldfields topped with forty-three (43) points. On the other hand, we found the sustainability reporting of the four local mining companies in case two, The second case has two four local mining companies: Bloomfield Mineral Resources ,West Line Mining, Western Precious Metals and Ghana Manganese

Company (GMC) were very poor. Their reporting is mainly limited to community projects, policy on community engagement and stakeholder involvement. Bloomfield Mineral Resources had no point (0), West Line Mining had a point (1), Western Precious Minerals had two points (2) and Ghana Manganese Company had two (2) points out of the 130 sustainability indicators. Consequently, it can be concluded that foreign-owned mining firms disclose more detailed sustainability reports than local mining firms. The findings support the first proposition that foreign firms would disclose more of their sustainability initiatives than local firms.

3.2   Environmental disclosures

Based on proposition three of this study, we examined the environmental disclosures of the firms. We noted that out of the 58 environmental indicators proposed by Azapagic (2004), Goldfields scored 18 points.   Bloomfield Mineral Resources, West Line Mining, Western Precious Metals and Ghana Manganese Company (GMC) which are smaller firms did not report on any of the environmental indicators. It can be inferred from this finding that foreign firms disclose more on environmental sustainability issues to some degree than local firms. This is not to conclude that foreign firms assume more environmental sustainability initiatives than local firms.

3.3   Sustainability reporting: Progress

Research findings indicate that, only three mining firms had comprehensive progress reports on sustainability. All these firms were foreign owned ones. They include AshantiGold which has updated reports from 2001 to 2017. Goldfields had progress report from 2006 to 2016. Newmont Ghana also had progress report from 2013 to 2016. The other firms did not have comprehensive reports which indicated their progress.

Discussion

The objective of the study was to assess the sustainability reporting idiosyncrasies of mining firms in Ghana. We proposed that foreign-owned firms are likely to disclose thorough sustainability information than local mining firms. We also proposed that larger mining companies would disclose more sustainability information than smaller-sized mining firms. The third proposition was that mining firms would provide a comprehensive report on their environmental sustainability disclosures.

We noted that the foreign firms reported more sustainability information than the local firms. They scored higher points than the local ones on the indicators used. Hence the first proposition

that foreign firms would disclose more of their sustainability initiatives than local firms is supported by the study's findings. This finding could be explained from the angle that foreign-owned firms have a greater hurdle to surmount with regard to legitimising their operations in the host country, in this case, Ghana, hence would want to disclose as much sustainability information as possible (Azapagic, 2004). Prior studies have revealed that host country stakeholders do not trust international firms. For instance, Eweje (2007) explains that locals view the operations of mining

The surprise however is that smaller firms that were adjudged as sustainable responsible mining firms by Akoben programme of the Environmental Protection Agency (EPA) of Ghana in 2015 did not provide a comprehensive sustainability report (EPA, 2015).

We agree with prior studies such as Azapagic (2004), that to obtain their 'social licence' or prove their legitimacy, all the foreign firms provide information on environmental sustainability. We noted that all the three firms in case one, reported on the amount of water they used, recycled and reused. The type and amount of energy used and exported was also reported. All the three firms also reported on emission of greenhouse gases and total volume of the biodiversity methods. These actions can be attributed to their intentions to communicate to their stakeholders that they have actually taken steps to conserve water bodies, energy and reduce greenhouse gas for which they are normally accused of destroying and depleting the ozone layer (Azapagic 2004).

Our findings suggest that sustainability reporting practices among local mining firms are still at the embryonic stage and they need to adopt standardised guidelines for reporting their sustainability initiatives. The study's major limitation was the emphasis on only the online reports of the firms. Further studies could be conducted where a combination of media reportage are examined such as printed reports, newspaper articles, and magazines in addition to the company websites. Again, for reasons of generalisation, future studies can be conducted on the sustainability reporting idiosyncrasies of all the mining firms operating in Ghana.

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Contact

Robert Ebo Hinson

University of Ghana

P.O. Box LG 25. Legon, Accra, Ghana

hinsonrobert@gmail.com

Anne Renner

University of Ghana

P.O. Box LG 25. Legon, Accra, Ghana

anne.rennner11@gmail.com

John Paul Kosiba

University of Ghana

P.O. Box LG 25. Legon, Accra, Ghana

johnpaul.kosiba@gmail.com

Frederick Okyere Asiedu

University of Ghana

P.O. Box LG 25. Legon, Accra, Ghana

federickasiedu@gmail.com

NON-FINANCIAL INDICATORS IN THE VALUATION PROCESS IN CZECH REPUBLIC

Jaroslav Hradílek

Abstract

Purpose: This paper deals with the increased significance of non-financial indicators in company valuation process. It researched if these indicators or, more generally, non-financial data are used in business praxis in M&A transactions in Czech Republic.

Design/methodology/approach: The research was conducted on a sample consisting of three Due Diligence reports used in M&A transactions (two for buyer, one for seller). In addition, one certified expert data set for valuation has been examined. A methodology was created to set the most important areas for non-financial indicators and to evaluate these reports according to these criteria.

Findings: None of the researched document dealt with non-financial indicators intensively to improve the accuracy of the company valuation. Some of them dealt with certain non-financial information but none has defined a standardized system to use non-financial indicators to decrease the risk of improper value setting and possible financial losses on either side of an M&A transaction.

Research/practical implications: The buyer in M&A transaction focuses primarily on financial analysis. They should take in account also the non-financial indicators, as they have significant predictive power. This can improve the accuracy of M&A transactions and lead to higher success rate of M&A transactions. The increased usage on non-financial indicators by company controlling systems is also highly recommended. The results can reduce sunken costs of M&A transactions and improve performance of small and medium enterprises. As there is a gap in a literature, better theoretical background for the praxis shall be provided.

Originality/value: Few researches have dealt with the non-financial indicators problematics. No research has been conducted on the real data from business transactions. Further research on larger data sample recommended.

Keywords: M&A, non-financial indicators, valuation, benchmarking

JEL Codes: G12, G32, G34

Introduction

The awareness of non-financial indicators importance grew steadily in both academic sphere and in corporate environment in last years. It is broadly acknowledged both in theory – e.g. Hálek (2016): "In a global environment, where a major part of a business operates in an international environment, financial indicators seem insufficient, because for the most part they are historical indicators and do not reflect future developments and in corporate life" as well as in a corporate environment. Top Consultancy Company, E&Y (1996) states: "When non-financial factors were taken into account, earnings forecasts were more accurate, thus reducing the risk to investors. If a firm's non-financial data are strong, this could facilitate its ability to raise capital. The message is clear: non-financial factors can be used as leading indicators of future financial performance". Yet, the usage in Czech companies, especially small and mid-size is very limited and the benefits are being utilized very slowly. This can obviously bring inefficiencies in management decisions, process ineffectiveness, employee unsatisfaction and subsequently performance slowdown. Even worse implications this ignorance can bring in a valuation process. The M&A process according to Financial Times (2012) increases its failure rate from 60-70% to 50% in 2012[6]. The aggregate value in CEE region over last 6 years is 615,3 bln EUR causing the waste of approximately 307,65 bln EUR In Czech Republic the values are 25 715 mil. EUR for M&A total, 12 857 mil. EUR for the wasteful spendings (statista.com, 2017). Taking this information into account, the fundamental question arises, if in M&A process in Czech Republic are any non-financial indicators taken into account to increase the success rate of acquisitions.

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[6] HBR.COM (2016) states the failure rate 70 -90 % with a single Time Warner – AOL write-off of 99 bil. USD

Fig. 1a and 1b: Total value of merger and acquisitions (M&A) deals in Central and Eastern Europe (CEE) and in Czech Republic from 2011 to 2016

Source: https://www.statista.com
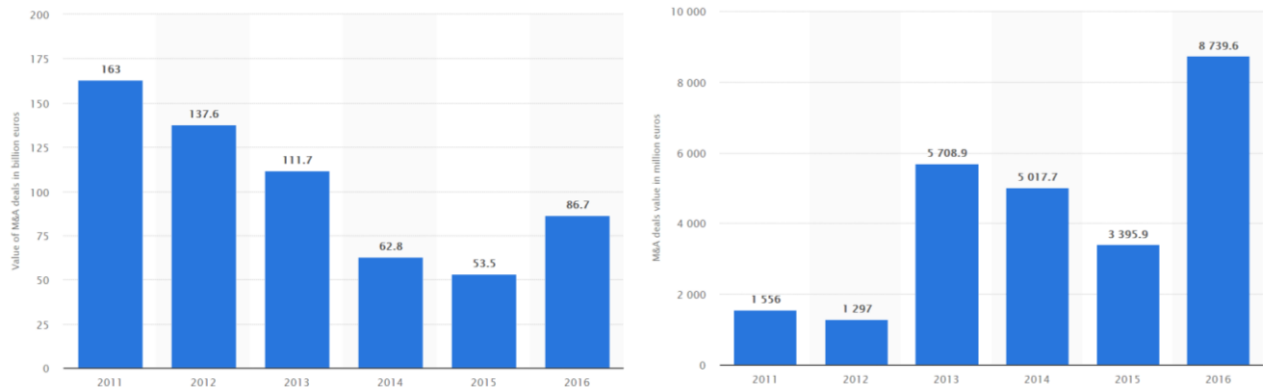
We have examined three selected Due diligence reports from three different, independent best class advisory companies in M&A process and examined, if and to what extent the valuation reports consists of non-financial indicators. Additionally, a certified expert (in Czech soudní znalec) proceeding has been examined, if in expert valuation process are non-financial indicators also taken into account.

1   Theoretical framework

There are not many sources regarding the area of non-financial indicators (NFI) yet. The commonly accepted approach is that NFIs have to be closely aligned to entity's vision, mission and a long-term strategy (Hálek 2016). It also has to have strong cause-effect descriptive power, in best case in a form that describes the key processes / value flow in an enterprise and have good forecasting capabilities (Kaplan et al, 2000). Here is often a set of indicators considered, where a mixture of financial and non-financial KPI's is usually chosen. These sets create often a performance models, where Balanced Scorecard, EFQM, Performance prism and others can be mentioned (Bititci, 2016). Every such a performance model has been developed for a certain purpose and therefore has strong and weak sides of its performance, where also the place and time of its creation has to be considered (see Oger et al, 2002). An overall conclusion based on above facts tries to present H. Aschenbrennerová (BusinessInfo.cz, 2010) in her model for measuring and controlling the performance of the small and medium sized enterprises. Her model takes in account non-financial indicators and the key stakeholder structures, however lacks the comparability as it has been developed for the use of the companies themselves.

Tab. 2: Main valuation methods

BALANCE SHEET	INCOME STATEMENT	MIXED (GOODWILL)	CASH FLOW DISCOUNTING	VALUE CREATION	OPTIONS
Book value Adjusted book value Liquidation value Substantial value	Multiples PER Sales P/EBITDA Other multiples	Classic Union of European Accounting Experts Abbreviated income Others	Equity cash flow Dividends Free cash flow Capital cash flow APV	EVA Economic profit Cash value added CFROI	Black and Scholes Investment option Expand the project Delay the investment Alternative uses

Source: Fernandez (2001)

It is obvious that there are other factors, which determine the company success. There are important areas which indicate future company success like customer intimacy, corporate culture, employees' satisfaction and many others. They have direct impact on company future success – and inevitably on selling price. Kislingerová (2008) states that these indicators of intangible nature have to be represented by a tangible, measurable indicators. On contrary, Fernandez (2001) states 12 common errors in valuation where all of them are of financial nature. Kislingerová warns before using NFI without clear cause-effect connection to company objectives. (Malina, 2016) concludes that 80 % managers with no previous experience with BSC or similar model prefer financial indicators, on the contrary just 65 %, managers with BSC experience prefer FI over NFI. The need for further education and research is obvious.

2   Data

Three due diligence (DD) reports have been examined in this research. All of them have been commercially used in real M&A transaction in Czech Republic. As these reports are strictly confidential, disclosure of their origin or author would result in the loss of confidentiality. Therefore, there cannot be disclosed any more details regarding the identity neither of the target company, nor of the advisory company. We will name them X, Y and Z.

X report has been created to assist in acquisition of mid-sized Czech engineering company. Based on report results, also from nonfinancial part, the M&A process has been terminated by the buyer.

Y report was issued to aid the buyer in the acquisition of a big machinery company. The process has been terminated because of unmitigated risks in a target company.

Z was seller's information memorandum and data room report used in an acquisition of medium-sized machinery company. It had been successfully accomplished.

In all cases, the size of the deals was in a range between 4 – 20 mil. EUR.

Additionally, a standard data request for proceeding leading to the expert valuation from a certified expert has been examined. Here, too, it cannot be disclosed who the expert was. This request will be referred to as W.

3   Methodology

Because the lack of similar methodology, own methodology had to be developed. The basis for the criteria was an EFQM model, which represents one of the most complex performance models. It consists of nine criteria ((1) *Leadership*, (2) *People*, (3) *Policy and strategy*, (4) *Partnership and resources*, (5) *Processes* as Enablers and (6) *People results*, (7) *Customer results*, (8) *Society results*, (9) *Key performance results* as Results)[7]. Based on these categories, we have introduced: Strategy – based on (3), management ability (1), quality, processes (5), people (2 and 6), customers (7), suppliers (4). Society results has been omitted for its intangibility and quality has been added as an overall leading principle of EFQM foundation. Key performance results (9) fall in category financial analysis and were therefore omitted.

In a category **Strategy**, topics like company mission, vision, strategy, is it communicated, accepted, are there shared company values, is a company culture inspiring and motivated were accented. Exist a sound controlling and reporting system? In a **Management ability** section, the ability of a senior (and medium level) management shall be considered, their style, relationship to employees, results etc. In a **quality** part, not only questions regarding the product quality shall be considered (e.g. delivery reliability, defects per product etc.), but also quality of internal results (e.g. if R&D department sticks to their time/costs budget. **Processes** can be measured by the existence of measurement of internal processes (e.g. effort spent on a single process, effectivity of a process etc.). The existence of a process description in a good shape is also an important criterion. **People** section shall deal with metrics like employee satisfaction, fluctuation, development (e.g. training costs), but also attendance record, age/educational structure etc). In **Customer** category a series of KPI's exist like market share, offer hit rate (success rate), customer satisfaction/loyalty, repeated purchases, revenue per purchase etc. **Suppliers** can be described e.g. by a proportion of a long-term relations to a total purchasing

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[7] The EFQM Model (2012), WWW.EFQM.ORG

volume, the existence of a strategic purchasing department and their activities, the primary targets of the procurement, involvement of suppliers in internal (R&D, manufacturing) processes etc.

The special regard was taken if there exist any comparable metrics, which can be followed over time series and/benchmarked with other companies/industry standard etc. Ideally in a form of a standardized KPI. The rankings were also based on EFQM evaluation matrix, where result range is between 0 – 100 % in 5 steps by 25% (Česká společnost pro jakost, 2003). The following results were obtained:

Tab. 2: The rankings of each assessed category

Category/ranking	Not present	Mentioned	Described	Emphasized	KPI form
Strategy	0	0,5	1	1,5	2
Management ability	0	0,25	0,5	0,75	1
Quality	0	0,25	0,5	0,75	1
Processes	0	0,25	0,5	0,75	1
People	0	0,5	1	1,5	2
Customers	0	0,5	1	1,5	2
Suppliers	0	0,25	0,5	0,75	1
Total achievable					10

Source: author's own methodology based on EFQM model

In three categories there are double points in the scoring achievable. That is based on the EFQM model (People are both Enablers and Results, the same can be said of a Customer). Strategy because it is the broadest and has, according to author conviction the strongest influence on a future company success, therefore should have the biggest impact on a possible company valuation adjustment (one strategical mistake can endanger the whole company). Total 10 points thus can be achieved.

4   Results

For better clarity, the results have been displayed into an overview, where in columns are examined reports and in rows there are key findings. All findings are more thoroughly described in a later text.

Tab. 2: The usage of NFI in DD reports

DD Report	W	X	Y	Z
Strategy	**0**	**0,5**	**0**	**0**
Management ability	0	0,25	0	0,25
Quality	0	0	0	0,25
Processes	0	0,25	0	0
People	**0,5**	**0,5**	**0**	**1,0**
Customers	**0,5**	**0,5**	**0,5**	**0,5**
Suppliers	0,25	0	0,25	0
Total	**1,25**	**2**	**0,75**	**2**

Source: own assessment and calculations

4.1   Findings in W (the expert questionnaire)

The expert proceeding focuses mainly on the financial indicators and accounting data. Out of 25 items, just 7 can be considered of non-financial nature. Out of them are ecological and personal audits (if requested), important contracts information, risks out of these, basic marketing description, planned invests and possible seasonal effects. None of these can be categorized as indicators and are of risk-description nature. From the obtained data, none of the information like status of strategy implementation, management ability, process maturity or employee satisfaction can be determined.

4.2   Findings in X (the DD report)

This DD report is dealing beside standard financial and balance sheet items with customers, focuses on the relationship to key customers. Also brings some information about management of the company and key customers, especially with regard to a possible acquisition. Also consists of SWOT analysis and Porter market powers analysis. Slightly touches also areas like post acquisition synergies (processes), market penetration (customers), employees' relations (people), but only as a projected post-acquisition state, not as a qualitative description of a status quo.

4.3 Findings in Y (the DD report)

This DD report deals basically with accounting data only. As there is analysis of current orders/customers and suppliers, some points have been awarded, overall it can be said that this DD report deals with financial data solely.

4.4 Findings in Z (the DD report)

One systematic difference can be observed here, as the DD report here was not ordered from a buyer, but from a seller's advisor. Therefore, this report is not focusing closely on risks, but on strong sides of the target. In any way, for this research the importance of this is not significant, as we do research whether these reports consist of any non-financial indicators regardless the side they represent.

In report, a good share of information regarding the management has been presented (age, experience), also a basic information regarding the quality standards and certificates have been presented. Compared to others sources, the biggest focus has been laid on employees. Their age structure, compensation strategy, training, unions have been examined and reported. A breakdown of customers / competitors was also considered, all mentioned above without any standardised form of KPI's.

Conclusion

The article has investigated to which extent non-financial indicators are being used in the valuation and M&A process in Czech Republic. Thought the sample is limited, we can conclude that NFIs are not used in praxis in a sufficient extent. Both theoretical sources and research outcomes confirm that NFIs are not generally used despite known disadvantages of analysis based purely on financial data leading to higher probability of incorrect target valuations.

Possible reason why NFI are not used is a limited knowledge of entrepreneurs and management, therefore more focus of the academic community shall be put on this topic. Further promotion of academical research / publication and practical usage of nonfinancial indicators during due diligence process and in practical controlling activities is strongly recommended.

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Contact

Jaroslav Hradílek

Ekonomicko-správní fakulta Masarykovy Univerzity

Lipová 41a, 602 00 Brno-Pisárky, Czech Republic

10955@mail.muni.cz

CORPORATE SUSTAINABILITY WITH FOCUS ON HR, REPORTING AND FINANCIAL PERFORMANCE

Stepanka Hronova – Jitka Srpova

Abstract

Purpose: Reason for the paper is to build a theoretical background and to compile literature review on Sustainable Corporate Responsibility (SCR).

Design/methodology/approach: The objectives are achieved through thorough exploration of the most current scientific research and academic papers. The literature review was conducted with the use of mixed research techniques where the authors were collecting and analysing both qualitative and quantitative data. The subject scope and the research problem are represented by corporate sustainability (focused on HR) and its nonfinancial disclosure. Firstly, the authors reviewed CSR/ sustainability and reporting research. Secondly, the review sought to find answer to the research question of whether responsible behaviour (towards HR) of reporting organizations is in correlation with their higher financial performance and appreciation.

Findings: Positive correlation has been found between corporate (social) sustainability (oriented on HR) and increased financial performance as well as appreciation of shares of the sustainable reporting entities.

Research/practical implications: Implications for practitioners and companies: sustainable behaviour, social liability (towards HR) and their reporting are recommended as the discussed studies bring proof of their positive impact on financial performance. For researchers: the evidence brought can inspire further research in order to collect more support for the findings.

Originality/value: The original contribution of the paper is its focus on sustainability within human resources (HR) and their management. The main added value is the up-to-date sustainability literature overview.

Keywords: Corporate sustainability (reporting), CSR, financial performance, human resources, sustainable management

JEL Codes: M12, M14, J24

Introduction

The time we live in is full of precipitous changes. Kotler & Caslione (2009) describe the latest period as the age of turbulence, change and unstable boundaries, where predictability of a state almost disappear. Rapid changes and big shocks take place more frequently, especially due to the global interconnectedness of the world, and the massive flow of information and goods. The external environment has a significant impact on business operations; managements are increasingly being forced to respond to stormy changes in the macroeconomic environment.

1 Corporate governance, ethics, CSR & sustainability and HR

In a modern concept of organizational management, emphasis is placed on ethics, openness of communication, transfer and storage of knowledge within an organization, transparency of activities and functioning with respect to the community and the environment. As a result of fast data spreading, corporate activities are increasingly monitored from the outside and firms are under higher pressure, which might be one of the reasons for more responsible behavior of companies. Therefore, the concepts of *organizational sustainability*, *corporate social responsibility (CSR)*, *corporate citizenship*, the *sustainable behavior* of companies and businesses, etc. have emerged and nowadays are being discussed more frequently.

1.1 Concepts of CSR and corporate sustainability

The term corporate sustainability is derived from the wider concept of sustainable development, with the 3 pillars of sustainability (economic, environmental and social) being applied to the organizational level. There, the model is transferred into corporate practice. A CSR concept can rather be considered a managerial approach. It is usually described as the concept of organization's liability for impacts of its decisions and activities on society and the environment.

1.2 HR as an essential condition for corporate sustainability

An essential condition for ensuring the company's sustainability is its access to a skilled workforce. (Lortie, Nadeau & Vezeau 2016) In order to maintain high-quality employees, it is important to provide background factors and workplace relationships supported by ethical management of the company. This body should act with transparency and ensure equitable approach to employees; it shall also provide appropriate incentive programs and health-enhancing work environment. Employee needs to be further considered include: an inspirational work environment, motivating financial rewards, work-life balance, recognition

of work, empowerment, delegation of authority, working interpersonal relations, opportunities for further education, overall personal development, possibility for career growth and others.

In his article, Chadwick (2017) mentions two processes that determine the value and cost of human capital, which are: the creation of human capital value and the safeguarding of this value. These issues are different, yet related and interconnected. Pasban & Nojedeh (2016) focus on contribution of human capital to the organization and sees its benefits as follows:

- creativity and innovation
- knowledge and skills
- competitive advantage
- added value

Managers often have to deal with a contradiction between the economic and social spheres, which can be supported by the paradox theory. (Ehnert, 2009) For example, the executives are generally pressed for greater financial performance of their organization and its financial savings and hence lower spending on educational policy and social or cultural needs of employees. At the same time, however, they are under pressure from the internal and external environment of an organization that emphasizes the social goals that, if fulfilled, lead to a sense of satisfaction for both employees and the community.

1.3   The role of corporate governance

The way in which corporate staff behave in the external and internal environments is dependent on management and process control systems in an organization. This system is called *Corporate governance* and defines duties and rights among all stakeholders (shareholders, management, statutory bodies, HR, and customers). Dimopoulos & Wagner (2016) highlight the important role of management and CEO of the company in establishing proactive corporate social responsibility with the adoption of value-creating strategies. These strategies should build on the capabilities of the company as effectively as possible and as such become a necessity for ensuring a financial success of the company. In order for the management to be perceived as ethical, employees must evaluate its behavior as morally relevant. (Fehr, Yam & Dang, 2015)

1.4   Sustainability reporting

In view of the increasing pressure on sustainability reporting, firms have gradually responded to this situation voluntarily by disclosing information on the diverse areas of sustainability

associated with the companies' activities. Various formats are used including: a separate CSR/sustainability report, integrated report or a CSR/sustainability section in an annual report.

2   Research method

In order to compile a literature review, the authors primarily searched the most renowned databases and looked for the studies indexed in Scopus and WOS with the intention to find the most relevant articles having the search limited to the time period of 2012-2017 with an attempt to reach as many papers as possible in journals with impact factors. The most relevant ones are introduced in Chapter 3 (19 longitudinal and 13 cross-sectional/literature reviews). Their amount is limited by the allowed number of pages. Keywords used for search optimization were: *CSR, corporate sustainability, nonfinancial (reporting), human resource/capital (management), corporate accountability* and combined with *longitudinal studies, reporting, disclosure*, *corporate governance*, *ethics* and *financial performance*. The authors followed a three-phase model proposed by Onwuegbuzie (2016) shown in Figure 1 where the research is sequenced into three steps: an exploration, an interpretation and a communication phase.

Fig. 1: The Three Phases of the Comprehensive Literature Review
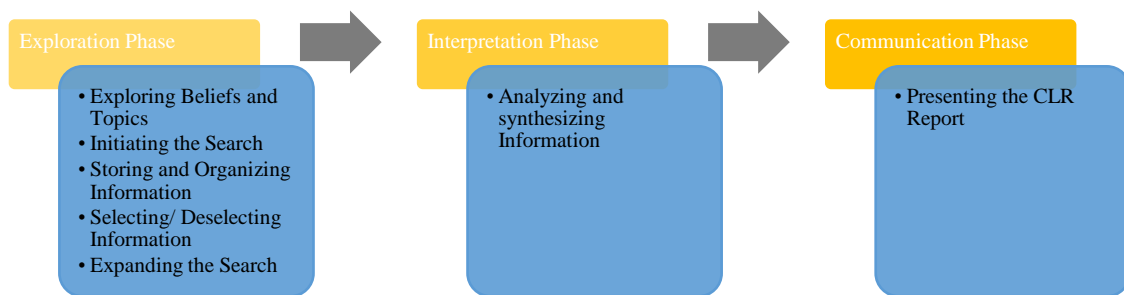
Source: Authors based on Onwuegbuzie (2016)

The *communication phase* is applied after the scientific paper has been published and the data can be communicated towards the academic community. The *interpretation phase* in the discussion section of the paper had been prepared before it was compiled. The *exploration phase* represents the initial cyclical process of searching for relevant materials inclusive of selecting, deselecting and organizing the data. Based on Pautasso (2013), the literature review encompassed discovering and evaluating relevant studies and other scientific literature, synthesizing the data from various sources, applying critical thinking and assessment skills.

3   Literature review

Tab. 1: Corporate Sustainability, Sustainability of HR, Sustainability Reporting – Longitudinal Studies 2012-2017

Author	Year	Journal	Name, contents	Description/ methodology/outcomes
KPMG	2017 2015 2013	**KPMG website**	**KPMG Survey of Corporate Responsibility Reporting** Longitudinal (repeated cross-sectional studies) worldwide tracking of corporate responsibility and reporting since 1993, tracking the top 100 companies in selected countries	Quantitative analyses of corporate responsibility. The KPMG report reflects the current state of non-financial reporting worldwide and identifies key trends. Every study encompasses more countries than the previous one: 2017-4900 companies in 49 countries, 2015 - 4500 companies in 45 countries, 2013 - 4100 companies in 41 countries
Shabana, et al.	2016	**Business & Society** ISSN: 0007-6503 Impact factor: 3.3	**The Institutionalization of Corporate Social Responsibility Reporting** This study attempts to fill a gap in research into the implementation of social innovation (CSR reporting) by measuring the dissemination of this innovation, as well as a detailed description of the different stages through which the CSR / Sustainable Reporting and driving force process progresses from one phase to the next.	The study highlights how social innovation has been introduced in companies over time. It follows the 1997-2006 period for Fortune 500 (the Fortune ranking of 500 private companies and public institutions by gross turnover). It comes with the following three phases: defensive, proactive and imitative reporting.
Krištofik, et al.	2016	**E+M Ekonomie a Management** ISSN: 1212-3609 Impact factor: 1.16	**The reporting of non-financial information and the rationale for its standardization** The study monitors the evolution of non-financial reporting in EU countries - it examines and defines the benefits of standardization reports on non-financial information.	It monitors the evolution of non-financial reporting in the EU in 2010-2014 and the reasons for voluntary involvement in the reporting of non-financial indicators. It focuses on standard reporting - the Global Reporting Initiative.
Hetze, Winistörfer	2016	**International Journal of Bank Marketing** ISSN: 0265-2323	**CSR communication on corporate websites compared across continents** – a longitudinal analysis of CSR reporting by banks in the period 2000 to 2012, and a content analysis of the latest reports.	Report names are most often linked to the concept of responsibility and sustainability - they focus on 10 key stakeholders and themes. When comparing the continents, there is a difference in the use of names - European banks prefer the *Sustainability Report,* while Asian and US banks are more likely to use the term *CSR Report.*
Grossmeier et al.	2016	**Journal of Occupational and Environmental Medicine** ISSN: 1076-2752 Impact factor: 1.861	**Linking Workplace Health Promotion Best Practices and Organizational Financial Performance: Tracking Market Performance of Companies With Highest Scores on the HERO Scorecard.** The aim of the study was to evaluate the development of stock prices of publicly traded companies that obtained high scores in evaluating the HERO employee health management performance indicators and compare them with the performance of companies rated by ind. S & P 500.	*HERO Employee Health Management Best Practices Scorecard* in Collaboration with Mercer – companies with a high score in this ranking that promote good health at workplace valued their shares by 235% during the six-year simulation (2009-2014) compared to the S & P 500 index, where the shares valued at 159%. American study. It is based on the Fabius (2013) and Goetzel (2016).
Pollach	2016	**Environmental Communication** ISSN: 1752-4032 Impact factor: 1.4	**Issue cycles in corporate sustainability reporting: a longitudinal study** – the study examines 744 corporate news reports over a 10-year period. It attempts to extend the existing theory of life cycles of certain interest topics from the media domain to the corporate sphere by examining how companies implement and use sustainability over time.	The results show recognizable cycles in publishing of almost all 13 pre-defined and monitored themes. Some questions are in a phase of increased awareness, others in discontinuous balance after specific events and others in a phase of decline. The study focuses on environmental aspects.
Goetzel et al.	2016	**Journal of Occupational and Environmental Medicine** ISSN: 1076-2752 Impact factor: 1.861	**The Stock Performance of C. Everett Koop Award Winners Compared With the Standard & Poor's 500 Index** Study Objective: Explore the link between companies investing in health & welfare and stock market performance. Based on Fabius (2013).	During the monitored period of 2000-2014, shares of companies awarded for their contribution to health investment and employee welfare compared to shares of the market average showed appreciation of the first group by 325% (compared to a market average of 105% appreciation). The study proved a higher market valuation of the responsible companies. USA.
Kaspereit, Lopatta	2016	**Business Ethics: A European Review** ISSN: 1467-8608 Impact factor: 1.9	**The value relevance of SAM's corporate sustainability ranking and GRI sustainability reporting in the European stock markets** The paper examines whether the relative sustainability of a business, measured by the SAM sustainability assessment and GRI sustainability reporting, is associated with a higher market valuation.	Value studies of relevance for 600 largest European companies with the use of the Feltham and Ohlson model. Empirical evidence of the positive relationship between GRI reporting and market value is statistically significant in some, but not all, model specifications.
Eurofound	2015 2010 2005	**Eurofound website**	**Eurofound Working Conditions Survey** Employee Satisfaction Survey (2015) in all 28 EU countries plus other countries. A total amount of 35 countries participated with a target sample of most countries at 1000 respondents. A total of 43,850 respondents took part in the survey. Samples of working population in each country, assembled using multistage, stratified, random selection.	Topics explored through personal interviewing between employees and self-employed (according to a structured questionnaire) from a random population sample - job position, duration and organization of working hours, work organization, learning and training, physical and psycho-social risk factors, health and safety , worker participation, a work-life balance, income and financial security, and work and health.
Eccles, et al.	2014	**Management Science** ISSN: 0025-1909 Impact factor: 2.8	**The Impact of Corporate Sustainability on Organizational Processes and Performance** The study examines the effect of corporate sustainability on organizational processes and performance. It uses a population of 90 companies and a control sample in the same number.	Study Findings: Companies with a high degree of sustainability have the following traits: directly involve the Governing Board in the issue of sustainability and link managers' rewards to sustainability goals; have a much higher level and deeper involvement of stakeholders; are characterized by long-term time orientation, process

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			It surveys voluntary reporting until 1993, as well as reports on the sustainable behavior of the company in 2009.	optional reporting; pay more attention to non-financial employee-focused measures, external social and environmental issues. They are characterized by a higher degree of transparency. During the 18 year period under review, companies with high levels of sustainable behavior have provided better financial performance in terms of both their bookkeeping and stock markets.
Höllerer	2013	**Journal of Management Studies** ISSN: 0022-2380 Impact factor: 3.9	**From taken-for-granted to explicit commitment: The rise of CSR in a corporatist country** The study examines the interpretation issue of taking the social responsibility after its incorporation into organizational concepts and managerial practices. It focuses on the rise of CSR in Austria	1636 observations in 179 enterprises (some multiple) reports ranging from 1990-2005. Method of binary logistic regression model was used for evaluation.
Eccles, Serafeim	2013	**Harvard Business Review** ISSN: 0017-8012 Impact factor: 0.72	**The performance frontier: Innovating for a sustainable strategy** The study tracks companies in 2002- 2011 and tries to uncover the relationship between financial performance and performance of ESG (environmental, social area and management). The article features the "The Performance Frontier" model. The article also brings several case studies of companies. ESG = Environment, Social and Governance Criteria	There are many ESG areas which could have a major impact on financial performance: (from emissions, water and energy consumption and waste management through workflows, community development, employee safety and management rewards.) The significance of the area in creating the long-term value of shareholders depends on the business sector (carbon emissions are much more important for coal-fired power stations than for the bank) as well as on the specific strategies applied (human rights are more important for a low-cost workforce company in developing countries than for a company employing skilled workers in developed countries).
Das	2013	**Social Responsibility Journal** ISSN: 1747-1117	**Corporate social reporting and human resource disclosures: experiences from insurance companies in India.** With the use of content analysis, the qualitative data published in the annual reports of 26 insurance companies is analyzed. The article focuses on insurance companies' annual reports in India.	The study followed the 2002/3 - 2009/10 reports and found that non-life insurers showed significantly fewer social indicators than life insurance companies. The study also reveals that public insurers of life insurance published significantly more social information than other life insurance companies. The relationship between ownership and CSR / sustainability reporting was also examined by a paired t-test.
Fabius, et al.	2013	**Journal of Occupational and Environmental Medicine** ISSN: 1076-2752 Impact factor: 1.861	**The Link Between Workforce Health and Safety and the Health of the Bottom Line: Tracking Market Performance of Companies That Nurture a "Culture of Health."** The study tracks stock market performance for companies that have been awarded the Corporate Health Achievement Award winners (ACOEM).	A longitudinal study from 1997-2012 and 1999-2012 (4 different research scenarios). An investment portfolio was created to monitor the share price of ACOEM winning companies. Using the simulation and market performance in the past, an initial investment of $ 10,000 was tracked between 1997-2012 (1 scenario) and 1999-2012 (3 scenarios). The study found that companies that build a corporate culture with a focus on the well-being and security of their workforce bring greater value to their investors.
Schaltegger, et al.	2012	**Society and Economy** ISSN: 1588-9726	**Applying the known: a longitudinal analysis of the knowledge and application of sustainability management tools in large German companies.** This longitudinal study focuses on the operationalization of sustainability at the corporate level - the theory knows many different sustainability tools, but little is known about their adoption and implementation.	Three empirical researches in 2002, 2006 and 2010 are looking at which sustainable management tools are known and used in practice. One of the important outputs is that the awareness / knowledge of the concepts and their application have a positive correlation.
Ioannou, Serafeim	2012	**Journal of International Business Studies** ISSN: 0047-2506 Impact factor: 5.87	**What Drives Corporate Social Performance? The Role of Nation-level Institutions** Corporate Social Performance (CSP) - is being examined, especially from the point of view of the impact of institutional activity at the state level, on these factors. A sample of 2000 companies from 42 countries was observed for seven years. For each business, the CSP annual index was based on social and environmental metrics.	The authors found that the political system, followed by the work and education system, and the cultural system are the most important categories that affect the CSP - corporate social performance. Surprisingly, the financial system has a relatively less significant impact.
Starke, et al.	2012	**Management Research Review** ISSN: 2040-8269	**Impact of ISO 9000 certification on firm performance: evidence from Brazil** This longitudinal study validates the so-called signaling theory in the context of organizations.	The authors examined the impact of adopting standards in 1995-2006 on the financial performance of companies using three regression models.
Aldamoe, et al.	2012	**International Journal of Human Resource Studies** ISSN: 2162-3058	**The Mediating Effect of HRM Outcomes (employee retention) on the Relationship between HRM Practices and Organizational Performance** The study examines the mediated role of HRM results, such as staff retention in relation to human resource management practices and organizational performance. The main objective of this study is to investigate the mediating effect of HRM (employee retention) outcomes on the relationship between human resource management processes and organizational performance.	242 organizations and HR 484 managers surveyed. Questionnaires with a 5-degree Likert scale evaluating the degree of consent. For data analysis from field research: Descriptive analysis (summary of respondents profile and their organizational structure), factor analysis (data reduction) - rotation with varimax, correlation analysis (for confirmation of hypotheses). The author notes that retention of employees is likely to mediate the relationship between human resource management processes and organizational performance.
Ameer, Othman	2012	**Journal of Business Ethics** ISSN: 1573-0697 Impact factor: 2.354	**Sustainability Practices and Corporate Financial Performance: A Study Based on the Top Global Corporations.** Longitudinal study of 2006-2010 tracking 100 sustainable businesses and their financial performance.	Companies were monitored against a control sample of the same range. It was found that the significantly higher average of the financial indicators (PBT, ROA, cash flow, etc.) was shown in the case of sustainable firms in certain sectors compared to the control sample.

Source: Authors

Tab. 2: Corporate Sustainability, Sustainability of HR, Sustainability Reporting – Cross-sectional Studies, Reviews, 2012-2017

Author	Year	Name, contents	Description/ methodology/outcomes
Courrent, et al.	2016	**Do Entrepreneurial SMEs Perform Better Because They are More Responsible? Cross-sectional study.** The study considers sustainable practices - Environmental Practices, Social Workplace Practices (SPW) and Social Practices in the Community (SPC) - as three likely mediators in the relationship between business orientation and performance.	Data from 406 SMEs were tested on the modeling approach of the structural equation. It has been found that business orientation has a positive impact on the implementation of sustainable practices and that social practices in the workplace partly mediate the link between entrepreneurial orientation and performance.
Hosseininia, Ramezani	2016	**Factors Influencing Sustainable Entrepreneurship in Small and Medium-Sized Enterprises in Iran: A Case Study of Food Industry. Cross-sectional study.** Efforts to identify social and environmental factors that affect sustainable business in SMEs.	A sample of 142 respondents, data analyzed using descriptive and inferential statistics. 8 factors were selected according to the respondents' preferences (the most important for the sustainability of entrepreneurship from social factors: customer orientation and human resources)
Kelana, et al.	2016	**HR sustainability practices instrument comparative analysis in Malaysian SMEs. Cross-sectional study.** The Impact of Implementing Sustainable HR Practices through HR Strategy on SME Employee Productivity.	Conducted using the tool used to measure the impact of Sustainability of Human Resources on SME productivity through HR policies. This tool is based on the research model introduced by Gollan (2000), "Model Factors Affecting HR Sustainability".
Pasban, Nojedeh	2016	**A Review of the Role of Human Capital in Organizations. Cross-sectional study.** The text deals with human capital and HR roles in the organization.	100 analyzed texts with the result of the most common index, and that is the human aspect.
Rodriguez-Fernandez	2016	**Social responsibility and financial performance: The role of good corporate governance – Cross-sectional study.** The aim of this theoretical-empirical study is to investigate the bi-directional relationship between corporate social responsibility and financial performance. The survey was carried out in Spain in 2009.	The results of this analysis provide evidence that the adopted social strategies in firms increase their financial resources and, on the contrary, that increased financial performance leads to greater social benefits. Dependent variable: financial performance, independent variables: GRI, DJSI, COMPL.RECOM, GC, control variable: LNASSENT.
Ehnert, et al.	2015	**Reporting on sustainability and HRM: a comparative study of sustainability reporting practices by the world´s largest companies – Cross-sectional study.** Focus on reporting HR activities of internal employees compared to employee reporting in the supply chain, reporting companies in co-ordinated market economies (CMEs - Germany, Austria, Scandinavia) and liberal market economies (LMEs - United Kingdom, Canada, USA, Australia)	Comparative study, content analysis. Sustainability Reporting of 250 Best Companies by Forbes. The results show that rather internal HR data than the supply chaing HR data are reported. Surprisingly for the authors of the study, reports on corporate management structures from CMEs countries were not under such a strong control (trade unions, works councils, etc.) as expected.
DePrins, et al.	2014	**Sustainable HRM: Bridging theory and practice through the *Respect Openness Continuity (ROC)-model* – Literature Review.** A three-dimensional model "ROC" to express sustainability in human resource management.	During the development of the Sustainable Human Resource Management Model, various theoretical aspects beyond the strategic tradition of human resources are examined. Their potential for contributing to a framework for sustainable human resource management that can overcome theory and practice is assessed.
Kramar	2014	**Beyond strategic Human Resource Management: Is sustainable Human Resource management the next approach? – Literature Review.** Based on the literature review, to determine whether the sustainable HRM is a further developmental stage after the strategic HRM.	Analysis of 90 studies. Sustainable access to HR management is somewhat controversial to the strategic HRM, as the latter focuses primarily on financial performance. Sustainable HRM increases the importance of explicitly expressing the moral dimension of HRM.
Hahn, Kühnen	2013	**Determinants of sustainability reporting: a review of results, trends, theory, and opportunities in an expanding field of research – Literature Review.** The aim is to find out what determinants of sustainability reporting are examined in the literature and to identify the (in)consistency in the approach. Identify the direction of future research.	Content analysis of 178 journal articles on business, management and accounting. Recorded shift from separate social or environmental sustainability reports to an integrated or a comprehensive TBL report.
Singh, et al.	2012	**An overview of sustainability assessment methodologies - Literature Review.** Examines existing sustainability indicators and their subcategories; deals with the formulation of strategies, the process of producing these indicators and their benchmarks or their introduction of standards.	The paper provides an overview of 41 sustainability indices and their subcategories (sub-indicators). Social or HR aspects are, for example, the Human Development Index, the Well Being Index, the Index of Sustainable Society and others.
Torugsa, et al.	2012	**Capabilities, Proactive CSR and Financial Performance in SMEs: Empirical Evidence from an Australian Manufacturing Industry Sector – Cross-sectional study**. Proactive CSR has been less explored in small and medium-sized enterprises (SMEs) compared to large firms. Australian research trying to fill the gap.	Using quantitative data (171 SMEs) in the machinery and equipment sector of the Australian manufacturing industry, it was found that all of the capabilities set out are positively linked to the adoption of proactive CSR by SMEs and that proactive CSR is also associated with improved financial performance.
Aldamoe, et al.	2012	**The Mediating Effect of HRM Outcomes (employee retention) on the Relationship between HRM Practices and Organizational Performance – Cross-sectional study.** The main objective of this study is to investigate the mediating effect of HRM results (employee retention) on the relationship between human resource management processes and organizational performance.	242 organizations and HR 484 managers surveyed. Questionnaires with a 5-degree Likert scale evaluating the degree of consent. For the analysis of data from field research: descriptive analysis (summary of respondents profile and their organizational structure), factor analysis (data reduction) - rotation with varimax, correlation analysis (to confirm hypotheses). In conclusion, the author states that retention of employees probably mediates the relationship between human resources management processes and organizational performance.
Cohen, et al.	2012	**HRM's role in corporate social and environmental sustainability - Literature review** Report from the SHRM Foundation Research - Human Resources and Corporate Social and Environmental Sustainability	Survey of studies, books and professional articles. New models - eg: Balanced Indicator Model for Strategic HRM mentioned. It defines the organizational prerequisite for sustainability applications.

Source: Authors

4   Discussion

The above charts show a limited number of longitudinal (19), cross-sectional and literature review studies (13) that fit the scope of the project for which the review has been prepared. Papers in Chapter 3 are not included in the References as the amount of resources was limited. More detailed list is presented in the outcomes of the project. Longitudinal studies are generally preferred as the data projected over a period of time bring more reliable results and can reveal certain patterns. The cross-sectional studies, on the other hand, may serve in-depth research in a given time period analyzing behavior of the sample capturing a specific point of time. Some studies offer possibility of their methods' replication, other may answer the research question. For example, Ameer & Othman (2012) in their 2006-2010 longitudinal study statistically tested the relationship between the company's reported corporate responsibility and the firm's financial performance across 100 sustainable global firms. The study also focused on the content analysis of the corporate reports. Their research methodology could be built on, and original research can be conducted when the four areas of corporate sustainability (community, environment, diversity and ethical standards) are replaced by four logically grouped parameters concerning HR (employment, health & safety, education & talent management and equal opportunities) each further subdivided into four areas and evaluated on a scale 1-3, calculating an HR reporting index. Regression model can further be used having the HR reporting index as an independent variable, financial performance (PBT) as a dependent variable and size of a company as a control variable. Ameer & Othman's (2012) study revealed that a significantly higher average value of financial indicators (PBT, ROA, cash flow, etc.) had been shown by sustainable firms in certain sectors compared to the control sample. In terms of financial performance and (HR) sustainability and their reporting, the following was found.

Fabius et al. (2013) uncovered that companies building corporate culture with a focus on well-being and safety of their workforce bring greater value to their investors. Between 1997 and 2012, the study monitored the development of stock prices of corporations receiving the Corporate Health Achievement Award. Goezel et al. (2016) analyzed the period of 2000-2014 focusing on the companies winning the C. Everett Koop National Health Award for being socially responsible and investing in the health and welfare of its employees. Then the authors compared the companies with other publicly traded firms. There was a 325% appreciation of the shares of responsible companies compared to 105% of the market average. Grossmeier et al. (2016) watched high-scores of companies for HERO (management practices for employee

health protection) for the period 2009-2014. It was found that these firms valued their shares by 235% compared to the market average of 159%. Eccles et al. (2014) published longitudinal research of 90 companies and a control sample of the same number. It was revealed that companies with a high degree of sustainability had been directly involving their governing board in the issue of sustainability. During the 18-year-long period, firms with a high degree of sustainable behavior provided better financial performance with regard to both their accounting and equity markets. The study called Human Capital Reporting (2016) of the British Chartered Institute of Personnel and Development was developed to evaluate the current standards of non-financial human capital reporting used by 100 companies from the Financial Times Stock Exchange in the UK. The research revealed an overall increase in reporting in the field of human resource development. Finally, the results of the Rodriguez-Fernandez's study (2016) of 50 Spanish companies registered at the Madrid Stock Exchange show that the social strategies adopted in companies increase their financial appreciation and, on the contrary, that increased financial performance leads to greater social benefits.

Conclusion

The goal of the paper was to compile and introduce a literature review focused on corporate and HR sustainability, responsible managerial practices and the possible impact of these factors (and their reporting) on firms' financial performance. Practical implications of the paper can be drawn for organizations, as the discussed studies proved responsible (social) behavior contributing to increased financial performance and appreciation of companies on the stock exchange markets, which may become inspirational. Implications for researchers can be drawn from the proof having been brought in the form of the literature collection about responsible behavior of companies (also those focusing on HR) showing positive correlation in terms of increased financial efficiency. The collected articles might inspire further research. These future studies can be compiled to support the already existing research trying to collect more evidence on the fact that human capital - a key asset of an organization - and a sustainable approach of companies towards it may lead to competitive advantage and long-term sustainable operation.

Acknowledgment

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Contact

Stepanka Hronova

University of Economics in Prague

W. Churchill Sq. 1938/4, Czech Republic

hros00@vse.cz

Jitka Srpova

University of Economics in Prague

W. Churchill Sq. 1938/4, Czech Republic

jitka.srpova@vse.cz

CAUSE RELATED MARKETING FROM THE SLOVAK CONSUMERS' PERSPECTIVE

Zuzana Huliaková – Zdenka Musová

Abstract

Purpose: The success of the cause related marketing is highly depending on the customers and their willingness to participate in the cause related marketing projects. The aim of the paper is to present the results of the analysis the willingness of the Slovak consumers to participate in the cause related marketing projects and also to examine the difference between their approaches based on their gender, age, education and disposable income.

Design/methodology/approach: The data were obtained through the questionnaire research which was realized on research sample of 415 respondents from Slovakia. Respondents expressed their approach towards three statements through 7-point Likert scale. The data were processed with Mann Whitney U test, Anova test and Spearman Correlation Coefficient.

Findings: The results of the research indicate that Slovak consumers are willing to participate in the cause related marketing, but their willingness may decrease with the need to change the preferred brand of the product or pay higher price for the product. From the socio-demographic characteristics, only gender of the consumer has influence on cause related marketing perception while the women have more favourable attitude.

Research/practical implications: When applying the cause related marketing the companies should take into consideration the sensitivity of the consumers towards price increase of the products related to the good thing. Products which are mostly purchased by women have higher probability to be successfully implemented in cause related marketing projects.

Originality/value: The paper develops the current awareness about the perception of cause related marketing by Slovak consumers. The paper presents how socio-demographic characteristics determine the willingness of the Slovak consumers to participate in the cause related marketing.

Keywords: Cause related marketing, Slovak consumers, socio-demographic characteristics

JEL Codes: M14, M31

Introduction

The companies work in dynamically changing global environment. If they want to succeed in the fight for the customer and have stable market position, they have to emphasize not only economical, but also social and environmental values. Socially responsible marketing, as the integral part of holistic marketing, emphasizes bigger ethic, legal, environmental and social responsibility in the marketing management (Poliacikova, 2017). One of the innovative marketing approaches of the responsible companies is also the cause related marketing.

1   Theoretical background

Cause related marketing (CRM) is important tool of the sales promotion in developed countries. It is a commercial activity, mutually beneficial partnership of the businesses and non-profit organizations which leads to supporting of the "good causes", respectively it contributes to solve the all-society problems. The consumers are involved into the projects in many various ways. CRM is considered as break-through tool of the responsible behaviour of the companies. We can see its practical application in the economical level (responsible approach to the customers), social level (connection to the philanthropic activities to support the various communities) and environmental level (support of the environmentally oriented projects).

CRM as a part of the socially responsible marketing is considered by Drumwright and Murphy (2001) as the strategic marketing form of the cooperation between profit and non-profit organizations in which the non-profit subject offers its name, image, logo or the licence to support the business or sale of its product. The company offers some kind of reward to the non-profit subject - percentage share from sale of products, time or another nonmonetary fulfilment, for example spreading of the information about the social issue.

In the scientific literature can be found several definitions of CRM. Authors approach differently to this concept and place it to the different position in the spectrum of traditional and social marketing. We can mention one of the first and currently often used definition from Varadarajan and Menon (1988) who state that the CRM is the process of formulating and implementing marketing activities that are characterized by an offer from the firm to contribute a specified amount to a designated cause when customers engage in revenue-producing exchanges that satisfy organizational and individual objectives. The CRM tries to achieve two aims – to improve the business efficiency and to help solve the specific cause. It is one of the modern marketing tools which connects company or the brand with the relevant social cause or issue to achieve mutual benefits (Hartmann, Klink, 2015). Mutual benefit of the participating

partners is mentioned also by Marconi (2002) who claims that the CRM is an activity based on which the company, non-profit organization or similar entity sells the image, product, service or the information for the benefit of both involved sides. The mentioned idea is also supported by Adkins (1999) who emphasizes that the important element is the partnership – the relation between the profit organisation and non-profit organization or the specific cause. The CRM uses traditional marketing processes and tools for achieving its aims.

Closer look at the cause related marketing activities is provided by the other authors (Barone et al., 2000; Christofi et al., 2014) who examined them from the business perspective as a subject those priority is to profit from these activities. It is considered as a strategy to gain marketing aims with the help of charity causes. Apart from the increase sales they see also the other functions, for example brand awareness, increase of satisfaction and loyalty of the customers, change of the customers' approaches to the product or the company. The non-profit organizations can get direct financial support thanks to the charitable activity, to make their activities and the organization itself more noticeable, get additional forms of support or widen the database of the potential donors. The involvement of the consumers widen the project is essential. If the triangle "for-profit organisation – non-profit organization – customer" is well compiled, functional and oriented not only to profit, but also to charity purposes of all involved partners (win-win situation), the CRM can be considered as the effective and ethic approach.

The campaigns of the CRM can have different forms. In the terms of standard and most often used forms (programs, ways of the realization) we can use the categorization of Adkins (1999), Pracejus and Olsen (2004) and Daw (2006):

- "product sales" – from the sale of the product – specially labelled with the logo of the campaign or non-profit organization – particular amount of sales is donated to cause;
- "purchase plus" – in the chain stores or in the other retail stores the customer will get the option to add contribution to the non-profit organization to the purchase;
- "new for old" – the customers are appealed to return their old product to the retailer when buying a new product. The "old" products can be renovated and given to charitable causes;
- "Buy One, Give One" – donation is communicated in the comparable form (for example one package = one vaccine; one euro = one planted tree etc.)

The choice of CRM programme is connected to the target segment on which the company is focusing on, to financial difficulty of the individual programmes and also to the need of additional activities required by the potential customers (Webb, Mohr, 1998). The programmes

are focused on the already existing potential customers, but also new ones. From the time point of view the programmes can be long-term or single activity

In practice, the success of the CRM significantly depends on the trust and positive perception of the consumers who are involved in such activities. The prediction of their approach and later behaviour is important when compiling and implementing the effective project of the CRM. In connection to this we focused on the research of the CRM perception in the context of Slovak consumers. Selected results are presented in the following part.

2   Research methodology

The main aim of the research was to analyse the perception of cause related marketing by Slovak consumers and to examine the influence of the selected socio-demographic characteristics (gender, age, highest achieved education, average disposable monthly income) on their willingness to participate in CRM campaigns. To evaluate the willingness of consumers and influence of the individual characteristics was analysed through three statements (S1-S3). Statements were presented to the respondents with the application of the seven point Likert scale in order to determine the degree of the acceptance of every single statement.

In order to meet the main aim, the quantitative empirical research has been carried out. Data were collected through online questionnaire during the November 2016. We received 415 correctly filled questionnaires. To achieve the representativeness of the research the purpose quota sampling was used. Research sample follows the structure of population in Slovakia in the terms of gender and age. From the total amount of the respondents there were 208 women and 207 men (50.12 % of women to 49.88 % of men Distribution/division of respondents according to the other socio-demographic characteristics are presented in table 1.

Fig. 1: Socio-demographic characteristics of survey participants

Age group	15 – 26 years: 86; 27 – 34 years: 74; 35 – 49 years: 132; 50 – 64 years: 123
Level of Education	Primary school: 5; High school without leaving certificate exam.: 49; High school with leaving certificate exam.: 170; Bachelor degree: 70; Master degree: 17; Higher university education: 4.
Income	0– 199 €: 20, 200 – 499 €: 85, 500 – 699 €: 123, 700 – 999 €: 112, 1000 – 1199 €: 36, 1200+ €: 31

Source: The authors.

When processing the results there were used selected mathematical-statistical methods (Mann Whitney U test, Kurskal-Wallis ANOVA and Spearman Correlation Coefficient). We presume that, in the distributions of qualities, there exist statistically-significant discrepancies at the level of $p < 0.05$.

3 Results

Precentral distribution of answers for all three statements is displayed in table 2. The statements motivate the respondents to think about their own consumer behaviour in connection to the CRM activities. The respondents were asked if they would be willing to select the specific product which supports the charitable idea (S1), if they would choose the same product if the price would increase (S2) or if they would select that product even though they would have to change the preferred brand for the brand which is connected with the charitable idea (S3).

Tab. 2: Attitude toward cause related marketing

Statement/Scale	Strongly Agree	Agree	More agree than disagree	More disagree than agree	Disagree	Strongly disagree	No attitude
S1: In the offer of few products/services which are in the comparable quality and price I select one which supports non-profit organization and the specific charitable idea.	13 %	23,9 %	29,6 %	19 %	8 %	3,1 %	3,4 %
S2: I am willing to pay higher price for the product/service which support non-profit organization and charitable idea	5,8 %	19,3 %	27,7 %	25,3 %	10,6 %	7,2 %	4,1 %
S3: I am willing to change my preferred brand of the product for other because the other one supports charitable idea.	4,6 %	13,3 %	21,7 %	29,9 %	15,7 %	8,7 %	6,3 %

Source: The authors.

When considering the real consumer behaviour, 66.5 % of Slovak respondents would be influenced in their consumer choice by the fact that purchase of the product can support the charitable idea. The rest of respondents (i.e. 30.1 %) would not change their shopping behaviour by this fact and 3.4 % of the respondents were not able to answer this question. In S2 and S3 we can see the worsening of the results in relation to the willingness to participate in CRM. Despite of the price increase (S2) there is still more than a half of the respondents willing to buy the product of the CRM with the aim to support the cause or non-profit organisation. In the situation when it is necessary to change the preferred brand, less than 40 % of respondents

indicate the willingness to support CRM and at the same time is the most frequent answer "more disagree than agree". All these results indicate relatively high unwillingness to change the consumer behaviour in favour of the social responsibility.

For investigating the influence of socio-demographic characteristics of consumers on their attitudes towards cause related marketing we analysed differentiation in respondents' responses within the followed statements. Considering the fact respondents had the option to select the answer "I cannot say" we had to adjust N respondents and exclude those who selected this answer. Achieved results are shown in table 3. The table 3 contains results of the U Mann Whitney test which was used for analysing the influence of the gender on the perception of CRM. According to the results from for all three statements, there are significant evidences for attitude differences based on gender (S1=0.00; S2=0.049; S3=0.00). On the confidence interval 95 % within the S2, and on the all common confidence intervals within the S1 and S3, we can expect the difference between the women's and men's approaches to participate in the CRM projects even though the participation would need paying the higher price or change of the preferred brand. This fact is also confirmed by the results of Spearman Correlation Coefficient, where we can observe statistically significant correlations between the statements and the gender of the respondent. However, it is important to remark that values of the correlations between the investigated parameters do not overreach the value of the medium dependency between variables, so the respondent's gender has only weak influence on the tendency to agree with the statements. Results show that when considering gender impact, Slovak women have a more favourable attitude toward CRM strategies than men. This fact is directly reflected in the cumulative quantity of the consensual answers of men and women (women: S1 = 75.5 %, S2 = 57 %, S3 = 48.6 %; men: S1 = 57.5 %, S2 = 49 %, S3 = 34 %).

Within the parameters as age, highest achieved education and disposable monthly income we realised Anova test results which are also shown in table 3. In none of these parameters exists statistically significant difference in the respondents' answers of the different age groups, different education category nor different income groups. Similarly, in the case of mutual correlations between statements and parameters, there are no significant correlations. Considering that the analysed statements are directly connected to the consumer behaviour, the income of the respondents was important for our research. Disposable income, as the important determinant of the customer's purchase abilities, can highly influence respondent's willingness to participate in the CRM project or even pay the higher price for the product which is related to good cause. We may assume that the higher the income of the respondent is, the less sensitive

the customer is on the cost advantage of the purchase. This fact was not confirmed by statistical testing. In linkage to the statement S2 was reached statistically significant correlation, but the correlation coefficient gains only weak non-linear correlation (ρ=0,135).

Tab. 3: The results of Spearman's Correlation and U Mann-Whitney/Anova test

		Spearman's Correlation				U Mann Whitney/Anova test			
		Gender	Age	Education	Income	Gender	Age	Education	Income
S1	ρ	**,283****	-,004	-,018	-,071	**,000**	,727	,943	,160
	P-value	,000	,938	,724	,172				
S2	ρ	**,102***	,051	-,085	**-,135****	**,049**	,544	,103	,162
	P-value	,049	,327	,102	,009				
S3	ρ	**,197****	-,004	,006	-,045	**,000**	,780	,214	,204
	P-value	,000	,934	,914	,388				

Source: The authors.

4 Recommendations for the business practice

Nowadays consumer has the power to choose from infinite amount of possibilities, which reflect its individual requirements. Consumer's behavior is influenced by plenty of determinants. In our research we focused on whether and how can the consumer be influenced by the cause related marketing. The results have confirmed that one of the aim determinants of the success of the CRM is consumers' perception towards cause related marketing. Favorable perceptions increase credibility of CRM and belief in benefits for the company, non-profit organization and the cause as well. On the contrary consumers with the negative perception towards CRM are usually behaving skeptically. CRM is perceived as controversial and as a method of misuse of the good name of the non-profitable organization to achieve own profit aims.

Thus, the presented research suggests some implications for business practice and future research. Considering the achieved results, we can state that there is evolving a space for the practical implementation of CRM on the Slovak market. In the process of planning, we recommend to thoroughly evaluate segments and focus on that target group in which there is biggest possibility of involving into the CRM projects. The focusing on the "Socially Concerned", who have positive approach to CRM, has particular importance. "Socially Concerned" consumers are actively searching for the causes, trying to find out as much information as possible and they are not questioning intentions of companies in CRM. Based

on our results the Slovak women will be more willing to participate in the CRM, we consider CRM campaigns can particularly suitable for promoting products for women. The marketing communication should also focus on this consumer segment. Since there has been no significant correlations within the other socio-demographic characteristics (age, income, education), the companies do not have to adapt to other segments significantly.

Moreover, we recommend to consider the usage of CRM by those companies which are not established on the market for long. These "new" companies can be confronted with the bigger unwillingness of the consumers to change the preferred brand for the newly established brand without considering the fact that it supports the "cause".

Conclusion

The aim of this paper was to present the partial results of the research in which we analysed the willingness of the Slovak consumers to participate in the projects of cause related marketing and also to examine the difference between their approaches based on their gender, age, education and disposable income.

With the general view on the achieved results we can state that the share of consensual answers was decreasing eventually. This result was expected, because within the S2 and S3 statements the consumers have to renounce something. In the S2 situation it is about spending additional financial resources and in S3 situation it is the need of change of the shopping behaviour. If the price of the product would increase because of the cause related marketing, more than half of the respondents would be willing to select this product, even if the prices of the other similar quality product would remain unchanged. Increasing the price of these products is not usual, more usual is the situation when the customer have to change the preferred brand for the one supporting the good thing. For this statement the most of the respondents disagreed. Most respondents expressed strong disagreement (29.9 %) which can be eventually considered as a positive result. Strong disagreement does not indicate the absolute conviction of the consumers on the change of the preferred brand. It is also necessary to state that when following the approaches through the statements we do not specify to which charitable purpose the contribution would be assigned and moreover we abstract the fact that the whole project of the cause related marketing is supported by other communication channels that could increase its attraction and influence the indecisive consumer.

When analysing the individual socio-demographic characteristics on the consumer's decision we identified statistically significant differences between the men's and women's answers within all the followed statements. The evaluation of the influence of individual parameters was realized by Spearman correlation coefficient, those results provided us with the similar conclusions. According the results we can state that only the gender can influence the perception of the cause related marketing. On the contrary, the age of the consumer, his highest achieved education and income do not determine this perception.

The results of our research may be relevant to the subjects which decide to realize the CRM projects and want to select the best target market. They are also a basis for a more detailed examination of the CRM issues.

Acknowledgment

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Contact

Zuzana Huliaková

Faculty of Economics, Matej Bel University in Banská Bystrica

Tajovského 10, 975 90 Banská Bystrica, Slovakia

zuzana.huliakova@umb.sk

Zdenka Musová

Faculty of Economics, Matej Bel University in Banská Bystrica

Tajovského 10, 975 90 Banská Bystrica, Slovakia

zdenka.musova@umb.sk

ENTREPRENEURIAL THINKING: TOWARDS DRIVERS OF INNOVATION PROCESSES IN PUBLIC SECTOR

Iuliia Iliashenko – Patrizia Gazzola

Abstract

Purpose: The paper aims to provide contribution to the literature devoted to the public-sector innovations research providing new insights considering approach which discover entrepreneurial thinking as one of the intra-organizational antecedents in the innovations within public organizations. Moreover, the study seeks to provide new theoretical perspective on to the entrepreneurship in public context from the standpoint of the concept of knowledge-based entrepreneurship with regard to the innovation process.

Design/methodology/approach: In order to provide systematic approach this study performs literature review via three-stage procedure of paper selection from Google Scholar and One Gale databases for the period of 1985 - 2017. Being in consistency with the purpose of the paper, the main criteria of eligibility is consideration of the entrepreneurial orientation and behaviour within public sector from the standpoint of innovation and efficiency. In addition to develop empirically-based conceptual framework of mapping the entrepreneurial thinking within the processes of the formation of innovation enabling conditions we select only studies applied empirical methods.

Findings: The findings suggest that the entrepreneurial thinking in public context perform function of drivers of the innovation process at both: individual and organisational level. Align with considering potential impact on two levels, it provides theoretical framework of cumulative effect, based on one of the core principals of knowledge–based entrepreneurship - optimal use of knowledge and human capital.

Research/practical implications: The paper embraces implications for the innovation strategy development for public sector organisations, concerning how to foster innovation more effectively by supporting the motivation of entrepreneurial thinking among public employees. It opens new areas for future empirical research, for instance to identify the determinants of entrepreneurial thinking in public context.

Originality/value: This paper fulfils the revealed gap at the conceptualisation of the entrepreneurial thinking and acting within public organisations with respect to the concept of innovations within organizations.

Keywords: Public sector innovations, public sector entrepreneurship, knowledge-based entrepreneurship, entrepreneurial thinking

JEL Codes: L32, L26, O31

Introduction

Since the researchers revealed the importance of the public-sector impact on the national innovation systems, consequently the issues related to the innovativeness of the public organisations have gained a considerable scholar attention as well. While some scholars highlighted functions of the public sector organisations within innovation system development (Maloney, 2017, Varblane and Dyker, 2007), others considered the structure and nature of its inputs (Reiljan, Friedrich and Paltse, 2012). Although the innovative public services is to be driving force of great importance for business sector innovations (Peter, et al., 2013), the peculiarities of the public sector from the standpoint of innovations still remains undisclosed due to the complexity of its structure, taking into account that it embeds a significant number of the subsectors related to the public goods production and public services provision. Whereas the issues of public-private technological transfers, peculiarities of the health care and educational establishments and other public research institutions are well-studied, other sectors (such as utilities, security etc.) which are also highly connected to the urban sustainable development typically remains uncovered and underestimated from the angle of "innovativeness". In particular, Reiljan et al. (2012) considering the constituent elements of knowledge inputs provided by public sector from the standpoint of innovation highlighted the importance to take into account the development of the innovative processes within such public organizations as "public utilities and public industrial companies" (Reiljan et al., 2012, p. 329) align with health care and research institutions. Such misbalance in studies is also partially explained by findings of the studies which investigates the facilities of national innovation systems development due to the revealed path-dependency difficulties in comprehension of industries of different tech level (Varblane et al., 2007).

In fundamental sense it implies the lack of the rigorous and conclusive analysis of innovation activities by sectors in public context at both intra- and interorganisational level which result in overlooking of its direct and indirect impact on innovation system in a whole that could be quite significant for the resulting effectiveness of the innovation policy, taking into the consideration supportive function of the majority of public subsectors. Consequently, in order to provide higher level of generalization and consistency it is reasonable to find out appropriate "common denominator" which will allow to reclaim existing misbalance and discover peculiarities of the innovation processes within organization of different public subsectors much deeper than only from the standpoint of public R&D expenditures and public research institutions practices exploration. In this paper we seek to reveal such kind of "denominator" by focusing on the set

of internal cognitive processes of public organisations which are to be reflective from the purpose to untangle the determinants of their propensity to innovate. As far the innovation in public sector in its turn is fostered by interplay of policy agencies and managerial structures from one side and interrelation with public employees which appears as a result of public participation, it is also necessary to consider the peculiarities of this processes at different managerial level (Park et al., 2014).

In general innovations being driven by shared knowledge and do not occur in an isolated organizational space, in such a way the employees who demonstrate propensity to behave entrepreneurially become the background for the organizational innovation (Ireland et al., 2006). Thereby in order of mentioned problem disclosure we are going to proceed as follows: primarily, we consider the concept of knowledge-based entrepreneurship (KBE) with respect to the issues of the public sector innovations on the base of systematic literature review for the period of 1985-2017. Literature review incorporates papers devoted to the consideration of the different patterns of entrepreneurship in public sector. First, we seek to treat the entrepreneurial thinking consideration on the base of generalisation of entrepreneurial "issues" (for instance, entrepreneurial orientation of public organisations, corporate entrepreneurship in public context, etc.) within context of public sector innovation activities, that allows to treat them further with respect to its impact on the innovativeness of public organisations through the conjunction with knowledge spillover theory of entrepreneurship. Secondly, we seek to provide mapping entrepreneurial thinking within internal processes of public organisations innovative activity on the base of the discovering of the interrelation between determinants of KBE and enabling conditions formation of the innovation activity within public sector. Thereby, we aimed to deepen understanding of the role of inherent level of the entrepreneurial thinking of public managers and employees among other antecedents in framing of conductive conditions for public organisations to innovate.

1   Knowledge-based entrepreneurship concept in public context

Previously scholar attention devoted to the issues of entrepreneurship within public context was traditionally drawn to the capabilities of efficiency increasing as a result of the free-market tools application. The important findings on this aspect were highlighted in executive summary of Global Centre for Public Service Excellence (2015), it stated that in fact greater level of the efficiency cannot be assigned as inherent to any particular model of ownership regardless the specific of each sector, moreover the provision of services are more and more acquiring a hybrid

public-private characteristics. Simultaneously, the effects of such "changes in nature" on processes of the technological modernisations and efficiency of applied innovation policy have not found enough reflection in academic literature. Therefore, studies devoted to the role of public sector R&D within national innovation system are non-systematic and inconclusive; the main question still remains undisclosed: What is the reason of being entrepreneurial while staying public?

Hence, the study of the entrepreneurial thinking as specific strategic toolkit that represents entrepreneurial orientation of public organisations with respect to its innovativeness as another reflective indicator within efficiency analysis gains increasing scholar interest (Lewandovski, 2017). To be innovative for public organizations first of all means to be able to react on constantly increasing society requirements towards resources availability, quality of public goods and services and support of the environment protection standards, i.e. to provide higher efficiency level, while being entrepreneurial means to act creatively and proactive in order to enable innovations within organization. This reasoning allows to distinguish the entrepreneurship in public sector as knowledge-based, i.e. to assign it to such subset of entrepreneurial activities that is based on "the new knowledge with potential of commercialisation" (Witt et. al., 2005, p. 1).

In order to reveal the place of the knowledge-based entrepreneurship concept with respect to innovation processes within public organization we provide by the precise content analysis of literature devoted to the public sector entrepreneurship and public sector innovation for the period from 1985 to 2017. The last two decades of XX century is marked by emergence of particular massive of scientific literature devoted to the issues of public-private partnership and discussing other management models in public sector from the standpoint of efficiency within transition economies, which also led to reconciling of this issue within free-market economies (Nellis, 1999). That is why such particular period was chosen for the analysis. As a part of the methodology, we provide a systematic literature review performing the three-stage selection process of the eligible papers.

At the first stage we distinguish papers which are present at Google Scholar and Gale Academic OneFile databases that disclose the issues of entrepreneurship within public sector (was considered approximately 1700 papers that was selected using such keywords as "public sector entrepreneurship", "entrepreneurial orientation of public organisation" and "public-private partnership"). At the second stage we excluded duplicates and papers directly devoted to the policy of liberalization instead of organization performance issues (total number of the papers chosen after "filter-stage" for the whole period of analysis accounts 1052). And finally we provided a content analysis from the standpoint of "innovativeness" in order to highlight main trends and revealed the specific interrelations between "entrepreneurship" and "innovations" within public context. In order to analyse interrelation mentioned above we distinguished four key categories: the first one – "public sector entrepreneurship" incorporated final set up of selected papers in each five-year period starting from 1985; the second – "public sector efficiency" – includes papers opted from previous category which consider the issues of entrepreneurship with respect to the efficiency of public organisations; the third – "public sector innovations" – as previous one, it involves papers from set up of the first category which cover entrepreneurial orientation within public sector in regard to the innovativeness of public organisations; the fourth "knowledge-based entrepreneurship within public sector" – incorporates papers from the first set up that also seek to address issues of role of knowledge while discover the peculiarities of innovations in public sector. The result is presented at a figure 1.

Fig. 1: Comparative structure of the literature devoted to the entrepreneurship at public sector with respect to the subject of consideration

Source: authors' elaboration
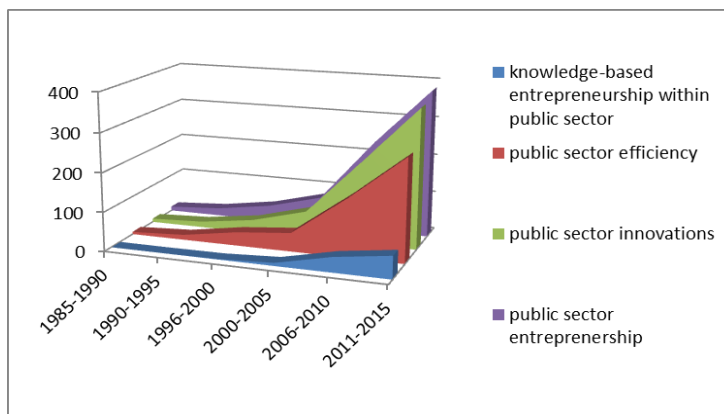
Due to the results of analysis, it was revealed that in average 90% of papers which considered entrepreneurship in public sector simultaneously considered issues devoted to the innovations at public organization, while 75% also touched the problems of its efficiency. In addition, from 2004 was noticed shift towards consideration of innovations at public organistaions through the joint lens of the theory of public sector entrepreneurship and knowledge spillover theory of entrepreneurship.

Generalizing the results of literature review analysis for the period after 2004, it is reasonable to highlight that among of the main contribution of the public sector to the innovativeness scholars distinguish knowledge diffusion and entrepreneurial experimentation (as a reaction on the uncertainty as inherent feature of the development processes) (Bergek, Lindmark, & Jacobsson et al., 2008). Varblane et al. (2007) highlighted the importance of such function of the public sector R&D activities as knowledge diffusion maintenance (Varblane et al., 2007). Such functions-based approach with orientation on knowledge-enabling processes is able to provide required availability of cross-sectorial treatment of the innovation processes within public context. The majority of publications related to the issues related the displays of the entrepreneurial thinking within public sector were concentrated in Journal of Public Administration, Public Management Review, International Entrepreneurship and Management Journal, Entrepreneurship theory and practice, Entrepreneurship and Regional Development, Small Business Economics, International Journal of Public Sector Management.

At the same time, we identified the lack of the conceptualization of and knowledge diffusion processes of public organizations' innovative activity. Hence the internal cognitive processes which are stipulated by the entrepreneurial knowledge-sharing behaviour at public organisations is to be treated as the common indicator within innovative processes of different public subsectors that covers processes of the knowledge diffusion and knowledge accumulation at public organisations. Thereby incorporation of knowledge-based approach into the theory of public sector entrepreneurship requires a revision of the basic dimensions of entrepreneurship in the public sector in terms of the efficiency of internal processes of knowledge enabling and knowledge sharing in order to achieve greater innovative capabilities of public organisations.

2 Mapping entrepreneurial thinking within conceptualization of the innovation-enabling processes in public context

In order to provide empirically-based dependable theoretical framework and avoid problem of ambiguity, we conceptualize results of the studies which applied empirical methods (35% of the total number of considered papers). Based on the systematic literature review on the analysis of entrepreneurial orientations within public context (Rogowska et al., 2017) we state that determinants of KBE also plays role of conditioning factors of entrepreneurial orientation in public context at both: organizational and individual levels. The cognitive outcomes of these processes are supporting entrepreneurial thinking though the creative behaviour empowerment

at organizational level and exploiting entrepreneurial intentions at individual one via displays the innovative behaviour at the workplaces.

According to the De Vries et al. (2016) classification of the antecedents of public organizations' innovation activity, the organizational antecedents includes such factors as resource management, leadership styles, degree of risk aversion, incentives, etc., while individual comprises following indicators: employees autonomy, job-related knowledge and skills, creativity, job satisfaction, etc. (De Vries et al., 2016). As far depending on the context antecedents could act as drivers or barriers, cognitive outcomes of the entrepreneurial orientation provide influence on the antecedents via knowledge-enabling processes (at organizational level) and knowledge-application and sharing processes (at individual level) setting the direction of their transformation into the drivers, in such a way jointly framing the environment enabling to the innovations for public organisations. Enabling environment in its turn is represented through a set of conductive conditions highlighted by Demircioglu and Audretsch (2017) as significant: experimentation capabilities, ability to roll out outdated infrastructure, feedback expectations, motivation for improvement (Demircioglu and Audretsch, 2017). Based on the pervious reasoning we propose the conceptual framework of the formation of enabling conditions for public organizations to innovate through the lens of the determinants of KBE (see figure 2).

The framework in public context, in principle, works in the same line as was discovered under World Bank research (2002), due to which findings in order to achieve greater level of innovativeness organizations need to encourage internal motivation for changes from one side and organizational capability to accept new technologies, from the other. Both of these sides is measured from the standpoint of "awareness" indicators (in particular, awareness of need to change, awareness of what and how to change). Consequently, entrepreneurial thinking in combination with knowledge management is significant triggers for innovation processes enabling within public organisations reflecting the features of the joint private and public initiatives within hybrid public-private characteristics. Thereby, the consideration of the fostering conditions of public sector innovations via determinants of the knowledge-based entrepreneurship implies the most comprehensive coverage of the internal processes which stay behind the innovation activities of public organisations.

Fig. 2: Mapping KBE determinants within conceptual framework of the processes of enabling conditions formation for innovations at public organisations

Determinants of the knowledge-based entrepreneurship:

Antecedents of innovation activity at public organisations

Formation of the enabling environment for innovation:

Entrepreneurial orientation of organisations

empowerment of creative behaviour / supporting entrepreneurial intentions

knowledge-enabling processes

- Entrepreneurial culture
- Technology-transfer office effectiveness
- Social capital
- Novelty of research outcomes
- Cooperation with companies
- Technology commercialization
- Support to research outcomes

Organisational antecedents

- Resource management
- Leadership styles
- Degree of risk aversion
- Incentives/rewards

Individual antecedents:

- Employee autonomy
- Job-related knowledge and skills
- Creativity
- Job satisfaction

knowledge-sharing processes

Enabling conditions for innovation:

- Experimentation capabilities
- Ability to roll out outdated infrastructure.
- Feedback expectations
- Motivation for improvement

Entrepreneurial orientation of employees

proactive and innovative behaviour in the workplace / exploiting entrepreneurial intentions

Source: Adopted from Moutinho et al. (2016); Demircioglu et al. (2017); Rogowska et al.(2017); De Vries (2016), author's elaboration.

The processes of opportunities recognitions are intentional, thereby treating the entrepreneurial intentions within existing public organisations as one of the internal drivers of innovation processes is to solve problem of specific public-private dichotomy of public organisations. Assessing the potential of entrepreneurial thinking as driver for public sector innovations, we also emphasizes its specific role of the tools for policy-makers in order to the form the conditions which are conductive in terms of innovation fostering within public sector organisations.

Discussions and conclusive statements

The main objective of this paper is to provide new theoretical insights to the public sector innovations researches from the lens of the knowledge-based entrepreneurship treatment within public organisations in order to provoke further empirical implications for further studies. In order to achieve this goal we propose the empirically-based conceptual framework of the processes of public sector innovations fostering from the standpoint of the KBE determinants to deepen the understanding of internal innovation conditioning processes at public organisations of different subsectors.

The previous studies are concentrated on the effect of the entrepreneurship in public sector from the angle of compering of the managerial model effectiveness leaving behind deeper investigation inherent internal characteristics of the public sector. Answering the question on the concern of being entrepreneurial for public organisations provides new perspective on the issues of its efficiency considering in terms of innovativeness. In particular, combination of the knowledge spillover theory with the concept of public sector entrepreneurship contribute conceptualisation of the entrepreneurial thinking within knowledge accumulation and knowledge diffusion processes at public organisations with respect to the innovativeness as one of the instruments to achieve its main goals of creating public values.

However the adjustment of the determinants of the knowledge-based entrepreneurship as a conductive condition to innovative activity in public sector requires thorough empirical investigation, thereby provides new directions for future empirical researches, for instance, to reveal the correlation between the entrepreneurial thinking and innovativeness of public organisations with respect the different levels of the organisations management or managerial models in a whole.

Incorporation of the concept of the knowledge-based entrepreneurship provides and reopens issues connected with internal processes that stay behind the public sector organizations' innovative activities taking into account the high level of the subsectors heterogeneity. It also proves necessity to explore the determinants of the entrepreneurial thinking within public organisations at intra- and interorganisational levels as it deepens understanding of the efficiency of the different types of policies and innovation strategies (i.e. policies oriented onto the agencies/organisational or those which provides impact on behavioural issues) and, accordingly, to choose instruments within particular policy more accurate.

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Contact

Iuliia Iliashenko
Department of Economics
Università degli Studi dell'Insubria
Via Ravasi. 2, 21100 Varese, Italy
iuliia.g.iliashenko@gmail.com

Patrizia Gazzola
Department of Economics
Università degli Studi dell'Insubria
Via Ravasi. 2, 21100 Varese, Italy
patrizia.gazzola@uninsubria.it

REGIONAL FACTORS DETERMINING INNOVATIVENESS OF ENTERPRISES IN POLAND – A CASE STUDY OF THE KUYAVIAN-POMERANIAN VOIVODESHIP

Alfreda Kamińska

Abstract

Purpose: The aim of this paper is to verify the thesis that there are a number of factors on the regional level which influence innovativeness of enterprises, and proper stimulation of these factors by voivodeship authorities may contribute to increasing the innovativeness of enterprises.

Design/methodology/approach: The conclusions are drawn from a survey performed in Poland on a sample of 265 small, medium, and large enterprises from the Kuyavian-Pomeranian voivodeship. The research analysed the impact of 27 regional factors on innovativeness of enterprises. Spearman's rank correlation coefficient was used to determine the relationship between the level of innovativeness of enterprises and the assessment of factors included in the study.

Findings: The research presented here has identified the relatively most important factors influencing innovativeness in each of five groups of region-level conditions.

Research/practical implications: The conclusions of the study are important information for voivodeship-level local government, which should focus its innovative policy more on the factors that the entrepreneurs judge most significant in stimulating innovativeness. The conclusions of the study may also be useful for the companies which aim at increasing their level of innovativeness, as well as for the institutions of business environment which offer services supporting implementation of innovations. They may contribute to an increase in the innovative potential of companies.

Originality/value: This paper seeks to systematise regional factors and present the size of their impact on innovativeness of enterprises.

Keywords: Innovativeness of enterprises, regional conditions of innovativeness

JEL Codes: O30, O32, R11

Introduction

An increase in innovativeness of enterprises is one of the key goals of the Polish economy for next several years (EIS, 2017, GUS, 2017). The dynamics of the processes of innovation and of various factors that condition them imply the need for systematic research to identify the factors that determine the innovativeness of enterprises. Mesoenvironmental regional conditions, largely dependent on local authorities, are consistently gaining in prominence aside from the micro- and macroenvironmental factors (Kamińska, 2017). The aim of this paper is to verify the thesis that there are a number of factors on the regional level which influence innovativeness of enterprises, and proper stimulation of these factors by local authorities of the given voivodeship may contribute to increasing the innovativeness of enterprises.

The matter of conditions of innovativeness of enterprises is one of the most frequently analysed issues in the study of innovativeness, however, the literature on it usually only considers microeconomic and macroeconomic circumstances. Meanwhile, we can see at present that the mesoeconomic context, understood as a collection of factors that come into play at a regional level and create conditions that are more or less conducive to innovative activity of organisations within a given region (voivodeship in our case), is becoming ever more important.

1   Region as a stimulator of innovativeness of companies – theoretical conceptualisation

Since the 1990s, several concepts that have developed emphasize the impact of the environment and region on innovativeness of companies. The territory (region) is not only where the material resources influencing innovative potential of companies are applied, but also where non-material resources are created through learning and reciprocal interactions between the entities acting in the area, who take advantage of physical proximity and communality of rules, norms, and aims, pool their knowledge and participate in implementing the innovations. Nowadays a region becomes the main source of information and innovativeness, and its role as an inspiration for innovative endeavours by organizations depends vastly on the actions of local government.

More and more authors believe that regions ought to be the "heart" of innovative processes and the regional level should be considered as crucial for actual progress. Ciborowski (2009) points out that regions have already gained significant capacity to perform actions of innovative character. Regional units are closest to the key participants of innovative actions, i.e. enterprises, universities, and research institutes, and they have a major role to play in promoting knowledge-based economy. Nowakowska (2011) emphasizes that innovation is a localized and

territorially embedded process, and innovative processes are a derivative of resources and regional mechanisms.

At the same time, as Jasiński remarks (2014), the mesoeconomic level of innovativeness management plays an important role. However, it is rather underestimated by researchers. The author presents a similar view, claiming that neither the scientific community nor economic practice offer appropriate recognition of the significance of regions in stimulating innovativeness. Moulaert and Sekia (2003), who analysed regional aspects of innovativeness, have introduced the concept of territorial models of innovation (TMI), similarly to Rothwell (1994), who categorized and ordered separate generations of innovative process models in organizations. They listed four generations (traditions) of regional models of innovation:

- first: millieu French innovative model, industrial districts, local systems of production, focused on local institutional endogenicity,
- second: regional systems of innovation, learning regions,
- third: new industrial spaces (Californian school),
- fourth: innovative clusters.

Nowakowska (2009) and Santos Cruz and Teixeira (2007) use a slightly different categorization. Taking into account the key elements of models and the time of their creation, they named three main categories of theories dealing with the regional context of processes of innovation: theories focused on resources, focused on network relations, and focused on institutions (system approach). Neoclassical theories of localization, formed in an era of agricultural and industrial economy, were based on resources. The 1970s saw the rise of concepts based on network relations between subjects. The major proponents of this view are Antonelli and Becattini, who studied the phenomenon of Italian industrial districts, as well as the representatives of the Californian school – Scott and Storper. In the 1990s, an age of knowledge-based economy, there was a sizeable rise of interest in the region as a place for creating knowledge and innovation. Numerous researchers, in accordance with the system model of innovative process, emphasized the significance of mutual interaction and connections between individual actors in the system, which constitute the expanded network of economic, educational, and scientific subjects. This line of thinking is supported by Aydalot – the author of the concept of innovative environment, Porter – regarded as the creator of the concept of clusters, Florida (learning regions, creative class), and Cooke and Asheim, who analyzed regional systems of innovation.

The study of territorial models of innovation helps to understand the regional context of innovative processes and the impact of regions on innovativeness of enterprises. Although the contemporary territorial models of innovation are very diverse, they do share common features. They emphasize the increasing importance of non-material factors in the form of knowledge, experience, social relations, and trust-based interactions between entities, which contribute to the innovative potential of the region and thus influence the innovative capacity of companies. The system models not only analyze cooperation between companies, but also recognize a new role for other institutions, scientific-research units, and public administration.

There are a great number of diverse types of factors impacting innovativeness of enterprises. The literature on it usually divides them into two major groups: endogenous and exogenous. Endogenous factors are a result of material and non-material resources available to the company, while exogenous factors are related to the broadly-understood environment – which is a part of the microenvironment, mesoenvironment, and macroenvironment, as well as the global environment. This paper analyses mesoenvironmental factors in a regional context, and a region is understood to be a given voivodeship.

The review of the subject literature (Porter, 2001, Broekel, Brenner, 2011 or Bellmann et al., 2013) and own experiences and observations give reason to name five main, codependent groups of regional conditions, which have been assigned 27 factors determining innovativeness of enterprises. They are listed in Table 1.

Inasmuch as the list cannot be considered complete or exhaustive of the all the possibilities of a region's impact on innovativeness in enterprises, it does provide a toolkit for the identification of the most important conditions and for an assessment of the extent of their influence.

2 Data and Empirical Results

The research has been performed by a survey accompanied by in-depth interviews with the management of the enterprises. The research tool for the survey stage was a questionnaire prepared by the author, while the research was conducted by the Centrum Badania Opinii Społecznej (*Centre for Public Opinion Research*, CBOS). The general research was performed between October and December 2016. The interviews were conducted by using the CATI (Computer Assisted Telephone Interview) method on a sample that was representative both in terms of size (due to the number of employees) and in terms of sectional activity (as per the Polish Activity Classification – PKD), which included 265 small, medium, and large enterprises

in the Kuyavian-Pomeranian Voivodeship. The structure of enterprises analyzed as part of the research is proportional to the structure of all enterprises in the regions: small (10-49 employees) account for 84.0% of the surveyed, medium (50-249) for 14.0%, large (250 and more) for 2.1%.

In order to better understand the problems that fall within the scope of the study and to capture the elements most important to entrepreneurs and the economy, the author interviewed several managers about the regional conditions of innovativeness of enterprises.

Based on the number of introduced innovations and their novelty, every enterprise was assigned to one of the following groups: very high level of enterprise innovativeness, high level of enterprise innovativeness, average level of enterprise innovativeness, low level of enterprise innovativeness, very low level of enterprise innovativeness, or non-innovative enterprise (Kamińska, 2017). Correlations (Spearman's rank correlation coefficient r_s) between the level of innovativeness of a given enterprise and the assessment of the analyzed factors were also calculated.

To determine the importance and impact of regional conditions on innovativeness of enterprises, the respondents were asked to evaluate 27 regional variables divided into five groups. They were asked to evaluate their importance on a five-step scale: very large (5), large (4), average (3), small (2), unimportant (1). These factors were then ranked based on the average evaluation score, as shown in Table 1.

Tab. 1: Impact of regional conditions on innovativeness in enterprises (average scores) and correlations between the innovativeness level of enterprises and the assessment of the importance of specific factors

	Average scores	Correlations between the innovativeness level of enterprises and the assessment of the importance of specific factors	
FINANCIAL SUPPORT OF REGIONAL AGENTS BY LOCAL GOVERNMENT			
Financial aid for investment in permanent assets	3.28	r_s	**0.216**[**]
		p	0.001
Subsidising and development of financial institutions, facilitating access of enterprises to capital	2.95	r_s	0.032
		p	0.614
Financial aid for autonomous R&D activities in enterprises	2.72	r_s	0.010
		p	0.872
Financial aid for purchase of consulting services, licenses, patents and so forth	2.71	r_s	**0.147**[*]
		p	0.020
Financial aid for cooperation with scientific research institutions	2.63	r_s	0.022
		p	0.733
Financing for creation and development of special economic zones	2.50	r_s	**-0.120**
		p	0.057

Financial support for creation and development of scientific research institutions and innovation centres	2.35	r_s	-0.069
		p	0.277
ORGANISATIONAL AND ADVISORY SUPPORT OF REGIONAL ECONOMIC AGENTS BY LOCAL GOVERNMENT			
Organisational and advisory aid for enterprises (including them in projects, organising conferences and training)	3.36	r_s	-0.019
		p	0.764
Engaging innovation centres in pro-innovative activity	2.87	r_s	**0.211**[**]
		p	0.001
Public procurement of innovative goods and services by local authorities	2.64	r_s	**0.198**[**]
		p	0.002
Investment in public-private partnership	2.43	r_s	0.038
		p	0.546
PROMOTING COOPERATION BETWEEN REGIONAL AGENTS BY LOCAL GOVERNMENT			
Price of services offered by institutions supporting innovation	3.53	r_s	0.057
		p	0.368
Local government aid for interregional and international cooperation (organising fairs, meetings, study visits etc.)	3.34	r_s	**0.307**[**]
		p	0.000
Facilitating cooperation with training and consultancy centres	3.25	r_s	0.080
		p	0.205
Tailoring the offer of business environment institutions to the needs of companies	3.00	r_s	0.103
		p	0.104
Location of institutions supporting innovativeness	2.98	r_s	**0.158**[*]
		p	0.012
Facilitating cooperation between enterprises and science	2.87	r_s	0.009
		p	0.888
Facilitating cooperation between enterprises and innovation centres	2.86	r_s	**0.119**
		p	0.059
Facilitating access to services of research institutions and laboratories	2.76	r_s	0.103
		p	0.102
Local government aid in the functioning of connection networks between enterprises and pro-innovation institutions, including clusters	2.71	r_s	0.061
		p	0.339
CREATION AND AUGMENTATION OF OTHER NON-MATERIAL RESOURCES OF THE REGION			
Local government aid for development of human capital	3.45	r_s	**0.169**[**]
		p	0.007
Creation of knowledge centres within the region and providing free access to market analyses, databases, information sources etc.	3.24	r_s	-0.036
		p	0.569
Promoting entrepreneurial and innovative attitudes in the region	3.22	r_s	0.093
		p	0.141
Increasing the capability of public administration to handle innovation and improvement of functioning of local administration	3.01	r_s	0.084
		p	0.186
CREATION AND AUGMENTATION OF OTHER MATERIAL RESOURCES OF THE REGION			
Development of transport infrastructure	3.88	r_s	0.098
		p	0.123
Development of communications and computing infrastructure	3.65	r_s	0.031
		p	0.630
Making the region more attractive for foreign investment	3.18	r_s	0.012
		p	0.846

r_s – Spearman's rank correlation coefficient, p – significance level.

** The correlation is significant at the level of 0.01, * the correlation is significant at the level of 0.05.

Other indicated cases – the correlation is significant at the level of 0.1.

Source: own research

Research shows that financial limitations are one of the most important barriers to introducing innovation (Kamińska 2016a). The most important financial factor for the realisation of innovative processes is financial aid for investment in permanent assets. This factor was given an average score of 3.28. The second most important factor – per the answers – is the financing and development of financial institutions (including lenders and guarantors, high-risk capital) and facilitating access to capital. This factor was rated at 2.95.

The respondents consider financial aid for autonomous in-house R&D to be the third most important condition (average grade of 2.72). They find financial aid for the purchase of consulting services, licenses, or patents to be less important, as it was rated at 2.71. The surveyed put financing the creation and development of special economic zones second to last, with an impact score of 2.50, while – in their opinion – the least important boost for innovativeness of enterprises is financial support for the development and creation of scientific research institutions and innovation centres (2.35).

Analysis shows a notable correlation in the Kuyavian-Pomeranian Voivodeship between financial factors and innovativeness level of specific enterprises when evaluating the importance of capital aid for permanent investments. This type of financial aid is more important for companies at a higher level of innovativeness, with Spearman's rank correlation coefficient (r_S) of 0.216 at probability value (p) of 0.001 (table 1).

The respondents consider direct aid for enterprises, including enlisting them in innovative undertakings and passing on necessary knowledge and information in conferences and training seminars, to be the most important element for increasing innovativeness, with a rating average of 3.36. Many enterprises believe that a broad engagement of innovation centres in pro-innovative tasks translates into a higher level of innovativeness in firms, and therefore they place that factor in second place, with a respective rating average of 2.87. This factor is more important for companies at a higher level of innovativeness ($r_S = 0.216$, $p = 0.001$). According to the respondents, public bids from local government have little impact on innovativeness, thus the average rates of 2.64. The last of the surveyed factors – development of investments in public-private partnership (PPP) – has been listed as the least relevant (2.43), which is appropriate considering the current situation in Poland in this regard, with one in five answers stating that is has no impact on innovativeness of enterprises. It is no surprise that organisational and advisory aid for enterprises, including bringing them onboard in innovative projects and providing training, has been rated the highest.

As for the promoting of cooperation of regional agents group, the respondents decided that the three most important factors for increasing innovation were: the price level of services rendered by innovation-supporting institutions (3.53), local government aid for interregional and international cooperation of enterprises (3.34), and facilitating access to training and consulting support (3.25). The results of many studies conducted in Poland indicate that a high price of services from business environment institutions is one of the principal barriers to innovativeness and development of enterprises (Kamińska, 2016a or Kamińska, 2016b).

When considering the differences in evaluation of different factors in this group and their correlation with the innovativeness level in enterprises, it appears that companies with a higher level of innovativeness place a much greater focus on facilitating access to research institutions ($r_S = 0.307$ with p below 0.0005).

The entrepreneurs see similar value in facilitating collaboration with the science sector and innovation centres. In the last place comes the help of local governments for clusters and other forms of cooperation.

Another investigated group of regional conditions were the various activities related to the creation and augmentation of non-material resources of the region. The analysis of replies suggests that in this group the largest importance is attributed to local government actions for the development of human capital (3.45). In the view of the respondents, promoting entrepreneurial and innovative attitudes in a region is more important than increasing the capabilities of public administration in innovation and improving its functioning. It is worth highlighting that projects accomplished as part of efforts to promote innovativeness and entrepreneurship are not costly and their introduction frequently depends solely on the will and activity of the local authorities. Of note are the high average notes of the factors in this group (average above 3.0) compared to other sets of conditions.

Referencing the evaluations with the innovativeness level of enterprises brings important conclusions. It appears that the relatively high rating of these factors is independent of the actual level of innovativeness a given company exhibits, except for local government actions to support the development of human capital.

According to the answers, all the listed material assets of a region are very important for innovativeness of enterprises. In this section, the highest rank went to the development of transport infrastructure, rated at 3.88. Second place went to the development of communications and computing infrastructure, where the average grade was also high, standing at 3.65.

Entrepreneurs believe that the development of innovative economic activity is very tightly connected to transportation and the information network, which allow for either face-to-face or computer-mediated communication with other agents, including suppliers and clients. Respondents give a high mark to actions intended to make a region more attractive to foreign investments (average ratings 3.18). This shows they are not afraid of competition from abroad, while remaining aware that foreign investment may contribute to the development of their enterprises and regions.

Conclusion

The research presented here has identified the relatively most important factors influencing innovativeness in each of five groups of region-level conditions. In the group of factors related to financial support from the local government, the respondents declared that the most important element is financial aid for investment in permanent assets as well as subsidising and development of financial institutions so as to facilitate access of enterprises to capital. The willingness of enterprises to invest in permanent assets testifies to their developmental needs and is a positive phenomenon for the economy as a whole. Considering the low degree of cooperation between companies and research and development institutions, it is no surprise that they rate financial aid to those institutions so poorly. Improving the cooperation between science and business remains a significant challenge for the coming years.

As for the local government organisational and advisory support, the most important factor was involving the enterprises in projects, organising conferences and training, and engaging innovation centres with pro-innovative activity. Entrepreneurs appreciate the importance of knowledge and information exchange for accomplishing innovative processes, prompting them to rate these factors highly.

Among the factors serving to inspire cooperation between various subjects in a region, the most important ones included the prices of services rendered by institutions supporting innovativeness and local government aid for companies in interregional and international cooperation. The former has been the main barrier for cooperation between science and business for years, while the willingness to cooperate with companies from other regions and countries is another proof that they have plans to develop.

In recent times, non-material assets have been attributed ever greater importance for the development of enterprises, regions, and countries. Among the factors creating and reinforcing

non-material resources of a region, involving the local government in developing the human capital (by handing out grants, stipends, organising training, promoting talent, tailoring education to fit the needs of the region and so forth) was deemed the most important. These are not overly costly actions; they do not call for significant financial burden on the local government, and their effectiveness depends on the knowledge of the local government and its actual commitment to the development of the local community. The task for local authorities is to shape enterpreneurial, innovative attitudes and educate for innovativeness. Another factor of great relevance in this group is the creation of knowledge centres in regions and free access to market analyses, databases, information sources necessary to bring about innovation processes.

In the Kuyavian-Pomeranian Voivodeship, expansions of transport and telecommunications infrastructure were declared as the most important factors in the creation and augmentation of a region's material resources group. Of note are high ratings given to this group of factors underpinning effective operations of enterprises. A developed transport and telecommunications infrastructure is a determinant of cooperation between entities, lowers the costs of business activity, and enables expansion into new markets.

When comparing the importance of the five groups of regional conditions, entrepreneurs place the creation of material and non-material resources in the first place. In turn, they attribute the least importance to financial support of regional agents, aside from subsidising investment in permanent assets of enterprises. Considering the high importance placed on financial factors on the micro- and macroeconomic level, it is a piece of information of both interest and importance for local governments who seek to conduct a policy of supporting innovativeness. At the same time, none of the factors reviewed in the survey received an average note of less than 2.0, which would mean that it is of very little importance. The lowest note as per the replies (2.35) was given to financial support for the creation and development of scientific research institutions and innovation centres, which results from the entrepreneurs' underestimation of the importance of cooperation with those institutions when introducing innovation.

Companies at a higher level of innovativeness attribute more significance to 9 out of 27 of the analysed regional factors and less significance to one of them. The correlations (Spearman's rank correlation coefficients) are not very large, but nonetheless present.

The results of the study confirm the thesis that there is, on the regional level, a number of factors influencing the innovativeness of companies, and proper stimulation of the factors by local government authorities may contribute to the improvement of innovativeness of companies.

The conclusions presented above provide important information for voivodeship authorities, which should focus its innovative policy more on the factors that the entrepreneurs judge most significant for stimulating innovativeness. The conclusions of the study may also be useful for companies aiming to increase their level of innovativeness, as well as for the institutions of business environment which offer services supporting implementation of innovations. They may contribute to an increase in the innovative potential of companies.

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Contact

Alfreda Kamińska

Management and Technological Sciences Department

Warsaw Management University

36 Kawęczyńska St., 03-772 Warsaw, Poland

alfreda.kaminska@wsm.warszawa.pl

GAMING AS AN APPROACH TO CONVEY THE EFFECTUATION MESSAGE

Duygu Keskin – Han Brezet

Abstract

Purpose: Effectuation has been emerging as an alternative perspective to the traditional theories on entrepreneurial decision-making, also referred to as causal reasoning. Building on the dichotomy between causal and effectual reasoning, a simulation game was designed to explore the effectiveness of games in teaching effectuation.

Design/methodology/approach: The game was designed to simulate the first year of a business development process based on an opportunity, and a number of causal and effectual actions that can be used to develop a sustainable product/service and accompanying business. The game was tested within the context of an European project, with the representatives of the project partners and students of Lund University. At the end of the game, the participants were asked to fill in an evaluation form to gather insights into the effectiveness of the game in introducing/teaching effectuation.

Findings: Our findings suggest that the game is a successful awareness tool in conveying the effectuation message; the players enjoyed it and found it educational. The game introduced the players in a fast and effective way to the theory of effectuation.

Research/practical implications: Besides learning effectuation as an alternative approach, the participants could directly apply it and learned what the implications are in practice. Moreover, the game instantly provides teachers/facilitators insights into the profile of the students or participants and their causal/effectual behavior and consequent learning needs. As a result, it can also be used as an educative planning tool for course development.

Originality/value: This study explores gaming as an alternative approach to teaching effectuation, and therefore contributes to the research on entrepreneurship education.

Keywords: Serious games, effectuation, entrepreneurship education

JEL Codes: L26, M13

Introduction

Entrepreneurship and new venture development are seen as vital for economic development. In this regard, entrepreneurship education gained popularity in policy agendas, leading to an increased number of entrepreneurship courses at universities and business schools over the last decade (Günzel-Jensen & Robinson, 2017). The widely-accepted idea that entrepreneurship –to a certain extent- can be taught, has given rise to the question regarding the content and method of teaching: "What should be taught and how should it be taught?" (Ronstadt, 1987).

Regarding *'what'*, in this paper we focus on an emerging theory of entrepreneurship, namely the effectuation theory, which has been developed as an alternative to the rational economic theories of decision-making. The rationale behind this choice is twofold. First, the entrepreneurship education is still dominated by causation as the main decision logic, and there is a need for new didactic materials and courses that address effectuation as well (Koopman et al, 2013). Second, effectuation is developed based on expert entrepreneur behavior, as opposed to causation which is linked to novice entrepreneur behavior. In this regard, it is of interest to explore how novice entrepreneurs can adopt an effectual logic (i.e. expert behavior) without going through the years of experience that is necessary to become an expert entrepreneur.

Unlike causation, which is linked to planned strategy approaches and involves activities such as opportunity recognition, research, analysis and planning, effectuation is linked to emergent strategy approaches in which the alternatives are chosen based on a set of effectual principles (Chandler et al., 2011). The predictive rationality of causal reasoning defines a process in which opportunities are identified at the beginning of the process, and then followed by a number of linear steps such as market research, competitive analysis, business plan development and resource acquisition (Read et al., 2009). In a causal approach, therefore, a considerable amount of time and resources are spent on activities like research and analyses, in an effort to achieve a predetermined product idea for a market segment (Sarasvathy, 2008). In contrast, in an effectuation approach the decision-making process starts with a set of means available to the entrepreneurs. Entrepreneurs, pragmatically, start thinking what they can do with their given sets of means rather than what they should do. They begin to imagine and implement possible effects that can be created and are worth creating (Sarasvathy, 2001). They move almost directly into action and interaction with stakeholders. Those stakeholders who commit to the new venture bring in new means and goals. This results in an expanding cycle of means and converging cycle of goals. Through the process of converging cycles of goals, new markets are co-created through stakeholder commitments (Sarasvathy, 2008).

Regarding *'how'*, we focus on serious games as an approach to convey the effectuation message. Game-based learning via serious games is highlighted as an effective alternative to traditional teaching tools and methods, as it requires active participation of students and offer opportunities to exercise knowledge and skills (Baalsrud Hauge et al., 2014).

Building on the dichotomy between causal and effectual reasoning, a game was developed within the framework of the PhD project of the first author (Keskin, 2015), with the purpose of exploring whether serious gaming is an effective approach for teaching effectuation. The game is designed with the aim of (1) creating awareness on the existence of an alternative approach (i.e. effectuation) among an audience that is more familiar with causal approaches, (2) reaching specific learning objectives in relation to the principles of effectuation, and (3) offering opportunities for students to reflect on their use of different logics, and (4) for teachers/facilitators to assess the learning needs of their students. For the game design, we adopted a behavioral approach, translating the cognitive aspects of effectuation into a number of observable actions, which formed an essential building block of the game. Although both causal and effectual approaches have their merits, the game is designed to favor an effectual approach in order to create an atmosphere for discussion among the participants. Furthermore, the game was tested within the framework of an European project on the dissemination and development (D2D) of sustainable innovation concepts. An important goal of the D2D project is to explore the most effective ways of implementation of new sustainable products and services via new venturing, particularly exploring, describing and partly explaining it by the effectuation theory.

The paper is structured as follows. The first part of the paper introduces the *content* of teaching, i.e. causation and effectuation and their behavioral implications, as we adopted a behavioral approach for the game design. The second part presents the *method* of teaching, i.e. the design of the game. Next, the test conducted among 28 participants is described. Following this, the research findings are presented. Finally, we discuss the findings and their implications for entrepreneurship education.

1   Behavioral implications of causation and effectuation

Bird and Schjoedt (2009) define entrepreneurial behavior as "the concrete enactment of individual or team tasks or activities required to start and grow a new organization." These activities and actions are the outcome of knowledge, abilities, cognitions, and motivations of entrepreneurial individuals and teams. While cognitive processes, for instance, are invisible,

behaviors are visible and observable, e.g., decision-making versus writing down the decision (Bird and Schjoedt, 2009).

Although effectuation is based on the cognitive aspects of entrepreneurship, Sarasvathy (2008) provides hints of its behavioral implications in a number of papers and examples, such as 'Curry in a Hurry'. In addition, there have been a number of recent studies that translate the principles of effectuation into the individual behavior of entrepreneurs and develop measures to empirically observe such behaviors. For instance, building upon the paper of Sarasvathy (2001), Chandler et al. (2011) developed a Likert-type scale, which conceptualizes the four principles of effectuation as: "(1) a focus on short-term experiments to identify business opportunities in an unpredictable future (effectuation) versus prediction of an uncertain future by defining the final objective up front (causation), (2) a focus on projects where the loss in a worst-case scenario is affordable (effectuation) versus maximization of expected returns (causation), (3) an emphasis on pre-commitments and strategic alliances to control an unpredictable future (effectuation) versus business planning and competitive analyses to predict an uncertain future (causation), and (4) exploitation of environmental contingencies by remaining flexible (effectuation) versus exploitation of pre-existing capabilities and resources (causation)". In this conceptualization, experimentation, which has not been associated with new venture creation in entrepreneurship literature, is introduced as a type of behavior; hence it is argued that effectual entrepreneurs conduct a series of short-term affordable experiments in an effort to find a viable business model. In summary, the behaviors associated with causation are as follows: analyzing and selecting opportunities based on expected returns, developing strategies to take advantage of resources and capabilities, designing and planning business strategies, implementing control processes for meeting objectives, researching target markets and conducting competitive analysis, developing a clear vision, designing and planning for production and marketing and making pre-commitments in order to acquire resources to reach objectives at the outset. The behaviors associated with effectuation are categorized into four main topics: experimentation, affordable loss, flexibility, and pre-commitments. Experimental actions involve experimenting with different products and business models and changing the product concept and business model over time. Affordable loss related actions involve committing resources not more than the team members and firm can afford to lose. Flexibility related actions involve allowing the business to evolve, adopting the business based on resources at hand and avoiding courses of actions that restrict flexibility and adaptability.

Finally, pre-commitment related actions are making pre-commitments with stakeholders as often as possible in order to reduce uncertainty.

In a similar vein, building upon the study of Chandler et al. (2011), Fisher (2012) explored the behavioral implications of effectuation and causation through a case study of six emerging firms. He identified a number of behaviors associated with causation and effectuation and subsequently used them as a lens to analyze the case data in order to investigate the relevance of approaches in explaining the emergence of ventures. In this study, we build on the work of Chandler et al. and Fisher in identifying a number of causal and effectual actions that can be used as input for the game design. In the following section, the game design is described more in detail.

2 Research Approach

2.1 Game Design

The game is designed to simulate the first year of a business development process, in which the players of the game are given the role of entrepreneurs that aim to develop a business based on a product/service idea. The three main building blocks of the game are: (1) action cards, (2) playing board, and (3) a reflection session that includes the scoring of participants' business development process and a short lecture on effectuation.

The first building block of the game is a repertoire of causal and effectual actions (Table 1) that can be taken during a venture development process. The majority of actions are defined based on the foundational papers on effectuation, as well as the studies of Fisher (2012) and Chandler et al. (2011). In addition, some other actions are defined in relation to the specific context of the D2D project, e.g. 'Visit Samsoe Academy', 'Talk with Mikael Backman (ex-director of the EU Princess Award of Sustainable Tourism)', 'Make an estimation of environmental benefits (e.g. energy reduction)'. These D2D-specific actions are presented in italic in Table 1. The game consists of 26 casual and 25 effectual actions, which are randomly numbered for scoring purposes, and provided as small cards in order to allow game participants to decide which actions they are willing to take for their business development process (Figure 1). The game allows the use of 26 out of a total of 51 actions. Since the game is designed to be an awareness tool; at the end of the game, the participants are invited to reflect on their business development process to explore whether they were acting predominantly casual or effectual.

The playing board (Figure 2) represents the first year of a business development process, since effectuation is suggested to be a more suitable approach for early phases of venture development due to the higher levels of uncertainty involved in this phase (Sarasvathy, 2008). The board is used by game participants to stick their preferred actions over time. In addition, it informs the participants about the imaginary inputs (i.e. entrepreneur duo, 2500€ starting budget and a product/service idea) and outputs (a 100,000€ running budget, a successfully running business and an outstanding network) of the process. Additionally, the board is divided into three four-month periods in order to identify the sequence of actions undertaken by participants. The rationale behind this is to allow participants to reflect on the type of logic they use at different stages of the process.

Tab. 1: Causal and effectual actions used for the game

Causal Actions	Effectual actions
• Forecast technology trends • Forecast potential demand • Develop a technology roadmap • Develop alternative scenarios for the future • Develop financial projections for firm growth • Calculate potential returns • Make a competitive analysis • Do a SWOT analysis • Do market research • Do a product benchmark • Make a consumer survey • Go to a fortuneteller • Interview potential customers/users • Develop a clear and consistent vision • Design and plan a strategy to make sure to meet objectives • Design and plan production and marketing • Determine a product-market combination based on expected returns • Develop a project plan • Acquire the necessary resources • Build a working prototype (costs 5000€ and 6 months) • Write a business plan document • Decide on the price of your product/service • Avoid stakeholders that demand product features that do not fit in your business strategy • Go to a bank • Go to an investor • *Make a streamlined LCA (Life Cycle Assessment)*	• Contact your family members and friends for feedback and resources • Ask Uncle X for a 500€ investment • Try to convince a friend to make a presentation/demonstration at her company • Try to convince a former colleague to help you actively with your new business • Evaluate your set of resources and means (Who are you? What do you know? Whom do you know?) • Start with a product or service you can easily realize • Experiment with alternative products and services • Experiment with alternative business models • Determine a product-market combination based on feedback from your interactions with stakeholders • Make sketches • Build a mock-up (costs 500€ and 1 month) • Find an enthusiastic potential customer • Find a partner for a demonstration project • Find a design student/intern that costs 500€/month • Contact suppliers for potential partnership • Identify a channel to sell your idea based on your existing network • Discuss your idea with the enemy • Revise your product-market combination • Make your first sale • Offer an equity share to customers and/or investors to get their commitment • Write a short business plan / 3-4 project proposals • *Make an estimation of environmental benefits (e.g. energy reduction)* • *Make an estimation of social benefits* • *Visit Samsøe Academy* • *Talk with Mikael Backman (ex-director of the EU Princess Award of Sustainable Tourism)*

Fig. 1: Action cards used in the game
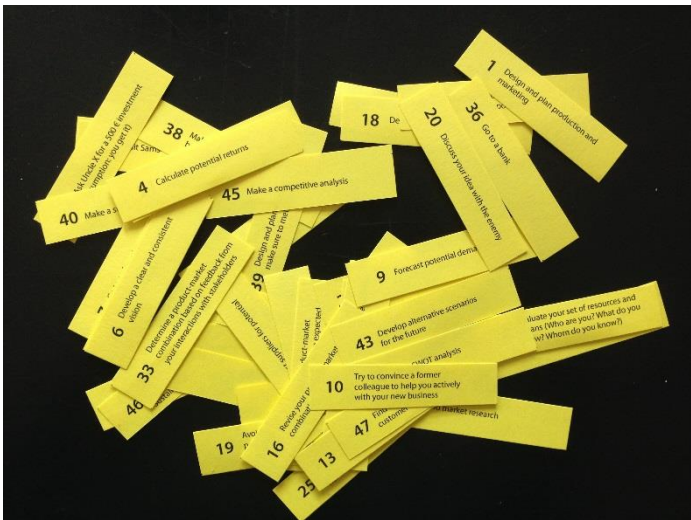
Fig. 2: Playing board used in the game
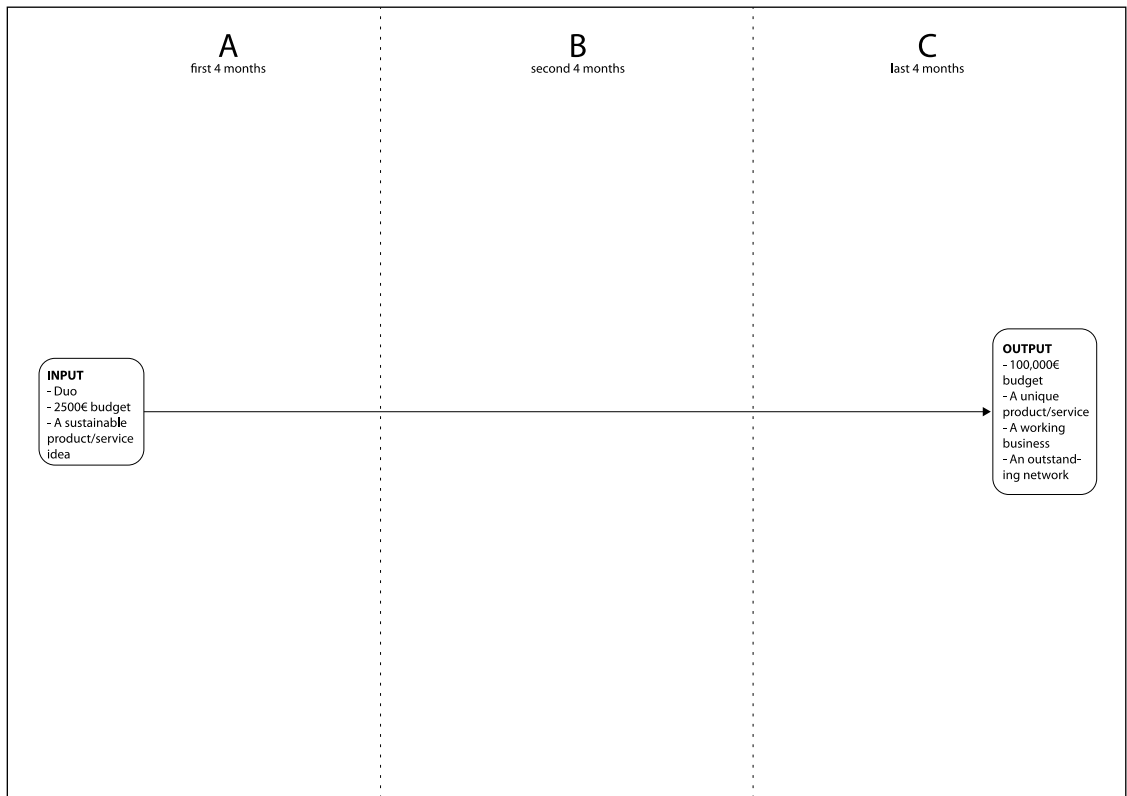
The reflection session includes the scoring of the business development process of the participants, as well as a short lecture on effectuation, as the theory behind the game. The scoring is done based on an 'ideal' effectual startup process, which was developed by the authors. Although there exists no ideal sequence or timing of actions and every process might look different depending on the uncertainty involved and the level of entrepreneurial expertise, this 'ideal' decision-making process consisted of only effectual actions positioned in specific

phases of the process. The score of the participants is determined based on their proximity to this 'ideal' process. Moreover, the short lecture, which is shared after the scoring, includes an introduction to causation and effectuation, the principle of effectuation and the causal/effectual venturing processes. As a follow up of this lecture, the participants are invited to reflect on their playing boards and the actions they were planning to take over time. A number of questions are posed by facilitators to stimulate participants to reflect on the differences between actions, their use of different logics over time, the link between actions and causation-effectuation, and the link between the actions and the principles of effectuation.

2.2   Testing

The game was tested in October 2014 within the context of a workshop organized for the D2D project, allowing one-and-a-half-hour test by 13 teams of mainly two participants. The audience consisted of 16 students, and 12 professionals that have varying degrees of expertise in the field of design, sustainability and entrepreneurship. The students were second year master students following an Erasmus Mundus program in Environmental Sciences, Policy and Management at Lund University, Sweden. The program prepares students for identifying and implementing solutions to complex environmental challenges, especially in an international context. The experts consisted of representatives of the D2D project partners.

Before the participants started playing, they were introduced to the game and an imaginary assignment that was prepared within the context of the D2D project. They were then given 10 minutes to think about an opportunity, i.e. a product/service idea, which they think they can develop within the framework of sustainable tourism. They were then asked which actions they would take during the three phases of the process (Figure 3).

Fig. 3: Participants playing the game

This part of the game took about 30 minutes. At the end of this part, the actions suggested by the participants were compared with the 'ideal' effectuation process as suggested by the authors.

The teams that got closer to the ideal process received higher scores. That is, the participants got one point for each causal action if it was <u>not</u> used on the playing board and one point for each effectual action if it was positioned in the proper phases as provided by the authors. Finally, after the scoring the participants were asked to fill in an evaluation form in order to gather insights into the effectiveness of the game. A total of 24 (out of 28) filled in forms were received.

3   Results

3.1   Approach of the teams

The teams gained between 17 and 30 points (out of maximum 51 points). Team 1, 7, 9 and 13 received the highest scores; 28, 28, 28 and 30 respectively. In other words, these teams used most effectual actions in their processes and as in the phases as suggested by the ideal process of authors. While all teams preferred an effectual approach in phase A and/or B, they adopted a causal approach in phase C. Most frequently used effectual actions in phase A were related to means and stakeholder interactions. Some examples are 'find an enthusiastic potential customer', 'identify a channel to sell your idea based on your existing network', 'evaluate your set of resources and means', 'contact your family members and friends for feedback and resources' and 'contact suppliers for potential partnership'. In phase B, the actions used were mainly a mix of stakeholder interactions and design experiments. Some examples are 'find a partner for a demonstration project', find a design student/intern that costs 500€/month', 'experiment with alternative products and services' and 'determine a product-market combination based on your feedback from your interactions with stakeholders'. Finally, in phase C the actions were related to acquiring resources (e.g. 'go to an investor) and prediction and planning (e.g. 'calculate potential returns', 'write a business plan document' and 'decide on the price of your product/service').

The teams 2, 3, 6, 10 and 12 received the lowest scores; 17, 20, 19, 20 and 18 respectively. These teams used mainly causal actions in their process, particularly in phase A. The majority of the 'causal' teams used actions related to prediction and planning in phase A. Among others some examples of such actions are 'decide on the price of your product/service', 'calculate potential returns', 'forecast potential demand', and 'develop a clear and consistent vision'. In phase B, the majority of teams sought to find a partner, supplier or customer and make their first sale (i.e. effectual actions). Furthermore, the causal actions were a mix of prediction, planning and acquiring resources, e.g. 'forecast potential demand', 'design and plan production

and marketing', and 'go to a bank'. The number of actions used in phase C was lower compared to the first two phases. However, most teams used 'develop financial projections for firm growth', a causal action, and 'revise your product-market combination', an effectual action, in this phase.

3.2. Awareness / Learning

The most frequently stated learning, particularly among student participants, of the experiment was the awareness that there exists an alternative way of starting a business to the traditional managerial approaches. Furthermore, other remarks are matching with the four principles of effectuation, i.e. bird-in-hand, affordable loss, crazy-quilt and lemonade. First, some students mentioned that making use of available resources, particularly the network, is vital when starting a new business. Some quotes are: "Make fully use of your networking, family, friends and previous colleagues", "It's important to make use of all possible sources or techniques to gather resources", and "How difficult is to plan different activities in the most effective way, prioritizing elements and considering available means is fundamental when starting a business". Second, some participants pointed to the affordable loss principle by highlighting the link between success/failure and the starting costs: "I learned about effectuation and how best not to fail in debt" and "Typical business approaches might not always lead to success and are expensive". Furthermore, another stated: "Do not over think about returns". Lastly, crazy-quilt and lemonade principles were mentioned to a lesser extent. While the crazy-quilt principle was mentioned by highlighting the importance of networking or "asking experts", the lemonade principle was mentioned by emphasizing the importance of coincidence and flexibility rather than planning and "studying too long".

3.3. Feedback on the game

Besides the awareness, the participants were asked to rate the game in terms of fun, usefulness and learning. The majority of the participants experienced the game positively in terms of all aspects asked, in particular the fun aspect. Moreover, a number of suggestions were received to improve the game. A majority of suggestions were related to the actions. First, the number of actions was found to be too much, and as a result playing time perceived to be short. Second, actions were found to be linked specifically to the development of products although some teams were developing service ideas. Besides the playing time, the feedback time was also found to be too short, making the link between exercise and learning weaker. Moreover, some participants suggested some ideas in order to make the game rules more clear to the players,

e.g. more time spent on the explanation of rules at the start of the game, and showing the game rules on a slide throughout playing. Lastly, another suggestion was to discuss about the business ideas of the teams in order to make the link between different types of innovations and the venture development process stronger.

Conclusions

Our main goal in this study was to explore whether serious gaming could be an effective approach for conveying the effectuation message. Preliminary findings suggest that gaming can be successful at creating awareness on the existence of an alternative approach and at reaching specific learning objectives in relation to effectuation principles.

The game structure of 'first play, then lecture' appears to have facilitated the learning process of the participants and engaged them more effectively to the content of the lecture. During the play, the participants had the opportunity to discuss *which* actions they would take, *when* and *why.* This hands-on experiential way of learning increased their curiosity for the lecture, but also enabled them to relate to the concepts of causation and effectuation, as well as when and how to use these two different decision-making logics. Instructors teaching effectuation can consider gaming as an additional educational resource to get students -but also entrepreneurs and other stakeholders- engaged in effectual decisions and actions.

Besides the game as an awareness tool, it provided insights into the type and sequence of effectual and causal actions used by specific teams. Thus, it offers opportunities for participants/students to reflect on their use of different logics in different phases of the business development process and for teachers/facilitators to assess the learning needs of their students. Therefore, instructors can use the game in assessing the learning needs of students and planning of their didactic materials.

Although the game proved to be successful in conveying the effectuation message in a fun way and short time span, there is room for improvement. We have played this version of the effectuation game only one time in a limited timeframe of one and a half hour. A more in-depth discussion with teams on their particular business ideas and preferred actions could have strengthened the link between exercise and learning and give more insights into the drivers for selecting specific actions. Our goal is to develop the game further and hold more sessions with students and professionals from different backgrounds and in different settings.

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Contact

Duygu Keskin

Department of Industrial Engineering and Innovation Sciences, Eindhoven University of Technology

Innovation, Technology Entrepreneurship & Marketing Group

't Eeuwsel 6, Connector 0.01, 5612 AS Eindhoven, Netherlands

d.keskin@tue.nl

Han Brezet

Department of Development and Planning

Aalborg University

Rendsburggade 14 DK-9000, Aalborg, Denmark

brezet@plan.aau.dk

INFLUENCE OF SOCIAL CAPITAL ON INCUBATED MSMEs' ACCESS TO NON-FORMAL FINANCE. A CASE OF TANZANIAN INCUBATED MSMEs

Deogratias Kibona – Utz Dornberger – Noor Un Nabi

Abstract

Purpose: The purpose of this study was to investigate whether social capital of incubatees and incubator managers contribute to the incubatees' access to non-formal finance in Tanzania. Also, to understand the types of social networks that have significant influence on incubatees' access to non-formal finance.

Design/methodology/approach: Quantitative research approach was adopted in this study where data collection was conducted through the self-administered questionnaire. A stratified sampling technique was used because of the diversity of the business incubation programs and a sample of 141 incubated MSMEs was selected out of 593 incubated MSMEs in Tanzania. PLS regressions analysis method was employed to test the impact of bonding, bridging and linking social capital of both incubatees and incubator managers on incubatees' access to non-formal finance.

Findings: The results indicate that incubatee's bonding and bridging social capital and incubator manager's linking social capital have positive impact on incubatee's access to non-formal finance. But incubatee's linking social capital and incubator manager's bonding and bridging social capital have insignificant impact on incubatee's access to non-formal finance. These results suggest that incubatees' family members, neighbours, close and distant friends and secondary groups play a significant role in helping incubatees access finance from non-formal financiers. Similarly, incubator managers' connections to influential people in private sector, civil society organisations, and government and public representatives have significant influence on incubatees' access to non-formal finance.

Research/practical implications: This paper creates awareness to incubatees to utilize their bonding and bridging network links, to increase their non-formal financial accessibility. The incubatees are also motivated to utilize the incubator managers' connections in the civil society organizations, private sector, government agencies and public representatives. Based on these results, policy makers should adopt group guarantee strategy which is being applied among secondary groups to facilitate financial accessibility. Also, policy makers can focus on how to maximize utilization of incubator manager's connections to key people in civil society organizations, private sector, government agencies and public representatives.

Originality/value: The paper begins with an overview of previous researches in area of MSMEs' access to finance and then moves on to show the role of social capital in incubated MSMEs' access to non-formal finance. The paper then suggests the type of social capital/social networks that have a significant impact on incubated MSMEs' access to non-formal finance.

Keywords: Financial accessibility, non-formal finance, incubatee's social capital, incubator manager's social capital

JEL Codes: L26, L53, G23

Introduction

Micro, Small and Medium Enterprises (MSMEs) form a crucial component of a strong and vibrant economy in both developing and developed countries (Ngowi & Milanzi 2006). They are important to the promotion of enterprising culture and to the creation of jobs within the economy contributing to around 60 to 80 percent of newly created jobs (Ou 2006). However, despite their importance to the economic development, MSMEs experience relatively high failure rates (IFC 2009). Most of the MSMEs point out financing as the foremost obstacle for their growth (Schiffer & Weder 2001). In Tanzania, various interventions have been put in place to address the problems which face MSMEs including limited access to finance. Some of the interventions are the business incubators which have been established to support MSMEs at their infancy stage. One of the objectives of business incubators is to facilitate the incubated MSMEs' access to finance. The literature indicates that business incubators significantly promote incubated MSMEs' access to finance (Wanyoko 2013), but it is not clear what aspects lead to business incubators' significant promotion of incubatees' access to finance. It should also be noted that due to weak finance sectors, developing countries like Tanzania are dominated by non-formal finance (Denis 2004) which is highly influenced by social networks (Swierczek 1994). Based on the fact stated above, it is therefore important to investigate the role of social capital on the incubated MSMEs' access to non-formal finance.

This paper examines specifically the impact of incubatee and incubator manager's social capital on the incubatee's access to non-formal finance in Tanzania. It enhances the existing incubated MSMEs financing literature and contributes to the field by revealing the role played by both incubatee and incubator manager's social capital on the non-formal finance.

1   Literature review and hypotheses

1.1   Conceptual review

Incubatee's social capital

Social capital refers to the benefits arising from mutual understanding, trust and shared values and behaviours that bind members in communities and human networks and make cooperative action possible (Putman 2001). In this paper incubatee's social capital implies to incubatee's benefits that are derived from preferential treatment and cooperation with his/her groups and individuals. Incubatee's social capital has been categorised into three categories i.e. bonding, bridging and linking social capital. Incubatee's bonding social capital entails the incubatee's benefits derived from his/her links to people based on the sense of common identity such as

family, close friends, neighbours and people of the same culture or ethnicity. Incubatee's bridging social capital refers to the benefits derived from the links to people who are beyond the sense of identity (Babaei et.al 2012) i.e. people such as distant friends, colleagues and members of secondary groups. Incubatee's linking social capital refers to the incubatee's benefits derived from his/her links to the people with key positions in civil society organizations, government agencies, representatives of the public and the private sector.

Incubator manager's social capital

This involves the incubatees' benefits that are derived from preferential treatment and cooperation by groups and individuals to incubator manager. In other ways, it is the incubator manager's social contacts which influence positively the productivity of incubatees. Incubator manager's social capital is also categorized into three categories i.e. incubator manager's bonding, bridging and linking social capital. Incubator manager's bonding social capital suggests the incubatees' benefits derived from the incubator manager's links to people based on the sense of common identity such as family, close friends, neighbours and people of the same culture or ethnicity. Incubator manager's bridging social capital refers to the incubatee's benefits derived from the incubator manager's links to people who are beyond the sense of identity. It is incubator manager's links with people such as his/her distant, colleagues and members of secondary groups. Incubator manager's linking social capital implies to the incubatees' benefits derived from the incubator manager's links to the people with key positions in civil society organizations, government agencies, public representatives and the private sector.

Non-formal finance

Non-formal finance is a type of finance that is provided by financiers who are not licensed by the central bank (Hyuha et.al 1993). In Tanzania, non-formal finance is categorized into informal and semi-formal finance. Semi-formal finance constitutes the finance provided by financiers who are regulated by authorities other than Central bank of Tanzania. Currently the notable regulatory authorities include Ministry of Home Affairs, Ministry of Finance (MoF) and Registrar of Cooperatives under Ministry of Agriculture, Food Security, and Co-operatives. Ministry of Finance regulates NGOs by reviewing external audits prior to authorizing disbursement of funds provided by Government or donors to the NGOs and granting accreditation to them. Organisations like Poverty Africa, PRIDE Tanzania, YOSEFO, SIDO, CREW, SELFINA, FINCA, Tanzania Gatsby Trust and Mennonite Economic Development

Association fall in this category. Informal finance involves finance accessed from all institutions and/or individual financiers which are virtually outside the control of the established legal framework (Hyuha et.al 1993). Institutions and individuals such as rotating savings and credit associations (ROSCAs), Accumulated Savings and Credit Association (ASCAs), moneylenders, landlords, relatives and neighbours fall under the category of informal financiers.

1.2 Empirical literature review and hypotheses

In relation to the empirical evidence, Calice et.al. (2012) have summarized studies that show the financing gap as the main barrier towards business growth particularly among the MSMEs. To address the problem of financing gap among MSMEs, a reasonable number of researchers argue that business incubators are some of the successful interventions. According to Wanyoko (2013) and Bruneel et.al (2012), business incubators contribute to the incubatees financial accessibility. However, most of the reviewed studies have focused on the business access to formal finance and it should be noted that majority of MSMEs in developing countries access non-formal financing (Hyuha et.al. 1993, Ellis et.al. 2010). On the other hand, several researchers have argued that social capital has a significant influence on the business' access to finance. Guiso et.al. (2000), and Barr (2000) argue that social capital has positive impact on business financing. Based on the above reviewed literature, we are motivated to find out the impact of incubatee and incubator manager's social capital on the incubatees' access to non-formal finance. From the reviewed literature above, the following hypotheses were formulated.

H_1: *Incubatee's bonding, bridging and linking social capital have significant impact on incubatee's non-formal financial accessibility.*

H_2: *Incubator manager's bonding, bridging and linking social capital has a significant impact on incubatee's non-formal financial accessibility.*

2 Data and Empirical Results

Our analysis in this study was based on 141 incubatees who secured loan from non-formal financiers. The distribution of data was tested by Shapiro and Wilk test which showed that data was non-normally distributed, and therefore PLS regressions analysis method was employed. Our dependent variable is MSMEs financial accessibility (MFA) and was measured through the level of satisfaction on the following dimensions: amount of loan obtained, interest rate, the loan repayment term, general credit contract agreements, required collateral, necessary managerial background, credit processing procedures and credit processing time. MFA was

calculated as an average of the above indicators which are ordinal data i.e. respondents replied by ranking the indicators in 1-5 Likert scale. The independent variables are incubatee's bonding social capital (IBS), incubatee's bridging social capital (IRS), incubatee's linking social capital (ILS), incubator manager's bonding social capital (MBS), incubator manager's bridging social capital (MRS) and incubator manager's linking social capital (MLS). IBS was measured through level of support received by incubatees from their family members, close friends and neighbours. IRS was measured through level of support from incubatee's distant friends and colleagues in secondary groups. ILS was measured through level of support from incubatee's people with key positions in civil societies organisations, private sector, government agencies and public representatives. MBS was measured through level of support received by incubatees from incubator manager's family members, close friends, and neighbours. MRS was measured through incubatees' level of support from incubator manager's distant friends and colleagues in secondary groups. MLS was measured through incubatees' level of support from incubator manager's people with key positions in civil societies organisations, private sector, government agencies and public representatives. In the Table 1 below, IBS, IRS, ILS, MBS, MRS, MLS and MFA constructs were presented and all of them have Cronbach's alpha values above 0.60 which is a minimum acceptable Cronbach's alpha value for a construct reliability.

Tab. 1: Descriptive results for IBS, IRS, ILS, MBS, MRS, MLS and MFA

Variable	Indicator			Construct			
	Mode	Mean	S.D	Mode	Mean	S.D	Cronbach's Alpha
IBS Incubatee's bonding social capital				**3.00**	**2.91**	**0.87**	**0.73**
Financial advice from family members	3.00	3.16	1.45				
Financial support from family members	3.00	2.81	1.34				
Financial advice from close friends and neighbours	3.00	3.02	1.20				
Financial support from close friends and neighbours	3.00	2.78	1.33				
Financial advice from people of the same ethnicity	3.00	2.87	1.30				
Financial support from people of the same ethnicity	3.00	2.85	1.29				
IRS - Incubatee's bridging social capital				**3.00**	**2.87**	**0.86**	**0.65**
Financial advice from distant friends and colleagues	3.00	2.84	1.25				
Financial support from distant friends and colleagues	3.00	2.52	1.13				
Financial advice from fellow members in secondary groups	3.00	2.97	1.32				
Financial support from fellow members in secondary groups	4.00	3.17	1.28				
ILS - Incubatee's linking social capital				**1.00**	**2.26**	**1.46**	**0.88**
Financial advice from people with key positions in CSOs & PS	2.00	1.82	1.65				
Financial support from people with key positions in CSOs & PS	3.00	2.87	1.58				
Financial advice from people with key positions in GAs & PRs	2.00	1.60	1.73				
Financial support from people with key positions in GAs & PRs	3.00	2.76	1.76				
MBS - Incubator manager's bonding social capital				**3.00**	**2.88**	**0.76**	**0.69**
Financial advice from manager's family members	3.00	3.08	1.33				
Financial support from manager's family members	3.00	2.74	1.44				
Financial advice from manager's close friends and neighbours	4.00	2.81	1.28				
Financial support from manager's close friends and neighbours	4.00	3.08	1.18				
Financial advice from manager's people of the same ethnicity	3.00	2.78	1.15				
Financial support from manager's people of the same ethnicity	3.00	2.75	1.13				
MRS - Incubator manager's bridging social capital				**3.25**	**2.88**	**0.98**	**0.73**
Financial advice from manager's distant friends and colleagues	3.00	2.95	1.24				
Financial support from manager's distant friends and colleagues	2.00	2.69	1.16				
Financial advice from manager's secondary groups members	4.00	2.99	1.34				
Financial support from manager's secondary groups members	3.00	2.91	1.47				
MLS - Incubator manager's linking social capital				**3.00**	**2.97**	**0.88**	**0.75**
Financial advice from manager's people in CSOs and PS	3.00	3.08	1.34				
Financial support from manager's people in CSOs and PS	3.00	2.74	1.15				
Financial advice from manager's people in GAs and PRs	3.00	3.03	1.10				
Financial support from manager's people in GAs and PRs	3.00	3.05	1.06				
MFA - MSMEs non-formal financial accessibility				**3.50**	**2.98**	**0.74**	**0.84**
Level of satisfaction regarding interest rate agreed	3.00	2.97	1.07				
Level of satisfaction regarding loan repayment term	3.00	3.08	0.91				
Level of satisfaction on overall conditions of credit contract	3.00	2.98	0.88				
Level of satisfaction regarding requirement of collateral	3.00	2.74	1.19				
Level of satisfaction on requirement of managerial background	3.00	2.81	1.24				
Level of satisfaction on financier's credit services procedure	3.00	3.01	1.04				
Level of satisfaction on length of the credit processing time	4.00	3.16	1.10				
Level of satisfaction regarding amount of credit obtained	3.00	3.07	1.13				

CSOs = Civil Society Organisations, PS = Private Sector, Gas = Government Agencies, PRs = Public Representatives

As shown in the Table 1 above, incubatees received the highest support from incubator manager's connections with influential people in the society in their (incubatees) process of accessing finance from non-formal financiers. But they received the lowest support from their

own connections with influential people in the society. These results can be reflected in table 2 below which shows that ILS impact on MFA is insignificant.

Table 2: Results – PLS regressions analysis

Dependent: MSMEs non-formal financial accessibility(MFA)

	Non-formal finance		
	Model 1	**Model 2**	**Model 3**
IBS – Incubatee's bonding social capital	0.331**		
IRS – Incubatee's bridging social capital		0.595**	
ILS – Incubatee's linking social capital			0.028
MBS – Incubator manager's bonding social capital	0.012		
MRS – Incubator manager's bridging social capital		-0.086	
MLS – Incubator manager's linking social capital			0.210*
BAG – Business Age	-0.058	-0.021	-0.078
BCP – Business Capital	0.035	0.090	-0.016
IPD – Incubation Period	0.035	-0.009	0.078

*$p < 0.05$, **$p < 0.01$

Table 2 above presents results for three PLS regression models. Model 1 analyses the impact of IBS, MBS and control variables i.e. BAG, BCP and IPD on incubated MSMEs' access to non-formal finance (MFA). The results suggest that IBS has a significant positive impact on MFA, while MBS has insignificant impact on MFA. Likewise, model 2 results indicate that IRS has a significant positive impact on MFA, while MRS has insignificant impact on MFA. Model 3 indicates that ILS has insignificant impact on MFA, while MLS has significant positive impact on MFA. Based on these findings, both two hypotheses are partially accepted. The results partly concur and partly contradict with the findings by Guiso et.al. (2000) and Barr (2000) who found that social capital has a significant positive relationship with financial accessibility. They concur by revealing that in Tanzania, incubatees' bonding and bridging social capital significantly influence their access to non-formal finance. incubatees' family members, neighbours, close and distant friends provide advice to them on how to access finance from non-formal financiers and in some cases, they even guarantee the incubatees to the financiers. Some of these close people provide loans to the entrepreneurs under incredibly favourable conditions. Also, incubatees' secondary groups provide guarantee to group members i.e. a member with no collateral is guaranteed by his/her group members. This facilitates incubatee's access to finance because as a member of a group can be guaranteed by the group to the financiers. The findings have also revealed that incubator managers' connections with

key people in civil society organizations, private sector, government agencies, and public representatives positively influence the incubatees' access to non-formal finance.

On the other hand, the results contradict the reviewed literature above as they suggest that incubatee's connections with influential people in the society have no any significant contribution to the incubatee's non-formal financial accessibility. This is mainly due to a big interaction gap between incubatees and people with key positions in civil societies organisations, private sector, government agencies and public representatives. Similarly, incubator manager's family members, close and distant friends, neighbours and secondary groups have insignificant influence on incubatees' access to non-formal finance.

3 Conclusion

Incubatees' social networks related to family members, neighbours, close and distant friends, colleagues and secondary groups play an important role to their access to non-formal finance. Correspondingly, incubatees with high support from incubator manager's connections in civil society organizations, private sector, government agencies, and public representatives can easily access non-formal finance. These results create awareness for incubator managers and other stakeholders to motivate the incubated MSMEs to expand and utilize their bonding and bridging social networks, to increase their non-formal financial accessibility. The incubated MSMEs are also motivated to effectively utilize the incubator managers' connections in the society.

Regarding these findings, the following suggestions can be made: Firstly, the governments and other stakeholders should still put much efforts in supporting business incubators to enable them to incubate more MSMEs to facilitate their financial accessibility. Secondly, business incubators and other interventions can adopt the group guarantee strategy which is being applied among secondary groups. This strategy can be adopted and institutionalized by the business incubators to eliminate the obstacle of lack of collateral, a problem that has been singled out by MSMEs as the most burning obstacle towards financial accessibility. Thirdly, business incubators can also put emphasis on the incubator manager's links to key people in civil society organizations, private sector, government agencies, and public representatives as another aspect to be utilized for promotion of incubated MSMEs financing. This strategy brings the incubatees much closer to many non-formal financiers which without incubator managers they could have not accessed them.

Lastly, since this study is confined only to incubatee and incubator manager's social capital impact on access to non-formal finance, the future research may be extended to include the formal finance. It may focus on understanding the influence of incubatee and incubator manager's social capital on the incubated MSMEs' accessibility to formal finance as well.

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Contact

Deogratias Kibona

International SEPT Program, Leipzig University

Ritterstrasse 9-13, 04109 Leipzig, Germany

Mzumbe University, Morogoro Tanzania

dmkibona@gmail.com

Utz Dornberger

International SEPT Program, Leipzig University,

Ritterstrasse 9-13, 04109 Leipzig, Germany

Noor Un Nabi

International SEPT Program, Leipzig University

Ritterstrasse 9-13, 04109 Leipzig Germany

Business Administration Discipline, Khulna University

Khulna 9208, Bangladesh

TECHNOLOGY ADOPTION AND MANAGEMENT STRATEGIES: AN EMPIRICAL ANALYSIS OF WOMEN ENTERPRISES IN FOOD AND BEVERAGE SECTOR

Ravi Kiran

Abstract

Purpose: The present study has been undertaken to analyse the technology adoption and management strategies of women enterprises in food and beverage sector in India. Although women entrepreneurship has attracted many researchers, yet technology adoption and management strategies aspect has not been given enough attention. As Food and beverage sector is a growing sector of Indian economy, the present study is an effort to identify and analyse the technology adoption and management strategies of women entrepreneurs in this sector.

Design/methodology/approach: The study was conducted in 5 major districts of Punjab. Punjab is a growing economy of India. A sample of 60 women entrepreneurs was taken. The primary information was gathered with the help of a structured questionnaire. Factor analysis was used to identify technology adoption strategies. The study identified the technology management strategies used by women entrepreneurs in Food and Beverage sector. Finally, structural equation modeling has been used, to identify which Technology adoption and management strategies influence business performance.

Findings: The results indicate that there are five major factors that led to technology adoption in food and beverage sector, viz. organizational culture; external environment; policy factors; market competence and customer satisfaction. Further, there are three major technology management strategies that are followed by companies in food and beverage sector. These are: employee involvement; management initiative; and training and development. Results of structural equation modelling highlight that both technology adoption and technology management strategies influence business performance. 76.3 percent variation in business performance is influenced by technology adoption and technology management strategies. However, technology adoption emerges as a better predictor.

Research/practical implications: The results technology adoption emerges as a better predictor of business performance. These results indicate that most women entrepreneurs are investing more funds on technology adoption and adoption may increase the output and business performance. However real gains in business can be made through focusing on technology management which will result not only increase in output, but will result in real productivity gains. This suggests that there is need to focus on technology management strategies in future.

Originality/value: Women entrepreneurs are perceived to be slow adopters of technology, but there were not studies trying to empirically examine this. Thus, a research was needed to examine technology adoption of women entrepreneurs in food and beverage sector. This study is one of initial studies that is examining not only technology adoption, but also is analysing how technology adoption and technology management strategies are influencing business Performance.

Keywords: Technology adoption, technology management, business performance, food and beverage sector, women entrepreneurs

JEL Codes: L66, L66, O32

Introduction

Food and Beverage sector is growing sector, as total factor productivity is positive has increased from 2001 to 2012 depicting that there is technical progress in this sector (Chhabra & Kiran, 2015*).* In food and beverage sector, the responsibility and traceability of food ingredients, handling process, preservation and labelling have become extremely vital. As customers prefer quality products, the supply chains of food and beverages are under increased competition and regulatory pressure to develop and maintain knowledge management systems for quality assurance (Hagen, 2002). Tulus (2007) opined that in manufacturing sector, most of the women entrepreneurs are in the food, beverages and tobacco sector, followed by textile, garment and leather, and non-metallic mineral products.) Advancement of technology in food sector is a factor led to rigorous competition and an urge for quality assurance (Brannback & Wiklund 2001; Hagen, 2002; Sporleder & Moss, 2002).

Davenport and Bibby (1999) highlight 'entrepreneurial dynamism' as an important driver of increased innovation. According to Wahid (2007), the attributes of technologies that enhance the adoption and diffusion process include characteristics of the potential adopters and strategies that contribute to successful technology adoption and integration. Buttner & Rosen (1989) find human capital (knowledge), social capital (networks) and financial capital as the major barriers that make it more difficult for technology adoption by women entrepreneurs. There are some research studies on technology adoption, but are limited to obstacles or barriers. This was the main motivation for undertaking research in this area.

1   Theoretical Framework

Factors influencing performance of women entrepreneurs have been researched broadly, yet there are fewer studies on technology adoption and technology management strategies used by women entrepreneurs. Technology acceptance Model (TAM) by Davis et al. (1989) forms the base of studies related with adoption of technology. Taiwo et al. (1995) opines that majority of women operated in informal sectors and used rudimentary technology. Researchers have also highlighted the strategic significance technology for stimulating performance (Melville et al., 2004; Chae et al., 2014). Vijayalaxmi et al.,(2008) highlighted that training enhanced self-confidence (80%), leadership qualities (72%), and skills to undertake value addition activities (69%) among women entrepreneurs. Shah (2013) was apprehensive of this and suggested women's lack of confidence and difficulties in acquiring entrepreneurial skills as major barriers

for success in business. The items of Technology adoption along with supportive literature is shown in table 1.

Tab. 1: Technology adoption Scale

Technology adoption		Supportive literature
i.	Material Cost	Martino (1993).
ii.	Operational Cost	Kiran and Kaur (2008); Martino (1993)
iii.	Increased Business Cost	Rogers (1995); Kiran and Kaur (2008); Martino (1993)
iv.	Reduced Profits	Rogers (1995); Kiran and Kaur (2008); Martino (1993)
v.	Obsolete Machines & Equipment	Martino (1993); Rogers (1995)
vi.	High Labor Turnover	Greenhalgh, C. & Mavrotas, G. (1996).
vii.	Competition	Porter (1985); Schendel and Hofer (1979)
viii.	Economic Conditions	Porter (1985); Petti & Zhang (2011)
ix.	Demand for quality Product	Chae H. C., Koh C. E., Prybutok V. R. (2014)
x.	Market Pressure	Porter (1990); Schendel and Hofer (1979)
xi.	Environment Sustainability	Zhang, Peng & Li (2008)
xii.	Government Financial Support	Kiran and Kaur (2008)
xiii.	Globalization	Zhang, Peng & Li (2008)
xiv.	Availability of better technology	Arora, Fosfuri and Gambardella (2001); Rogers (1995)
xv.	Industrial Policies	Zhang, Peng & Li (2008)
xvi.	Availability of Professionals	Hassan et al. (2006)
xvii.	Cordial relation with supplier of technology	LaDonna et al. (2013)
xviii.	Top Management commitment	Kwahk, Kim and Chan (2007)
xix.	Clear Vision	Lalkaka and Bishop (1996)
xx.	Communication	Rogers (1995); Koellinger, P. (2008); Cohen & Bailey (1997)
xxi.	Openness to innovative culture	Lalkaka and Bishop (1996); Zhang, Peng & Li (2008)
xxii.	Investment in R & D	Jain and Kiran (2012); Koellinger, P. (2008).
xxiii.	Involvement of entire workforce	Zhang, Peng & Li (2008)
xxiv.	Cross functional working team	Cohen & Bailey (1997)
xxv.	Availability of Resources	Makhbul (2011)
xxvi.	Need for Customized Product	Stump, Athaide & Joshi (2002)

Source: own research

Technology adoption to improve productivity in poultry lead to exclusion of women from poultry businesses in many countries and men were considered to enhance profits through innovation (Acharya, 1981). Petti & Zhang (2011) highlighted role of Government Financial Support, Industrial Policies; and economic Conditions for facilitating technology adoption. Lack of an entrepreneurial culture among people in Sweden resulted in slow economic growth

despite high focus on technology (Dahlstrand, 2007). Technology adoption must be associated and linked with requisite technology management strategies for success in business. The items of technology management strategies along with supportive literature is shown through table 2.

Tab. 2 : Technology Management Strategies Scale

Technology management Strategies	Supportive literature
i. Skill Development Workshops/Programmes	Koning (1998); Belwal & Belwal (2014)
ii. Regular Training	Belwal & Belwal (2014); Vijayalaxmi et al.,(2008); Buttner & Rosen (1989
iii. Change in Management Practices	Groen et. al. 2008: Hassan, Junaida & Ismail (2006)
iv. Retraining	Vijayalaxmi et al.,(2008); Buttner & Rosen (1989
v. Up-gradation of Present Technology	Rogers (1995) ; Small & Yasin (1997)
vi. Readiness of Staff to accept new technology	Shaw et al. (2013); Groen et. al. 2008
vii. Readiness of Staff to undergo training for new technology	Belwal &Belwal (2014); Shaw et al. (2013);
viii. Seminars to make employees comfortable with the technology	Hassan , Junaidah, & Ismail (2006).

Source: own research

Up gradation to new technology is associated with change in culture and needs requite skills. New Technology management necessitates entrepreneurs to focus on training and retraining. Any technology with acceptance of employees will not survive for a long period.

Tab. 3: Business Performance Scale

Performance	Researchers
i. Competitive Advantage	(Porter, 1985); Chen, Greene & Crick (1998)
ii. Improvement in product quality	Gunasakeran et al. (1996)
iii. Cost Reduction	Khalil Darwish and Singh (2013)
iv. Increased Profits	Bain (1968)
v. Competitive Price	Hagedoorn J and Cloodt M (2003).
vi. Enhanced Efficiency	Gunasakeran et al. (1996); Sethi et al. (2007)
vii. Improved Performance	Gunasakeran et al. (1996); Sethi et al. (2007)
viii. Fulfilment of Customers demand	Slater and Narver (1998);
ix. More market share	Ramayah (2015); Koellinger, P. (2008)
x. Enhanced Productivity	Grilliches 1994; Kiran and Kaur, (2008).

Source: own research

As highlighted through table 3 the business performance aspects are undertaken keeping the researchers perspective which ranges from profits to market share; focus on quality, cost reduction, productivity, efficiency, competitive advantage & fulfilment of Customers demand.

2 Data and Research Methods

Four segments of Food and beverage sector considered in the study are Confectionary, Bread, Fun food and Snack, and Fruit Juices and Concentrates. The structured questionnaire used for survey had 3 sections, viz. Technology adoption; technology management strategies; and business performance. Majority of women entrepreneurs surveyed were owners of small scale enterprises. 17 percent of these were medium scale firms. Data was collected from 60 women entrepreneurs across the state. The study used factor analysis to extract factors for technology adoption; identify technology management strategies used by women entrepreneurs in food and beverage sector. As the sample size is small, SEM-PLS was used for constructing a model depicting a relation among technology adoption; technology management strategies and business performance. The related hypothesis are:

Hypothesis H1: Technology adoption is positively related with business performance.
Hypothesis H2: Technology management strategies are positively related with business performance.

3 Empirical Results

3.1 Technology adoption among women entrepreneurs

The researchers wanted to examine the technology adoption of women entrepreneurs in food and beverage sector. The research question to be examined was: Do successful entrepreneurs leverage technology in order to achieve their business objectives? The related was to identify the factors influencing technology adoption among women entrepreneurs in food anf beverage sector. Factor analysis was used to identify technology adoption factors for women entrepreneurs for selected firms in food and beverages sector. In this section the analysis for factors responsible for technology adoption have been discussed. Results are depicted in Table 4. The results indicate that there are five major factors that led to technology adoption in food and beverage sector. These can be classified as organizational culture; external environment; policy factors; market competence; and customer satisfaction. The identified five factors explain 76.9% of the variation.

Tab. 4: Factors influencing technology adoption among women entrepreneurs

Component/Item name	Organizational Culture TA1	External Environment TA2	Policy factors TA3	Market Competence TA4	Customer Satisfaction TA5
i. Clear Vision	.894				
ii. Availability of Professionals	.892				
iii. Involvement of entire Workforce	.800				
iv. Top Management commitment	.767				
v. Increased Operational Cost	.716				
Eigen value	**4.946**				
% of Variance explained	**19.024**				
i. Environment Sustainability		.929			
ii. Availability of better technology		.901			
iii. Market Pressure		.803			
iv. Openness to innovative culture		.770			
v. Cordial relation with supplier of technology		.622			
vi. Increased Business Cost		.603			
Eigen value		**4.859**			
% of Variance explained		**18.690**			
i. Government Financial Support			.896		
ii. Industrial Policies			.841		
iii. Globalization			.773		
iv. Economic Conditions			.766		
v. High Labor Turnover			.545		
Eigen value			**4.058**		
% of Variance explained			**15.608**		
i. Availability of Resources				.972	
ii. Need for Customized Product				.811	
iii. Cross functional working system				.638	
iv. Communication				.635	
Eigen value				**3.622**	
% of Variance explained				**13.932**	
i. *Demand for quality Product*					.877
ii. *Competition*					.765
iii. *Increased Material Cost*					-.564
Eigen value					**2.530**
% of Variance explained					**9.732**
Total variance					**76.987**
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization. (a. Rotation converged in 6 iterations.)					

Source: own research

The organizational culture (TA1) was heavily loaded with sub-factors like clear vision (.894) and availability of professionals (.892). Environment sustainability (.929), availability of better

technology (.901) and market pressure were the major contributors towards external environment (TA2).

The policy factor (TA3) was heavily loaded with government financial support (.896), industrial policies (.841), globalization (.773) and economic conditions (.766). In Market competence (TA4) the important items were: availability of resources (.972) and need for customized product (.811). Demand for quality product (.877) and competition (.765) were important items in Customer satisfaction (TA5).

Organizational culture and external environment emerged as important factors influencing technology adoption. This has support from earlier researchers as well. Organizational cultures shapes the way in which organizations choose to use technology. Behavioral intent has a means for creating richer models of technology adoption (Agarwal & Karahanna, 2000; Plouffe, Thompson, Compeau, & Higgins, 2006). External environment has also induced the firms to adopt technology, especially with globalization new technology is available and currently, there is increased demand due to focus on environment sustainability (Fatima, 2017).

3.2 Technology management strategies

The second objective of the study was to examine the technology management strategies of women Entrepreneurs in food and beverage sector. Exploratory factor analysis was applied to understand the technology management practices used by women entrepreneurs in this sector. Three major technology management strategies used were: employee involvement; management initiative; and training and development. These three strategies explain 76.071 percent of variation. The results as shown through Table 5.

Employee involvement (M1) was heavily loaded with sub-factor like readiness of staff to undergo training for new technology (.827). This was followed by seminars to make employees comfortable with the technology (.818). The second strategy i.e. management initiatives (M2) had dominance of two items, viz. managing through e-mode (.940); and change in management practices (.812). Training and development (M3) had dominance of regular training (.944). For checking convergent validity average variance extracted and composite reliability were calculated. Average variance extracted for all three strategies was greater than 0.50. This indicated that we could proceed ahead with SEM-PLS. The composite reliability for employee involvement was .859, for management initiative it was .827 and for training and development it was .805. This again is indicative of the fact that all these three strategies could be used for further research, as the score is above the threshold limit of 0.70.

Employee involvement (M1) emerged as the major strategy followed by management initiative (M2) and training and development (M3). There is an additional focus needed for training and development (M3).

Tab. 5: Technology Management Strategies

	Component/Item name	Employee Involvement M1	Management Initiative M2	Training and Development M3
i.	Readiness of Staff to undergo training for new technology	.827		
ii.	Seminars to make employees comfortable with the technology	.818		
iii.	Readiness of Staff to accept new technology	.760		
iv.	Up-gradation of Present Technology	.700		
v.	Managing through e-mode		.940	
vi.	Change in Management Practices		.812	
vii.	Retraining		.574	
viii.	Regular Training			.944
ix.	Skill Development Workshops /Program.			.684
	Eigen value	2.530	2.324	1.993
	Variance Explained	28.109	25.820	22.141
	Average Variance Extracted	**.605**	**.624**	**.653**
	Composite Reliability	**.859**	**.828**	**.805**
	Total Variance Explained		**76.071**	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 4 iterations.

Source: own research

Successful organizations in today's business environment are those which manage well along with their technological resources along with their human resources also (Hassan et al., 2006). Many respondents reported that though technology is adopted there are fewer training programs organized to assist in right use of technology for improving business performance. Thus, there is a need to improve this.

3.3 Relation among, technology adoption, technology management strategies and business performance in food and beverage sector

The last objective of research was to find a relation among, technology adoption, technology management strategies and business performance in food and beverage sector. Business performance in the figure is depicted by Outcome variable. To achieve this objective SEM-PLS was used. The results are shown through Figure 1. As the results highlight both technology

adoption and technology management influence business performance. However technology adoption emerges as a strong predictor of business performance. The value of adjusted r-square is 0.763. Hence 76.3 percent of variation in business performance is explained by technology adoption factors and technology management Strategies.

Fig. 1: Relation among, technology adoption, technology management strategies and business performance in food and beverage sector
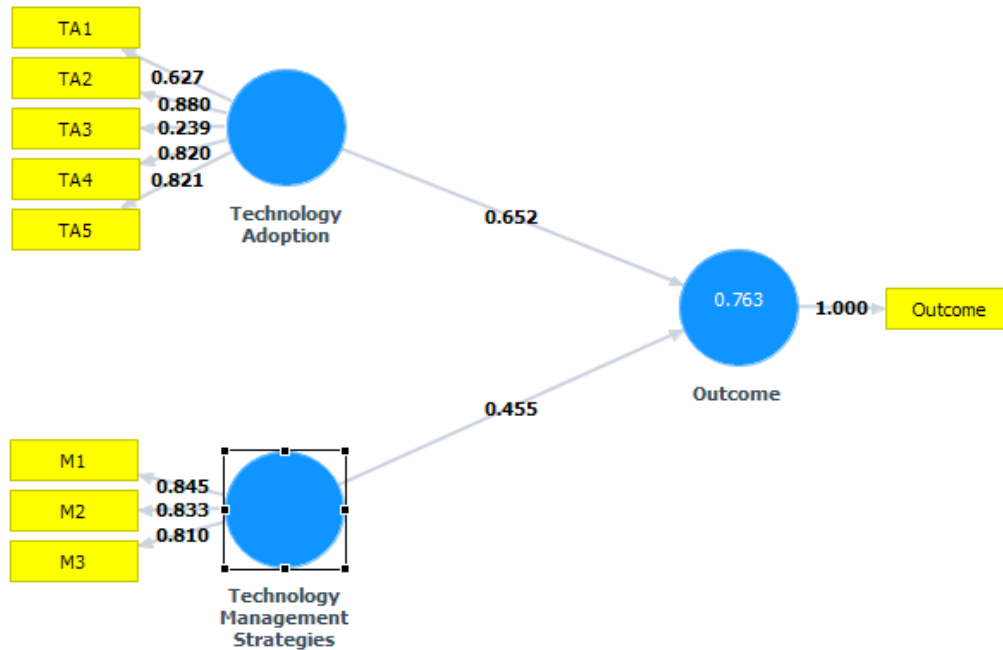
Source: Self Computed using SEM-PLS

The results of SEM-PLS (Table 6) highlight that H1: Technology adoption is positively related with business performance is accepted. The t-value is 14.976 and p is less than .001. Hypothesis H2: Technology management strategies are positively related with business performance is also accepted as the t-value is 7.236 and p is less than .001. Thus, Technology adoption and technology management strategies are related with business performance.

Table 6: Status of hypotheses

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T Statistics (|O/STERR|)	P Values	Hypothesis	Status
Technology Adoption -> Outcome	0.652	0.646	0.044	14.976	0.000***	H1: Technology adoption is positively related with business performance.	Accepted
Technology Management Strategies -> Outcome	0.455	0.441	0.063	7.236	0.000***	H2: Technology management strategies are positively related with business performance.	Accepted

Source: self-computed

Technological improvement is considered to be associated business performance and induces long-term growth (Acemoglu 2009). This study corrugates that there is a need to focus on technology adoption. Caselli (2005) puts technology adoption and management at the center stage for enhancing total factor productivity and growth, across firms. In technology adoption TA2: External Environment; TA4: Market Competence; TA5: and Customer satisfaction are important. Porter (1985) has highlighted the importance of market competence. SMEs capacity to meet growing customer expectations is based largely on their ability to innovate and deliver new products at competitive prices (Ghobadian and Gallear, 1997). Thus, although SMEs face serious restraint in acquiring new technology (Martino, 1983), but technology up gradation has always demanded attention.

Conclusion and Discussion:

This study contributes to a growing literature evaluating the impact of technology adoption and technology management strategy on business performance of women entrepreneurs in food and beverage sector in India. Exploratory factor analysis helped to identify technology adoption strategies for women entrepreneurs for selected firms in food and beverages sector. The results indicated that technology adoption in food and beverage sector is influenced by organizational culture; external environment; policy factors; market competence; and customer satisfaction. The most successful organizations build a culture that welcomes changes as the opportunities (Lockhead, 2008; Davenport and Bibby, 1999). Policy factors predicting value is low in SEM-PLS model. Thus, as pointed by Gomez (2009) public agencies must support technical expertise, training, disseminating information and financing. Thus, policy factors play a role in developing economies

Employee Involvement (M1), Management Initiative (M2), and Training and Development (M3) emerged as three major technology management strategies in this sector. Readiness of staff to undergo training for new technology; and seminars to make employees comfortable with the technology dominated employee involvement. Managing through e-mode and change in management practices were key players in management initiatives. Regular training and skill development workshops majorly influenced training and development strategies. These three strategies were followed by the food and beverage women entrepreneurs of Punjab. Technological entrepreneurship (TE) is an important way to commercialize technological innovations and offers unique development opportunities for societies to educate and grow. Moreover there are studies indicating that formal support comes in the form of financial,

technology, and strategic partnerships (Makhbul 2011). Thus there is need to focus on proper technology management strategies.

SEM results indicated importance of technology adoption and technology management for enhancing business performance. Results are also indicative of greater reliance place by Indian players on technology adoption. Rogers (1995) argues, adoption is a decision to make full use of an innovation as the best course of action available. The adoption of innovation creates changes in the structure and functioning of an organization (Damanpour, 1991) and further has also highlighted role of Technology is often perceived as masculine, which may explain the scarcity of women who chose to enter employment in technological fields (Wajcman, 2004). Moreover, McClure (1997) opined that organizations not adopt changes in technology will be ill prepared to function in current and future environments. Thus, undoubtedly technology adoption is important, however to survive and sustain it is creditable to focus on management of technology as well.

Organizations with an entrepreneurial culture focusing on action oriented employees and their willingness, as well as ability to create an idea and bring it to practical realization are going to be future leaders. This study highlights the importance of culture for technology adoption and this will assist the realization of success in business. In developing economies there still is reliance on policy factors to promote technology adoptions. Technology and Patent facilitating centers can assist to build technoentrprenurial culture. Future research could be undertaken on successful cases of food and beverage sector to provide more depth.

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Contact

Ravi Kiran

Thapar Institute of Engineering and Technology, School of Humanities and Social Sciences

Patiala-147004 (Punjab), India

rkiran@thapar.edu

AN OVERVIEW OF BUSINESS MODELS IN THE CZECH CHEMICAL INDUSTRY

Peter Kita – Iveta Šimberová

Abstract

Purpose: The paper's objective is to provide an overview of the utilized business models in the Czech chemical industry, more specifically section 20.1 according to CZ NACE. The aims of the underlying research are to provide a methodology to study an industry through the scope of its business models and utilize it on a specific industry to identify novel business models. Specifically, the research was conducted to identify the specific elements (or features) of novel business models based on sustainable multiple customer value creation within the context of the chosen industry.

Design/methodology/approach: The methodology is based on the work of different authors. Based on their methodologies and research a questionnaire was developed to fit the specific goal. The questionnaire's relevance was tested during semi-structured interviews with 2 directors from 2 different companies belonging in the sample. The sample consists of all 38 companies belonging to section 20.1 CZ NACE. The questionnaire was primarily targeted to commercial directors or production directors. It consisted of 32 questions regarding selected elements of their company's business model. These elements were later used to provide an overview of the business models for the selected industry.

Findings: Within such a capital-intensive industry under the spotlight of many external audits and under heavy legislation, following the issued legislation becomes a competitive advantage. The majority and minority business model constructs state the business model elements utilized by most of companies and vice versa. In effect the legislation and constant audits pushes companies towards more industrial safety and meeting environmental customer expectation while social expectations are being met by a smaller number of companies.

Research/practical implications: The majority and minority business model constructs provide an overview of the current trends in the selected industry. Due to the narrow orientation of the research the results are very specific for these companies. Future research involves the creation of specific concepts based on individual elements contained in the minority business model. Other efforts will be focused on gaining access to specific performance data to pair it with its specific business model, thus providing evidence on how different configurations of business models affect social, environmental and economic performance.

Originality/value: Business model research is often constricted to case studies of one or a few companies. Few works have focused on studying an industry through the lens of its business models. Also, few works have studied the connection of specific business model elements and sustainability multiple value creation.

Keywords: Novel business model, business model, multiple value creation, chemical industry

JEL Codes: M21

Introduction

Business activities have a large influence on the economy, environment, and society. A company draws upon its environment's biodiversity for resources and its society for labor to create value for its customers. The fourth industrial revolution promises the creation of novel business models driven by technological advancement and enhanced data collection capabilities. These promises promote ideas of sustainable development and multiple customer value creation. Although, business model research has sparked the interest of many authors in recent years, it has mostly remained limited to case studies. Although, case studies shed light on the outliers of an industry's dominant context and market forces, there hasn't been much research describing an industry through the lens of its business models.

The article's objective is to present an overview of the utilized business models within an industry, CZ NACE 20.1 manufacture of basic chemicals, fertilizers, and plastics. The focus is on novel business models within the industry, therefore the data collected about the occurrence of selected business model elements is divided into two business model constructs. The scientific goal is to combine the various approaches which examine an industry through the lens of its business models and discern novel business model elements within the specific and uniform context across the industry.

The first part introduces the theoretical background of the research. This part ties these concepts together on a theoretical level. The second part describes the research design and methodology. The third and last part presents research results and the minority and majority business model constructs.

1   Sustainable multiple customer value creation

The theoretical foundation of the research is based on two theoretical bodies. First, sustainable multiple customer value creation and business models. By incorporating the notion of sustainability and multiple value creation into a company's strategy it is forced to change the narrative of how it creates, delivers, and captures diverse types of value, i.e. the business model changes.

The notion of multiple value (Freeman, Wicks, Parmar, 2004) has been coined during sustainability reporting efforts (Marberg, Jonker, 2007). The theoretical framework of multiple value creation as a business foundation was formulated by McVea and Freeman in stakeholder theory (McVea, Freeman, 2005). The notion is based on the concept of the "triple bottom line"

(Elkington, 1998). Thus, multiple customer value applies sustainable development principals. In this respect, assessing the choice of production technologies, production processes, and distribution channels, i.e. the business model, to promote eco-efficiency ensuring that the product/service exceeds customer expectations (Nidomolu, Prahalad, Rangaswami, 2009; Červený, 2013).

Multiple customer value is an incremental and differentiating part of the value proposition. It is manifested in business decision leading to the satisfaction of environmental and social expectations of both customers as well as the stakeholders partaking in the company's success. In this respect, partaking stakeholders aid the understanding of customer expectations. Sustainability in this sense underlines activities which can be repeated in the long run opposed to one-time actions. Sustainable multiple customer value, thus, supposes a long-term relationship emphasizing mainly customers and other stakeholders. The relationship is described by two trends which are heavily supported by technology (Le Vely, 2015). The first trend (push strategy) integrates sustainable multiple customer value creation in regard to market differentiation in developing and pushing products/services aiding the customer's eco-efficiency (water usage, energy storage, etc.). In the context of Industry 4.0 the exchange of information is reliant on information technologies. This sets the business model into a context described by its customer and stakeholders (the collected) and their expectations which will impact its business model configuration and thus its performance. On the other hand, a pull strategy aids the understating of customer expectations which leads to lowering opportunity costs. This relationship serves to contribute to the company's economic success, such as cost savings, competitiveness or sales increase, risk reduction, improved profitability, customer retention, reputation, etc. In conclusion the integration of sustainable multiple customer value creation into the business model presupposes that it is (Schaltegger, Lüdeke-Freund, Hansen, 2012):

- voluntarily with the intention to contribute to the solution of societal or environmental problems;
- creating a positive business effect or a positive economic contribution to corporate success which can be measured or argued for in a convincing way;
- clearly and convincingly argument that it lead to both, the intended or environmental effects, and the economic effect.

1.1 Methodology and research design

Based on the theoretical background the following research question was formulated: "How to discern novel business models based on sustainable multiple value creation?" To answer this question a methodology was developed to discern novel business model designs within the context of an industry, namely CZ NACE 20.1 manufacture of basic chemicals, fertilizers, and plastics. The chemical industry is among the most capital-intensive ones where business model innovations are tied to technological improvements and incremental. The choice of a very narrow industry is due to context. Companies within the industry share common stakeholders, are regulated with the same set of regulation, and notably share the same basic business model. In this case, all companies manufacture basic chemicals, fertilizers, or plastics; share common stakeholders; and are influenced by European and national regulation.

To determine which companies, employ a novel business model design, the shared context has to be known, i.e. a general business model construct specific to this industry. Afterwards a comparison is possible.

The research is based on a methodological triangulation of the following methods:

– content analysis,
– semi-structured interviews,
– survey.

The set of 52 elements provided in the work of Chen & Chiu (2015) served as the basis for the research. In the first phase, the exact elements were used during the content analysis of websites, reports, articles, etc. of all the companies within the sample. After reviewing the results, the set was reduced to 38, due to no relevance to the industry's context.

Two semi-structured interviews were further conducted to test the relevance on the remaining elements. The interviews were conducted with the production and commercial direction of Synthon, AS and the general director of the research and education center of Unipetrol, AS. Both interviews lasted around 60 minutes. In result, the set of elements was modified and reduced to 32, displayed in Table 1. The resulting elements had to be formulated in a wide enough sense to cover each company's specific context and narrow enough to portray the activity and its implications in the business model's narrative.

Lastly, a questionnaire was developed to accommodate the 32 elements into 32 statements about the company to which respondents true or false. This is possible through the nature of business

model elements, which represent a narrative of the company's activities. An activity is either present in the narrative or not. The survey was mainly aimed commercial or marketing directors, if not present in the company's structure, then production managers were contacted. All participants were contacted via phone for consent in participation in the survey and the questionnaire was sent via e-mail subsequently.

All of the 38 companies in the sample were contacted and 22 questionnaires were obtained, which represents a 57,89% response rate. The results of the survey were used in conjunction with the results of the content analysis to provide a data set containing all the companies in the industry, due to the low sample size.

1.2 Sample

The sample consists of medium and large enterprises which belong into the CZ NACE group 20.1 manufacture of basic chemicals, fertilizers, and plastics. The companies were found using the database Amadeus and triaged based on the following criteria:

- active status;
- has headquarters or branch in the Czech republic;
- employee count greater than 75 employees;
- must belong to group 20.1 manufacture of basic chemicals, fertilizers, and plastics.

First results stated 49 companies in total, after reviewing, double entries and false entries were deleted leaving 42 companies. After, contacting each individual company during the distribution of the questionnaire commercial outlets and wholesalers were almost eliminated from the sample, leaving a final number of 38 companies.

2 Research results

Table 1 presents the research results, mainly the occurrences of elements within the business models of all 38 companies. The set of 32 elements was coded according to the 9 fields of the business model canvas albeit with a slight change in 2 fields where according to the definition of sustainable multiple customer value creation the field "customer relationships" and "Customer segments" were replaced by "Stakeholder relationships" and "Stakeholders". Elements were sorted to create the minority and majority business model constructs (Slávik et al., 2014). If an elements occurrence was greater than 51% than it was attributed to the majority business model and vice versa.

Tab. 1: Business model elements and results

Business model canvas field	Element	Frequency	Percentage (%)	Minority model
Value proposition	Availability of different products variants	32	84.21	
	Availability of product alternatives	17	44.74	x
	Environmentally safe products	24	63.16	
	Availability of related products	16	42.11	x
	Avoid hazardous substance in production	23	60.53	
	Provide individual planning	23	60.53	
	Emphasis on industrial safety	27	71.05	
Key partners	Provide supporting services with other companies	27	71.05	
	Procurement from local suppliers	16	42.11	x
	Cooperation with public/non-profit organizations	11	28.95	x
Key activities	B2B resource sharing	21	55.26	
	B2b functional supporting	4	10.53	x
	Centralized waste treatment	25	65.79	
	Provide take back agreement	10	26.32	x
Key resources	Sustainable of sustainable feedstocks	18	47.37	x
	Use of energy saving equipment	21	55.26	
Stakeholder relationships	Share information (also with the public)	23	60.53	
	Share experiences (with customers and suppliers)	16	42.11	x
	Assist/participation in academic research	18	47.37	x
	Provide internships for university students	20	52.63	
	Consulting	22	57.89	
Channels	Online platform for reservation	13	34.21	x
Cost structure	Waste to energy	15	39.47	x
	Reduce waste	23	60.53	
	Waste recycling	23	60.53	
	Money donations/Sponsorships	24	63.16	
	Set up education foundation	5	13.16	x
Revenue streams	B2B leasing	7	18.42	x
	Sale of waste materials as a resource or energy	11	28.95	x
	Specialized services (R&D)	21	55.26	
	Provide full-survice	24	63.16	
	Provide maintenance	3	7.89	x

Source: Author's own research, based on Chen, Chiu, 2015; Osterwalder et al., 2015

2.1 Majority business model

The majority business model construct (Fig. 1) represents a set of prevalent business model elements. Thus, a business model employed by most of companies in the industry and which would be needed to follow if a new competitor entered the market. Thus, it can be said that it presents an industry specific meta model.

Fig. 1: Majority business model construct

Key partners	Key activities	Value proposition	Stakeholder relationships	Stakeholders
• Provide supporting services with other companies	• B2B resource sharing • Centralized waste treatment	• Availability of different product variants • Environmentally safe products • Avoid hazardous substance in production • Emphasis on industrial safety • Provide individual planning	• Share information (also with the public) • Consulting • Provide internships for university .	• Customers • Suppliers • Universities • Environment
	Key resources • Use of energy saving equipment		**Channels**	
Cost structure • Reduce waste • Waste recycling • Money donations/Sponsorships			**Revenue streams** • Specialized services (R&D) • Provide full-survice	

Source: Author's own research, modified according to Osterwalder et al., 2015

2.2 Minority business model

The minority business model construct (Fig. 2) represents, according to the definition of sustainable multiple value creation, a subset of differentiating elements which are geared towards satisfying the environmental and social expectations. The minority model construct displays the orientation towards a larger number of stakeholders, new income streams and opportunities to reduce opportunity costs and drive eco-efficiency. Notably, in the "channels" field where distribution is also ensured through an online platform connecting local suppliers and offering waste materials as a resource or energy source. It also shows greater openness to a larger number of stakeholders by sharing experiences with customer or suppliers, participating in academic research, and cooperation with public and non-profit organizations.

The construct, as it stands, cannot be applied to the whole industry due to its nature of being a collection of less frequently utilized elements. Companies are likely to utilize the full extent of elements of the majority model and only some from the minority model. Thus, minority model can serve as a tool to gauge whether a company engages in creating multiple customer value or not and follow the evolution of the industry through shifts of elements from and to the minority business construct.

Fig. 1: Minority business model construct

Key partners	Key activities	Value proposition	Stakeholder relationships	Stakeholders
• Procurement from local suppliers • Cooperatation with public/non-profit organizations	• B2B resource sharing • Provide take back agreement	• Availability of product alternatives • Availability of related products	• Assist/participation in academic research • Share experiences (with customers and suppliers)	• Customers • Suppliers • Local government • Public/non-profit organizations • Environment
	Key resources • Sustainable feedstocks		**Channels** • Online platform for reservation	

Cost structure	Revenue streams
• Waste to energy • Set up education fund	• Provision of maintenance • B2B Leasing • Sale of waste materials e as a resource or energy

Source: Author's own research, modified according to Osterwalder et al., 2015

Conclusion

Business model research is often limited to case studies of one or a few companies. Few works have focused on studying an industry through the lens of its business models. Also, few works have studied the connection of specific business model elements and sustainability multiple value creation.

The majority and minority business model constructs provide an overview of the current trends in the in the group 20.1 according to CZ NACE. Due to the narrow orientation of the research the results are very specific for these companies. Based on the minority business model construct, it is visible that the contained elements point to that novel business models shift to more of an open system through a service-based logic which aims to lower environmental impact. Although, the majority and minority constructs may seem similar in some terms, it is necessary to note that they represent narratives. The majority business model represents a meta narrative for the whole industry, whereas the minority model represents a collection of odd elements which fit into specific narratives of individuals companies and represent vast effort for implementation.

Future research involves the creation of specific concepts based on individual elements contained in the minority business model. These concepts can be acquired through statistical correlation of the existing data, to see exactly which elements correlate to specific elements. Other efforts will be focused on gaining access to specific performance data to pair it with the

specific business models, thus providing evidence on how different configurations of elements in the business model affect social, environmental, and economic performance.

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Contact

Peter Kita
Faculty of business and management
Brno University of Technology
Kolejní 2906/4, 612 00 Brno, Czech Republic
kitap@fbm.vutbr.cz

Iveta Šimberová
Faculty of business and management
Brno University of Technology
Kolejní 2906/4, 612 00 Brno, Czech Republic
simberova@fbm.vutbr.cz

THE SURVEY OF ENTREPRENEURS IN THE COMPREHENSIVE ASSESSMENT OF COMPETITIVE ENVIRONMENT

Alexandr Kokovikhin – Ekaterina Ogorodnikova – Andrey Plakhin

Abstract

Purpose: This article aims to test the working hypothesis on the greater reliability of an integrated assessment of competitive environment combining statistical and polling methods of obtaining information. The objective was formed during the implementation of the research project introducing the competition development standard in Sverdlovsk region.

Design/methodology/approach: The assessment of objective indicators was carried out through the system of market analysis and with the assistance of "SPARK-Interfax"companies. The Herfindahl-Hirschman index was used to calculate revenues. The ratio of price growth to cost growth was calculated on the basis of the company's financial reports.The quantitative study was based on a broad survey which had been conducted from December 2015 to February 2017. A total of 1187 questionnaires were sent to respondents, filled out and returned. The obtained results were further analyzed with the Chi-square test.

Findings: Throughout the research, rankings were carried out in conformity with the level of competition development of socially significant markets in Sverdlovsk region. We haverevealed the ambiguity of the competitive situation assessment with the use of statistical and survey methods of obtaining information. 2015 and 2016 were marked by the consistency lack of the estimates of statistical and questionnaire methods for the social services market and certain segments of the educational services market. We explain this situation by a significant share of the grey sector that is not fully accounted in the statistics.

Research/practical implications: According to the revealed discrepancies, we recommend the compulsory use of survey methods for competition analysis as they allow taking into account insider information and development tendencies of illegal segments of educational and social services markets.

Originality/value: The presented study uses a unique set of regional-level data and facilitates a comprehensive method for assessing the competitive environment of regional markets. The above-mentioned method was tested on the materials obtained for the Ministry of Investments and Development of Sverdlovsk region from 2015 to 2017.

Keywords: Competitive environment, entrepreneurship, competition development standard

JEL Codes: J24, J31, M51

Introduction

Entrepreneurs are responsible not only for the creation of new firms but also for their technological leadership and success, as well as creating new jobs (Shane, 2003). Thus, entrepreneurs are the driving force of economic growth and form inequalities in the development of certain areas within the country (Faggio& Silva, 2014). Not surprisingly, at all levels of government, much attention is given to supporting entrepreneurs and creating a number of institutions aimed at realizing this goal (Stough, 2016).

In Russia at the federal level, this is conducted by the Ministry of Economic Development of the Russian Federation which carries out activities related to the following areas: legal regulation of small and medium-sized businesses, the program for supporting small and medium-sized enterprises, lending to small and medium-sized enterprises, middle entrepreneurship (Chepurenko, 2012).

The competitive environment is mainly formed by state authorities at the regional level due to the localization of most markets within a certain territory. To unify and improve the manageability of this process, the Law of the Government of the Russian Federation No. 1738-r of September 5, 2015 approved the Competition Development Standard in the Subjects of the Russian Federation (Kokovikhin, Ogorodnikova, Williams, Plakhin, 2017).

Creating the competitive environment is an integral part of the sustainable social and economic development of the territory and the main incentive for attracting investments into the region's economy. The Government of Sverdlovsk region pays special attention to system work in this direction. The competition development standard in the Russian Federation (Standard) launched in Sverdlovsk region became a solid basis for improving the competitive environment in 2015.

The main objective of implementing the standard is to provide consumers with the necessary variety of supplies delivered to socially important markets. The real problem is methodological support for monitoring satisfaction with the level of competition development in goods and services markets (Perova, Bryazgina & Zhurba, 2016).

Indicators of the standard implementation at the regional level are included into the list of indicators assessing the performance of senior officials (heads of higher executive bodies of the government) of the subjects of the Russian Federation in creating favorable conditions for business activity. It was approved by Decree of the Government of the Russian Federation of April 10, 2014 No. 570-r. on monitoring and evaluating implemented components of the

competition development standard in the subjects of the Russian Federation. Some specific aspects of monitoring are presented in Kokovikhin's survey (2017).

However, there is no single methodology for analyzing the impact of a state decision on competition, many authors believe the assessment procedure has a positive effect on limiting negative consequences of the regulation of the competitive activity (Decker, 2017).

1   Methods

Primary data was used for the study. The estimation of objective indicators was carried out with the help of the market analysis system and "SPARK-Interfax" companies. To calculate the Herfindahl-Hirschman index, the company's revenue figure was used. To determine the ratio of price growth and cost growth, revenue and cost parameters for 2015 and 2016 were taken from the company's financial reports.

A quantitative study was based on a broad survey which had been conducted from December 2015 to February 2017. 2410 questionnaires were sent out, a total of 1187 questionnaires were filled in and returned.

The database included legal entities and individual entrepreneurs operating in Sverdlovsk region and related to the following groups:

- Recipients of financial and non-financial support provided by the Sverdlovsk Oblast Fund for Entrepreneurship Support,
- Companies that received permission to build on the territory of municipalities in Sverdlovsk region,
- Companies that received urban plans for the territory of municipalities in Sverdlovsk region.

The number of respondents was at least 5% of the total population exceeding 500 recipients, which is at least 25 people from the population of more than 100 but less than 500 recipients, not less than 15 people in aggregate from the population of less than 100 recipients, with less than 15 recipients of support measures. As a result, we have surveyed an exhaustive list of recipients.

In consideration of the foregoing, we have suggested the following hypothesis:

H1: The necessary degree of reliability of the integrated assessment of the competitive environment can only be achieved by using both questionnaire and statistical methods of

obtaining information.

We have analyzed methodological approaches to assessing the competitive environment maturity, including the assessment of market concentration and the definition of multidirectional profit and costs dynamics. This assessment was carried out using information obtained from business surveys (Table 1).

Tab. 1: The indicators for estimation of competitive environment.

Elements of the comprehensive assessment	Indicators	Formula	Assessment criteria
Estimation of the market concentration	Herfindahl-Hirschman index	$$HHI = \sum_{i=1}^{n} Si^2,$$ Si –vendor's rate	1800 till 10000– high level of the market concentration 1000 till 1800 – middle level of the market concentration 1 till 1000 – low level of the market concentration
Estimation of the market power	Coefficient of prices and costs dynamics	$$K_1 = \frac{\Delta P}{\Delta C}$$ ΔP- increases of prices ΔC- increases of costs	$K_1 > 1$ - no real competition $K_1 = 1$ - intense competition $K_1 < 1$ - moderate competition
Estimation performed using the polls of the entrepreneurs	Coefficient of Respondent's estimation of competitive environment	$$K_2 = \frac{i_n - i_{min}}{i_{max} - i_{min}}$$ i_n- scores of respondents i_{min} – minimum scores for market i_{max} – maximum scores for market	$K_2 > 3,5$ -moderate competition $2 < K_2 < 3,5$ - intense competition $K_2 < 2$ - no real competition

Source: (Lu, Qiao & Chang,2017), (Kokovikhin, 2017)

The developed methods of comparison of estimates include three stages of the data processing model, which performs a consistent comparison of the maturity characteristics of the markets obtained by implementing these approaches

The comparison of the estimates is based on the chi-square Pearson criterion (Pearson, 1900) (formula 1). This nonparametric method allows one to estimate the significance of the differences between the number of outcomes found in the study as falling into each category and the theoretical quantity that can be expected in the studied groups under the validity of the null hypothesis.

$$\chi_n^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i} \qquad (1)$$

i – line number (from 1 to n), Oij – actual number of observations in the cellij, Eij – expected number of observations in the cell ij.

If the frequencies really match the expected, the criterion value will be relatively small (since most deviations are about zero). But if the criterion turns out to be large, then this is evidence in favor of significant differences between the frequencies (Plackett, 1983).

2 The result of research

Most entrepreneurs in socially important markets of Sverdlovsk region are sure that competition is moderate and requires measures to increase the competitiveness of products / works / services, such as lower prices, higher quality, development of related services, etc. Exceptions are the markets for the services of psychological and pedagogical support for children with disabilities and services for children's recreation and rehabilitation.

The result of comprehensive assessment of socially important markets of Sverdlovsk regionis presented in Tables 2-4. There are four markets with high level of competition in Sverdlovsk region: market of services in the sphere of culture, communication services market, communication services market and retail trade (Tab.2).

Tab. 2: Comprehensive assessment of markets with high level of competition.

Market	Herfindahl-Hirschman index	Dynamics of profits and costs	Rate of respondents, estimate the competitionon market as moderate
Retail trade	530	The increases of prices such as the increases of costs	31%
Market of passenger transportation by land	881	The increases of prices low than increases of costs	40%
Communication services market	717	The increases of prices low than increases of costs	39%
Market of services in the sphere of culture	701	The increases of prices low than increases of costs	39%

Source: Authors' own elaboration

There are three markets with middle level of competition in Sverdlovsk region: market of housing and communal services, market of social services, Market of medical products (Tab.3).

Tab. 3: Comprehensive assessment of markets with middle level of competition.

Market	Herfindahl-Hirschman index	Dynamics of profits and costs	Rate of respondents, estimate the competition on market as intensive
Market of housing and communal services;	1360	The increases of prices higher than increases of costs	38%
Market of social services;	1773	The increases of prices such as the increases of costs	29%
Market of medical products.	1184	The increases of prices higher than increases of costs	33%

Source: Authors' own elaboration

There are six markets uncompetitive markets in Sverdlovsk region: market of pre-school education services, market of medical services, market of additional education services for children, market of psychological and pedagogical support services for children with disabilities, market of children's recreation and rehabilitation services, gas market (Tab.4).

Tab.4: Comprehensive assessment of uncompetitive markets.

Market	Herfindahl-Hirschman index	Dynamics of profits and costs	Rate of respondents, estimate the competition "no real competition"
Market of pre-school education services	5248	The increases of prices such as the increases of costs	28%
Market of medical services	8124	The increases of prices higher than increases of costs	42%
Market of additional education services for children;	8094	The increases of prices such as the increases of costs	37%
Market of psychological and pedagogical support services for children with disabilities;	3189	The increases of prices such as the increases of costs	29%
Market of children's recreation and rehabilitation services;	7518	The increases of prices such as the increases of costs	27%
Gas market	5436	The increases of prices higher than increases of costs	25%

Source: Authors' own elaboration

After the characteristics of the markets, we present data on the compatibility of competition assessments in accordance with various methodological approaches based on the chi-square Pearson criterion.

Fig. 1: Testing the assessments of the formation of competition in the socially significant and priority markets of the Sverdlovsk Region in 2015 by the criterion chi-square Pearson.
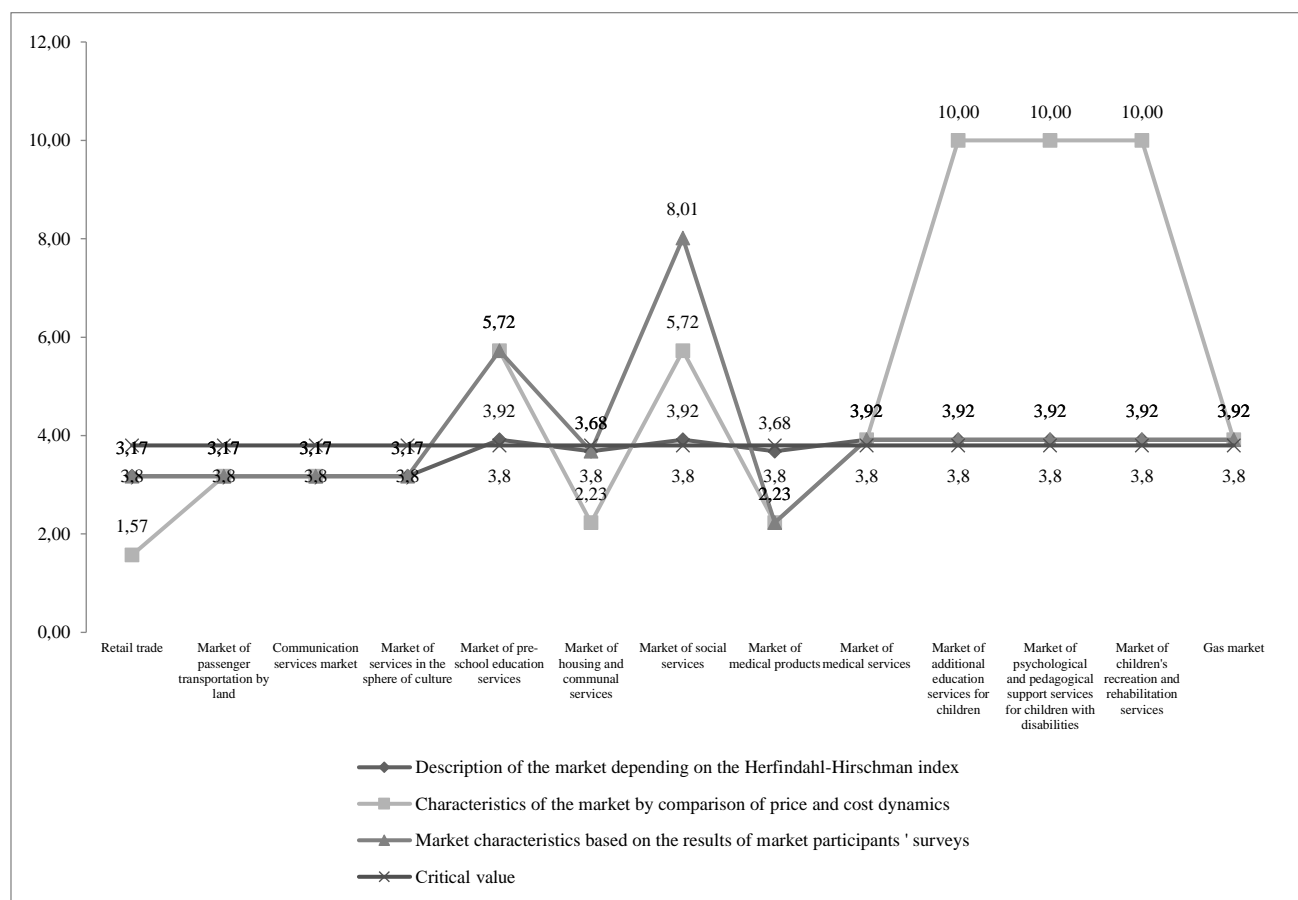
Source: Authors' own elaboration

As can be seen from the results of 2015, the greatest discrepancy in estimates is observed in the social services market. According to the Herfindahl-Hirschman index, the market is estimated as low-competitive while market participants evaluate it as competitive. This situation is explained by a significant part of the so-called "grey" individual participants in providing social services, who cannot be mentioned in official statistics. Similar reasons explain the divergence of estimates in educational markets. According to the revealed discrepancies, we recommend the compulsory use of survey methods for conducting the competition analysis as they allow taking into account insider information and the illegal segment of educational and social services markets.

Fig. 2: Testing of assessments of the formation of competition in socially important and priority markets of the Sverdlovsk Region in 2016 by the criterion chi-square Pearson.
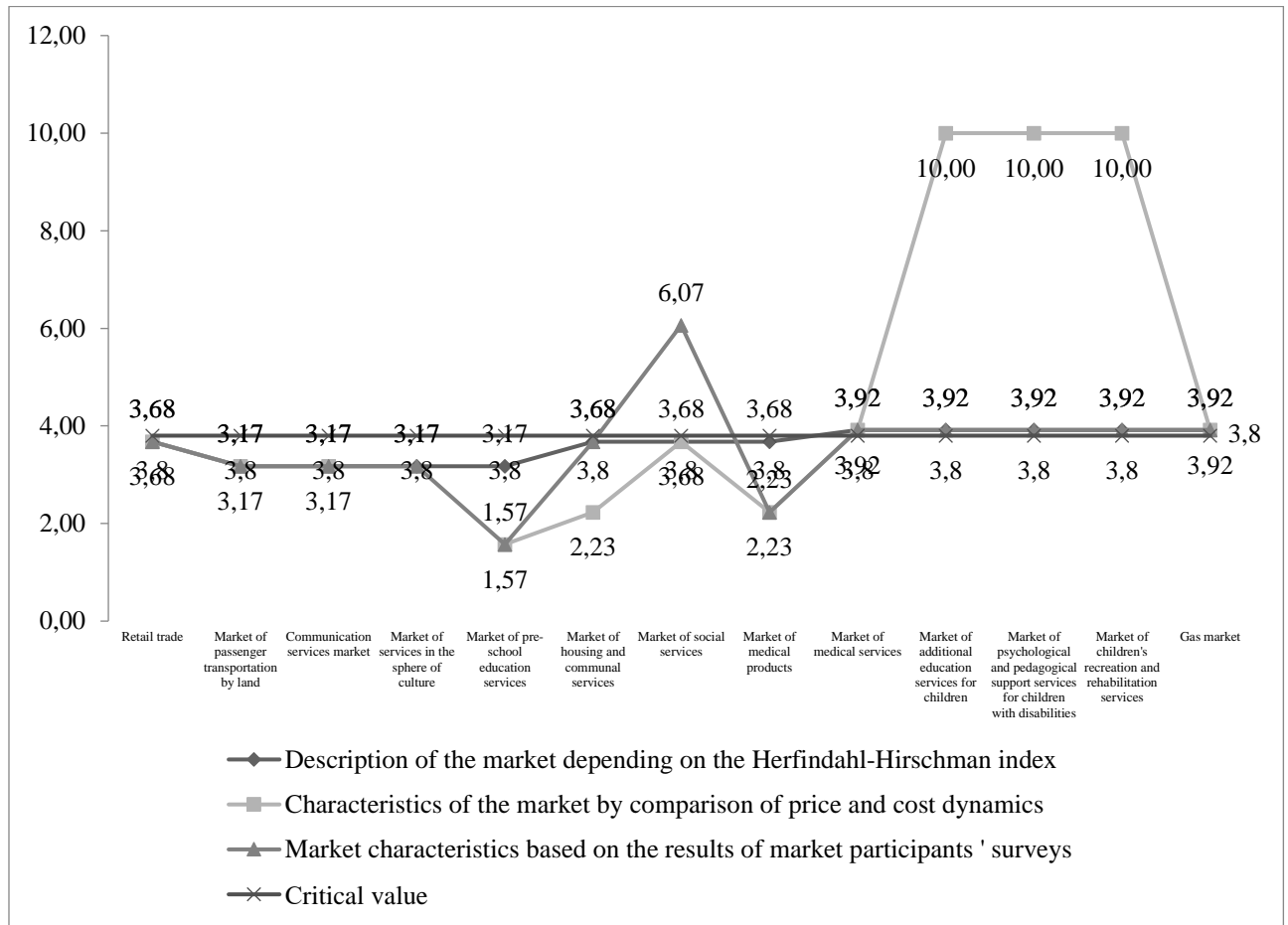
Source: Authors' own elaboration

At the end of 2016, the discrepancy in estimates for the social services market declined. In conformity with the Herfindahl-Hirschman index, the market is estimated as a market with moderate competition, while market participants regard it as competitive. This situation is due to the official registration of "grey" individual participants providing social services in connection with their desire to obtain various types of entrepreneur support for the priority market carried out by the authorities of Sverdlovsk region.

Conclusion

The article presents the results of studying and comparing statistical and questionnaire approaches to the assessment of the competitive environment formation and dynamics. The study was conducted as exemplified by socially significant and priority markets in Sverdlovsk region.

As the working hypothesis has confirmed, it can be argued that the significance of this information increases with the regular nature of interviews in the manner it is described in the works of (Filson, 2015) and (Joskow, 1994). Estimating the dynamics of indicators, one can draw full-fledged conclusions about the competitive environmentformation on a par with the market power performance and concentration indicators. Therefore, the work thesis is confirmed (Earle &Estrin, 1998).

The conducted research allows us to report on the following significant results.

Firstly, we have structured socially significant and priority markets of Sverdlovsk region on the level of their competition development. The largest number of markets are valued as markets with absent and low competition. We should note that most of them are separate segments of the educational market. The group of highly competitive markets includes the retail market, market for passenger transportation services by land, communications market and cultural services market. The group of markets with moderate competition comprises the housing and communal services market, social services market and medical production market.

Secondly, 2015 and 2016 were marked by the convergence lack of estimates obtained through statistical and survey methods on the social services market and certain segments of the educational market. We explain this situation by a relatively large "grey" sector of these markets that is not subject to full statistical accounting.

According to the revealed discrepancies, we recommend the compulsory use of survey methods for the competition analysis as they allow taking into account insider information and development tendencies of illegal segments of educational and social services markets.

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Contact

Alexandr Kokovikhin

Ural State University of Economics

620144 Yekaterinburg, 8 Marta/Narodnoy Voli st., 62/45 Russian Federation

gov66@inbox.ru

Andrey Plakhin

Ural State University of Economics

620144 Yekaterinburg, 8 Marta/Narodnoy Voli st., 62/45 Russian Federation

apla@usue.ru

Ekaterina Ogorodnikova

Ural State University of Economics

620144 Yekaterinburg, 8 Marta/Narodnoy Voli st., 62/45 Russian Federation

cmb_8@mail.ru

THE USE OF CRYPTOCURRENCY IN ENTERPRISES IN CZECH REPUBLIC

Andrea Kolková

Abstract

Purpose: The aim of this paper is to show the potential use and possibilities of cryptocurrencies for enterprises. This includes the accounting and legal aspects of this new phenomenon. The application will focus on one of the ways to exploit cryptocurrencies, namely CFD contracts.

Design/methodology/approach: The article describes the capabilities and tools for using cryptocurrency for entrepreners. Selected cryptocurrencies are subjected to statistical analyzes, and so analyze the daily values of the exchange rates from the time of the occurrence of the given cryptochange. Based on the data of selected cryptocurrencies, the possibilities of speculation with cryptocurrency for entrepreneurs are subsequently proposed in the article.

Findings: Entrepreneurs can also use cryptocurrencies to pay for ordinary businesses in a number of ways without the use of above-standard computing. At the present time, the greater spread of cryptocurrencies payments defends them high volatile and relatively large charges. The cryptocurrencies can be use entrepreneurs for trading.

Research/practical implications: In the Czech Republic there is a relevant legal regulation that allows transactions to be carried out in cryptocurrencies in accordance with Czech law, using appropriate electronic sales records. The issue contains many other topics for research.

Originality/value: Cryptocurrencies are considered the biggest innovation in the financial markets over the last 20 years. The use of these entrepreneur's tools has been small for now; however, they may still be a tool to develop enreprenur in the financial markets.

Keywords: Cryptocurrencies, bitcoin, ethereum, litecoin

JEL Codes: G14, C58, C53

Introduction

Cryptocurrencies are considered by many authors (Hileman, Rauchs, 2017) to be the largest innovation in the finance over the last 20 years. Some authors compare the creation of cryptocurrencies to innovations such as the Internet or email. The most extensive study on trading with the cryptocurrencies has been published by Cambridge University (Hileman, Rauchs, 2017). According to the study, the number of active users of cryptocurrencies worldwide ranges from 2.9 to 5.8 million.

Despite this, cryptocurrencies are still concidered illegal in some countries. From Figure 1, it is possible to see which countries, for example, consider bitcoin to be legal and which significantly restrict their use.

Fig. 1: legal restrictions of cryptocurrencies in the world

it's legal to use bitcoin

some restrictions on legal usage of bitcoin

interpretation of old laws, but bitcoin isn't prohibited directly

full or partial prohibition
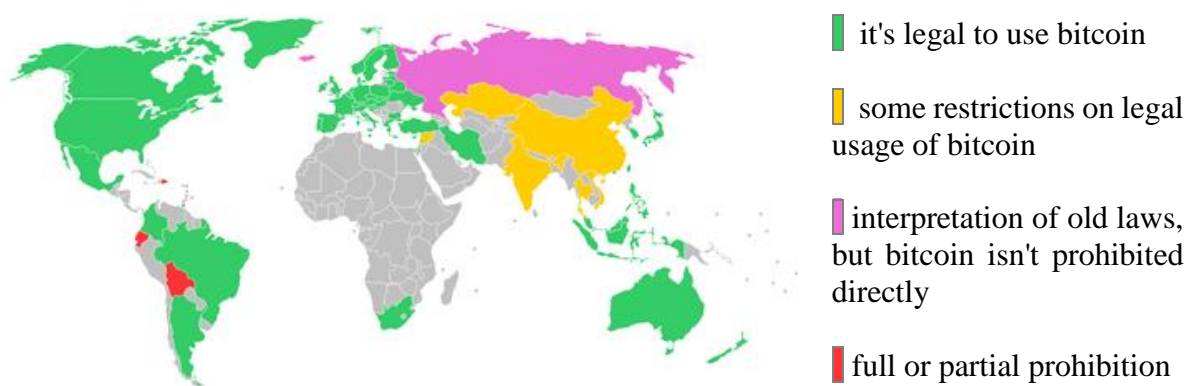
Source: Legal status of Bitcoin. https://commons.wikimedia.org/wiki/File:Legal_status_of_bitcoin.png

For the purpose of this contribution, an entrepreneur using cryptocurrencies is a person who has income from cryptocurrencies within the business activity according to par. 7 the number of the Income Tax Act and for their goods or services gets paid in cryptos. In addition, it is the person whose main entrepreneurship is to exploit cryptocurrencies and to obtain rewards from extracted blocks or transaction fees and ultimately the person trading on the stock exchanges of cryptocurrencies or cryptocurrency derivatives (especially CFD contracts).

1   Cryptocurrency

Cryptocurrency is a digital currency. The first and probably the best known cryptocurrency is Bitcoin. It was created in 2008 by a programmer using the pseudonym Satoshi Nakamoto (Nakamoto, 2008). The real name of Bitcoin´s author has not been found out yet.

After Bitcoin's first success, a number of other cryptocurrencies began to emerge, often referred to as altcoin. All digital currencies are also named Money 2.0. At present (November 2017), there are 1231 cryptocurrencies. Among the most capitalized foreign currency, Bitcoin also includes Ethererum, Ripple, Bitcoin Cash, Litecoin and Dash. A total of 12 cryptocurrencies have a market capitalization of over one billion dollars.

1.1   The nature of cryptocurrencies

The open source peer-to-peer network is used to create cryptocurrencies (P2P) and cryptocurrency owners are connected to one another in P2P network over the Internet. Cryptocurrency operations do not require a banking intermediary, so-called B2B network. The idea of digital money is not new, however it has always been based on the existence of a central coordinator. This is not necessary in the P2P network. From this point of view, cryptocurrencies could be the basis for a complete change or elimination of banking, or the entire monetary part of the economy in the future.

According to Satoshi Nakamoto, the electronic coin is defined as a string of digital signatures (Nakamoto, 2008). So cryptocurrencies were developed to eliminate the need for a single entity that accounts for and controls the currency. Bitcoin's blockchain was the first to achieve this decentralized accounting structure. Even this protocol is considered revolutionary by many computer scientists. Blockchain servers are calledminers.The miners cooperate to agree on the order of all transactions placed in the system by grouping transactions into blocks and forming a chain of blocks that defines their order, which creates blockchain. Any server can join this network and become a miner. Users then connect to P2P and issue cryptographically secured transactions, moving money to other users.

Security in this system is based on the fact that we can not use the same coin in two different transactions. Once the first is placed in the blockchain, a second simply cannot be placed after it (Eyal, 2017).

Blochain technology is still in its infancy and is constantly being improved and enhanced, and Bitcoines Next Generation or Hybrid Protocols and Solidus Protocols or Spectra Protocol, for example, are now emerging.

1.2   Use of cryptocurrencies for entrepreneurs

Bitcoin or other cryptocurrencies are very intristing topic nowadays (Nair, 2017) or (Hernandez, 2017). For entrepreners bitcoin mining would mean a huge additional costs not only for IT, but also for time, and therefore for wage costs and electricity costs.

Another way to get cryptos are shopping. It is necessary for a business owner to own a bitcoin wallet, which is now available for example by Blockchain, BitWallet, CoinPocket, breadWallet, GreenAddress, ANX Vault, Pheeva or Hive. It is possible to combine the deposit with a certain type of deposit wallet or safe deposit box. Purchases of cryptos are then available through the exchange and exchange office, or in bitcoin ATMs. These are located in the Czech Republic by wBTCb.cz, s.r.o. Cryptocurrencies can also be purchased on stock exchanges. Among which Bitfinex, Coinbase, Kraken or Bitstamp, which Luxembourg has licensed a payment institution, is the first fully licensed exchange for purchase and sale of Bitcoins in the EU. For the Czech Republic is also interesting the Coinmate Exchange, which allows the purchase of bitcoins in Czech crowns. These in the Czech Republic are operated by wBTCb.cz, s.r.o.Cryptocurrencies can also be purchased on stock exchanges. Currently, Bitfinex, Coinbase, Kraken or Bitstamp, which Luxembourg has licensed a payment institution, are among the most well-known exchanges, and is the first fully licensed Bitcoin Exchange to buy and sell in the EU. This Bitcoin exchange was named the Best Virtual Currency Startup at the 2014 (coindesk, 2014). For the Czech Republic is also interesting the Coinmate Exchange, which allows the purchase of bitcoins in Czech crowns.

Another possibility of using cryptocurrencies in entrepreneurship is the emergence of payment operators (such as Cashila) that allow the conversion of currency from a bitcoin wallet to a current bank account if the addressee does not yet make a payment by cryptocurrency. Probably the easiest way to accept payments in cryptos is bitcoinpay, bitopay or coinify. Customers pay to businesses via a QR code or by clicking on a payment link. The currencies can then be converted into their respective currencies and received virtually instantly on a classic bank account. Of course, this route will not be avoided by a variety of charges.

At the present time, the entrepreneurs accepting the cryptocurrency are moped in the portal Coinmap where we can find 10,373 stone shops, restaurants and service providers to this date (December 1, 2017). You need to add e-shops and online services to this number. In the Czech Republic, for the time being, there are 197 business places, other than e-shops, where cryptocurrencies are accepted. And there are also 10 bitcoin ATMs (7 in Prague, Pilsen, Brno and Ostrava). Merchants accepting cryptos are listed in the Bitperia.cz catalogue.

In its Methodological Instruction on the Application of the Sales Regime Act, the General Financial Directorate defined that the payment made by the cryptocurrencies complies with the formal requirements for a registered revenue within the meaning of the Sales Records Act. In this context, Bitcoinpay also provides electronic records of sales (ERS) in cryptocurrencies in the Czech Republic. This is the first the only bitcoin ERS Cashier called LILKA. Most entrepreneurs who receive payments in Bitchoine in the Czech Republic are only small entrepreneurs and they are rather only enthusiasts. Greater volatility, as well as significant transaction fees for payments made, are currently hampered by the widespread cryptocurrencis as a means of payment.

The latest way to use cryptos, such as an appreciation of free enterprise resources, is to deal with derivatives of kryptomena, which entrepreneurs can buy at classic brokers. This way of using cryptocurrencies will be discussed later in the research part of the thesis.

1.2.1   Legal nature of cryptocurrencies in the Czech Republic

The legal definition of cryptocurrencies in the Czech Republic is still missing. The definition of the virtual currency has been introduced by Act No. 253/2008 Coll., On Certain Measures Against the Legalization of Proceeds of Crime and on Financing of Terrorism, as amended by § 2 (1) l) where it is defined that a virtual currency is an electronically retained unit, whether or not it has an issuer and which is not a payment instrument under the Payment System Act but is also accepted as a payment for goods or services by another person other than its issuer.

However, this definition does not fully describe cryptocurrencies. For this reason, on February 10th, 2014, the ČNB issued an opinion stating that the cryptocurrencies are not cashless cash or electronic money, as defined by § 4 of Act 284/2009 Coll. About payment transactions or funds within the meaning of Section 2 (1) of the same law. The sale or purchase of cryptocurrencies is not, according to § 3 (1), a payment service and does not even constitute a non-cash foreign currency transaction, which defines Article 2 (1) E). According to the ČNB, it is not a payment service nor a transaction, nor an account management in cryptocurrencies. Exchanges in cryptocurrencies are not fulfilled either by § 2 (1) of Act 277/2013 on Exchange activities and cryptocurrencies do not even show the features of the investment instrument. The only exception is trading in derivatives, most commonly CFD contracts, which are, of course, an investment tool and will be analyzed in the application.

Czech law looks at the cryptocurrencies as a matter and it specifies the provisions of § 489 et seq. Act No. 89/20012 Coll., the Civil Code, as amended, as an intangible object within the

meaning of Section 496 (2) of the same Act.This also implies that when the cryptocurrencies are intangible fixed assets, that is the thing, the offender is liable for the alienation in accordance with the provisions of Section 205 of Act No. 40/2009 Coll., Criminal Code, as amended, which regulates the crime of theft.

1.1.2 Accounting aspects of cryptocurrencies in the Czech

All exchange of virtual currencies are exempt from VAT on the basis of a judgment of the Court of Justice of the European Union following the judgment of the Court of Justice of 22 October 2015, Skatteverket v. David Hedqvist, of the Court of Justice of the European Union. It was decided in a dispute between the Swedish Tax Administration and Mr Hedqvistem that, in the case of transactions involving the exchange of the traditional currency with the Bitcoin virtual currency and vice versa, and instead of paying a certain amount corresponding to the margin, they constitute the service for remuneration. Pursuant to Article 135 (1) (e) the EU Value Added Tax Directive, which specifies the tax exemption for activities, including currency trading, is therefore exempt from VAT of the provision of services consisting in the exchange of fiat currencies and vice versa. However, since July 1, 2017, the VAT liability for a virtual currency payment has been extended. Thus, the beneficiary of the taxable payment is also liable for the unpaid tax on this payment if the consideration is provided in whole or in part with a virtual currency, which Act 234/2004 Coll. On the Value Added Tax does not define, but it complies with Act No. 253/2008 Coll., On Certain Measures Against the Legalization of Proceeds from Crime and the Financing of Terrorism, as amended. To extend the liability insurance institution, the General Financial Directorate issued information as amended by Appendix No. 1: 70 857/17 / 7100-20118-012287. This process is supported in the Explanatory Report by the fact that cryptocurrencies offer enormous opportunities for tax evasion and legalization of crime, which may be the subject of further research. This is also reflected in the already drafted bill amending Act No. 253/2008 Coll., On Certain Measures against the Legalization of Proceeds from Crime and the Financing of Terrorism.

In business practice, income taxes can be compared to exchanges of any other currency. Virtual currencies enter the taxing process when they are exchanged for a fiat currency, if the exchange difference is a profit. From this exchange rate profit, however, it is possible to deduct income-generating costs, such as stock exchange and exchange office bills, or training courses in cryptocurrency control or purchase of a hardware wallet. Only the difference is the basis of the tax, which is subject to the relevant income tax according to the Income Tax Act No 586/1992. After taxing foreign exchange earnings, cryptocurrencies remain in the company's assets.

A more difficult situation occurs when buying and selling acts (or vice versa) divide the end of the marketing year. Regular fiat currency would be recorded in the accounting at the official exchange rate of the Czech National Bank. However, cryptocurrencies do not have this option. In the event that we still purchase the currency in the same way and through the same exchange office or stock exchange, it is possible to use this provider's exchange rate. In the case that we choose different platforms for the purchase or sale of cryptocurrencies, it is necessary to use the average rate of all stock exchanges and exchange offices concerned with the trading.

2   Data and methodology

In this paper, the daily exchange rates data of the most significant cryptocurrencies are being used such as Bitcoin (hereafter BTH), Ethereum (ETH), Ripple (XRP), Lithecoin (LTC), and Dash (DASH). All selected cryptocurrencies are rated in a currency pair with USD (coinmarketcap.com/currencies). The statistical characteristics of these cryptocurrencies are summarized in Tables 1-6. Data is the daily value for the entire existence of concrete cryptocurrency.

Tab. 1: Statistical description of Bitcoin and its

	N	Range	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
open	2219	4921.71	0.00	4921.71	536.76	17.13
high	2219	4979.90	0.00	4979.90	553.23	17.73
low	2219	4671.09	0.00	4671.09	518.83	16.50
close	2219	4921.70	0.00	4921.70	538.88	17.23

Source: own

Fig. 1: Value of Bitcoin in graph

Source: own, according to data of coinmarketcap.com

Tab. 2: Statistical description of Ethereum

	N	Range	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error

Open	1 363.00	400.21	0.21	400.42	38.91	2.22
High	1 363.00	409.42	0.35	409.77	40.76	2.31
Low	1 363.00	376.13	0.21	376.34	37.31	2.13
Close	1 363.00	399.54	0.31	399.85	39.12	2.23

Source: own

Tab. 3: Statistical description of LTC

	N	Range	Minimum	Maximum	Mean	
						Std.
	Statistic	Statistic	Statistic	Statistic	Statistic	Error
open	1655	84.68	1.15	85.83	10.29	0.36
higt	1655	90.73	1.34	92.07	10.76	0.38
low	1655	74.48	1.11	75.59	9.81	0.34
close	1655	84.88	1.16	86.04	10.33	0.36

Source: own

Tab. 4: Statistical description of Dash

	N	Range	Minimum	Maximum	Mean	
						Std.
	Statistic	Statistic	Statistic	Statistic	Statistic	Error
Open	1363	400.21	0.21	400.42	38.91	2.22
High	1363	409.42	0.35	409.77	40.76	2.31
Low	1363	376.13	0.21	376.34	37.31	2.13
Close	1363	399.54	0.31	399.85	39.12	2.23

Source: own

Tab. 5: Statistical description of Ripple

	N	Range	Minimum	Maximum	Mean	
						Std.
	Statistic	Statistic	Statistic	Statistic	Statistic	Error
open	1557	0.392	0.003	0.395	0.035	0.002
hight	1557	0.432	0.003	0.435	0.037	0.002
low	1557	0.329	0.003	0.332	0.033	0.002
close	1557	0.391	0.003	0.394	0.035	0.002

Source: own

Tab. 6: Statistical description returns of selected cryptocurrencies

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
						Std.				Std.		Std.
returns	Statistic	Statistic	Statistic	Statistic	Statistic	Error	Statistic	Statistic	Statistic	Error	Statistic	Error
BTH	2198	1.40142	-1.00000	0.40142	-0.0018	0.0019	0.0912	0.008	-7.721	0.052	83.627	0.104
ETH	1362	2.94	-2.56	0.37	-0.0090	0.0030	0.1091	0.012	-10.878	0.066	231.441	0.133
LTC	1654	1.69	-1.29	0.40	-0.0040	0.0019	0.0753	0.006	-5.317	0.060	75.141	0.120
DASH	1362	2.94	-2.56	0.37	-0.0090	0.0030	0.1091	0.012	-10.878	0.066	231.441	0.133
XRP	1556	2.25	-1.79	0.46	-0.0054	0.0022	0.0879	0.008	-6.882	0.062	120.323	0.124

Source: own

The statistical description of yields is also important in determining the stochastic process of cryptocurrencies development, as discussed in Article (Bariviera at all, 2017) and (Katsiampa, 2017). The basic research questions of this article are, whether it is cryptocurrencies by a suitable tool for entrepreneurs? And the second research question will be whether a business system based on simple indicators of technical analysis is suitable for entrepreneurs with this instrument?

2.1 Methodology

To assess trading options for entrepreneurs, all selected cryptocurrencies on CFD derivative trades are applied, so it will not be a specific purchase of a cryptocurrency but a speculation to change the exchange rate of that asset. Within these instruments, business systems most commonly used amongst small traders will be applied and therefore suitable for their simplicity even for entrepreneurs whose main business is not trading, namely the moving averages indicator and the MACD indicator. These indicators have already been discussed in paper (Kolková, 2016). The trading system based on sliding diameters is based on the simple moving average, with period 9 (hereafter referred to as SMA9). This trading system generates a signal in case of intersection with the selected cryptocurrency rate.

The MACD-based trading system, which is constructed with custom parameters, generates signals in the case of a MACD histogram intersection with a signaling line.

The closing of trades takes place at T + 3 of the selected time frame, it is not dependent on generating the opposite signal, which supports the simplicity of the whole system. The default value is $ 1. The calculation in this post is based on SPSS, Excel and Ta-lib for Excel. The final results are evaluated on the basis of Risk-reward ratios, Expectancy, Annual Return and Sharpe ratios. Expectancy defines how large yield on average we can expect to a single deal, and so it is clear that the higher the characteristics, the more powerful the system is. The risk-reward ratio reflects the ratio of average profit to profitable trading and average losses on loss trade. For this indicator, its relationship with the expectancy is very important. Typically, high risk reward ratios are often caused by lower business success rates, and on the contrary lower risk-reward ratios often reduce the value of the expectancy. The Sharpe Ratio also inserts the level of risk measured by the standard deviation into the system.

As a risk-free return, the interest rate on 10-year government bonds for October 2017 is set in this post at 1.45%.

3   Results

The results of business systems based on MACD and SMA9 using different cryptocurrencies are declared by the table:

Tab. 7: Results

		BTH	ETH	LTC	DASH	XRP
MACD	total number of signals	133	53	135	44	37
	final wealth	3722.03	135.952	111.38	268.34	0.43519
	Risk-Reward Ratio	2.430	13.901	4.129	1.590	1.809
	Expectancy	0.296538	0.030612	0.009053	0.024850	0.000041
	anual return	2.55%	25.61%	3.08%	2.74%	5.53%
	Sharpe Ratio	0.000128	0.024844	0.006009	0.001375	0.034189
SMA 9	total number of signals	347	135	331	249	283
	final wealth	5853.11	730.749	309.26	657.17	0.93072
	Risk-Reward Ratio	1.342	1.008	0.798	2.137	4.918
	Expectancy	0.212739	0.055810	0.009561	0.027039	0.000034
	anual return	0.55%	3.40%	2.06%	2.19%	3.42%
	Sharpe Ratio	-0.000151	0.001636	0.002592	0.000948	0.018523

Source: own

The results show a clear fact that the SMA 9 based trading system generates more signals than MACD, which is consistent with previous research. Also, the final value of the capital exceeds the capital generated in the MACD system, which is probably only due to the number of trades made. The yield criterion clearly defines a more powerful, MACD-based system. Given the USD coupled rate then the highest final value of the capital is generated by BTH . Based on the Expectancy criterion, the results are no longer unambiguous, when BTH and XRP are used, MACD provides better results. However, there is a clear need to evaluate the expectancy value with the Risk-Reward Ratio. The most successful trading system is the one that has the highest Expectancy at the same time as the high Risk-Reward Ratio. This logic corresponds best to the BTH trade based on a MACD-based business strategy. Finally, the last indicator is the Sharpe ratio, here it is necessary to mark the completely malfunctioning BTH strategy based on the SMA 9 indicator, which provides a negative sharpe ratio. Sharpe ratio values are more favourable when using the MACD trading system. Surprisingly, the best result in terms of the Sharpe ratio has reached the XRP cryptocurrency value of the MACD trading system.

Conclusion

The submitted contribution confirms the possibility of using cryptocurrencies even for entrepreneurs. These can see great potential in cryptocurrencies, although they are still little used at present. The possibilities to make payments available to customers, especially in Bitcoins, are also relevant to entrepreurs and, in connection with the existence of EET, are in line with the Czech legal standard. In the Czech Republic, there are currently enough options to secure payments via the Internet and through this phenomenon. The Czech accounting system reserves the place for cryptocurrencies in long-term intangible assets and is thus accounted for as such, therefore, it can not be considered as money or investment under Czech law. The use of cryptocurrencies as a means of payment defends its high volatility, as can be seen from the descriptive statistics in Tables 1-6, so far they remain at the center of interest only as a means of speculation.

In the case of using the cryptocurrencies to speculation, entrepreneurs have the opportunity to use CFD-based trades. Using simple technical indicators such as SME9 or MACD, they will find their place in small traders. In other studies, it is possible to focus on the risks of the business systems and their comparison with the risks of other underlying assets.

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Contact

Andrea Kolková

VŠB –TU Ostrava, Ekonomická fakulta

Sokolská tř. 33, 702 00 Ostrava 1, Czech Republic

andrea.kolkova@vsb.cz

FORMS OF EMPLOYMENT IN SME SECTOR – EXAMPLE FROM SLOVAKIA

Enikő Korcsmáros

Abstract

Purpose: The rapidly changing market conditions of the 21st century caused the introduction of new forms of employment too. These forms of employment can be characterized by a distinct mark in terms of typical 8-hour employment, which is typical of the past. The basic aim of the research is to map the employment forms realized by small and medium-sized enterprises, especially the so-called atypical forms of employment.

Design/methodology/approach: To achieve the aim of the research author have collected the data by completed questionnaire on sample of 320 SMEs. The primary data collection was implemented in the first half of 2017. Cross table, Chi-square test, standard deviations were used to verify the hypothesis based on two analysed assumptions.

Findings: According of the results of this analysis there were no difference between the variables (the popular of the atypical patterns of the employment and the age of the company). Reflected in the value of standard deviation of the respondents' opinion the most common reason the respondents mentioned were the administrative border and the management decision to insist on traditional patterns of employment.

Research/practical implications: Based on our primary research we defined, that age of the company cannot predict how widespread the atypical employment patterns are within the company. Rejection of our assumption implies a further question regarding the age of the company and the presence of atypical employment patterns in the company. The most common reason why companies do not choose atypical patterns of employment were the administrative burden and the management decision.

Originality/value: The original contribution and the main added value of the paper is mapping of the current situation in the SME sector in Slovakia regarding the applied forms of employment policy. Examining forms of employment within the SME sphere abstains in Slovakia. This is a complex problem of exploration, since neither the theoretical background is unclear about atypical forms of employment.

Keywords: SME, employment, atypical forms of employment, Slovakia

JEL Codes: J21, M59, O29

Introduction

The economic role of small and medium-sized enterprises is remarkable since they provide a significant ratio of the GDP beside export and import activity. Based on the data of the Slovak Business Agency, more than 70% of the employees are employed by a company representing the small and medium-sized business sector (Malé a stredné podnikanie v číslach v roku 2015, 2016). The rapidly changing market conditions of the 21st. century forced the companies to consider and study the current employment trends and introduce new forms of employment e.g. home office, part-time job. These forms of employment show completely different characteristics from traditional nine-to-five jobs, and can be called atypical.

1   Theoretical background of the problem

The issue of different forms of employment has been studied by several domestic and foreign researchers. Kazuya (2005) emphasises, that it is not so easy to clearly define what do we mean under typical and atypical patterns of employment, since what we accept today typical was considered to be atypical a few decades ago. Technological and infrastructural developments over the last decades required appropriate solutions, which can be characterized by flexibility (Makó & Simonyi, 2003). Hanzelová (2005) emphasizes the fact, that the scientific literature does not provide clear definition for typical and atypical patterns of employment. Following the labour market changes of the past period we can assume, that employment with a contract of indefinite duration and not a nine-to-five job can be considered atypical.

The atypical employment patterns provide new possibilities for small and medium-sized enterprises; introduce the possibility to decrease the social contribution costs. Unlike to socially-protected employment status, these new patterns of employment provide numerous advantages and solutions of managing human resources. These new types of employment can cut costs and increase competitiveness and efficiency. (Korcsmáros & Majdúchová, 2016; Šúbertová et al., 2017)

Hárs (2012) listed the types of atypical employment patterns. According of Hárs the main atypical forms of employment are part-time employees, temporary workers (employees with fixed term contract, seasonal workers, casual workers), renting workforce, work at home, teleworking, flexible working hours, self-employment. As Mura and Vlacseková (2017) described, motivation is very individual and managers have a hard task by motivating their employees but the part-time employment could be motivation factor as well.

Part-time employment is defined as people in employment (whether employees or self-employed) who usually work less than 30 hours per week in their main job. Employed people are those aged 15 and over who report that they have worked in gainful employment for at least one hour in the previous week or who had a job but were absent from work during the reference week while having a formal job attachment. This indicator, presented as a total and per gender, shows the proportion of persons employed part-time among all employed persons and is also called incidence of part-time employment. (OECD, 2017)

The increase of atypical employment patterns is driven by changing customer needs and efforts to provide cheaper and more flexible forms of employment. Part-time employment is one of the most known forms of atypical employment patterns. In case of part-time jobs the working time is reduced to 4-6 hours a day. According to Frey (2007), the popularity of part-time employment pattern lies in faster increase of employment rate compared to full time employment pattern. The target group of part-timers can be diverse e.g. parents applying for childcare allowance, maternity leave, those who care about family members, older workers before old age pension. The employer and employee may enter a contract declaring shortened work time, or extension of shortened working hours to full time. Employees working on shorter work time receive a wage, in accordance with their working hours included in the employment contract. (Štěpánková et al., 2015)

A mutual trust is required both form the employee and the employer to apply the atypical pattern of employment successfully in the organization. This level of trust, as a part of company culture, as Finna (2007) emphasizes, is one of the pillars of long-term cooperation. The absence of cooperation as a key factor can weaken the performance of company in terms of efficiency, competitiveness and profitability (Takácsné & Benedek, 2016).

Being familiar with the long-term economic benefits, that is to say, the shift from old tendencies happens, because it can maintain the competitiveness of the company or help to become competitive (Laczkó, 2007). The labour market trends show, that employees and employers are ready for mobility and flexibility. Flexibility is considered to be long-term, which requires employees with special characteristics.

The research conducted by Frey (2000) emphasizes the disappearance of regular and rigid forms of employment patterns, which are gradually replaced by atypical, irregular and flexible patterns of employment. It is important to mention, that this transformation is not a result of external constraints, but the managers of companies apply atypical forms of employment to

maintain competitiveness of their businesses. They have recognized and accepted the importance of this change, which can provide help in hiring employees, decreasing unemployment or managing the fluctuation in customer demand.

Based on foreign literature the development of flexible employment arrangement could be defined into three reasons as follows:

- the changed requirements of firms operating in broader, more uncertain and more unstable economic context with constantly intensifying pressure to increase competitiveness and to cut costs;
- the changed behaviour of labour supply, with a marked increase in labour-market participation especially by women;
- changes in the labour policies by governments and the European Union as to unemployment. (Regalia, 2006)

In dealing with sparsely neighbouring countries the number of part-time employees in Slovakia was in year 2016 only 11,8% (same as in Czech Republic) which is the second lowest rate within the examined countries. In Austria the proportion of part-time employment was 24,4%, in Poland 22,9% and in Hungary 8,3%. (Persons employed part-time, 2016)

2   Research objectives and methodology

The main objective of the research is to map the employment patterns applied in small and medium-sized enterprises, with a special emphasis to introduce, in what measure businesses apply typical and atypical patterns of employment in a rapidly changing economic environment of the 21$^{st.}$ century.

In order to achieve our research objective we decided to collect primary data with the help of questionnaire survey. We have created a database of small and medium-sized businesses operating, which was based on business databases. The questionnaire was sent via mail to companies. 320 completed questionnaires were returned and used to examine the issue. The primary data collection was implemented in the first half of 2017.

The questionnaire contained 21 questions, which can be categorized as the following:

a) questions that focus on fundamental characteristics of research sample;
b) the presence of different employment patterns in companies and the information about them;

c) flexible employment and related beliefs;

d) future plans for employment.

To analyse our research data we used basic descriptive statistical methods, cross-tabulation analysis and distribution.

We defined two assumptions as the follows:

1   Assumption: Atypical patterns of employment are becoming increasingly popular among the companies; and relatively younger companies can be characterized by using atypical forms of employment.

2   Assumption: In most of the cases, companies do not choose atypical patterns of employment, because the work to be done does not require it.

3   Results of the research

To examine our first assumption, the frequency method, as one of the descriptive statistical methods was applied to determine, how companies are categorized based on the number of years of their existence. As a result of our analysis we can conclude, that 42% of the companies has been operating less than 5 years. However, start-up companies need much time to build social networks, to become recognized and successful. Companies that have been functioning for 5-7 years can be considered relatively stable. 24% of the companies involved in our research belong to this category.

Fig. 3: The distribution of the companies surveyed about the years since its inception
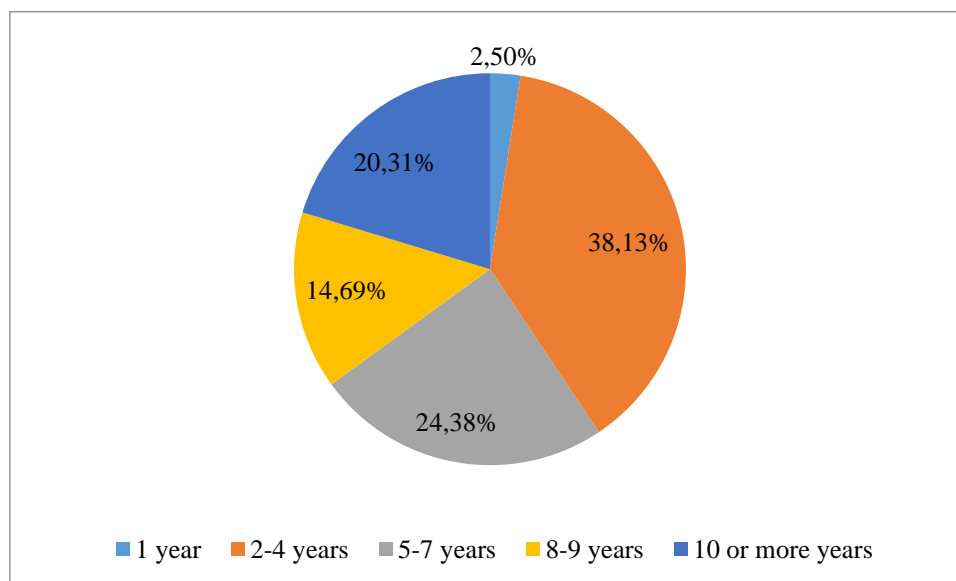
Source: own editing based on primary data collection

Cross tabulation was used to analyze the distribution of the sample elements regarding the year of company establishment, as well as to check how atypical forms of employment are important for the company. 75% of the surveyed enterprises, which are particularly young and only a year has passed on since their establishment said, that they use atypical employment patterns, but it is not characteristic for the company. 25% of the companies apply atypical patterns of employment. This fact seems to be very commendable, but we should not forget, that we are talking about a very young business group and companies face hard work to remain competitive and maintain their market position. As we talk about start-ups, it is more likely that they use employment forms different from typical e.g. part-time, occasional employment. It is a kind of economic consideration in the company, since part-time or occasional employment will ensure lower costs than full-time employment.

61,48% of the companies, which have been operating for 2-4 years have introduced employment forms different from typical, but do not find them characteristic in the company. It is encouraging, that in case of 30,28% of the companies in this group is rather characteristic, for 2,46% is definitely characteristic the implementation of atypical employment patterns. The opinion of companies established 5-7 years ago reflects, that they employ atypical forms of employment, but it is not very typical (56,41%). Companies, which have been operating for 8-9 years have also declared the employment of atypical patterns of employment, but it is not typical in the company (42,55%). What is remarkable in this group compared to other respondents, that there is high ratio of companies not employing different than typical patterns of employment. The cross tabulation analyis of the issue did not lead us closer to validation or rejection of our assumption, so we need to examine, whether the variables are significantly related. If they are related, it is important to determine how and to what extent. The Pearson Chi square table is used to show the correlation between the variables. The observed value of the indicator is 57, 348. The value at two-tailed significance test it is lower than 0,05. It means, that Hypothesis 0 – there is no difference between the variables - can be rejected. The value of Likelihood ratio and the Chi square is the same, if the sample size is large. Since the value of probability ratio is lower than the 5% significance level, a significant relationship between the variables can be detected. The linear-by-linear association cannot be applied in this case, because it can detect the correlation between the intervals and the ratio scales. We used nominal scales for the analysis.

Tab. 2: Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	57,348[a]	16	,000
Likelihood Ratio	52,823	16	,000
Linear-by-Linear Association	,353	1	,552
N of Valid Cases	320		

a. 13 cells (52,0%) have expected count less than 5. The minimum expected count is ,20.

Source: own editing based on primary data collection

Further analysis of variables by lambda, Goodman, Kruskal tau and the uncertainty coefficient provided the following results: being familiar with the fact, that how many years the company has been operating improves our estimations about the characteristics of atypical employment patterns in the company. The results are the following: lamdba 6,6% (0.066), Goodman and Kruskal tau 4,1% (0,041). The results show, that the age of the company cannot predict how widespread the atypical employment patterns are within the company. The assumption, that mainly younger companies use the atypical patterns of employment can be rejected. It is important to mention, that rejection of our assumption implies a further question regarding the age of the company and the presence of atypical employment patterns in the company. It can be important to approach this issue from the perspectives of social norms, company culture, organizational structure and legal background.

To confirm our second assumption it is necessary to check the ratio of those companies, where atypical employment patterns are not applied at all. We also have to discover, why these companies insist on typical forms of employment.

In the research sample 18,8% of the companies declared that they avoid any form of atypical employment pattern. The opinion of respondents is different regarding this question, as it is reflected in the value of standard deviation (std.dev.=2,3). The most common reasons the respondents mentioned were the administrative burden and the management decision to insist on traditional patterns of employment. The third in a rank was the option, that tasks to be performed do not require an atypical pattern of employment. Our assumption could not be confirmed, however it is emphasized, that employees require atypical forms of employment. The employer's lack of experience with this form of employment cannot be an obstacle to

introduce it. The legal framework, high administrative burden, bureaucracy and different obligations towards the institutions block the spread of atypical forms of employment. The administrative burden can also explain the following fact: If the company introduces an atypical form of employment, it is usually the introduction of flexitime. The employee is required to work determined number of hours a month resp. a week, but they are not forced to do a regular nine-to-five job.

Fig. 4: Causes of slight of atypical forms of employment
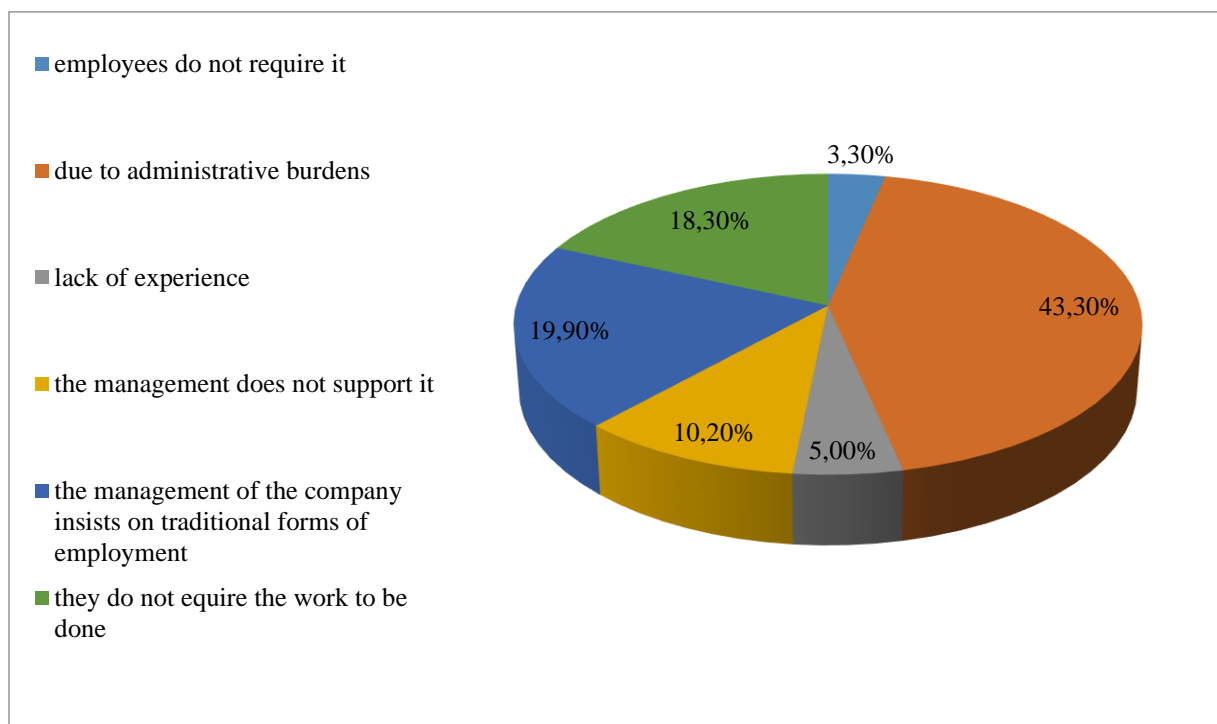
Source: own editing based on primary data collection

Conclusion

In the rapidly changing socio-economic environment of the 21[st.] century, due to constantly changing market and consumer demands we should emphasize the expansion of atypical patterns of employment as a different phenomenon from the standard nine-to-five employment form.

The number of companies providing services is widespread in Slovakia, and this is reflected in the examined measure. Atypical forms of employment are more present in the service sector, compared to other emerging economic sectors. We also have to define that atypical forms of employment are more or less characteristic for other sectors of economy as well. We hope that this positive fact can help the active population to make their work-life balance better. Because

of the most preferred atypical form of employment is flexitime, we recommend that companies that use this kind of employment should receive different minor discounts, for example in the way the contributions are being discharged after these employees. According of the result of our research the lower is the number of company employees, more frequently companies apply one of the atypical patterns of employment. It is probably based on cost-efficiency.

Based on our primary research we defined, that age of the company cannot predict how widespread the atypical employment patterns are within the company. It is also important to mention, that rejection of our assumption implies a further question regarding the age of the company and the presence of atypical employment patterns in the company. It can be important to approach this issue from the perspectives of social norms, company culture, organizational structure and legal background. The most common reason why companies do not choose atypical patterns of employment were the administrative burden and the management decision to insist on traditional patterns of employment. The third in a rank was the option, that tasks to be performed do not require an atypical pattern of employment. Based on this facts we consider it extremely important to reduce the administrative burden associated with atypical forms of employment and, consequently, to increase entrepreneurs' awareness of atypical forms of employment and to point out the advantages of atypical forms of employment.

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Contact

Enikő Korcsmáros

J.Selye University

Bratislavská 3322, 945 01 Komárno, Slovakia

korcsmarose@ujs.sk

CHINA'S POLICY FOR SPECIAL ECONOMIC ZONES AND ITS IMPLICATIONS FOR THE DEVELOPMENT OF ENTREPRENEURSHIP IN THE RUSSIAN FAR EAST

Viktoriia Koretskaia-Garmash

Abstract

Purpose: This study is aimed at exploring the experience accumulated by China in creation and operation of special economic zones (SEZs) and the potential application of this experience for the development of entrepreneurship in municipalities of the Russian Far East. One of the key goals in this process is to identify the type(s) of economic zones that would be optimal for this region.

Design/methodology/approach: In our research, we used the historical method to study Chinese experience of creating different types of economic zones. After analysing a variety of sources, we identified the factors underlying the success of Chinese economic zones and thus selected the optimal SEZ types for the Russian Far East. We also conducted a correlation and regression analysis to determine the interconnection between the socio-economic development of municipalities in the Far East and the economic performance of small businesses in these areas.

Findings: The Chinese approach to creating SEZs can be effectively applied to establish a customs cooperation area on the Russian-Chinese border in the Jewish Autonomous Region to stimulate the development of this economically depressed territory through international trade and entrepreneurship; to create jobs and, therefore, increase the income of the local population; and to attract highly qualified specialists to the region.

Research/practical implications: The results of this research can be used by municipal governments participating in the SEZ experiment in the Jewish Autonomous Region.

Originality/value: The author uses methodology to analyze the indicators that show the efficiency of small businesses and individual entrepreneurs in municipalities of the Russian Far East. The municipalities are assessed depending on their performance on each indicator, which reveals their strengths and weaknesses that should be addressed by the regional and federal authorities. The optimal types of economic zones are determined by analyzing the relevant Chinese experience and the Russian legislation.

Keywords: Special economic zones, entrepreneurship, workforce, Far East

JEL Codes: F21, F23, F36

Introduction

Russia and China are two of the world's leading economic (Tao, Y., Yuan, Y. & Li, M., 2016 and Mayburov I.A., 2017) powers although their development tends to be unbalanced and their paths of economic growth are different. The differences reside in different state policies; geographic location; the available natural and financial resources and the workforce. The natural, financial and human resources are used by the countries to secure themselves a better position in the international trade; to strengthen their national currency and use it as reserve currency (for China); to balance the state budget; to reduce inflation and unemployment; and to increase life expectancy. These goals are not just populist slogans, they reflect the vision of a reality many people strive for. No matter what their political views are, all people aspire for longer and better lives. The concept of 'better living' (Fominsky, I.P., 1987) has a complex meaning, which can vary in different social groups, but what lies at the core of this concept remains constant: people want higher standards of living, free universal health care, free higher education, good employment and career opportunities, and affordable housing. Economic resources as the key elements of entrepreneurship are essential to achieve all the above-described objectives (Mallikarjuna, K.G., 2014).

In the history of the economic theory, physiocrats believed that land was the sole source of wealth (Fominsky, I.P., 1987). The classical economists, in their turn, considered capital, land and labour to be the key economic resources (Smith, A., 1904), which led Jean-Baptiste Say (1827) to propose his theory of the three 'factors of production' or economic resources. Alfred Marshall introduced the fourth factor - organization and entrepreneurship (1920). At the end of the twentieth century, Alvin Toffler (1980) argued that knowledge, information and technological innovation constitute the primary resource in the economy as they will revolutionize the contemporary principles of production, when post-industrial principles replace industrial ones and production becomes inseparable from consumption.

The World Bank's Doing Business Ranking has shown that it is possible to accumulate sufficient resources for successful development of entrepreneurship. As a result of Russia's balanced reforms (World Bank Group, 2018) to ensure the protection of investors' rights, trade, lending, and electric power supply, the country rose to the 35th position in this ranking in 2017 (see Fig.1).

These positive economic trends resulting from the implementation of the consistent reform program should be used to stimulate entrepreneurship by establishing special zones with preferential tax treatment and/or expedited custom clearance procedures.

Fig. 1: Russia's position in 'Doing Business' Ranking in 2010-2017
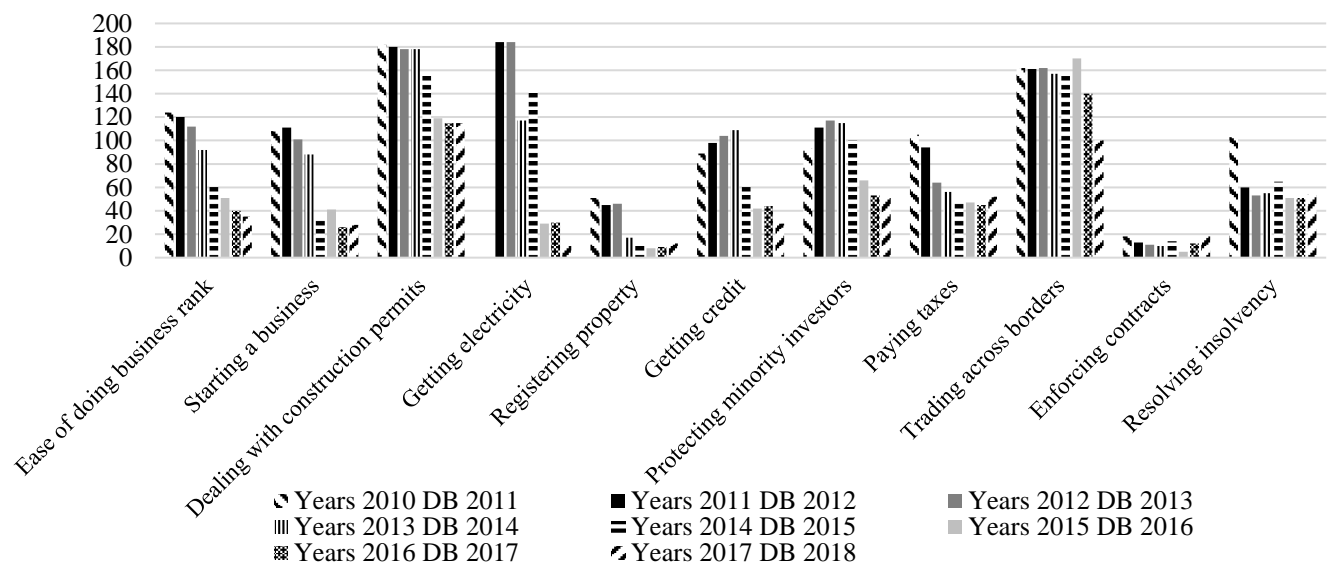
Source: World Bank Group "Doing Business 2018" Available at: www.doingbusiness.org (Accessed 23.02.2018); World Bank Group "Doing Business 2011" Available at: www.doingbusiness.org (Accessed 23.02.2018); Ministry of Economic Development of the Russian Federation. 'On the Improvement of Russia's Position in the World Bank's Doing Business Ranking 2016'. Available at: https://docviewer.yandex.ru/view/324996462/ (Accessed 23.02.2018).

Special economic zones have proven to be a viable option for over 120 countries. These zones are used to attract national and foreign investors to develop specific regions, to address the demographic problem, create new jobs, stimulate technological innovation and knowledge-intensive production. Moreover, these zones can play an important role in implementing the principle of continuity of generations for sustainable usage of natural resources. Waigaoqiao Free Trade Zone in China with its 9,500 residents is considered to be the best in Asia and East Asia and one of the best in the world. The residents of Waigaoqiao include 150 companies from the top of the 'Fortune Global 500' ranking such as Microsoft, BNP Paribas, Total, Sony Corporation, and Amazon (Golubkin, I.V. and others, 2017).

1 Chinese experience of creating special economic zones (SEZ)

Facing the slow economic growth, low efficiency of the economy and, as a result, mass poverty, the Chinese government launched a series of market-oriented reforms, which included creation of areas with special economic conditions or special economic zones (SEZs). The government

pursued a wide range of long-term objectives, which included the following (Yue-man, Y., Lee, J. & Kee G., 2009): 1) to attract maximum foreign investment, advanced machinery and technology to spur innovation; establish enterprises in the knowledge-intensive sectors of industry; 2) to enhance international commercial activity and ensure deeper involvement of the country into the geographical division of labour; stimulate export and inflow of foreign currencies; 3) to encourage experimentation in the sphere of modern production and management before adopting this experience nationwide; 4) to improve the socio-economic conditions within SEZs to achieve the standards set by Hong Kong, Singapore, and other 'Asian tigers'; and 5) to put to good use the excess supply of cheap labour force.

The Chinese experience has proven to be tremendously successful and currently China has over 180 SEZs, varying in scope and function. In the thirty-seven years that the SEZs were operating in China there has evolved a unique multi-level system of economic zones, which has no counterparts in any other country of the world. Therefore, China has a complex typology of SEZs, comprising over fifteen different subtypes, some of which correspond to the internationally accepted typology while some are found exclusively in China. Among the main three types of SEZs (Zhihua, Zeng, D., 2015), the first would be **export-focused zones** with diversified economy. At the moment there are five such zones on the territory of China. The geographic location of these zones and the special administrative and visa regulations that apply on their territory determine their closed character.

The second type of SEZs is the 'open' port cities located along the coast of the Yellow Sea, East China Sea and South China Sea – Shanghai, Guangzhou, Dalian, and Tianjin. These zones enjoy considerable freedom in their economic activities and offer tax-and-tariff incentives to foreign investors.

The third type includes **zones and areas of economic and technological development**. Zones of this type can be compared to European technoparks, where foreign entrepreneurs are given tax breaks in exchange for sharing their innovative technologies. In China, there are about 90 such zones, located not only in the eastern but also in the central (Chengdu, Chongqing, Xi'an, and Wuhan) and western (Lanzhou and Kunming) parts of the country. Special areas of this type are in many ways similar to zones but are larger in size.

Apart from these three types, there are others such as new and high technology industrial development zones (114); cross-border economic cooperation zones (15); unbonded zones (15); free trade zones (15); and export-processing zones (15) (Mayburov, I.A., 2017).

The process of creating SEZs was not always smooth and easy as the Chinese government encountered a number of problems and setbacks. Among other things, the government had to allocate large funds for the development of non-production sectors. Another problem was the low quality of production resulting from the poorly qualified workforce. The government had to transport 'guest workers' from remote regions. Yet one more problem to address was to make Chinese products more competitive on the global market. Although SEZs did not always fully meet the government's expectations for the enormous gains in the technological sphere, we should keep in mind that the main investors in Chinese SEZs were not Japanese, American or Western European companies but small and medium businesses from Xianggang and Taiwan.

Therefore, the factors of Chinese economic success are the openness of the country's economy to the world; influx of foreign direct investment and technology; independent approach to the development of the institutional and legal frameworks for SEZs; cheap labour; development of the private sector of economy; political stability; stable national currency; building foreign exchange reserves; and export-oriented industrial policy; successful struggle with corruption among government officials.

2   Economic performance of the Far Eastern regions

The Far East of Russia borders with China as a reliable energy supplier potential consumer market for Chinese goods, as a host country for Chinese labour migrants and a participant of the One Belt and One Road Initiative, connecting China with Central Asia, Europe and the Middle East.

The economic development of the nine Far Eastern municipalities is shaped by such factors as natural and climatic conditions, the available human capital, natural resources and investment climate. These factors affect the structure of their GRP (Russian Regions. Socio-Economic Indicators, 2012, 2014, 2017):

1) Kamchatka region specializes in fishing and fish farming, which account for 12.2% of the total GRP; state management and military security, 18.6%; wholesale and retail trade, vehicle repair and maintenance, repair of household and individual appliances, 9.6%;

2) the structure of the GRP of Primorsky and Khabarovsky regions is dominated by transport and communications, 20% (25.7%); wholesale and retail trade, 19.8% (15.1%); processing industries, 9.4%; state management, military security, and social insurance, 9.1 (9.8%); the real estate and service sector, 8.4% (7.3%);

3) Magadan, Sakhalin, Amur regions, the Republic of Yakutia and Chukotka Autonomous Region are oriented towards mineral extraction, which accounts for 11.2% of the GRP in Amur region and for 65.7% in Sakhalin. Other dominant industries include building, transport and communications (22.8% in Amur region);

4) the key areas of development in the Jewish Autonomous Region and Amur region are agriculture (9.9% and 7.5%), transport and communications (8.9% and 22.8%); building (8.9% and 8.0%); wholesale and retail trade (9.9% and 12.1% respectively).

People in the Far East do not see entrepreneurship as a profitable activity but instead associate it with a lot of hard and sometimes pointless work (Shigeeva, A.S. & Krasova, E.V. (2017), Prokapalo, O.M.& other (2017) and Mikitchuk, V.P. (2013). Businesses in this region have to struggle to stay afloat and there is no guarantee that they will ever become profitable, which makes the population unwilling to get actively involved into entrepreneurship and to take risks. This is proven by statistics which shows a decline in the number of small and private businesses, employed workers and the amount of revenues. These indicators reflect the dynamics of the external environment and show the efficiency of the country's state system of support for small businesses and individual entrepreneurship. In 2017, Russia ranked 35th in this sphere while simultaneously dropping to the 28th place in such indicator as the number of businesses set up and registered. Russia is also facing systemic issues in taxation, moving down from the 45th to the 52nd place, and has problems with contract enforcement, which involves losing its 12th place and moving to the 18th. Finally, Russia's position in the resolving insolvency rank still leaves much to be desired as the country went down from the 51st to the 54th place.

Profit is the key indicator of the efficiency of small businesses but this information is not publicly available. Therefore, we used the data on the small companies' sales revenues in the period between 2010 and 2016 (see Fig.2).

Fig.2: Distribution of small businesses' sales revenues in 2010-2016

Legend:
☒ Primorsky region ▨ Kamchatka region ▣ Republic of Yakutia
◩ Khabarovsky region ⊞ Amur region ▥ Magadan region
▤ Sakhalin region ■ Jewish Autonomous Region ▪ Chukotka Autonomous Region

Source: Russian Regions. Socio-Economic Indicators. 2017.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2017. - 1402 p. Available at: http://www.gks.ru/free_doc/doc_2017/region/reg-pok17.pdf (Accessed 23.02.2018).

Russian Regions. Socio-Economic Indicators. 2014.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2014. Available at: http://www.gks.ru/bgd/regl/B14_14p/Main.htm (Accessed 22.02.2018). Russian Regions. Socio-Economic Indicators. 2012.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2012. Available at: http://www.gks.ru/bgd/regl/B12_14p/Main.htm (Accessed 21.02.2018).

We applied the statistical method of correlation and regression analysis to test our hypothesis that there is a strong correlation between the sales revenues of small businesses and the indicators of socio-economic development in each of the nine municipalities in the Far East. Although there are multiple indicators characterizing socio-economic development of a region, we have chosen the following key indicators to test our hypothesis: 1) the number of small businesses; 2) the average number of employees in small enterprises; 3) the average annual number of employed people; 4) the average annual number of the registered unemployed people; 5) the per capita income in the municipality; 6) the consumption expenditures per capita; 7) the number of lending organizations and their branches; 8) the available capital assets; and 9) the amount of investment into the fixed capital. These indicators were chosen because they allow us to cover the whole population of a municipality, since local inhabitants act as clients, founders and employees of small businesses. In our correlation analysis, we applied the coefficient of Pearson's multiple linear correlation.

We analyzed the data on all municipalities and confirmed our hypothesis that there is a correlation between the sales revenues of small businesses and seven of the nine indicators, except for the number of small enterprises and the amount of investment into the fixed capital (Table 1).

Tab. 1: Analysis of correlation between the sales revenues of small enterprises and the indicators of socio-economic development of Far Eastern municipalities in 2010-2016

Regions	Indicators						
	Number of employees (x_1)	Income of the population (x_2)	Number of unemployed people (x_3)	Number of lending organizations (x_4)	Consumption expenditures (x_5)	Number of employed people (x_6)	Capital assets (x_7)
Primorsky region	∨ (+)	∨ (+)	Z	Z	Z	Z	Z
Kamchatka region	Z	∨ (+)	∨ (-)	Z	Z	Z	Z
Republic of Yakutia	Z	Z	Z	∨ (-)	∨ (+)	Z	Z
Khabarovsky region	Z	∨ (+)	Z	∨ (-)	Z	∨ (-)	Z
Amur region	Z	Z	Z	Z	∨ (+)	∨ (-)	Z
Magadan region	Z	Z	Z	∨ (-)	∨ (+)	Z	Z
Sakhalin region	Z	Z	Z	∨ (-)	Z	Z	∨ (+)
Jewish Autonomous Region	Z	∨ (+)	∨ (-)	Z	Z	Z	Z
Chukotka Autonomous Region	∨ (+)	Z	Z	Z	∨ (+)	Z	Z

Legend: ∨ (+) means a high positive correlation between sales revenues and the factors; ∨ (-), a high negative correlation between sales revenues and the factors; Z, no correlation between sales revenus and the factors

Source: Russian Regions. Socio-Economic Indicators. 2017.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2017. - 1402 p. Available at: http://www.gks.ru/free_doc/doc_2017/region/reg-pok17.pdf (Accessed 23.02.2018).

Russian Regions. Socio-Economic Indicators. 2014.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2014. Available at: http://www.gks.ru/bgd/regl/B14_14p/Main.htm (Accessed 22.02.2018).

Russian Regions. Socio-Economic Indicators. 2012.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2012. Available at: http://www.gks.ru/bgd/regl/B12_14p/Main.htm (Accessed 21.02.2018).

According to Table 1, all factors can be divided into two groups according to their impact on the key performance indicator – sales revenues of small businesses. The first group of factors with a high positive correlation includes the average number of employees of small enterprises, the per capita income of the municipality population; the consumption expenditures per capita; and the available capital assets. The second group of factors with a high inverse (negative) correlation is the average annual number of the registered unemployed people in the municipality; the number of lending organizations and their branches; and the average annual number of employed people.

The financial performance of small businesses in Primorsky region and Chukotka is affected by the factors with a positive correlation while in other municipalities their performance is shaped by a set of divergent factors. To test the strength of correlation between the indicators, we created regression equations. For each equation, we found the value of the regression coefficient (see Table 2).

Tab. 2: Coefficient of correlation between the sales revenues and the indicators for Far Eastern municipalities in 2010-2016

Regions	Regression equation	Graphical representation
Primorsky region	$y = -2198.95 + 14.80161 * x_1 + 19.5264125 * x_2$	
Kamchatka region	$y = 22.04528 - 1.37472 * x_3 + 0.001785 * x_2$	
Republic of Yakutia	$y = -112.208 + 0.970667 * x_4 + 0.010379 * x_5$	
Khabarovsky region	$y = 28216.217 - 3.57451 * x_4 - 3.65976 * x_6 + 0.005793 * x_5$	
Amur region	$y = 1134.466 - 2.35535 * x_6 - 0.00319 * x_5$	
Magadan region	$y = 58.81213 - 2.97924 * x_4 - 2.40406E - 05 * x_5$	

Sakhalin region	$y = 122.3587 - 4.40655 * x_4 + 2.6433E - 05 * x_7$	
Jewish Autonomous Region	$y = 18.69658 - 1.48195 * x_3 + 0.000302 * x_2$	
Chukotka Autonomous Region	$y = -5.40116 + 3.815564 * x_1 + 0.000313 * x_5$	
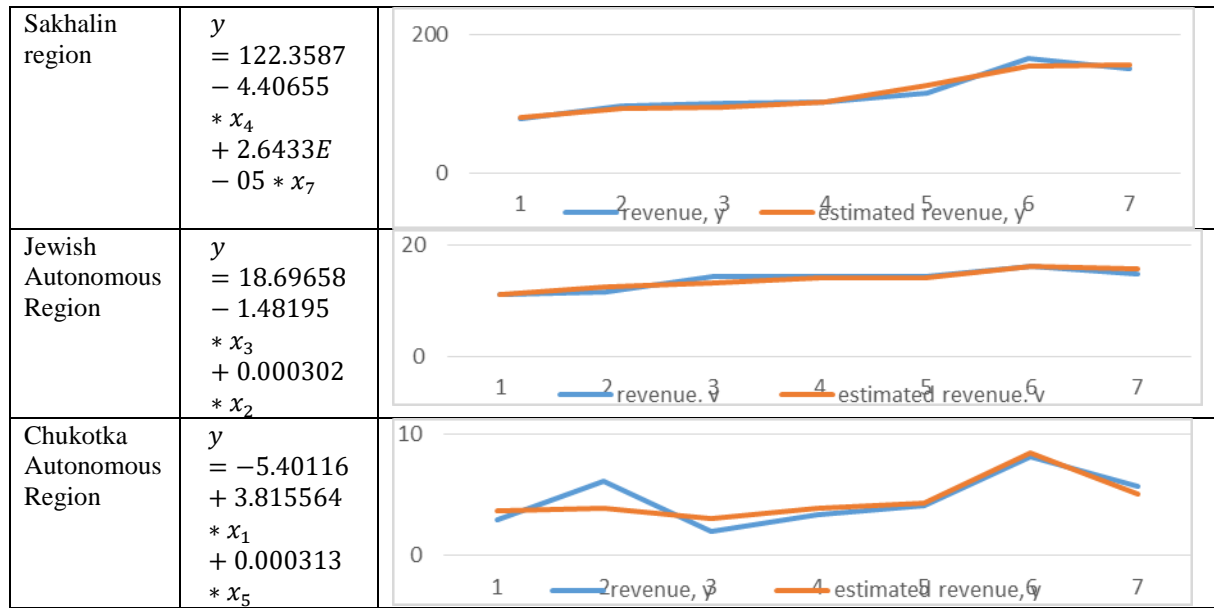
Source: author

Source: Russian Regions. Socio-Economic Indicators. 2017.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2017. - 1402 p. Available at: http://www.gks.ru/free_doc/doc_2017/region/reg-pok17.pdf (Accessed 23.02.2018).

Russian Regions. Socio-Economic Indicators. 2014.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2014. Available at: http://www.gks.ru/bgd/regl/B14_14p/Main.htm (Accessed 22.02.2018).

Russian Regions. Socio-Economic Indicators. 2012.; Ed. by S.N. Egorenko: statistical book. - Moscow: Rosstat, 2012. Available at: http://www.gks.ru/bgd/regl/B12_14p/Main.htm (Accessed 21.02.2018).

These results can be evaluated if we compare production costs of small businesses in the Far East with the similar indicators in developed countries (see Table 3).

Tab. 3: Comparison of companies' operating costs in 2017

Indicators	Russian Far East	China	Japan	Canada	USA	Singapore	South Korea
Electricity costs, U.S. dollars per kilowatt hour	0.06	0.1	0.145	0.09	0.105	0.193	0.1
Gas costs, U.S. dollars per kilowatt hour	0.09	0.34	0.6	0.19	0.19	0.34	0.37
Water costs, U.S. dollars per cubic metre	0.27	0.35	2.1	3.4	1.23	2.04	0.7
Monthly labour costs, U.S. dollars per capita	768	830	2,511	4,034	4,008	2,872	2,890
Cost of debt in national currency, % per year	11.6	4.4	1.0	2.7	3.8	5.4	3.4

Source: State Council of the Russian Federation. Report on Integrated Development of Regions of the Far East. 2017. Available at: http://fb.ru/article/208819/novyiy-shelkovyiy-put-marshrut-shema-kontseptsiya (Accessed 21.02.2018).

As Tab.3 illustrates, the Russian Far East compares favourably with its counterparts in developed countries in terms of energy and labour costs and is, therefore, highly attractive for

investors. However, it is at a disadvantage in terms of such crucial parameter as the cost of debt (11.6%).

Conclusion

The main economic factors that shape the sphere of small business in the Far East include the number of employed and unemployed people in the region; the cost of debt and loan accessibility; the income level and the level of consumption expenditures; and the availability of modern technical infrastructure.

The socio-economic diversity of municipalities makes the task of devising a single scenario for their development particularly difficult.

Chinese experience demonstrates that special economic zones can offer an efficient solution for a range of problems, primarily in the social sphere, such as unemployment and low living standards. Moreover, special economic zones could relieve the pressure on the local budget, which is particularly important for the Jewish Autonomous Region.

On the territory of the Jewish Autonomous Region it would be productive to establish an area of customs cooperation, which would allow the region to create direct trade relationships with China, participate in international migration flows, and attract Russian and international investment.

Acknowledgement

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Contact

Viktoriia Koretskaia-Garmash

Department of Financial and Tax Management

Ural Federal University named after the first President of Russia B.N. Yeltsin

St. Mira, 19, Ekaterinburg, Russian Fedration

vkoretskaia-garmash@urfu.ru

KEY COMPETENCIES IN SUSTAINABILITY: ASSESSMENT OF INNOVATIVE FACTORS INFLUENCING THE DEVELOPMENT OF HUMAN RESOURCES IN HEALTH CARE SYSTEM

Irina Kostadinova – Diana Antonova

Abstract

Purpose: This study presents the review of the innovative solutions for sustainability in human resource management. It demonstrates a discussion issue - how the development of emotional and social intelligence (E&SI) as a key competence for sustainability can reveal new opportunities for improving the achievements of human resources in health care. Answers are sought through the creation and implementation of a methodology for studying the impact of E&S intelligence as a factor for enhancing the professional competence of physicians.

Design/methodology/approach: The paper research design is qualitative and quantitative analysys and characterization of medical work as well as the influence of E&SI on revealing the possibilities for individual and organizational change. The assesment is viewed as part of the sustainable development of human resources. A methodological tool (questionnaire) has been developed to identify and evaluate the possibilities for enhancing the results of medical work through the development of a key competence - the emotional and social intelligence of the physicians in order to improve their individual economic, medical and social results, and hence the organization, in which they work.

Findings: After conducting a social experiment in two treatment clinics in Bulgaria and carrying out 360-degree interviews with the managers (100% of the management staff of the two clinics), doctors (80% of doctors in both clinics) and patients (8% of the lying patients) presented evidence of the importance of key competences - E&SI, as an innovative factor for improving the human resources performance in the medical organizations.

In order to prove the sustainability of the key factor, indicators for comparative analysis of the results from applying a methodology assessing the impact of E&SI on improving the medical doctors' integrated competence have been systematized and classified.

Research/practical implications: The applicability of the proposed methodological approach and methodology was confirmed by the interviews with the target groups (in the last trimester of 2016) and the social experiment (October 2016 - September 2017). The place of the research is the Pnevmotipsi Clinic in Ruse and Pleven - Bulgaria. The results are summarized and the possibilities for increasing the individual professional competencies of the medics have been demonstrated by increasing the E&SC as a key factor for the sustainability of the investigated health institutions. The paper provides evidence that the proposed key competences could be used for further research on sustainability issues of the organizations.

Originality/value: Firstly, empirical evidence is applied to measure E&SI impact on the integrated competence of doctors by a "360° questionnaire evaluation" through an own questionnaire based on Goleman's competency model in real hospital care organizations. A complex adapted model for E&SI as an innovative factor in the sustainability management has been appraised by comparing the results by elements of the integrated competence model and the indicators of their activity for establishing organizational change in the hospitals observed.

Keywords: Sustainability, innovations, emotional & social intelligence, competencies

JEL Codes: M12, M51, M53, M54

Introduction

The primary point of Emotional Intelligence (EI) is to solve human problems. In the long run, this will help the individual and the organization to make sustainable ecosystem decisions. How the resources will be effectively distributed in a short/long term depends entirely on the behavior of the individuals which strongly correlates with their emotional and social competence level. It is not very difficult to predict that companies and organizations that acknowledge this fact will be the successful ones in the future able to attract the best professionals.

Problems with the lack of a unified definition of EI come from the different starting points in the studies of its researchers. As the pioneers of EI concept John Mayer and Peter Salovey said, emotional intelligence is employed to cover too many different concepts by the different authors (Mayer, Salovey & Caruso, 2008). According to Mayer and Salovey, emotional intelligence is "the cognitive ability of the person to think about their emotions and to enrich their thought processes through these emotions" (Mayer & Salovey, 1997). The first one who has succeeded to present the category of "Emotional Intelligence" beyond the strictly scientific circles by adapting it to practical applicability is Daniel Goleman (Goleman, 1995). He has developed the concept of social intelligence as parallel to the emotional one, taking the opportunity to pay attention to some abilities in his construct that have been neglected in the other models of intelligence (Goleman, 2007).

In this paper we assume that emotional intelligence and its manifestation, social intelligence, are a system of personality traits and a complex of abilities and skills. This is particularly relevant to professions carried out in a diverse social environment, requiring very good emotional self-control, such as doctors, lecturers, human resources specialists, and all those working in the service sector. According to us, these are the key competences that can provide the sustainability in the health care system or any other busness field (Buscemi *et al,* 2017)

In the teoretical part of the study, the "mixed model" of Goleman's emotional intelligence is chosen as the main subject of the study, and in the empirical part, a study of the medical staff of two hospitals has been conducted through 360° assesment by management teams, colleagues, patients and self-assessment of the specialists surveyed (The Consortium for Research on Emotional Intelligence, 2017). As a result, the aim of the study is to establish whether the professional and personal effectiveness of the doctors' performance is changed as a result of E&SI qualitative manifestations of the doctors, in order to make personal and organizational

change. As a resutl of the improved effectiveness of these key competences, there will be better sustanability outcomes in the organizations studied.

Naturally, by 360° instrument, it is not possible to assess the E&SI capacity of the individual, and his/her subjective self-assessment, or his/her managers' and patients' opinions, which are also subjective and stem from their own understanding of the twelve indicators (12 discreet competences) examined. This, on the other hand, can be presented as an accurate picture of the actual environment in which doctors' work. Undoubtedly, it is more important in terms of the benefits to society to be able to trace emotionally intelligent behavior at work than to just fix on some scale the "real" competence of doctors, as it is often achieved with IQ tests. It has already been proved (Kirova, 2010; Morrison & Bennett, 2013; Austin & Saklofske, 2014); Mura & Horvath, 2015) that finding a certain ability cannot change the organization's performance, but its manifestation in the work may lead to a change in the final outcome (Kaufman *et al*, 2017).

Accordinng to their studies "emotional and social intelligence competencies are found to represent a practical and theoretically coherent, reliable and valid approach to assessing and developing individuals in diverse cultures". For Bulgaria, such a study is conducted for the first time, and the inclusion of a patient's panel in the E&SC cluster complements Goleman's methodology.

1 Research Methodology

1.1 Research philosophy

Developing an *integrated* competence system (professional and E&SC) would enable doctors to respond adequately to the constantly changing environment and acomplish good personal results that will also lead to the achievement of the organization's goals such as improved sustainability. The development of E&SC will enable doctors to be proactive, in other words, to have control over their reactions to the environment.

The study's thesis states that Goleman's "E&SI model" can be used as a tool for improving professional and personal relationships, as well as doctors' performance through more effective communication between them and patients, resulting in greater satisfaction of the latter. Therefore, their inclusion in the model is justified in order to achieve a greater therapeutic effect in subsequent treatment.

The survey method is a "360 degree instrument". 360 ° questionnaire (anonymous) refers to empathic skills, empathic accuracy, and impulse control and relationship management. The survey has no personal evaluation character, the anonymity of the participants is guaranteed, which is indicated at the beginning of the questionnaire form, so that reliable results can be obtained. For the purpose of the study on E&SI as one of the factors influencing doctors' performance, the questionnaire designed is part of the instruments for conducting a subsequent scientific experiment with a base and control hospital. The questionnaire form was pre-tested in a pilot study of E&SI of doctors in Northern Bulgaria (2016).

Participants, included in the "360° assessment" survey, are the following reference groups: *management (management of the medical institution), doctors and patients*. It is intended for doctors (self-assessment), administrative staff (management) and patients (who actually attended the health establishments during the period under study). This tool is valuable for allowing individuals to realize their strengths and weaknesses, to see their mirror image, and at the same time, to establish the level of influence they have through the information received from their managers, team colleagues and users of medical services.

1.2   Study sample and Methodology

The object of the study are two complex medical institutions. Dispensary for Pneumo-Phtysiatric Diseases – Ruse is presented as a basic organization, where E&SC research and training has been carried out. The Clinic of Pneumology - Pleven has been selected for a control health care institution. The total panel of the reference groups surveyed is as follows: the sample for the managing staff is equal to the number of the managers in the two hospitals, i.e. we have 100% participation (6 people), the doctors involved in the study are, n=20, N_{max}=25 (80%), the number of patients is 128, which is 8% of the users of medical services in the last trimester of 2016.

The questionnaire was created on the basis of Daniel Goleman's model, with respondents expanded by adding patients' opinions as a target group evaluating the medical work. They are included as a third party in the cluster analysis of E&SI, as a key competence of the medics, representing an innovative factor in the improvement of their individual work and hence of the medical organization as a whole. Indicators for comparative analysis of the results from applying a methodology assessing the impact of E&SI on improving the medical doctors' integrated competence have been systematized and classified.

The survey covers 12 indicators (each including 10 statements), summarized in 4 main groups of competences, forming the survey cluster: **(I) Self-awareness:** *(1) Emotional Awareness and (2) Self-Confidence;* **(II) Self-management:** *(3) Emotional Self-Control; (4) Adaptability; (5) Achievement* and *(6) Optimism;* **(III) Social awareness:** *(7) Empathy and (8) Organizational Awareness;* **(IV) Social skills:** *(9) Developing Others, (10) Leadership, (11) Conflict Management and (12) Teamwork & Collaboration. Self-awareness and self-management clusters* refer to the ***Emotional competence*** and *social awareness* and *social skills clusters* are about ***Social competence.*** (See Table 1)

The measurement tool used in the survey is a questionnaire with 120 items, variations in the responses to their evaluation in a five-stage Likert scale with scores from two to six. A variation analysis has been performed to present the statistical dispersion between the cases in the sample by variance of an attribute. Two types of indicators have been used to measure the impact of determinant factors and that of non-determinant factors. First, weighted average values ($\bar{x}$), and second - standard deviation (*S*) have been calculated for each of the compounds in the experiment.

$$\overline{X} = \sum_{i=1}^{n} Xi * fi / \sum_{i=1}^{n} fi \quad (1)$$

The criteria and indicators presented in the study provide a possibility for comparative assessment of the results of applying a methodology, to explore the impact of E&SI on improving the professional competence of doctors and to trace how this will influence the results of the hospitals, taking into account the opinions of all stakeholders by conducting training for doctors and evaluating their results by comparing statistics with the main economic indicators of a hospital.

2   Results and discussion

Tab. 1: Results from the descriptive statistical analysis

Indicators (12 descret competences)		Management n=6		Doctors n=20		Patients n=128		Tot. Oth.		Overall score n=154	
		$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
1	**Emotional Awareness**	4.37	0.63	4.41	.53	4.13	.37	4.25	.50	4.30	.39
2	**Self-Confidence**	4.72	0.58	4.63	.34	4.42	.27	4.57	.43	4.59	.33
3	**Emotional Self-Control**	4.37	0.56	4.67	.44	4.41	.42	4.39	.43	4.48	.43
4	**Adaptability**	4.53	0.74	4.62	.32	4.47	.54	4.50	.64	4.54	.51
5	**Achievement**	4.73	0.75	4.47	.57	4.48	.37	4.61	.56	4.56	.53
6	**Optimism**	4.33	.42	4.45	.59	4.22	.29	4.28	.36	4.33	.34
7	**Empathy**	4.73	.70	4.65	.36	4.29	.38	4.51	.54	4.56	.39
8	**Organizational Awareness**	5.02	.54	4.56	.25	4.56	.25	4.79	.40	4.72	.36
9	**Developing Others**	4.68	.45	4.44	.63	4.23	.28	4.46	.36	4.45	.39
10	**Leadership**	5.15	.76	4.63	.46	4.42	.30	4.79	.55	4.73	.48
11	**Conflict Management**	4.72	.55	4.46	.38	4.29	.21	4.50	.38	4.48	.29
12	**Teamwork & Collaboration**	4.70	.61	4.52	.39	4.26	.23	4.48	.44	4.49	.36

Source: authors' elaboration, 2017

2.1   Key competences related with emotional intelligence

The first indicator *„emotional awareness"*, together with *„self-confidence"*, makes an important part from the competence model construct.

The result of the managers $\bar{X}$=4.37 is close to the mean of the group, whereas with S=.63 we have a high dispersion of answers. It is clear that part of the management staff considers "*emotional awareness"* to be very important for the good medical practice, while others believe that this is not as important in the doctors' practice - their cumulative assessment is slightly above the average.

For *„self-confidence"we* have: $\bar{X}$=4.59; *S*=.32. The results of the managers show even higher values ($\bar{X}$=4.72), which exceed the average for the group, but with S=.58 it is clear that we have varied responses.

For patients result we have ($\bar{X}$=4.42; *S*=.27). These results are also confirmed by interviews conducted in the hospitals themselves, not only with the patients, but also with their relatives

and companions. Doctors give higher scores on this indicator ($\bar{X}$=4.63; S=.34), which means they can still be motivated for a further development of this competence.

For the third indicator „emotional self-control", which belongs to the Self-management cluster, the average result of the participants' groups is ($\bar{X}$=4.48; S=.43). The managers result ($\bar{X}$=4.367) is below the average value for this competence, but with S=.56 it is clear that we have varied responses.

The patients' responses are below the average values of the group ($\bar{X}$=4.409 и S=.419).

Doctors self-assess their "self-control" levels higher than the average for the indicator

($\bar{X}$=4.67 at S=.44). This does not mean that they have overestimated themselves on this competence.

For the indicator „adaptability"the average result of the participants' groups is $\bar{X}$=4.541 and S=.505. Managers' results are above the average ($\bar{X}$=4.533), but with S=.740 we have a high dispersion of answers.

Patient results are below the mean of the group ($\bar{X}$=4.47 и S=.543). For patients, it is important for doctors to adhere to a pattern of behavior that allows them to be more flexible in their work so they can feel the importance of their own role in successfully managing the treatment.

The self-assessment reasult of doctors on this indicator show $\bar{X}$=4.62 with S=.315. Physicians have a much greater knowledge of the system, and they can set more precise limits on their behavior and reaction to a problem that patients think can be solved very easily if the physician is more adaptive.

The fifth indicator „achievement", together with „optimism", also belongs to the Self-management cluster.

The management considers "achievement" as an important indicator for the management of medical work, corresponding to the very high assessment they give to doctors' competence in the respective hospitals.

Patient results are below the mean of the group $\bar{X}$=4.48 and S=.365. These results have been confirmed by the interviews in the hospitals under study.

From the doctors self-report on this indicator we have: $\bar{X}$=4.47 and S=.569. This result can be interpreted as follows: in some physicians, the motivation in this direction decreases, or, more precisely, it is redirected to other fields, while others manage to keep it at high levels.

For „*optimism*" the average result from the tree respondents' groups is $\bar{X}$=4.33 and *S*=.34.

The result of the managers themselves ($\bar{X}$=4.333 and *S*=.423) is identical with the mean of the group.

Patient results are below the mean of the group ($\bar{X}$=4.22 и *S*=.29). For them, it is important for doctors to be optimistic, but obviously they do not get the "optimistic doses" they expect from the doctors during their treatment.

The result received from the doctor's self-reports is higher than the mean values ($\bar{X}$=4.45; and *S*=.59. They reflect the personal perceptions generated by the very nature of the work, but also the ability of the doctors to self-restrict themselves, fearing medical errors and negative public evaluationt.

2.2   Key competences related with social intelligence

The seventh indicator „*empathy*" is the first competence from Goleman's Social Awareness cluster.

Managers result is above the average value $\bar{X}$=4.733 and with *S*=.70 we clearly have a high desperssion of answers, especially in comparison with the patients' answers.

Patient results are below the mean of the group $\bar{X}$=4.29; *S*=.38. This can be explained by the fact that they still give positive assessment to doctors.

The self-assessment of the doctors shows a result higher than the average ($\bar{X}$=4.65 and *S*=.36). Interestingly, pysicians change their attitude towards the importance of empathy the moment they become patients.

The eighth indicator „*organizational awareness*", finalizes the survey of Social Awareness cluster.

The managers' responses show very high results, above the mean of the group $\bar{X}$=5.02, with *S*=.54 and a discrepancy with patients' results.

According to patient results ($\bar{X}$=4.56; *S*=.25) physicians have a relatively high level of "orga-nizational awareness" but there are areas where this competence can be developed further.

The self-assessment of the doctors shows the following result ($\bar{X}$=4.56; *S*=.25). This fact speaks of a high degree of realistic self-assessment by the doctors.

The ninth indicator „*development of others*" starts the survey of Social skills cluster.

The managers' results exceed the average for this indicator ($\bar{X}$=4.68; S=.45). The managers' results exceed the average for the group and at S=.45 we have a polarization again with the patients' response.

From the patients result ($\bar{X}$=4.23 and S=.28), noticeably, patients want to see greater collegiality, sense of empathy and mutual help among the doctors while working. For them, it is important for physicians to be able to ignore their personal interests and goals in order to support the primary achievement of the goals and tasks of their hospital.

Interestingly, the result of the doctors is below the mean for the indicator ($\bar{X}$=4.44; S=.63). Their responses for the physician's priority role roughly coincide with those of the patients and the managers.

The tenth indicator is „leadership" from the Social sckills cluster.

The Managers' result from the assessment is very high ($\bar{X}$=5.15; S=.76) with a high dispersion of answers. According to the managers, the doctors working under their management show high leadership capabilities and have built leadership skills.

Patient responses are below the mean $\bar{X}$= 4.42; S=.30. The results reflect a positive patient attitude towards doctors' skills and abilities, regarding "leadership" competence, but some weaknesses are also found.

Doctors' result from the self-report seems realistic, in line with the other results ($\bar{X}$=4.63; S=.46). There is no overestimation, which is an indicator for an emotionally intelligent behavior.

For the eleventh indicator „conflict management" we have an overall result ($\bar{X}$=4.48 and S=.29).

Managers' result ($\bar{X}$=4.72; S=.55) gives an optimistic view about doctors' ability to manage emerging conflict situations, while patients' assessment ($\bar{X}$= 4.29; S=.21) suggests that it is impossible to determine precisely whether the doctors who are treating them have these social skills.

The self-assessment made by the doctors reveals some positive tendencies regarding their ability to manage the processes under consideration ($\bar{X}$= 4.46; S=.38). The high managers' scores can be explained by their subconscious desire for physicians to have a greater capacity

to manage conflict situations arising during their work, which will accordingly reduce the pressure on the managers while interacting with patients.

Patients do not expect doctors to be very active in managing conflicts. Considering that the overwhelming majority of the patients in the examined hospitals are from minority groups where there are high levels of poverty, lack of education and good manners, these results are not surprising.

The twelfth indicator „teamwork & collaboration"is the last from the Social skills cluster.

Managers' high scores ($\bar{X}$ =4.70; S=.61) show that „teamwork & collaboration"is an important competence, contributing to effective management.

Patient responses are significantly below the mean for the group ($\bar{X}$ =4.26; S=.23). Generally, respondents have a positive attitude towards the team work skills and knowledge of doctors, but according to the answers on some statements there are some deficiencies in the team work.

The result from the self-assessment of the doctors are below the managers' results ($\bar{X}$ = 4.52; S=.39) but higher than the patients'ones. This speaks of a seriously taken self-evaluation. The doctors are aware of their emotional state and how it could reflect on their teamwork & collaboration with colleagues.

Results and Conclusions

A complex adapted model for E&SI as an influencing factor on the medical performance has been appraised by comparing the results by elements of the integrated competence model and the indicators of their performance for establishing organizational change in the hospitals observed.

After presenting the results and the analysis of the twelve indicators, the following conclusions can be drawn, regarding the relationship between E&SI and E&SC:

- Based on the survey conducted in the two health care institutions it was found that the responses of the three groups of participants varied within the following limits: $\bar{X}$ =4.521 and S =.13.

Fig. 1: E&SC Clusters result
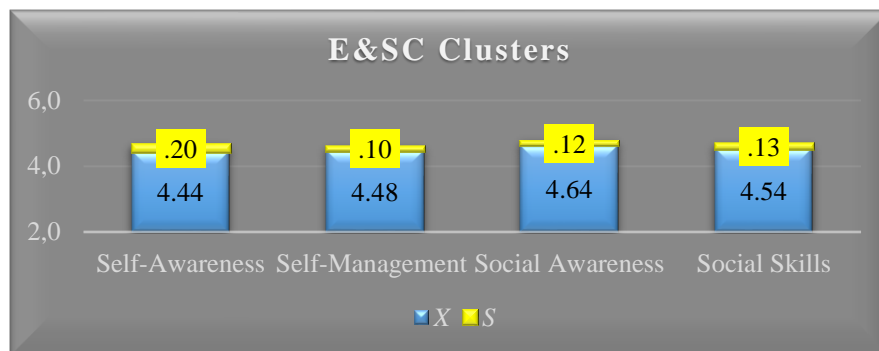
Source: authors' elaboration

- For "self-awareness", representing the first group of Goleman's competence model, the following picture is observed $\bar{x}$=4.44; S=.21. The doctor's profession requires dealing with challenging circumstances, confidence in making important decisions, as well as their subsequent argumentation and assertion.

- For „self-management" cluster we have: $\bar{x}$=4.48 and S=.11. The results showed the doctors' desire for change, or readiness to accept new challenges. Respondents with medium to high levels of self-management tend to have a positive attitude to changing strategic decisions in response to unforeseen situations.

- For „social awareness" cluster we registered the following scores: $\bar{X}$=4.64; S=.12. Empathy is confirmed as a crucial indicator for success in professions such as physicians, where communication and interpersonal relationships have a priority. In turn, the scores of "organizational knowledge" showed from medium to high understanding of formal authority and adequate action in line with the formal organization. At the same level is the assessment of the informal structure, the recognition of social networks in the hospital that affect the work of doctors.

- For „social skills" cluster covering part of the social competencies we have obtained

- ($\bar{X}$=4.541 and S=.13). The results are slightly lower than those shown in the other cluster of social intelligence, but the scores are higher than the clusters associated with emotional intelligence.

- In the analysis of the results of the two main groups (EC and SC) presented in Table 2, the following results for the indicators forming the cluster of emotional competence are obtained through "self- awareness" and "self-management" clusters. Even the slightly higher values obtained for the cluster of social competence are in sync with the theoretical formulations presented.

Tab. 2: Groups result from the 360° evaluation for emotional and social competence

Groups	Emotional competence		Social competence	
	$\overline{X}$	S	$\overline{X}$	S
Management	4.51	.18	4.83	.20
Doctors	4.54	.11	4.55	.09
Patients	4.36	.12	4.34	.13
Overall score	**4.47**	**.12**	**4.57**	**.12**

Source: authors' elaboration

- As a general conclusion from the study and the applied methodology for evaluating the impact of E&SI, it can be noted that despite the multi-aspect and complexity of the medical work, it is subject to sustainable management. Doctors' performance can be significantly improved by using an appropriate methodical instrument. Such platform for specialized training presents opportunities for individual change through improving the key competences presented and, hence, for positive organizational change leading to sustanability.

- The work presented is a prerequisite for building an innovative working model of key competences that allows the assessment of individual development and growth. There is a need for change in Bulgarian hospital organizations and it is directly linked to the need of investment in the acquisition of higher competence of human capital.

- The high E&SC results shown by the doctors in both organizations were confirmed by the staff turnover, which is very low because of employee satisfaction with their role in the organizations and totally contradicts to the hundreds of doctors leaving Bulgarian health care system for a better future abroad. The following paragraph by Campiolo completely coresponds with the authors'vision for sustainable development of human resourses: „*Today to innovate is to introduce novelty to the old, to step out of the box where old habits and old practicies imprison us and with that, rich and integrated, motivated staff who wishes to grow, to learn, to develop and to reach success. Nowadays, to manage people is no longer a synonim to controlling, patterning and routinizing, but to stimulating involvement, growth and staff development*".

Acknowledgment

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Contact

Irina Kostadinova

University of Ruse "Angel Kanchev" Bulgaria

Faculty of Business and Management

8 Studentska st., 7017, Ruse, Bulgaria

ikostadinova@uni-ruse.bg

Diana Antonova

University of Ruse "Angel Kanchev" Bulgaria

Faculty of Business and Management

8 Studentska st., 7017, Ruse, Bulgaria

dantonova@uni-ruse.bg

BALANCED SCORECARD AS A TOOL FOR RESEARCH AND DEVELOPMENT PERFORMANCE MANAGEMENT– A CASE STUDY IN AN AGRICULTURE COMPANY

Marie Kubáňková – Jaroslava Hyršlová – Jan Nedělník

Abstract

Purpose: The growing number of research oriented to research and development (R&D) performance reflects broad debates dedicated to R&D evaluation, measurement of its effectiveness related to competitiveness and also R&D added value and cost management. Therefore, many authors call for research focused on the implementation of strategic management accounting tools, primarily the Balanced Scorecard (BSC) used as a R&D management tool in small and medium-sized enterprises (SMEs). The aim of this paper is to contribute to the empirical knowledge of implementation of strategic management accounting tools in R&D performance management, with a primary focus on the BSC implementation in SMEs.

Design/methodology/approach: The purpose of this paper is to propose a procedure for R&D performance management tailored for SMEs based on BSC. This paper also intends to be an inspiration for further research in this area. As a case study method is recommend by the literature when a particular management tool is a desired output, the case study was provided in a case company. The investigation lasted nine weeks, three key steps can be recognized: (1) reference framework development; (2) strategic goals of the case company and the status quo of R&D management identification (3) development a BSC for the case company.

Findings: The case study concludes the BSC proposal as a system of interrelated indicators and a procedure for R&D performance management. The indicators transform the strategic goals of the company into a set of corresponding R&D goals. Hereby this paper responds to the challenges endorsed by the literature, specifically the call to investigate the implementation of BSC in R&D performance management.

Research/practical implications: Empirical research of the practical implementation of strategic management accounting tools is of a crucial importance of the further development of this scientific discipline. Innovation management measurement as well as R&D performance management are subjects of interest for a number of expert studies. The ambition of this paper is to provide a procedure for SMEs how to manage R&D by BSC, and also to bring an inspiration for further research in this field.

Originality/value: The added value of this paper is extension of the existing knowledge concerning the BSC used in the management of R&D performance.

Keywords: Research and development, Balanced Scorecard, strategic management accounting

JEL Codes: O32, M10, M20

Introduction

The expanding amount of literature dedicated to R&D performance management reflects an extensive discussions how to evaluate R&D projects, measure their added value, manage related costs or analyse competitiveness caused by R&D investment (Pearson, Nixon and Kerssens-van Drongelen, 2000). Technical development, steady technological improvements and innovations together with global competition increase the uncertainty over the product lifecycle; these factors rather complicate long-term planning primarily in the area of R&D (Chiesa et al., 2009).

Strategic management accounting can make a significant contribution to achieving and maintaining a competitive advantage for a company in the global environment (Bremser and Barsky, 2004). Strategic management accounting helps to identifying a strategic orientation of a given company and it provides information for the decision-making processes. Company competiveness or even survival depends on a successful assessment of the current situation and the choice of an appropriate strategy. Innovation management measurement as well as R&D performance management are subjects of interest for a number of expert studies (Adams, Bessant and Phepls, 2006; Savino, Messeni Petruzzelli and Albino, 2017). There are notable calls for a research into the use of BSC in R&D management primarily in SMEs (Bremser and Barsky, 2004; Tuomela, 2005). SMEs are often more productive in the innovation process, they usually achieve higher R&D productivity; however SMEs do not usually use strategic management accounting tools in general and neither in R&D performance management (Tuomela, 2005). The aim of this paper is to contribute to the empirical knowledge of implementation of strategic management accounting tools in R&D performance management, with a primary focus on the BSC implementation in SMEs. This paper reflects the challenge outlined by Bremser and Barsky (2004) and Tuomela (2005). The ambition of this paper is to provide a procedure for SMEs how to manage R&D by BSC, and also to bring an inspiration for further research in this field.

1   Reference framework

Chiesa et al. (2009) classify the existing knowledge of R&D performance management to four levels. At the first there are findings from a research focused on the choice of individual indicators or metrics suited for R&D, at the second level research has looked into the choice of the performance perspectives of R&D. At a third level, research has adopted a systemic perspective to R&D performance measurement and finally at the last level more strategy-

oriented stream of research has adopted a contextual perspective where performance management system for R&D should be studied within the context in which it is applied.

A great impulse for the business performance management systems literature was the BSC created by Kaplan and Norton (1996); several authors have applied this tool for R&D management (Bremser and Barsky, 2004; Tuomela, 2005) as the BSC allows to implement a strategy in accordance with the strategic goals in financial, customer and innovative perspectives with the alignment to internal processes and all managerial levels of a given company (Bisbe and Otley, 2004; Morandi, 2011). Bremser and Barsky (2004) claim: BSC offers a great approach to performance measurement and management. One of the identified problems of strategic management accounting is the lack of attention to practice (Tuomela, 2005). Pearson, Nixon and Kerssens-van Drongelen (2000) argue that the key challenge of R&D performance management is the decision about the long-term strategic and financial goals. As BSC can be decomposed to individual indicators, the implementation of BSC in R&D management ensures integration and compliance of R&D planning with the whole company strategy (Bremser and Barsky, 2004). BSC offers a balanced combination of non-financial and financial indicators to manage of R&D performance in accordance with the innovation process to maximization of the value of R&D opportunities; BSC can also make a significant contribution to the learning process.

Based on the reference framework and in line with the main aim of the paper, the following question was asked: Can BSC to improve R&D performance management in SMEs? Can a simple procedure for R&D performance management in SMEs be designed?

2 Methodology

The original BSC proposal by Bremser and Barsky (2004) was extended to the area of strategic partnership in line with Mayer-Haug et al. (2013). Tab. 1 summarizes the initial BSC indicators for R&D departments.

Tab. 1: Initial BSC designed for R&D department

Strategic areas	Strategic indicators at company level	Indicators at R&D department level
Finance	A. Return on investment capital B. Customer profitability C. Company turnover growth	1. R&D annual budget (A) 2. Total R&D expenses (A) 3. R&D expenses as % of turnover (B) 4. Licences revenue (A, B, C)
Customers	D. Retaining number of customers E. Retaining market share F. Acquiring new customers (number and quality)	5. Product lifecycle on the market (D, E, F) 6. Customer satisfaction with a new products (D, E) 7. Added value perceived by customers as a result of highly professional services (D, F) 8. New products and technologies with a positive impact on the environment (F, D)
Internal processes	G. Profitability of new products H. R&D effectiveness (time between development and market launch) I. Percentage of funds to be spent to keep existing products on the market J. Other non-R&D indicators	9. Number of successful projects 10. Average cost of one product development (G) 11. Total number of projects
Learning and development	K. Staff fluctuation L. Staff development M. Percentage required qualifications and competencies being fulfilled N. Measuring staff satisfaction O. Analysis of innovation culture	12. Number of recognized patents (M) 13. Percentage required qualifications and competencies being fulfilled (K, M) 14. New acquired skills 15. Newly used technology 16. Competitiveness of R&D vs. competitors (M) 17. Customers satisfaction (N, O) 18. Staff training (K, L)
Strategic partnership	P. Networking and engaging in prestigious consortia Q. Acquisition of external sources for R&D financing	19. Number of projects co-financed from public sources 20. Number of projects implemented in cooperation with other private entities 21. Number of new strategic partnerships

Source: adjusted according to Bremser and Barsky (2004), Mayer-Haug et al. (2013)

Case study allows describing interactions; Jorgensen and Messner (2010) recommend using a case study method if searching a complex problem. This method enables assessment from a wide perspective (Morandi, 2011) and it is often used for creating a specific management tool (Coyte, Ricceri and Guthrie, 2012). Therefore the case study was selected as an appropriate

method to answer the research questions. The investigation lasted nine weeks; three key steps can be recognized:

1. Introducing the reference framework according to McCarthy and Gordon (2011) to the management.

2. Strategic goals of the case company and the status quo of R&D management were identified in line with Tuomela (2005) and Chiesa et al. (2009). Interviews were provided with the executive manager, R&D manager and R&D project managers to assess the current performance management status at the R&D department level. The structure of the questions was based on a questionnaire created by Aiman-Smith et al. (2005). The questionnaire was broaden to bring data about product portfolio, added value, nature of R&D activities, goals set for the R&D department (return on investment, amount of turnover dedicated to R&D; performance measurement and main characteristics of the performance measurement system used, reasons for performance measurement and the main required performance parameters of R&D; tools currently used for R&D management, how it is monitored to meet defined criterion, how the tools are adapted to the goals pursued).

3. BSC with tailored indicators was developed for the case company.

The proposed procedure allows the adaptation of the BSC to the specific condition of the case company.

The case study was carried out in one private SME actively involved in agriculture, crops breeding and providing expert consultancy services to agricultural entrepreneurs. The company's customers include both private entities (especially agricultural entrepreneurs) and also public sector organizations, in particular the organizations of protected landscape areas. The case company has been established on the market for more than 24 years, has its own R&D department and devotes considerable funds to research on new agro technologies, breeding, landscape reclamation methods and nature conservation practices.

The implementation of BSC in selected company was in line with the basic principles as outlined by Bremser and Barsky (2004): (1) to create an overview of strategic goals at the enterprise level; and (2) those goals on the agreement between both management levels set for a lower management level. Each specific indicator for R&D has its link to the company strategic goals to ensure that R&D will support the strategic development; hereby the final BSC was developed.

3 Results

The following strategic goals of the case company have emerged from interviews with the executive manager:

- to maintain an existing position on the market and customers,
- to expand the portfolio of activities on new bioenergy technologies and products,
- to expand the portfolio of active international partners and projects and to engage in EU Framework Programs.

The following conclusions were drawn from the interviews with the R&D manager:

- R&D department is determined mainly on the basis of specific projects planned on an annual basis; the R&D department is responsible for the implementation of these projects,
- the link between the contribution of the R&D department and the company's goals is not explicitly illustrated,
- the company continuously monitors implemented R&D projects, in particular compliance with the budget and deadlines,
- the mutual communication is at a very good level.

The case study resulted in the creation of BSC, precisely a system of interrelated indicators that transform the strategic goals into a set of R&D goals and ensure the fulfilment of strategic goals of the company. The final BSC is provided in Tab. 2.

In the BSC proposal we can find limiting indicators (Total R&D expenses, R&D annual budget) as well as monitoring indicators (Licences revenue, Customer satisfaction with a new products, Added value perceived by customers as a result of highly professional services, Number of new strategic partnerships). Indicators Number of successful projects and Percentage required qualifications and competencies being fulfilled put timely attention to any potential threat or they signal opportunities (success in new projects). Further it is possible to state that managers put the same attention to both the financial and the non-financial indicators when they selected the indicators for BSC. In the original proposal by Bremser and Barsky (2004) indicators for partial areas always related to the given area. In the final design of BSC created for case company some indicators related to more than one area. This concerns for instance indicator Number of successful projects that relates to customers' area as well as to internal processes area. Further it is the indicator Percentage required qualifications and competencies being

fulfilled that integrates in itself both the learning and growing area and the customers' area. Further it is the indicator Percentage required qualifications and competencies being fulfilled that integrates in itself both the learning and development area and the customers' area.

Tab. 2: Breakdown of company strategic goals into R&D indicators – final BSC

Company strategic goals	BSC part	Company strategic indicators	Company indicators of R&D department
Maintain existing position on the market	Finance	A. ROA	1. Total R&D expenses (A)
			2. R&D annual budget (A)
			3. Licences revenue (A)
Extend the portfolio of activities about new profitable projects	Customers	B. Keeping existing customers	4. Added value perceived by customers as a result of highly professional services (B)
		C. Acquiring of new customers	5. Customer satisfaction with a new products (C)
		D. Increase turnover from new products	6. Number of successful projects (E, C)
	Internal processes	E. Achieving profitability from new products	
	Learning and development	F. Staff development	7. Percentage required qualifications and competencies being fulfilled (F, C, B)
Extend partner portfolio	Strategic partnership	G. Networking and engaging in prestigious consortia	8. Number of new strategic partnerships (G)

Source: authors

The top management of the company has decided to use this system since they believe it shall increase profitability of business and it will generate new perspective projects. Company manager expressed the main contribution of the case study: *"The investigation encourage me to think over the links between the company's goal and the task for the R&D department. The joint meeting (the presentation and the discussion) was the impetus for us to debate again about the strategy. We concluded of few new proposals for further development of the company."* The R&D manager said: *"The need to look at our department and our department's projects resulted in understanding of how a very important role our department has and how important our department is for the overall success of our company in the market. Thanks to the fact that our employees shall be much more confronted with our customers' requirements and our department shall monitor how commercialization is successful I hope this will have impact on*

project proposals submitted by our R&D professionals. I believe this change shall be towards projects resulting in market success."

In order to succeed with the implementation of BSC it seems to be very important to focus also on indicators for concrete R&D projects. This step is in agreement with Papalexandris et al. (2005) and Bremser and Barsky (2004) recommendation who stress the need to create BSC even for individual project teams.

Conclusion

The completed case study has verified the implementation of BSC provided by Bremser and Barsky (2004); the procedure consists of the following steps: 1) formulation of strategic goals at the company level, 2) analysis of the current level of R&D management performance, 3) transforming the performance indicators to lower levels in line with the company's goals to secure a smooth transition to a new management approach. The proposed procedure allows BSC to adapt to specific company requirements as recommended by Coyte, Ricceri and Guthrie (2012) and to achieve effective communication of the need for changes in the performance management system (Papalexandris et al., 2005). The selection of concrete indicators was based on the procedure recommended by Bremser and Barsky (2004). It is clear that the multi-criteria evaluation of R&D activity will provide better information to the management of the company as it will allow the display of customer needs, so the impulses will not only be generated from the "inside" of the company but will take into account market needs. The implementation of the BSC in the case company led, according to the company's management, (1) to improving of communication and enhancing of cooperation – see Pearson, Nixon and Kerssens-van Drongelen (2000), Tuomela (2005); (2) to increase of management awareness of the added value of R&D to creation of added value for the company – see Tuomela (2005), Papalexandris et al. (2005); (3) to support of innovative climate in the company and to creation of new projects – see Taylor et al. (2000).

The main limitation of realised research is the chosen method. A case study was conducted in a selected SME, the conclusions cannot be generalized. Cabelo-Medina et al. (2011) claim that companies are too complex units, so research results in one does not need to lead to the same results in conducting the same research in another company, but summarizing "best practices" is an important task. Examples of good practice can be a guide for a number of businesses, and can be applied to a variety of different companies operating under different conditions. Consequently, on the one hand, the conclusions cannot be generalised, on the other hand, they

may be important for other companies to manage R&D performance. In the area of further research, a more in-depth analysis of the implementation of the BSC in a research organization may bring interesting findings.

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Contact

Marie Kubáňková

Agricultural Research, Ltd. Troubsko

Zahradní 400/1, 664 41 Troubsko, Czech Republic

mariekubankova@gmail.com

Jaroslava Hyršlová

University of Pardubice, Faculty of Transport Engineering

Studentská 95, 532 10 Pardubice, Czech Republic

jaroslava.hyrslova@upce.cz

Jan Nedělník

Agricultural Research, Ltd. Troubsko

Zahradní 400/1, 664 41 Troubsko, Czech Republic

nedelnik@vupt.cz

SOCIAL (IR)RESPONSIBILITY OF PROFESSIONAL SPORTS CLUBS

Vilém Kunz

Abstract

Purpose: The aim of the paper is to present the current situation in some issues of socially (ir)responsible behaviour, especially in the management of professional sports clubs from the highest domestic league competitions or the English Premier League, while also trying to focus on their approach to sponsorship issues, especially to sponsors from the so-called socially sensitive sectors.

Design/methodology/approach: To analyse the application of CSR in sports clubs, football and hockey are chosen from collective sports, as the highest amount of sponsors is interested in this sector. Premier League was chosen not only because of the greatest interest of sponsors, but also because it has long been considered a leader in the application of CSR. In addition to the content analysis of the relevant information, which clubs present on websites, individual semi-structured interviews with managers of selected clubs were also carried out.

Findings: Premier League football clubs carry out a number of CSR activities, focusing on community programs in particular. In the Czech Republic, CSR activities are being implemented mainly by the most economically strong clubs. Sponsors of football clubs in England, similarly to sports clubs in the Czech Republic, include, in particular, companies in intensive competition, sports goods producers and gambling operators.

Research/practical implications: Achieved results can not only be a valuable reflection to think about the further direction of attitude towards sponsors not only for the selected clubs but also for managing executive sports authorities that are likely to be under greater pressure from stakeholders observing for the principles of responsible and ethical behaviour.

Originality/value: The paper brings not only current data but also comprehensive findings on the situation in the field of sports sponsorship in the most popular collective sports in the Czech Republic and comparing them to the findings from the British football environment.

Keywords: Sensitive industries, social responsibility, sports industry, sports sponsorship

JEL Codes: M14, Z23

Introduction

Social responsibility in the sporting industry is being increasingly attracted by academics and researchers as well as by sports organizations themselves. Babiak, &Wolfe (2009) believe that managers of sports organizations as well as managers from other sectors, should nowadays consider CSR activities to be an integral part of their management and one of the effective ways to develop relationships with their stakeholders.

The intensification of stakeholder demands on sports organizations is seen as one of the crucial and critical factors of turbulent changes in the environment of sports organizations functioning, which their management needs to pay close attention to. In practice, there are a number of related issues, whether in the form of increased media attention towards unethical practices or stronger interest of fans in the social aspects of the functioning of sports organizations which the leadership of sports organizations has to deal with, so as to avoid any public skepticism or to avert media criticism. In particular, top sports clubs are subject to intense interest and control by the mass media and also general public that is constantly informed throughout these channels about almost everything related to their activities. The work of the club's management, as well as the sporting performances or the behaviour of the players, even outside the sports arena, are under the public's scrutiny.

1   CSR in sports industry

In recent years, due to some exposed corruption scandals from the sporting environment, it is also possible to see increasing pressure from the general public towards the ethical and social aspects associated with the functioning of sports organizations. Also, increasing commercialization and media coverage in sport - where sponsors or investors bring not only financial resources to sport, but also associate their name and reputation with it - put pressure on sports organizations to behave socially responsibly.

According to some experts, it is somewhat surprising that the academic analysis of the role of CSR in the field of sport (being a relatively recent trend), is in contrast to the issue of CSR, which gained an attention of science and research more than half a century ago. Not earlier than at the beginning of the twenty first century, professional literature on social responsibility in sport began to emerge (eg. Babiak, & Wolfe, 2009), but there are still quite a few own methodological recommendations on how sporting subjects can successfully implement and manage their CSR activities.

Research activities in this area have been developing quite intensively and diversely over recent years (Aguinis, & Glavas, 2012). While the first research papers focused on identifying the main characteristics and specifics of CSR in sport (Bradish, & Cronin, 2009), the following research also focused on the use of CSR during specific sporting events in sports organizations or other related issues. Increased interest in this area has been underlined in recent years by the growing number of research articles published in major scientific international journals dealing with sports marketing and management issues: *International Journal of Sport Management and Marketing (IJSMM), International Journal of Sport Marketing and Sponsorship (IJSMS)* or *Sport Marketing Quarterly (SMQ).*

It can be assumed that the sporting industry will continually represent a rich context in which other issues related to CSR will be intensively explored. Similarly, it is to be expected that in the future, CSR-related issues will be a strategically important area of the interest of all actors in the sports industry, be it international or national sports federations, league competitions, professional sports clubs, individual athletes, sports equipment producers, partners and sponsors in the field of sport.

2 Arguments to support CSR in sport

Many academics (e.g. Smith, & Westerbeek, 2007) believe that the growing interest of CSR in the field of sport in recent years is also affected by the very strong link between CSR and sport. Levermore, & Moore (2015) think that there are many rational reasons for the tight connection of sport and CSR, for example the important role of sport in today's postmodern society that can be used to tackle diverse social problems.

Enhancing local relationship between clubs and communities

The sporting area attracts audiences to the local, regional and global scene, providing a unique opportunity to reach the general public with urgent social problems. Moreover, there is often a very strong and effective connection between sports organizations and their fans, which can be beneficial not only to sponsors but also to the society. This high level of loyalty and identification of fans with the club as well as the significant influence of sports organizations towards local communities can be effectively utilized in their involvement in CSR activities or in enhancing community integration and overall development.

2.1 CSR beneficial for sustainable operation of sports organizations

From the point of view of motivating sports organizations to engage in CSR, it is basically possible to distinguish between two basic approaches, which was stated by one of the greatest personalities of modern management Professor Henry Mintzberg. On one side, some representatives of sports organizations are currently involved in CSR initiatives mainly for noble reasons and their leaders believe that doing good is the right thing. However, on the other hand, it is also possible to see that sports organizations engage in CSR activities because their management is convinced that doing good can also be beneficial to the successful and sustainable operation of sports organizations and are motivated by pragmatic reasons for engaging in socially responsible activities (Giulianotti, 2015).

2.2 Implementation of CSR principles into strategic management of sports organizations

The implementation of CSR principles in strategic management of sports organizations may, according to many experts, bring benefits not only to surrounding communities and other stakeholders, but also to sports organizations themselves.

Although many of them are carried out in a longer time horizon and are mostly non-material, it does not mean they are less important. The strategic direction of CSR of sports organizations can also offer the potential to improve their overall functioning and competitiveness. (Blumrodt, Desbordes, & Bodin, 2010). Moreover, their CSR engagement can help ensure marketing attractiveness and exciting potential, be it towards investors, sponsors, media or fans. According to Babiak, & Wolfe (2009), one of the most important motives for involving sporting organizations in CSR activities can be the effort to improve relationships with their key stakeholders, whether they are fans, corporate sponsors, municipalities or surrounding communities.

3 Critical voices for CSR in the sports industry

The impact of trade on the world of sport has never been greater than at present, which raises pressure on the behaviour of sports organizations that in a number of cases have gradually transformed from their exclusive focus on sporting activities to typical commercial companies. Influential external actors in the sporting environment have their own pragmatic interest in sporting success, be it glory, prestige or higher financial income. Sponsors and the media are exerting direct and indirect pressure not only on sports organizations but also on athletes themselves, including the impact on their goals, motives or behaviour.

Sport and the sporting industry are an integral part and the mirror of contemporary postmodern society. Just as it is, the sport world is similarly complex and contradictory. Thus, in addition to the previously mentioned wide range of social benefits, a variety of negative side-effects may be associated with sport, which may also be affected by the irresponsible behaviour of professional athletes, sports organizations or other stakeholders (eg. spectators, sports officials, sponsors, etc.). A large part of them is also extensively addressed in professional foreign literature, especially in the fields of sports sociology or sport psychology, whether it is stadium violence, discrimination, doping or corruption in sport.

There is a growing call to apply the principles of ethical and social responsible behaviour in sport. At the same time, a whole series of critical issues are emerging, including the future direction of sport and its role in society. Fears about the future of the sporting world are compounded by a number of recent scandals, whether touched by the impact of trials to influence sports matches or the corruption of sports managers. The sports sector must therefore not only seek to gain its credibility, but also provide sufficient assurance that not only its political, economic, developmental or social potentials, but also its moral potential will be fulfilled in the future.

3.1   Issues of irresponsible behaviour in sport

In addition to focusing on the potential positive impacts of CSR in the sports industry, attention should be drawn to the problems of irresponsible behaviour in sport. Even through research surveys, answers to the following key questions should be sought:

- What basic measures and sanctions have been adopted in the fight against doping and what effect has it had?
- How is ethical behaviour in the spirit of rules and fair play promoted by athletes, coaches or referees in sports matches or competitions?
- How is financial stability supported? What are the measures against the indebtedness of sports clubs?
- How is corruption or manipulating the results in sport being fought?
- How are issues of sponsorship being addressed? Why are the main sports sponsors from sensitive industries (alcoholic beverage producers, breweries, gambling operators, fast food companies)?

3.2 Sports sponsorship by companies from sensitive industries

Most definitions describe sponsorship as a reciprocal business relationship between a sponsor and a sponsored subject. In most cases, the sponsors provide financial, material or other forms of support, with a certain amount of equivalent. The most common is to associate the sponsor's name with a major event or activity, which can support marketing communications and brand of the sponsoring organization very effectively. Sponsorship has gradually become a very popular tool for integrated marketing communications by organizations around the world.

In a global perspective, sports sponsorship has long been the focus of sponsors' interest, and according to PricewaterhouseCoopers, nearly three-quarters of global sponsorship spending is focused on promoting sports, which represented more than $ 45 billion in 2015. Sport provides unique opportunities for sponsors by attracting a mass audience to the local, regional and global scene, and - at the same time - it generates strong emotional responses.

While sponsoring international or national events as well as leading sports teams does not usually indicate sponsors' interest in surrounding communities, support for regional or local sports events by businesses will be more likely to be perceived as an integral part of their CSR policies. According Plewa, & Quester (2011), there is a growing number of multinational companies that, although operating outside the sport industry, are increasingly beginning to recognize the importance of implementing CSR activities in the field of sport in order to achieve their own business as well as social goals. Also, a number of academics (eg. Levemore, 2010) believe that the promotion of sport is gradually becoming increasingly strategic in the world in corporate CSR policies not only for large multinational corporations but also for differently sized groups of enterprises. This is evidenced by many researches. (eg. Plewa, & Quester, 2011).

Many companies from the so-called sensitive sectors use sports sponsorship, especially for their ability to help improve their image in connection with some of their problematic societal impacts (Plewa, Carrillat, Mazodier, & Quester, 2016). For example, manufacturers of alcohol and tobacco products have historically become the most important sponsors in the sport world. Indeed, the wide involvement of enterprises from sensitive industries or companies offering unhealthy products (gambling operators, alcoholic beverages, or fast-food companies) to sports sponsorship is becoming increasingly publicly challenged in the world. In particular, there is criticism of the inconsistency between the use of sport, which should embody health and active lifestyles, in connection with the promotion of products that can also harm human health. In addition, it is reminded that, for example, the integration of gambling with top sport, empowers

the idea that it is an acceptable form of entertainment or a harmless addition to watching sports. In recent years, a number of sensitive businesses have stepped up their product promotion through sports sponsorship, making frequent use of highly watched media sports broadcasts and attracting considerable attention from a wide audience including the most risky population groups.

Many research studies show (eg. Walters, & Tacon, 2010) that relatively short exposure of these brands in connection with sport can lead to a relatively significant increase in brand awareness. The logos or products of these sensitive businesses appear not only on the players' jerseys or at the stadiums themselves, but also to be as visible as possible in television broadcasts or during commercial breaks. According to some experts, the risky behaviour of risk groups can potentially be promoted, which can lead not only to public health deterioration but also to other pathological phenomena and problems, whether it is crime, debt traps or disruption of family relationships.

Even though in the current world of sport sponsorship is one of the key sources of income for sporting organizations (ranging from the lowest sports competitions to the highest levels of professional sport), regulators, sponsors and sports organizations themselves should not only remember the potential social consequences of supporting harmful products through sports sponsorship, but also be aware of the increasing negative public response towards issues of not keeping up with ethical standards. A number of critics are also increasingly appealing to sports organizations to curb sponsorship deals with companies offering these potentially harmful products in the future.

4   Own research investigation

The own research focused on the analysis of the application of sports sponsorship for teams of the highest English football league (Premier League), which is currently enjoying the highest interest of media, fans and sponsors across Europe. Results of this analysis were subsequently also partly compared with the situation in our professional football environment. For a more comprehensive overview of the current situation in the area of sports sponsorship in the Czech Republic, an analysis was made of the main sponsors of Czech ice-hockey, which is the second most popular sport after football in the Czech Republic. The main objectives of this research were not only to find out the differences in the industry structure of the main partners of English and Czech club football but also to reveal the role of businesses from the so-called sensitive industries in supporting two most popular sports in the country (football and

hockey).Information on the main partners was obtained from the official clubs' websites, the Czech Ice Hockey Association and the Czech Football Association.

An analysis of the Premier League's (the highest English football league) partners of all twenty clubs in the 2017/2018 season showed that among fifty-six major sponsors the ones most frequently involved were companies from the following fields:

1. Sports equipment production - NIKE (Manchester City), New Balance (Liverpool), Joma Sport (Swansea), Macron (Crystal Palace), Puma (Burnlay, Arsenal) Umbro (Hull City), Under Armour (Tottenham) , Adidas (Chelsea,Sunderland, West Bromwich, Middlesbrough, Manchester United)

2. Running of casinos, gaming houses or betting companies - Bet East (Swnasea), Bet Victor (Liverpool), Bet 365 (Stoke City), Betway (West Ham), Dafabet (Burnlay), Mansion (Crystal Palace), UK-K8 (West Bromwich)

3. Beverage production - Carabao (Chelsea), Carlsberg (Southampton, Crystal Palace) , Singha Beer (Leicester), Chang (Everton)

4. Money, insurance, securities trading and commodity exchanges - Vitality Health Life (Bournemouth), USM Holding (Everton), Ramdens (Middlesbrough), Standard Chartered (Liverpool), Global Reach Partners (Crystal Palace), Divisa Capital (Watford), AON (Manchester United), Aia the Real Life Company (Tottenham)

5. Transportation (mainly by air passenger transport - Air Asia (Leicester, Emirates (Arsenal), Etihad Airways (Manchester City), DHL (Leicester)

6. Manufacture of rubber products (Yokohama Tires (Chelsea), Nexen Tire (Manchester City)

7. Manufacture and trade of motor vehicles - Nissan (Manchester City), Chevrolet (Manchester United)

8. Information and communication activities - SAP (Manchester City), Virgin Media (Southampton), KCOM (Hull City), Eurotech Services (Watford), Football Manager (Watford)

9. Activities in the field of tourism - King Power (Leicester), Amazing Thailand Leicester)

10. Other fields - Sportpesa (Southampton), Carling (Sunderland, Swansea) University of Hull (Hull City), AJ (West Bromwich), Garmin (Southampton)

Fig. 1: English Premier League's Sponsors 2017/18
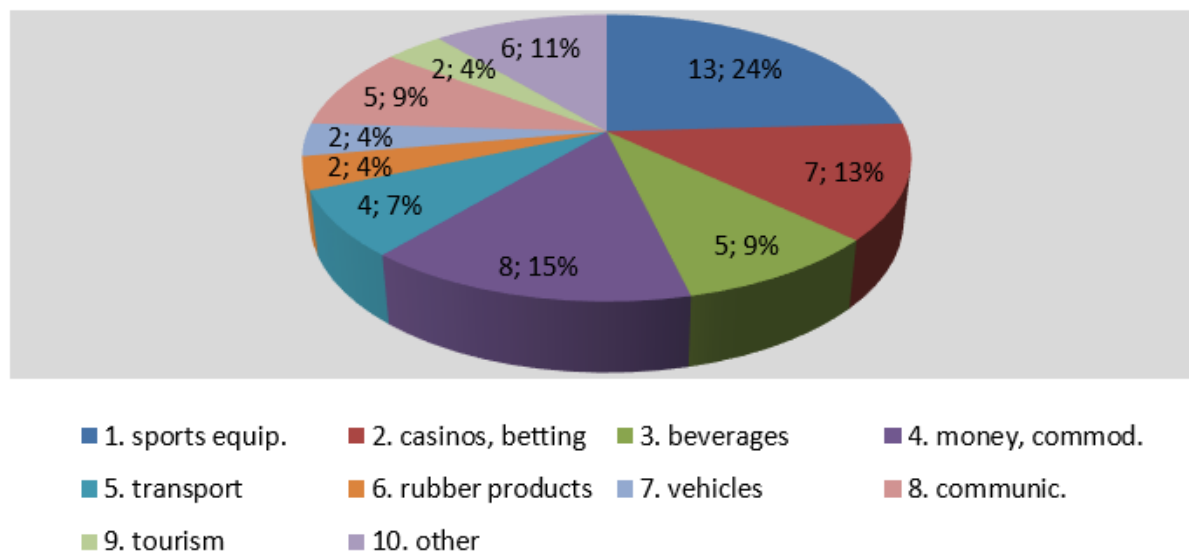
If we compare the situation in the English Premier League with the current situation in Czech football, we find that the situation in this area is quite similar. The main partners of the first league football clubs in the 2017/18 season operate in four of the most important areas:

- Betting agencies - 13% Sazka Bet (Sparta Praha), Synot Tip (Slovácko) Tipsport,

- Breweries and non-alcoholic beverages 12% Gambrinus (Olomouc), Pivovary Lobkowicz (Slavia), Bílinská Kyselka (Teplice), Pepsi (Jablonec)

- Sports equipment production and sale - (12%) – Adidas (eg. Olomouc), Puma (Teplice), Umbro (Slavia), Nike (Brno) Lion Sport (Bohemians)

- Insurance companies (9%): E-pojištění (Karviná), ČPP (Jablonec), Generali (Sparta)

While major sponsors of English clubs are mainly dominated by large multinational corporations, it is also possible to find large companies amongst the major partners of Czech football clubs that have their headquarters or operate in the same region as the clubs. (eg. AGC – FK Teplice, Preciosa – Liberec, Škoda Auto – Mladá Boleslav, Lukrom – Zlín, Sigma Group Olomouc, Doosan Škoda Power - Plzeň) Also, most of the main partners of the entire Czech football (representation, football league and cup) are in similar business areas, whether they are betting operators (Tipsport, Fortuna), beer and beverage producers (Plzeňský Prazdroj - Gambrinus, Pepsi), mobile operators (T-Mobile) or sportswear manufacturers (Puma). Additionally, a car seller (AAA Auto), a petrol station operator (MOL Czech Republic) and a manufacturer of paints or garage doors (HET, Hörmann) can also be found among the most

important partners of Czech football. In the past, the general partner of the domestic football cup used to be also Czech Post, which is a state-owned enterprise.

The situation in this respect is very similar in the second most popular and most watched sport in the Czech Republic, the ice-hockey. Among the main partners of Czech ice-hockey (representation and league), it was possible to find especially:

- Betting agencies (Tipsport),
- Breweries (Plzeňský Prazdoj - Pilsner Urquell, Radegast),
- Insurance companies (Generali, Českápojišťovna),
- Car manufacturer (Škoda Auto),
- Sports equipment production (CCM).

In addition, companies from other areas were among the most important sponsors of Czech hockey, whether it was consumer electronics (Sencor), waste management (AVE), transport construction (Eurovia) or sale of investment robots (WSM). One of the partners of Czech hockey in the 2017/18 season is also the state contributory organization Czech Tourism, whose aim is to coordinate the promotion of the Czech Republic and which falls under the Ministry for Regional Development. As far as the clubs of our highest hockey league are concerned, their strategic and long-term partners are mostly significant regional businesses, whether it is Unipetrol (Litvínov), Syner (Liberec), Třinecké železárny (Třinec), or Severočeské doly (Chomutov).

Individual semi-structured interviews with managers of selected hockey and football clubs in the Czech Republic (in total four hockey and four football club marketing managers from our top league competitions) clearly showed that managers do not see the representation of businesses from socially sensitive areas among club sponsors as an essential problem and that they are not going to change the approach to this issue in some way. Their pragmatic approach is obvious.

Conclusion

Findings concerning some sponsorship issues for football and hockey clubs in the Czech Republic largely corresponds to the conclusions of some previous research, which mainly sought to reveal the approaches of companies to sponsoring sports in the Czech Republic. The analysis also showed a very strong representation of companies from the so-called sensitive sectors (especially gambling operators and breweries) among sponsors of the best English and

Czech sports clubs. Similarly, these companies were also significantly represented among the main partners of Czech football and hockey. Interviews with selected marketing managers of domestic football and hockey clubs have shown that they do not perceive the representation of sponsoring companies from the so-called socially sensitive areas problematic or that they would be perceived as a manifestation of the social irresponsibility of their clubs.

Acknowledgement

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Contact

Vilém Kunz

University of Finance and Administration

Estonská 500, Prague, Czech Republic

kunz.vilem@seznam.cz

THE EPHEMERAL CORPORATE SOCIAL RESPONSIBILITY COMMITTMENT PURSUANT TO ANNUAL REPORTS – A CZECH CASE STUDY

Radka MacGregor Pelikánová – Robert Kenyon MacGregor

Abstract

Purpose: The objective of this paper is to determine the international, EU and Czech national legal framework and, based on that, to empirically and comparatively assess the corporate social responsibility ("CSR") commitment of the ten largest Czech companies, by sales, as witnessed by their annual reports in the context.

Design/methodology/approach: The authors have identified theoretic and practical perceptions of the CSR, have conducted a holistic and interdisciplinary research and teleological interpretation of legislative and academic, primary and secondary, sources. They identified the legal framework for the content, form and publication requirements for annual reports of companies, while paying attention to the CSR. They used Meta-Analysis to scrutinize annual reports, for 2016, of the 10 largest Czech companies to assess their CSR commitment. They have implied current trends in the perception and approach to the CRS.

Findings: The evolving perception of the CSR is, despite global and regional harmonization efforts, as yet unsettled. The Czech law appears to demand the general and gratuitous e-publication of annual reports with basic CSR data, while the EU law and other EU member states' law seems to impose a rather special and deeper CSR reporting, not necessarily fully and freely available online. The Czech Case study reveals both the observance of the law and significant differences in the CSR commitment across industries. These legislative and real reporting discrepancies suggest modifications of the current status quo to fit in Europe 2020.

Research/practical implications: Our review of legislative frameworks and practical approaches to the CSR demonstrates a number of discrepancies and the lack of commonly acceptable denominators. Our case study confirms it, points to the industry differences and invites for the modification of the approach and legislation of the CSR reporting.

Originality/value: The presented overview, assessment and case study exploit, in a unique manner, the CSR legislation and perception, and call for changes fitting in Europe 2020.

Keywords: Corporate social responsibility (CSR), annual report, sustainability

JEL Codes: M14, M48, Q01

Introduction

The modern perception of the global awareness linked to sustainability emerged in the USA in the 1960s with a focus on the ratio between available resources and increasing world population (Meadows et al., 1972). The related discussion of political and social elites brought the term sustainable development out as a hallmark for balancing resources and populations and led to the identification of five main problems: (i) environment and resources, (ii) globalization, (iii) international development, (iv) social transformation, and (v) peace and security (Jindřichovská & Purcarea, 2011). A milestone on the international level was the Report of the World Commission on Environment and Development Report: Our Common Future prepared by the Brundtland Commission (WCED, 1987) and published as the UN Annex to document A/42/427 in 1987 ("Brundtland Report 1987"). Under the motto "A global agenda for change", the Brundtland Report deals with sustainable development, balancing current and future needs with available resources (Chapter 2) and with common actions in the form of proposals for institutional and legal changes, such as getting at the sources, assessing global risks, making informed choices, providing legal means and investing in our future (Chapter 12). In 2005, the World Summit led to the adoption of UN General Assembly resolution A/RES/60/1 ("Resolution 2005") which continues the endeavors of the Brundtland Report 1987, reaffirms such common fundamental values as solidarity, tolerance and respect for nature and shared responsibility (ad 4.) and identifies as the first of the four problematic areas as development (ad 16.). The Resolution 2005 requires equity and transparency of financial and business systems (ad 36.). It supports the implementation of Agenda 21 aiming to achieve the goal of sustainable development which rests on three mutually reinforced pillars – economic development, social development and environmental protection (ad 48.). Production patterns and consumption needs to be sustainable (ad 49.). The international public perspective of conventional international law subjects, states and government organizations, has moved towards national private perspectives of natural persons and legal entities, especially corporations. On national levels, the growing focus on the sustainable development is translated in several concepts, such as (i) sustainability, with rather systematic and visionary features, left often to soft law and self-regulation of businesses and (ii) corporate responsibility with rather normative and moral features and regulated by the national law (Bansal & Song, 2017). Recently, these two concepts have converged in the CSR, which represents a modern relationship between business and society, only partially covered by the legal framework (Bansal & Song, 2017) and making companies accountable to a large spectrum of stakeholders (Jindřichovská & Purcarea, 2011).

Modern European integration is based upon the doctrine of the famous four freedoms of movement in the single internal market (Cvik & MacGregor Pelikánová, 2016) and represents a strategic priority (MacGregor Pelikánová, 2017). The CSR became truly significant in re the decade long Lisbon strategy 2000-2010 aimed at making the EU the most competitive knowledge-based economy in the world by 2010. This ambition of political and economic elites of the EU failed in many accounts (Balcerzak, 2015), reasons for that included shortcomings in financial regulation and management responsibilities in corporate governance (Bavoso, 2013), in particular due to the separation of the centralized corporate governance from "equity owners" (Cvik & MacGregor Pelikánová, 2017).

The strategy for 2010-2020, aka Europe 2020, was issued in reaction to these deficiencies and related crises of 2007 and 2008 (MacGregor Pelikánová & Beneš, 2017). The priorities of Europe 2020 are smart, sustainable and inclusive growth and address the CSR demands, which are in detail reflected by the Green Paper: Promoting a European Framework for CSR (Matuszak & Różanska, 2017), originally issued by the European Commission in 2001. According to Europe 2020, the CSR represents a dialogue and interaction between corporations and their stakeholders and the instrument for that is corporate reporting, both financial and non-financial aka CSR reporting (Matuszak & Różanska, 2017), which needs to be officially published and made accessible to everyone. This Europe 2020 vision translates into the EU law and national laws of EU member states. It is relevant to conduct a holistic research with a teleological interpretation of the EU and Czech legal framework along with the critical recapitulation of academic outcomes. This is to be confronted with primary data generated by the case study consisting of CSR reporting within annual reports, for 2016, of the 10 largest Czech companies. This Meta-Analysis reveals differences between EU and Czech law approaches as well as particularities of the Czech companies' attitude to the CSR.

1　Legal framework for CSR and its reporting in the Czech Republic

The Czech Republic is a member of the EU and hence there are three legal systems applying in the Czech Republic – international, EU and national. Since the international legal system does not generate direct rules on the CSR reporting in the Czech Republic, a further analysis will focus on the EU legal system and the Czech national legal system.

The primary EU law and Europe 2020 emphasize and legitimate the issuance of the appropriate secondary EU law dealing with the CSR and its appropriate reporting. Currently, two directives explicitly deal with reporting, including the CSR: Directive 2013/34/EU of 26 June 2013 on

annual financial statements, consolidated financial statements and related reports of certain types of undertakings as amended by Directive 2014/95/EU and Council Directive 2014/102/EU ("Directive 2013") and Directive (EU) 2017/1132 of 14 June 2017 relating to certain aspects of company law ("Directive 2017"). Directive 2013 requires that large public-interest entities with more than 500 employees include in the management report a non-financial statement linked to the CSR and provides further parameters of such a CSR (Art.19a). Directive 2017 requires that the companies disclose accounting documents required to be published by the Directive 2013 (Art.14), that this disclosure has to occur in the central, commercial or companies register (Ar.16), that e-copies of these documents have to be made available to the public (Art.18) with the support by the BRIS (Art.22) and the fees for that must not exceed administrative costs for the copies (Art.19).

Hence, regarding the proclaimed digitalization by the Europe 2020, the EU law stipulates the e-publication of financial statements, in cooperation with Directive 2013 and Directive 2017, by the Regulation (EU) 2015/884 of 8th June 2015 establishing technical specifications and procedures required for the system of interconnection of registers ("Regulation 2015"). It cannot be overstated that this form and publication instrument of the EU law has a direct, strictly mandatory and superior effect, since it is included in a regulation and not merely in a directive. Further, one must point out that this Regulation 2015 provides for the system of interconnection of registers, aka BRIS, which uses a e-Justice platform placed on the Internet domain carrying the domain name "e-justice.europa.eu" and allowing the search both on business registers at a European level and national business registers.

All EU member states and their national laws and subjects must go for the CSR and its reporting in financial or annual statements, as demanded by EU law. This includes, of course, the Czech Republic. The pivotal Czech lex specialis in this field is Act No. 563/1991 Coll., on accounting ("Act 1991"), which has been over thirty times novelized and until today regulates compulsory content of final accounts, i.e. financial statements, in the largest sense (Art. 18 et foll.), which, except for micro accounting units, needs to be verified by a public auditor and include annual reports (Art. 21). The Act 1991 further provides for the compulsory publication of these documents (Art. 21a) for all entities registered in public registries. Although Act 1991 states as the compulsory content of the annual report both the financial reporting data as well as CSR data, namely about R&D, environment protection and employment relationship, it remains very brief and general, without going into further details (Art.21). Act No. 304/2013 Coll., on public registries ("Act 2013") provides that the public registries are maintained electronically (Art.1)

by courts (Art.2), that all companies and corporations need to be registered in the Commercial register (Art.42) and that the e-publication of annual reports occurs via a so-called Collection of documents.

Tab. 1: CSR reporting legislative overview - applicable acts from the newest to the oldest

Law instrument	Key CSR reporting provisions
EU Directive 2017	EU companies must disclose accounting documents required to be published by the Directive 2013 and they have to be e-available with the support by the BRIS, the fees for that must not exceed administrative costs for that..
EU Regulation 2015	EU Interconnection of Business Registers by BRIS via http
EU Directive 2013	EU large public-interest entities with more than 500 employees must include in the management report a non-financial statement containing well defined CSR
Czech Act 2013	e-publication of annual statements of all Czech companies with the public audit duty in the Collection of documents of the Commerical Register.
Czech Act 1991	Czech companies, except for micro accounting units, have to submit their annual statements (with minimal CSR data) for publication .

Source: Prepared by authors

Basically all Czech companies, regardless whether listed or not listed, big or SMEs (except micro accounting units with activities under CZK 40 mil., annual turnover under CZK 80 mil. and less than 50 employees), have the duty to file their annual reports with the Commercial Registry for the e-publication which is materialized by uploading the pdf in the subsection of the domain justice.cz of the Public register (Veřejný rejstřík) (Fig.1) called Collection of documents (Fig.2). Naturally this data is migrated in the BRIS.

Fig. 1: Public Register (Veřejný rejstřík) – Collection of documents (Sbírka listin)

Source: Prepared by authors based on www.justice.cz

In sum, both the EU and the Czech Republic go for the e-publication of information about companies, including financial statements. However, the EU legislative perspective is rather oriented towards a developed CSR reporting for larger companies, while the Czech legislative

perspective focuses more on a general CSR reporting for all audited companies, i.e. even SMEs which exceed micro-thresholds. In sum, the EU demands more CSR information from fewer subjects, while the Czech Republic wants less CSR information from more subjects. In addition, the Czech e-publication of annual reports is observed and the free access is available to everyone. Hence, it can be suggested that, in the Czech Republic, the CSR reporting is perceived as a general duty for all with a full and free public e-availability, while in the EU, the CSR reporting is perceived as a special duty for some with a limited and not always for free public e-availability. Therefore, it is highly instructive to test this proposition on the Czech largest companies by sales. Namely, they all are under the duty to be audited and to file their annual reports with at least basic CSR data in order to make their e-version publicly available for free. Are their annual statements truly available? If yes, do they include CSR data? If yes, is this CSR reporting robust and developed or just merely satisfying the very weak content demands set by the Czech law? Are there significant differences between these Czech annual reports?

2 CSR commitment in annual reports of ten Czech largest companies

The CSR reporting consists of two phases – measuring (evaluating) and auditing (assessing) and, for at least two decades, Czech companies have demonstrated at least certain aspects and features of these phases of the CSR (Jindřichovská & Purcarea, 2011). However, due to the rather facultative legal framework in this arena and the conditions of the Czech market and competition in it, along with Czech consumer particularities, a drive for formal materialization of CSR commitment could be in principle truly detected only by large companies (Jindřichovská & Purcarea, 2011). Although currently more and more Czech companies of various sizes decide to join this trend, still the CSR commitment can be reliable and scientifically researched rather by the Czech companies. Indeed, basically all the 20 largest Czech companies by sales have filed with the Commercial Register annual statements demonstrating a certain CSR commitment. This leads to the key research question whether this CSR commitment is identical, similar or at least comparable. Namely, whether the perception and significance of the CSR reaches a comparable level by Czech companies and so they identify and describe it in a similar manner in their official reporting documents, i.e. annual reports. Table 2, below, summarizes the CSR reporting by the ten largest Czech companies – the name with the ID number, the number of pages about the CSR, the total number of pages of the annual report, the number of pages and the quality of the required CSR information about R&D, environment protection and employment provided (0 for no information, X reduced

information, XX generic information, XXX detailed information provided) and other CSR information, e.g. on the community involvement or anticorruption.

Tab. 2: CSR reporting within 2016 annual reports of 10 largest Czech Companies

Company with ID	CSR / all (pag/pag)	R&D (pag/qual.)	Environm. (pages/qual.)	Employm. (pages/ql.)	Other (pages/qual.)
ŠKODA AUTO a.s., 001 77 041	6/112	2/ x	1/x	2/x	1/x
ČEZ, a.s. 452 74 649	12/324	3/xxx	5/xxx	3/xxx	2/xx
AGROFERT, a.s., 261 85 610	4/59	1/x	2/xx	1/x	0
EPH, a.s. 283 56 250	4/200	1/x	2/x	1/x	1/x
FOXCONN CZ s.r.o. 259 38 002	7/81	1/x	2/xx	2/xx	2/xx
UNIPETROL, a.s. 616 72 190	14/207	3/xxx	5/xxx	3/xx	3/xxx
ČEPRO, a.s. 601 93 531 ! liquid!	7/144	2/xx	2/xx	2/xx	1/x
innogy ČR s.r.o. 242 75 051	19/215	10/xxx	5/xxx	1/x	3/xxx
Tesco Stores ČR a.s. 453 08 314	1/39	0	0	1/x	0
MOL ČR, s.r.o. 494 50 301	2/39	1/x	1/x	1/x	1/x

Source: Prepared by authors based on www.justice.cz – Collection of documents (Sbírka listin)

Although the pilot Czech case study of the ten largest Czech companies does not work with a statistically robust sample, still its heterogeneity aspects offer a set of relevant suggestions in re the CSR reporting via annual reports in the Czech Republic. First, all these companies are subject to the Czech legal duty to be audited and to file annual reports, including minimum CSR data, with the Commercial Registry to make them part of the public register, i.e. Commercial register – collection of documents, and all of them satisfy this duty, i.e. the 2016 annual report was filed by all of them and always included at least some CSR data. Secondly, 90% of these companies met the minimal threshold triad for the CSR extent (R&D, environment, employment), i.e. one company failed on this account (Tesco Stores ČR a.s.). Thirdly, none of these companies included quantitatively significant CSR reporting, i.e. the financial part of the annual report was always over 90 % and left way under 10% for non financial part, CSR. However, fourthly, there were significant qualitative differences – some companies provided detailed intensive CSR reporting about both the minimal threshold triad as well as other CSR aspects (UNIPETROL, a.s.).

This is along with prior Czech studies showing industry differences regarding the non-financial information and putting as the leader in the CSR the chemical and petrochemical industry

(Čevela & Bílková, 2016). Studies from others Central European countries show a more developed CSR reporting, but it needs to be pointed out that this might reflect "more demanding" local legislation and that this data is rather developed and included in special CSR reports more than in annual reports (Matuszak & Różanska, 2017). The harmonized commitment to the CSR fitting into Europe 2020 does not seem to be coming by itself.

Conclusion

Regardless of the globalization and European harmonization, the CSR legislation and practical endorsement by subject differ. Czech law appears to demand the general and gratuity e-publication of annual reports with basic CSR data, while EU law and other EU member states law seem to impose a rather special and deeper CSR reporting, not necessarily fully and freely available online. The case study of the annual reports of ten largest Czech companies shows both the observance of the law and significant differences in the CSR commitment across industries. These trends, supported by the foreign data, suggest that spontaneous strong commitment to the CSR and transparent e-publication of CSR reporting is not progressing as perhaps expected by Europe 2020. Although CSR reporting at a company level can bring benefits both to the company and stakeholders and helps quantify full costs of its activities, still many (not only) Czech companies are reluctant, or at least not fully eager, to embrace this managerial accounting and high information approach (Jindřichovská & Purcarea, 2011). The rather disciplined Czech approach to satisfy law requirements, i.e. to include required financial and non-financial data in annual reports and making them freely electronically available is a good opportunity for further progress. Business practitioners, including Czech ones, should re-assess their attitude and perceive the e-CSR reporting as an opportunity for a competitive advantage in the modern information oriented society, i.e. to use it for both its internal analysis of the effectiveness and efficiency and its external positive presentation. The EU can take inspiration from the Czech legal approach, especially regarding the form and publication, and the Czech Republic should follow the voluntary content CSR reporting commitment demonstrated across the EU. The current legislative disharmony and practical diversification of CSR approaches across industries and states does not fit in Europe 2020 and should be addressed by an open-minded bottom-up discussion leading to the consensus on the legislation on the CSR and e-reporting. This would be a true contribution to the smart, sustainable and inclusive growth and could help to make out of the EU power what it wants to become.

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Contact

Radka MacGregor Pelikánová

Anglo-American University Prague

Letenská 5, 118 00 Prague 1, Czech Republic

radkamacgregor@yahoo.com

Robert Kenyon MacGregor

Anglo-American University Prague

Letenská 5, 118 00 Prague 1, Czech Republic

robertkmacgregor@yahoo.com

VALUE GENERATORS OF ENTERPRISES IN THE PROCESSING INDUSTRY

Veronika Machová – Zuzana Rowland

Abstract

Purpose: The purpose of this article is to find out value generators of industrial enterprises having operated on the Czech market in 2015.

Design/methodology/approach: The analysed data come from Albertina database. The dataset (data of their complete financial statements) contains records of 500 enterprises altogether. We calculate EVA value for shareholders (owners) of each enterprise of its operation on the market. Data mining and automated neural networks (radial basic function and multilayer perceptron networks) will be used as major tools.

Findings: A reliable method was developed, and value generators of industrial enterprises having operated in the Czech Republic in 2015 were identified. The most important variables were defined. They are long-term receivables, material and energy consumption, power consumption, equity and basic capital.

Research/practical implications: Enterprises of the processing industry should mainly focus on suggested value generators, their management and optimization. Thus, they get a higher EVA Equity and reach their major goal – value growth for shareholders (owners).

Originality/value: As a result, verifying the method for identifying value generators and appreciating their importance in the model should be considered as the most important part. At the same time, four central problems, which need to be dealt with within the further research, have been identified. They are wise choice of variables, dependence (or independence) of variables, size of the data file and stationarity of the data.

Keywords: Value generators, artificial neural networks, economic value added, processing industry

JEL Codes: G32, C45, M21

Introduction

Increasing the enterprise value which depends on the ability of the enterprise to produce high yields presents a main goal of the entrepreneurship. It means that it depends on uniqueness and quality of the offered product. As a matter of fact, these two factors significantly influence the demand for the product, market position of the enterprise, effective costs management, innovative abilities of its employees, abilities to grasp new investment opportunities and effective use of available resources, i.e. management of enterprise processes. Consequently, all crucial decisions of the enterprise must be made with the view to influencing the value of the enterprise (Stehel and Vochozka, 2016).

The term Value Generator emerged in professional literature in the USA in association with the concept of Shareholder Value, presented by Alfred Rappaport. Value generators are represented by several basic business management quantities, of which the aggregate sets the value of the enterprise (Wöhe & Kislingerova, 2007). Company value measurement is very important in corporate finance and strategic management. The indicator EVA – Economic Value Added represents a reliable indicator measuring the value of the enterprise within a specific time horizon. EVA was introduced by Stern Stewart & Co. in 1994.

As a matter of fact, value generators have been analysed by many specialists; e.g. Hall (2016) indicates variables that set the value of the enterprise while he focuses on various kinds of sectors and enterprises. A similar research was done by Kuzey, Uyar and Delen (2014), who explored influence of financial indicators on the value of a multinational company. Mainly, they examined the leverage effect, liquidity, profitability or size of the enterprise (measured by a natural logarithm of assets). On the other hand, the key areas of entrepreneurship which need to be looked at in order to achieve the optimal value of the enterprise are laid down by Vidgen, Shaw and Grant (2017). However, a slightly different point of view is expressed by Paraneta (2014), who explores influence of corporate risk management activities on the value of the enterprise. Therefore, he studies samples of British large non-financial enterprises. The fact that value generators may be found out based on EVA is documented in writings of Altaf (2016) or Salaga, Bartosova and Kicova (2015).

In order to successfully find out value generators of processing enterprises, this article uses artificial intelligence – so called artificial neural networks. Neural networks were used for indicating value generators e.g. in writings of Di Tollo et al. (2012), who show the relation between a common creation of values and innovations in technologically managed companies. Wilimowska and Krzysztoszek (2013) work out a method of prediction of value generators used

by means of artificial neural networks. Furthermore, Miles and Van Clieaf (2017) construct a complex model which leads to increasing the value of the enterprise via organizational capital.

The key aim of this article is to find out value generators of industrial enterprises having operated on the Czech market in 2015.

1   Data and Methods

The analysed data come from Albertina database and reflect industrial enterprises operating on the market in 2015. The dataset contains records of 500 enterprises altogether. Enterprises included in the analyses are randomly selected. Data of their complete financial statements (except for supplements) are available; i.e. data from balance sheets, statements of profits and losses and statements of cash flows are examined. The data are organized in a table in lines according to particular enterprises and years of their operation. On the other hand, columns contain precise information from financial statements.

The next step calculates EVA value for shareholders (owners) of each enterprise in every year of its operation on the market, i.e. in EVA Equity parameters.

This complex process requires an exact calculation of Weighted Average Costs of Capital (Neumaierova and Neumaier, 2008):

$$WACC = r_f + r_{LA} + r_{entrepreneurship} + r_{FinStab} \qquad (1)$$

Where WACC represents weighted average costs of capital, r_f risk free yield, r_{LA} indicators suggesting the size of the enterprise, $R_{entrepreneurship}$ indicators suggesting creation of production power, $r_{FinStab}$ indicators suggesting relations between the enterprise property and source of enterprise cover.

Subsequently, a rate of equity will be set (Neumaierova and Neumaier, 2008):

$$r_e = \frac{WACC * \frac{UZ}{A} - (1-d) * \frac{U}{BU+O} * (\frac{UZ}{A} * \frac{VK}{A})}{\frac{VK}{A}} \qquad (2)$$

Where r_e represents the rate of equity, WACC Weighted Average Cost of Capital, MS money sources (equity and interest-bearing foreign capital), A Assets, E Equity Provided we used tagging of variables suggested in the previous part, there would be value E (Equity), BL Bank loan, O bonds, U/BU+O Interest rate (however, tag *i* (interest) might be used as well), *D* rate of income tax (tag *t* (tax) was used in previous models).

Economic added value for shareholders is derived from (Neumaierova and Neumaier, 2008):

$$EVA\ Equity = (ROE - r_e) * VK \qquad (3)$$

Where ROE represents the Return of Equity.

Afterwards, the table will be uploaded to Statistica software in version 12 of DELL Company. We will try to find out to which extent is EVA indicator dependent on individual entries of the financial statement.

Data mining and automated neural networks (ANN) will be used as major tools. Regression will also be dealt with. EVA Equity will be suggested as a dependent quantity. Selected data from the financial statement will be used as independent variables.

- Assets altogether,
- Long-term intangible assets,
- Long-term tangible assets,
- Long-term assets,
- Current assets,
- Stock,
- Current assets,
- Long-term receivables,
- Short-term receivables,
- Trade receivables,
- Equity,
- Basic capital,
- Liabilities altogether,
- Foreign resources,
- Trade liabilities,
- Bank loans and assistances,
- Sales costs,
- Material and energy consumption,
- Power consumption,
- Trade margin,
- Personal expenses.

The choice of the variables was made with respect to the business management theory of production factors (see Wöhe and Kislingerova, 2007), but also on the expert´s point of view – the economist. Items that logically, from an economic or mathematical point of view don´t form a business value, were dropped. The value of an enterprise may not only consist of revenues, operating profitability or capital requirements but a whole range of financial statements. Most of the input variables refer to long-term assets, material, managerial and executive work. Moreover, the selection reflects the way of enterprise financing.

Data file is divided into three sets – training, testing and validation. In the first group, there are 70% of inputs. Based on the training set, elaborate neural structures will be generated. In the two remaining datasets, 15% of input information will be included. Both groups serve for validating the reliability of the discovered neural structure, i.e. discovered model. One thousand neural structures will be generated, out of which 5 with the most noteworthy features will be

retained[8]. The hidden layer will contain at least 2 neurons, 30 maximum. In case of radial basic function, the hidden layer will contain 21 neurons, 50 maximum. In case of multilayer perceptron network, distribution functions in the hidden and output layer will be as follows: Linear, Logistic, Atanh, Exponential, Sinus.

This complex process will result in neural networks, which will predict EVA Equity based on the input figures. Thus, we will be able to derive a probable value of EVA Equity from the input figures. As a consequence, the model will consider only such variables that are highly significant for the final EVA Equity value. We will choose such a neural structure which describes the relation in the most accurate way i.e. with the highest performance in the training, testing and validation dataset, minimum error in each dataset and a clear economic interpretation). Of a great interest will be neural input value of such a network. Furthermore, a sensitivity analysis will be performed in order to determine variables which enter the calculation and, at the same time, which significantly influence the result. The final result of the sensitivity analysis will be represented by value generators. Supposing value generators are determined more or less precisely (or rather, not very imprecisely), we will be able not only to predict the following EVA Equity, but also control the economic added value. In addition, we will be able to translate the results into the everyday reality of entrepreneurship. Moreover, we will be able to estimate which variables should be focused on in order to reach the primary goal – value growth for shareholders (owners).

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[8] A principal method of smallest squares and entropy will follow. Networking will be finished in case of no sign of any improvement, i.e. reducing the sum of squares, or more precisely, reducing the disorder.

2   Results

Table 1 suggests five best generated and retained neural networks.

Tab. 1: Neural networks with the best features

	Name of the network	Training perform.	Testing perform.	Validation perform.	Training error	Testing error	Validation error	Training algorithm	Error function	Activation of hidden layer	Output activation function
1	MPL 21-22-1	0.9970	0.9999	0.9999	12558571	144394618	9.763718E+09	BFGS 22	Sum of squares	Tanh	Logistic
2	MPL 21-21-1	0.9970	0.9998	0.9999	12680661	622871	1.053376E+10	BFGS 22	Sum of squares	Tanh	Logistic
3	MPL 21-13-1	0.9993	0.9966	0.9999	3252377	24152039	4.580818E+09	BFGS 54	Sum of squares	Tanh	Logistic
4	MLP 21-10-1	0.9969	0.9999	0.9999	13381492	19341285	1.542920E+10	BFGS 14	Sum of squares	Tanh	Logistic
5	MLP 21-11-1	0.9970	0.9999	0.9999	13127505	988514	1.269905E+10	BFGS 11	Sum of squares	Tanh	Logistic

Source: Authors.

As may be seen from the table, multilayer perceptron networks are retained; therefore, they have the best features. Training algorithm Quasi-Newton was used in all cases. The same algorithm (in the case 1 and 2) occurred in two cases. Algorithms of other variants occurred in the rest. Method of the smallest squares was used as the error function in all cases. Hidden neural layer is activated by hyperbolic tangents in case of retained neural networks. The output activation function is evaluated as a logistic function in all five neural structures. The number of neurons in the first layer also provides very valuable information. In all cases, it amounts to 21 neurons. Provided all neurons are represented by identical variables, it is perfectly possible to identify value generators of enterprises in the processing industry with relatively high accuracy.

Relevance of the generated networks is suggested in Table 2. The table assesses performance of retained neural structures. It is defined by a correlation coefficient of the actual output and appropriate prediction.

Tab. 2: Performance of retained neural networks

Neural network	Training	Testing	Validation
MPL 21-22-1	0.997019	0.999893	0.999998
MPL 21-21-1	0.997004	0.999754	0.999998
MPL 21-13-1	0.999283	0.996642	0.999999
MLP 21-10-1	0.996894	0.999903	0.999998
MLP 21-11-1	0.996948	0.999859	0.999998

Source: Authors.

The table observes performance of individual networks always in all datasets (training, testing and validation). In the optimal case, we look for the highest performance value (correlation coefficient) and, at the same time, we look for the same value for all datasets. Differences between individual networks are minimal; therefore, they show similar results, which are always highly positive.

For a more comprehensive result evaluation, prediction parameters carried out by individual networks are suggested in Table 3.

Tab. 3: Prediction parameters

Prediction parameter	1.	2.	3.	4.	5.
Minimum prediction (Training)	-241.0	-260.3	-283.4	-144.7	-192.1
Maximum prediction (Training)	355405.8	352719.0	358498.3	350722.7	351291.6
Minimum prediction (Testing)	-261.5	-247.0	-277.3	-184.6	-232.4
Maximum prediction (Testing)	196593.3	149238.0	132272.1	166056.7	151786.1
Minimum prediction (Validation)	-180.5	-242.6	-277.3	-17.9	-96.4
Maximum prediction (Validation)	209925.5	194635.1	334444.4	108311.8	154409.6
Minimum residua (Training)	-1399.5	-1064.9	-1628.4	-1024.1	-742.5
Maximum residua (Training)	29811.0	29620.1	10976.3	29695.2	29810.2
Minimum residua (Testing)	-48004.7	-2860.7	-10343.2	-17468.1	-3197.5
Maximum residua (Testing)	704.7	763.0	16316.5	542.2	620.7
Minimum residua (Validation)	-300.0	-249.0	-210.1	-485.4	-394.4
Maximum residua (Validation)	395232.5	410522.9	270713.6	496846.2	450748.4
Minimum standard residua	-0.4	-0.3	-0.9	-0.3	-0.2
Maximum standard residua	8.4	8.3	6.1	8.1	8.2
Minimum standard residua (Testing)	-4.0	-3.6	-2.1	-4.0	-3.2
Maximum standard residua (Testing)	0.1	1.0	3.3	0.1	0.6
Minimum standard residua	-0.0	-0.0	-0.0	-0.0	-0.0
Maximum standard residua	4.0	4.0	4.0	4.0	4.0

Source: Authors.

Table 3 shows that differences in the prediction are only slight; only residua show a difference. The lowest maximum residuum is suggested by network 3. In contrast to the second lowest maximum value, it is around the level 50% lower (in the validation set). On the other hand, testing dataset shows a significantly higher value than other networks. Broadly speaking, after such an in-depth analysis it was found out that retained neural networks show very similar features, and for that reason all of them may be used in operation.

Subsequently, a sensitivity analysis was dealt with. Results of the analysis are suggested in Table 4.

Tab. 4: Sensitivity analysis

Variable	1. MPL 21-22-1	2. MPL 21-21-1	3. MPL 21-13-1	4. MLP 21-10-1	5. MLP 21-11-1	Average
Long-term receivables	20.22171	17.90592	71.65934	22.69405	21.0798	30.71216
Material and energy	8.00176	7.34132	80.20535	12.30775	12.30775	23.36068
Power consumption	7.02559	5.46495	40.50308	8.69964	6.97929	13.73451
Equity	3.48179	2.92307	52.926	3.12732	3.00312	13.09226
Basic capital	3.18561	2.78993	52.88077	2.17791	2.57145	12.72113
Short-term receivables	3.05807	2.79566	20.6294	2.85817	2.756	6.41946
Stock	1.5622	1.53518	21.77745	1.31195	1.39979	5.51731
Current assets	1.1762	1.28357	18.07876	1.19976	1.29037	4.60573
Personal expenses	1.288749	1.220705	6.568041	1.263434	1.030421	2.317681
Assets altogether	1.319833	1.222421	5.265446	1.20798	1.182976	2.039731
Long-term tangible assets	1.149163	1.116643	3.781486	1.229969	1.174959	1.690444
Long-term intangible assets	1.578899	1.661147	2.689247	1.21342	1.211772	1.670897
Liabilities together	0.999733	1.002154	4.19468	0.999474	0.999738	1.639156
Current assets	1.004026	1.000251	3.566199	0.999413	0.998763	1.513731
Bank loans and assistances	1.103644	1.217111	2.249676	1.555183	1.271057	1.479334
Fixed assets	1.120744	1.141943	2.410478	1.384644	1.251675	1.461897
Trade liabilities	0.99944	1.009063	3.237189	0.999496	0.999422	1.448922
Trade margin	1.133408	1.213152	1.840383	1.515515	1.262196	1.392931
Sales costs + power	1.001392	1.001244	1.330891	1.003138	1.001152	1.067563
Foreign resources	1.018307	1.005122	1.011531	1.017682	1.017682	1.016613
Trade receivables	1.004271	1.002009	1.039058	0.998268	0.998269	1.008375

Source: Author.

The table shows that identical variables entered the calculation in all cases. Although the order of significance differs in individual networks, there is no big difference between individual neural structures. In the first place, there are long-term receivables. However, neither their highest value corresponds to such a result. The average weight of this variable amounts to 30.7. Moreover, all neural structures consider this variable as the most important. In the second place, there is the material and energy consumption. The same situation arises not only in the overall average of all retained neural networks, but also in all the individual networks. In this way, this is one factor of production which is regarded as absolutely vital for the final economic result. The third most important variable is the power consumption, or more precisely, consumption of production factors directly involved in the production of products. Even this variable is of a major importance to the value creation of the enterprise. One level below the power consumption, there is equity. Equity directly involves EVA Equity calculation and, thus, it precisely determines the amount of the indicator. Of a remarkable interest might be that it is only the fourth most important variable which influences the amount of EVA Equity. From the remaining variables, there is the basic capital worth mentioning, which is in the fifth place with

an average weight over 12. The influence of other variables is rather weak. Maybe the most surprising result is almost a zero importance of foreign resources and trade receivables.

More to it than that, in case of foreign resources, financial leverage, or rather positive financial leverage, may have been expected. However, the direct result does not reveal that.

Conclusion

The article aims at finding value generators of industrial enterprises having operated on the Czech market in 2015.

A reliable method was developed and value generators of industrial enterprises having operated in the Czech Republic in 2015 were identified. Twenty-one variables which enter the value creation of the enterprise were identified altogether. This value is measured by EVA Equity indicators. The most important variables were defined as follows: Long-term receivables, Material and energy consumption, Power consumption, Equity, Basic capital.

It means that enterprises of the processing industry should mainly focus on suggested value generators, their management and optimization. Thus, they get a higher EVA Equity and reach their major goal – value growth for shareholders (owners).

Obtained results are very clear. All the same, we need to draw attention to slight shortcomings that might prevent their practical use:

- A detailed discussion about integrating individual input variables into calculation was not held. The economic result and its financial interpretation were not evaluated. Therefore, some variables (and maybe the important ones) were not included. In this way, holding of a clear management business theory of production estates has been challenged.
- Moreover, there was no correlogram observing a direct correlation entering the calculation. Input data of the calculation were accurately evaluated – in association with the management business theory of factors of production and the source of enterprise financing.
- The input data file is restricted only to 500 enterprises of the processing industry.
- However, the calculation included only data from 2015.

  As a result, verifying the method for identifying value generators and appreciating their importance in the model should be considered as the most important part. At the same time, four central problems, which need to be dealt with within the further research, have been

identified: Wise choice of variables, Dependence (or independence) of variables, Size of the data file, Stationarity of the data.

Therefore, the results are very important and a further research may follow. As of now, it is necessary to overcome above mentioned obstacles heading to determining value generators and resolve value generators valid for several years, or even, decades, i.e. not only for 2015. In the next step, it is crucial to separate partial indicators and incorporate them into tactical and operative goals of the enterprise. In this way, the strategic goal has been set; it is represented by a value growth for shareholders.

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Contacts

Veronika Machová

Faculty of Business Administration

University of Economics

nám. W. Churchilla 4, 13067 Prague, Czech Republic

machova@mail.vstecb.cz

Zuzana Rowland

Faculty of Operation and Economics of Transport and Communications

University of Žilina

Univerzitná 8215/1, 01026 Žilina, Slovakia

rowland@mail.vstecb.cz

IMPACT OF ONLINE RETAIL ON ECONOMIC DEVELOPMENT IN RUSSIAN REGIONS

Maria Markhaichuk

Abstract

Purpose: The aim of this study is to determine the influence degree of the online retail on the economic development of the Russian regions in comparison with the effect of offline retail.

Design/methodology/approach: Data on 85 Russian regions from Unified Interdepartmental Information and Statistical System (EMISS) of Russian Federation were taken as a basis for the research. The sample includes data on online retail turnover, offline retail turnover, gross regional product (GRP), gross regional product per capita (GRP per capita) for the 2014-2015 years. Panel regressions with fixed effects were employed and econometric models with dependent variables such as GRP, GRP per capita were estimated to fulfil research aim.

Findings: The regression analysis showed the positive impact of both online and offline retail development on GRP and GRP per capita in the Russian Federation. Online sales have a stronger impact on regional development of the Russian Federation than offline sales.

Research/practical implications: The policy makers can use the research results in the process of e-commerce policy targets setting in terms of increasing volumes of online (cross-border) trade.

Originality/value: The study empirically proved the positive impact of online retail on Russian regions development and showed stronger impact of online sales on regional development of the Russian Federation than impact of offline sales.

Keywords: Electronic commerce, GDP, online trade, offline trade, electronic sales

JEL Codes: O11, O33, R11

Introduction

The world is moving in the direction of increasing online sales and reducing offline sales. Many factors affect e-commerce adoption (Rahayu & Day, 2015; Sila, 2013). There are obstacles that we need to overcome to make international electronic sales faster and more accessible.

E-commerce really has a big impact on many different spheres. The development of e-commerce in the forth coming years could be a remedy and additional value to the economy since doing e-commerce could result in lower costs and higher profit when compared to conventional way of doing business (Gokmen, 2012). Both e-commerce and R&D expenditure were found to have a positive impact on GDP per capita, but e-commerce had a stronger development enhancing effect (Anvari & Norouzi, 2016).

The studies are devoted to the search for the relationship between the use of e-commerce and the efficiency of business (Azeem, Marsap, & Jilani, 2015), influence of e-commerce on labor productivity (Degryse, 2016; Liu et al., 2013; Vasilyeva, 2014), prices (Gomez-Herrera, Martens, & Turlea, 2014; Hannak et al., 2014), unemployment rate (Terzi, 2011; Zatonatska & Novosolova, 2017), and traditional trade (Liu, 2016). Falk & Hagsten investigated dependence of e-commerce efficiency on firm size (2015). E-commerce has a direct or indirect influence on the economic management of the enterprise, thus promoting the change in management mode (Niu, 2017).

The influence of the digital economy on the economic development of the state is actively investigated. The recent research in the field of e-commerce is aimed at identifying drivers and impediments for cross-border e-commerce. The analysis confirms that distance-related trade costs are greatly reduced compared to offline trade in the same goods. However, language-related trade costs increase. Moreover, online trade introduces new sources of trade costs such as parcel delivery and online payments systems (Gomez-Herrera et al., 2014).

The factors influencing the formation, development of the Internet economy in Russian Federation were analyzed and the contribution of the Internet economy to the GDP of Russia was assessed by Maksiyanova (2012). However, in this study, only share of the Internet economy in the structure of Russia's GDP is estimated and its forecast is implemented, which does not give an idea of the magnitude of the indirect effects that arise because of the development of the Internet economy.

There is a lot of talk about the e-commerce development, about the factors hampering development, but it is obvious that without developed infrastructure, without overcoming

obstacles (such as shipping costs, using payment systems, overcoming language barriers), electronic sales can lead to a decline in development indicators, instead of improving the nation's welfare.

Some studies really indicate a weak GDP effect of online trade. The relatively weak GDP effect in comparison with the production and consumption effects indicates that the shift from offline to online retail induces considerable welfare redistribution from retailing to other sectors and to households, more so than a production effect (Cardona et al., 2015).

Thus, number of studies indicate a relatively weak e-commerce impact on economic development. In addition, we still do not know how much stronger online trade affects economic development, than traditional trade. The influence of the online retail development in the Russian Federation on economic development of the regions has not yet been studied. In this connection, the purpose of this research is to determine the influence degree of online retail on the economic development of Russian regions. We assume online retail in the regions of the Russian Federation has more significant impact on GRP than offline retail and the study is designed to verify this.

1   Online and Offline Retail in the Russian Federation

Retail trade is one of the largest and fastest growing sectors of the Russian economy. Turnover of retail trade in 2015 amounted to 42.3% of GRP, in 2014 – 44.5% of GRP. The growth rate of retail trade turnover in 2015 was 104.4%, the GRP growth rate in current prices was 109.8%, which may indicate both more significant contribution of other industries to GRP, and that retail trade gives impetus to development of related industries, causing so-called indirect effects.

Due to the development of information technology in the world, retail trade through the Internet is developing at a rapid pace. In the Russian Federation, there is growth of both offline and offline retail turnover (fig.1). The growth of online retail sales in Russia in 2016 and 2015 amounted to 125.7% and 134.3%, respectively. The share of online retail sales in the GRP was small and amounted to 0.4% of GRP in 2015, and 0.3% of GRP in 2014.

Fig. 1: Offline and online retail in the Russian Federation in 2014-2016, billion rubles
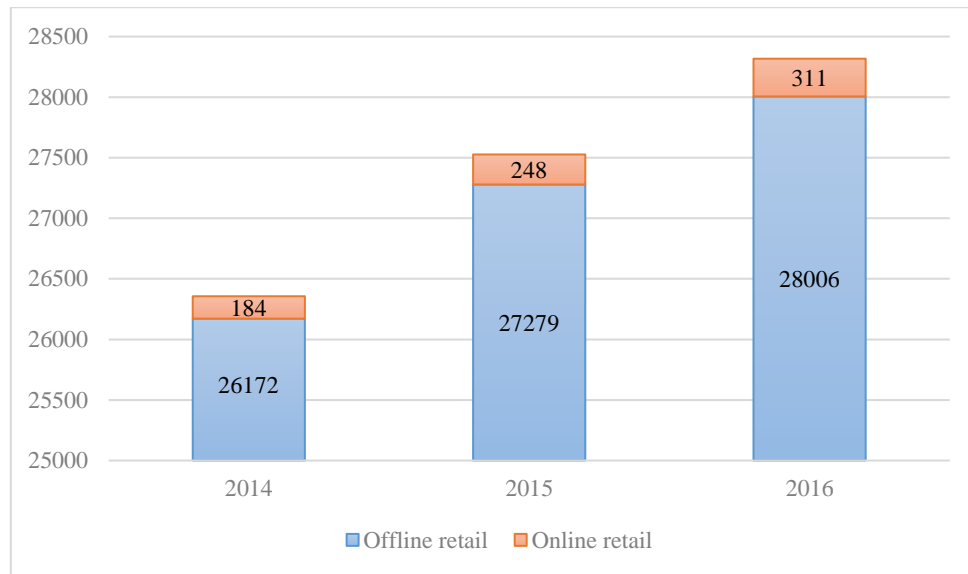
Source: calculated by the author on the basis of EMISS data

However, the development of e-commerce is of great importance for the Russian economy, since it gives impetus to the development of other industries that are providing for e-commerce, which leads to much more substantial results of economic development than direct contribution to GDP. Thus, indirect or secondary effects are formed, which must be taken into account when forming a strategy for the development of the Russian state.

Russia, which lagged far behind most other European countries in terms of Internet penetration in the recent past (with a 37% penetration rate in 2010), caught up rapidly until 2015. During that year, according to surveys by GfK and Yandex, Internet penetration in the country reached some 70%, with some 84 million Russians aged 16 or more – up 4 million from 2014 – declaring that they use the Internet. These numbers were stable in 2016. The recent current economic downturn (which reached its peak in 2014-2015) affected online retail to a much lesser extent than offline retail (East-West Digital News, 2017).

Territorial features also have an impact on the e-commerce development. Russia occupies a large territory and has regions with poor transport access and poorly developed ICT. Combined with an ailing road and rail infrastructure and a landscape of professional logistics providers that is just developing or undergoing its modernization, Russia's exceptionally vast geography makes the country challenging for anyone who wants to deliver goods to or within Russia (East-West Digital News, 2017).

The volumes of Internet sales differ significantly in regions of the Russian Federation. The leader in online retail turnover is Moscow – the capital of the Russian Federation (fig.2).

Fig. 2: Online retail trade share of the Russian regions in the total online retail trade in Russian Federation, %
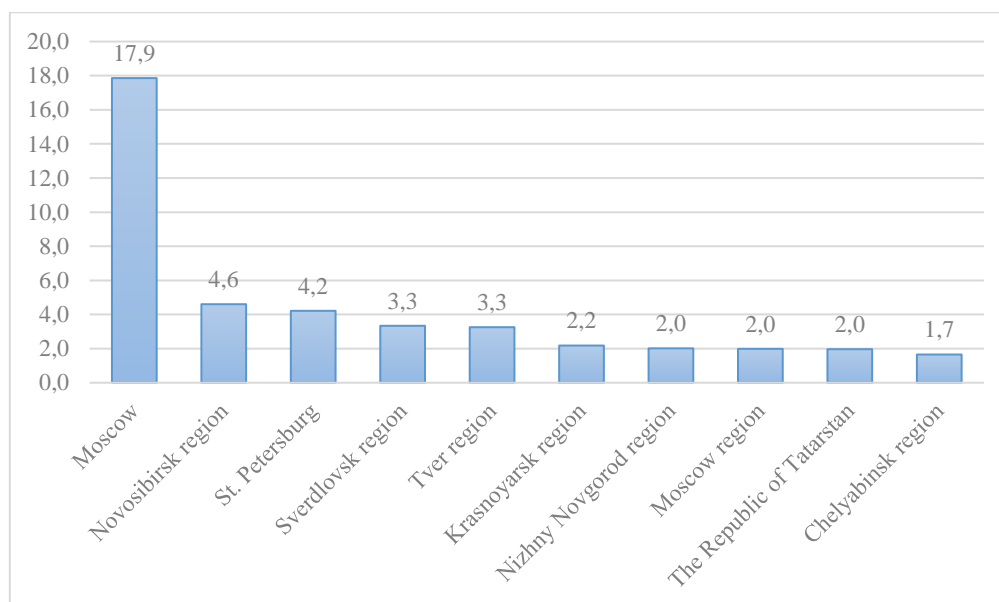
Source: calculated by the author on the basis of EMISS data

Almost half of sales (43.1%) are in 10 out of 85 regions of the Russian Federation. Consequently, either residents of most regions do not benefit from online purchases, or they are limited in both ICT and logistics. Such significant differences in the online retail turnover make one wonder whether it is worthwhile to make efforts to develop e-commerce and whether for all regions this development will bring more benefits than expenses, whether it is economically justified.

2   Analysis of online retail impact on economic growth in Russian regions

Regression analysis was used to assess the impact of online retail on economic growth in Russian regions.

The study is based on data from Unified Interdepartmental Information and Statistical System (EMISS) of Russian Federation for the 2014-2015 years. Official statistics in the Russian Federation on online retail began to be collected from 2014, which significantly narrows the possibilities of analysis. This explains such a small amount of empirical research studies on online retail in Russian Federation. Statistics on Gross regional product lags behind for 28 months, which limits this study to the year 2015.

Data on 85 Russian regions were taken as a basis for the research. The sample includes data on online retail turnover, offline retail turnover, gross regional product, and gross regional product per capita for the 2014-2015 year.

The dependent variables are GDP and GDP Per Capita. The explanatory variables are Online Retail Turnover, Offline Retail Turnover. Table 1 below presents descriptive statistics.

Tab. 1: Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
Online Retail Turnover, thous. rubles	2810808.	395628.6	77581921	0.000000	8108531.	155
Offline Retail Turnover, thous. rubles	3.26E+08	1.80E+08	4.39E+09	5196100.	5.19E+08	170
GRP, thous. rubles	8.00E+08	3.87E+08	1.35E+10	30148564	1.59E+09	169
GRP Per Capita, thous. rubles	404.1525	304.9576	3376.613	68.52620	437.5845	169

Source: own elaboration

Fixed effects estimation approach was chosen as estimation technique, because the panel data consist of regions that do not change over time. Fixed effects models were tested for redundancy of fixed effects. Also fixed effects approach is appropriate according to Hausman test. Estimated econometric models are presented in Table 2.

Tab. 2: Model table

Variable / Model	Model 1	Model 2
Dependent variable	GRP	GRP Per Capita
Online Retail Turnover	28.38880***	4.48E-06**
	(3.551857)	(1.88E-06)
Offline Retail Turnover	1.907126***	(6.15E-07)***
	(0.368714)	(1.95E-07)
Constant	1.16E+08	183.3237**
	(1.35E+08)	(71.29375)
R-squared	0.998964	0.995977
Adjusted R-squared	0.997798	0.991450
F-statistic	856.7877	220.0451
Observations	154	154
Note: Standard Errors are in parentheses *** stat. significance on 1%, ** stat. significance on 5%, *stat significance on 10%.		

Source: own elaboration

Firstly, the impact of Online Retail Turnover and Offline Retail Turnover on GRP was investigated (model 1). Then the impact of Online Retail Turnover and Offline Retail Turnover on GRP Per Capita was investigated (model 2).

Model 1 confirms statistically significant positive impact of both Online Retail Turnover and Offline Retail Turnover on GRP. Growth of online sales by 1 ruble leads to an increase in GRP on average by 28.4 rubles. Growth of offline sales by 1 ruble leads to an increase in GRP on average by 1.9 rubles.

It follows that online sales through indirect influence of related industries and supporting industries give GRP growth of 28.4 times more than the direct contribution of online sales to GRP. In addition, the impact of online sales on GRP is 15 times stronger than the impact of offline sales.

The concentration of efforts on the online retail development will lead to more rapid and significant results than the development of offline trading.

Model 2 confirms statistically significant positive impact of both Online Retail Turnover and Offline Retail Turnover on GRP Per Capita. Growth of online sales by 1 mln. rubles leads to an increase in GRP per capita on average by 4.5 rubles. Growth of offline sales by 1 mln. rubles leads to an increase in GRP per capita on average by 0.6 rubles. Impact of online sales on GRP per capita is 7 times stronger than impact of offline sales.

If we compare the impact of online sales on GRP and GRP per capita, we will see that online sales have a more significant impact on GRP than on GRP per capita.

Thereby, there is a positive impact of online retail on economic development of Russian regions.

Conclusion

The article is devoted to the analysis of online retail impact on economic development of Russian regions in comparison with the effect of offline retail. Previously, it was not investigated how much more e-commerce influences economic development than traditional trade. This study filled existed research gap.

The regression analysis confirmed statistically significant positive impact of both online retail turnover and offline retail turnover on GRP and GRP per capita. Online sales through indirect influence of related industries and supporting industries give GRP growth of 28.4 times more

than the direct contribution of online sales to GRP. In addition, the impact of online sales on GRP is 15 times stronger than the impact of offline sales.

The result is interesting, since in the Russian Federation in recent years the share of online retail trade is less than 1% of GDP. From which we can conclude that e-commerce should become one of the priority directions of the Russian Federation development. The policy makers should pay more attention to the institutional aspects of e-commerce and contribute to the development of the e-commerce infrastructure.

Since we are going to develop the e-commerce, we need to know to what extent it should be developed and maintained. Can we support it at the expense of traditional commerce? Do we need to support it at all? After all, it is possible that it will develop itself, and support can only go to the detriment. Is it possible to completely switch to e-commerce, getting rid of traditional trade. The search for answers to these questions may serve as the goal of further research.

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Contact

Maria Markhaichuk

Department of Commerce and Hospitality, Institute of Tourism and Entrepreneurship

Vladimir State University named after Alexander and Nikolay Stoletovs

Gorky Street, 87, Vladimir, 600000, Russian Federation

m.marhaychuk@gmail.com

INNOVATION IN THE CONTEXT OF CORPORATE SOCIAL RESPONSIBILITY

Ewa Mazur-Wierzbicka

Abstract

Purpose: The purpose of the paper is to analyze the links between innovative activity and the concept of corporate social responsibility from the perspective of Polish enterprises. The implementation of the aim dictated the paper's arrangement. At the outset, the issues of innovativeness, innovation, corporate social responsibility were brought about, then the issues of innovativeness from the perspective of Polish socially responsible enterprises were presented, and good socially responsible practices in the field of innovation undertaken by Polish enterprises were presented.

Design/methodology/approach: The subject matter of the considerations undertaken in the paper is innovativeness in the context of corporate social responsibility from the perspective of Polish enterprises. The paper was based on the subject literature, secondary data and case studies.

Findings: The implementation of the CSR concept in enterprises is a motive for undertaking and implementing various types of innovations, especially sustainable innovations. It should also be noted that enterprises regarded as innovative start to see potential future opportunities in CSR and decide to implement it. Certainly - as confirmed by the results of research conducted among Polish socially responsible enterprises - innovativeness and CSR are interdependent categories.

Research/practical implications: The considerations carried out in the paper allow concluding that in the corporate social responsibility the potential of the source of innovativeness for organizations at the economic, social and environmental levels is not yet discovered. It would be recommended to conduct further research of innovativeness and corporate social responsibility on a nationwide scale and to expand the research sample. It is important to pay attention not only to large enterprises, but also to the SME sector.

Originality/value: The content presented in the paper allows looking at the relationship existing between innovativeness and corporate social responsibility from the perspective of Polish socially responsible enterprises. The analysis of many good practices of the analyzed entities showed (surprisingly) a small number of those related to innovations, compared to other activities undertaken by socially responsible enterprises. It can be expected that both business standards and the very concept of corporate social responsibility will change in the coming years, which should give basis and impulse for innovations.

Keywords: Corporate social responsibility, innovations, enterprise

JEL Codes: M14, O39

Introduction

Since the mid-1990s, a trend of a new approach to running a business has been observed, manifesting itself in the implementation of pro-ecological production technologies, introduction of products and services that improve people's quality of life, building positive relationships with stakeholders (external environment) based on trust, openness, fair competition, which has its source, among others, in the new perception of innovation. Research shows that at the beginning of the 21st century the pursuit of sustainable development, which may be done, among others, by implementing the concept of Corporate Social Responsibility (CSR) will be key for managers in the functioning of businesses. Therefore, managers indicated 3 important areas within which they should focus most of their activities: consumers who stimulate companies to socially responsible activities in the spirit of sustainable development; technologies and innovations (mainly those counteracting climate change, communication ones); cooperation - mainly with industry partners.

The purpose of this paper is the analysis of relations occurring between innovative activity and the concept of corporate social responsibility from the perspective of Polish enterprises. This purpose of the paper dictated its arrangement. At the beginning, the issues of innovativeness, innovation and corporate social responsibility was outlined, then, issues of innovativeness from the perspective of Polish socially responsible enterprises and good socially responsible practices in the scope of innovation undertaken by Polish enterprises were presented.

The study employed national and foreign literature on the subject and secondary data.

1   Innovation - introduction to the issue

In today's economy, innovation understood as the ability and motivation of companies to search for new concepts, ideas and inventions and their practical application is one of the main determinants of its competitiveness, and is also perceived in terms of an important source of development.

It is therefore natural that one of the elements of economic policy is an innovation policy aimed at: building an effective system that allows establishing links between science, technology, administration and market, as well as supporting innovation of the economy through the prism of creating conditions conducive to the creation of new products, services, technological processes and management techniques. It mainly affects companies. It is assumed that innovative companies are those that develop and implement innovative strategies, have

organizational structures conducive to innovative activity, e.g.: innovation department, innovation leader position, have a scientific supervisor on innovative activities, cooperate in innovation networks, conduct post-license work, bear significant expenditure on R&D, show constant, high implementation activity, cooperate with units from the field of science, with foreign and domestic companies, in which new, implemented products and technological processes are characterized by increasing scientific receptiveness (Białoń, 2011).

There is no single definition of innovation in the literature on the subject, which results mainly from the short tradition of research into innovations and their different perception, different theoretical approaches to this concept. The term innovation can refer to a good, service, concept, idea, knowledge, processes, phenomena perceived as new, regardless of their objective "novelty". This term is undertaken through the prism of many macroeconomic as well as microeconomic factors (cf.: Marin et al., 2017; Zwiech, 2011). From the perspective of this paper, the basic definition adopted was the one from the Oslo Manual (OECD and Eurostat definition) - innovation is "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organisation or external relations" (OECD&Eurostat, 2006).

Just as there are many definitions of innovation, so too many categories of their division can be found in the literature on the subject. However, the most common is the classic division of innovation, which allows distinguishing four basic types. These are (Kunasz, 2013):

- product innovations - involve improving the existing or launching a new product or service,
- process innovations - involve the change of production methods, which may concern both the implementation of a new or significantly improved production or delivery method,
- marketing innovations - they concern changes in the scope of: design and packaging, methods of selling goods and services, promotion and advertising of goods and services
- organizational innovations - involve the introduction of new methods of organization in the internal structure of a company, or in its relations with the environment.

2   Innovativeness and corporate social responsibility

In today's economic practice, non-material values, such as honesty, trust, credibility, transparency of activities, relations with stakeholders, quality of these relationships are becoming increasingly significant. In addition, globalization, increased competitiveness, more aware stakeholders (mainly consumers), tightened legal regulations (e.g. regarding environmental protection) are conducive to respecting norms, social and environmental rules by companies. In view of the above, the concept of corporate social responsibility is increasingly stressed in business practice.

In the literature on the subject one can encounter a large number of studies on its nature, approach to defining it (e.g. definitions of: the European Commission, the World Business Council for Sustainable Development, social organizations, scientists, researchers or business practitioners) (Mazur-Wierzbicka, 2012; El Akremi, 2018). The study assumed as the basic definition the one included in the ISO 26000 standard, according to which "the essence of social responsibility is the responsibility of an organization for the impact of its decisions and activities on society and the environment and ethical behavior, contributing to sustainable development, health and welfare of the society, taking into account the expectations of stakeholders, complying with the law and international norms of behavior and is integrated throughout the organization itself" (International Organization…, 2010).

It needs to be stressed that CSR being a tool for the implementation of sustainable development at the level of a company gives it the possibility of harmonious, long-term development, additionally introduces new tools, employee- or natural environment-friendly management systems to the general business management system (Ćwik, 2011). Therefore, it also plays an improving role.

The specificity of activities undertaken under CSR, cooperation with stakeholders, maximization of creation of common values (organization and stakeholders) means that the ability of socially responsible companies to undertake innovative activities aiming to protect the natural environment and concerning social issues is assigned significant importance (apart from the need to have skills to adapt to changing environment conditions, resources, or adopted development strategy). This applies mainly to three types of areas (Ćwik, 2011):

- − innovation resulting from the adoption of a new form of stakeholder engagement,
- − innovations resulting from noticing a business opportunity in addressing social problems, perceiving pro-ecological investments as a chance for development,

> – innovations resulting from creating a place of employment, conducive to the development of innovation.

In socially responsible companies improvement can be made as part of the already implemented concept of social responsibility, called **the revolution of responsibility** resulting in the change of the organization's image through, among others, implementing innovative work models, redefining business goals, finding more optimal methods of leadership. This approach to social responsibility according to J. Hollender and B. Brenn "means more than reducing carbon dioxide emissions, reducing energy consumption, monitoring factories or charitable activities" (2010). In this case, we are already dealing with a deeper dimension of CSR, within which there is reference to corporate awareness, intelligent resource management (Hollender, Brenn, 2010).

3   Innovation and corporate social responsibility from the perspective of Polish socially responsible enterprises

Analyzing the subject literature, one can come to the conclusion that there is a strong relationship between innovation and corporate social responsibility (cf.: Mishra, 2017). Innovation is conducive to CSR and vice versa (cf.: Ratajczak, Szutowski, 2016). This is also confirmed by practitioners, expressing it in given answers, in qualitative and quantitative research in the field in question. Wanting to show how this situation is shaped amongst Polish enterprises, the results of research carried out in the group of people responsible for CSR, marketing and PR in the largest enterprises operating in Poland will be presented. The study was conducted in 2012 on a group of 70 large enterprises by Millward Brown for the Responsible Business Forum (Forum Odpowiedzialnego Biznesu, 2012). So far, this has been the most comprehensive survey conducted in a given subject-matter in Poland. Due to the fact that the CSR concept has only been more noticeable by Polish entities for a few years now and that according to research few enterprises in Poland call themselves socially responsible, the results of these studies seem binding. They are also confirmed by (pilot) research carried out by the Author on a group of 20 enterprises in 2017 - the results of answers given to similar issues were very similar[9].

The research shows that respondents perceived their companies as innovative; as many as 89% of the surveyed enterprises declared having initiated and implemented innovations in the last 3

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[9] Due to the paper's volume restrictions and the small scope of the 2017 research, an analysis of a 2012 study will be carried out.

years, while the percentage of enterprises with a formal CSR strategy was even higher and amounted to 97%.

According to the declarations, 78% of those surveyed stated that CSR can be a source of innovation. 32% of respondents pointed to CSR as the source of organizational innovation, 25% of respondents saw it as a process innovation, 22% of respondents pointed to CSR as a product innovation and 18% of respondents indicated it as a marketing innovation.

72% of respondents indicated that social and environmental values were the motivation for initiating innovative activities, while 79% considered that they should be taken into account at the important stages of implementation of innovative projects. The percentage of respondents who thought so was higher in the group representing companies with a formal CSR strategy (90%*[10]) - especially in the area of organization.

In the majority of surveyed companies employees were motivated to initiate innovative ideas/solutions (63%). This phenomenon occurred more frequently in large companies that had a CSR strategy (79%). According to 17% of respondents, the attitude of the staff was a barrier to the development of innovation in their company.

Entrepreneurs implementing CSR solutions and innovations brought about by this way of management emphasized that 34% of them were new innovative solutions, 25% declared that they were equally new and improving the existing ones, 39% said they were mostly improving existing solutions. The respondents indicated that the activities were innovative on the scale of the enterprise (80%), almost 60% indicated innovation on a national scale (novelty for the economy) and 25% indicated innovation on a global scale.

The largest number of surveyed companies implemented pro-ecological and pro-social projects in the field of production methods or services rendered (process innovations) (86%). Product innovations were implemented by 75% and organizational innovations by 63% of the surveyed enterprises. Less, because only 43% of enterprises implemented marketing innovations. On average, every tenth (7% - 13%) innovative venture has been abandoned/unfinished.

In turn, the same Polish managers, when asked in which areas of innovation their source may be CSR, indicated a slightly different order than the one that was observed in their companies.

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[10] * The sum of "Definitely yes" and "Rather yes" responses.

First of all, in their opinion, CSR could be helpful in organizational innovations, then process ones, product ones and least helpful in marketing ones.

Most companies monitored the impact of innovative activities on the areas they concern. The most systematically monitored was the impact of innovative activities on customers (78%[#11]), employees (75%[#]), the natural environment (69%[#]), less frequently on suppliers (63%[#]) and subcontractors (60%[#]). The monitoring was usually carried out with the support of auditors (67%[#]) and company's own observations (64%[#]).

The main benefits of the implemented innovations were associated by respondents with competition, demand, and markets (82%), mentioning higher profits, increasing or maintaining market share, improving the company's image, entering new markets, better competitiveness, and improving the offer. 60% indicated the benefits of production innovations (reduction of operating costs, increasing efficiency or speed of delivery, improving quality, reduction of unit costs). Half of the respondents also mentioned the benefits of organizational changes (strengthening relationships with customers, increasing the ability to adapt to customers' requirements, improving communication in the company, increased motivation).

The respondents identified cost factors (37%) and knowledge factors (25%) as the biggest problems in the implementation of innovative projects.

In conclusion, it can be assumed that thanks to having a formal CSR strategy, the company will be innovative. However, we might as well say that companies that are innovative today are beginning to see potential future opportunities in CSR. This makes them decide to implement it. It is not possible to state clearly what is first in the company: innovation or CSR. Certainly these are interdependent categories.

4 Good socially responsible practices in the field of innovation undertaken by Polish enterprises

Innovation as noted earlier is strongly related to CSR. In Poland, one can observe year after year socially responsible organizations more and more often take on innovative activities. Most often they concern environmental protection, modernization of technologies, methods of work and employee participation.

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[11] [#] The sum of affirmative responses: "In each, or almost each case" and "In some cases"

Innovative involvement of Polish socially responsible enterprises in the scope of, among others, innovativeness is included in Table 1. Innovations are categorized in the areas identified in the ISO 26000 standard.

In the report entitled "Responsible business in Poland. Good practices from 2016" good practices reported by socially responsible enterprises were linked for the first time to the Sustainable Development Goals that they contribute to. Among the 17 objectives, Objective 9 concerns innovation: "Building stable infrastructure, promoting sustainable industrialization and supporting innovation". Practices reported by 180 organizations qualified for the 2016 report. In total, among the qualified practices, 27 were related to Objective 9. By assigning them to the areas identified in the ISO 26000 standard, their distribution is as follows: organizational order - 2 practices, human rights - 0 practices, labour practices - 5 practices, environment - 11 practices, fair operating practices - 3 practices, consumer issues - 4 practices, local community social involvement and development - 2 practices (Forum Odpowiedzialnego Biznesu, 2016).

Tab. 1: Examples of good practices in the field of innovation of Polish socially responsible enterprises

Entity	Name of practice	Description	Area according to ISO 26000/ Category
Grupa Kapitałowa LOTOS	A programme serving the protection of the environment	Purification of industrial water at Grupa LOTOS with the use of an innovative straw installation	Environment/Pro-environment programmes
Henkel Polska Sp. z o.o.	International Innovation Center for Construction Chemicals Ceresit in Stąporków	Objective: to search for and develop modern technologies that allow more efficient use of natural resources and raw materials in house construction, and thus protect the natural environment. The most important directions of research are: high thermal insulation, eco-Hybrid technology and eco-biocides.	Environment/Eco-products
ING Bank Śląski	Innovation as an integral element of the organization's culture	Objective: supporting innovation through various activities, e.g. Innovation Bootcamp, creating an Innovative Community on the intranet, creating an Innovation Team.	Labour practices/Employee participation
PKO Bank Polski	Innovation Centre	Objective: using the engagement, ideas, experience and knowledge of PKO Bank Polski employees in order to facilitate solving specific tasks, to improve existing processes, to allow proposing innovative concepts and exchange of opinions. Center based on the idea of crowdsourcing	Labour practices/Employee participation
PKP S.A.	Organizing a competition for an innovative solution	Objectives: searching for innovative solutions contributing, among others, to the improvement of the comfort of travelers with limited mobility, social dialogue with the community in the area of innovation.	Consumer issues/ Availability of products and services

	contributing to the improvement of the comfort of travelers with limited mobility at railway stations, implementation of the winning project	Effect: launching on 13 December 2015 in 12 InfoStations the winning project improving the comfort of deaf and hard-of-hearing travelers at railway stations, through the possibility to translate sign language online "Tłumacz Migam" ("Sign Language translator").	
Polska Spółka Gazownictwa Sp. z o.o.	Innovation, practice, exchange of experience	Objective: sharing experience related to the mining sector and organizing work experience placements for students of the Faculty of Drilling, Oil and Gas. Joint scientific conferences are organized and innovative plans allowing modernization of an enterprise are developed in the framework of the project	Community involvement and development/Cooperation with universities
Polski Koncern Naftowy ORLEN SA	The system of developing safety through innovation	Objective: systematizing activities promoting creativity implementing safety-related ideas in practical activities	Labour practices/ Health and safety at work
Polskie Górnictwo Naftowe i Gazownictwo SA	Competition "The innovative young for PGNiG"	Objective: discovery of innovative solutions related to shale gas extraction Participants: university students, young scientists and PhD students	Community involvement and development/ Cooperation with universities
PwC	Social Innovators Club	Assumption: combining different perspectives, tools and knowledge contributing to the creation of non-standard solutions. Pillars of activity - exchange of knowledge, inspiration and actions - initiatives supporting the implementation of the most innovative pro-social ideas.	Fair operating practices/ Relations with stakeholders

Source: compiled on the basis of: (Forum Odpowiedzialnego Biznesu, 2015).

. **Conclusion**

Concluding the considerations contained in the paper, it should be stated that the concept of corporate social responsibility itself can be treated as an innovation, as well as it can be a source of innovation for both basic, i.e. product, process, organizational and marketing innovations and, additionally, for example, social ones (significantly related to CRS principles).

Undoubtedly, the implementation of the CSR concept is a motivation for companies to undertake and implement various types of innovation, especially sustainable innovations. It should also be noted that enterprises regarded as innovative start to see potential future opportunities in CSR and decide to implement it. Certainly - as confirmed by the results of research conducted among Polish socially responsible enterprises - innovation and CSR are interdependent categories.

In Poland, it is mainly large enterprises that decide to implement corporate social responsibility. Following new trends, they should focus on accountability to stakeholders and the environment,

and on watching the market more closely. It can be expected that both business standards and the very concept of corporate social responsibility will change in the coming years, and this should also give the basis and impulse for innovation.

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Contact
Ewa Mazur-Wierzbicka
Faculty of Economics and Management
University of Szczecin
Mickiewicza 64,71-101 Szczecin, Poland
ewa.mazur-wierzbicka@wp.pl

USE OF BUSINESS MODEL CANVAS FOR BUSINESS IN UNIVERSITY PREMISES: IMPLEMENTATION OF THEORY INTO PRACTICE

Simona Megová – Ladislav Pálka

Abstract

Purpose: The purpose of this study is to define a business model for a product sold on university premises. The product was the subject of research, respondents deserve hot cooked cocoa. In this article, Business Model Canvas as a tool for the opportunity of practical use.

Design/methodology/approach: The research uses quantitative research methodology in the form of a questionnaire, which was distributed to students, i.e. customers. The questionnaire was completed by 560 respondents. Further, a qualitative research method was used in the form of structured interview specifying the results obtained in the quantitative research. 410 structured interviews were conducted.

Findings: Within the questionnaire, student preferences were found. The questionnaire was directed to a product that would immediately reach. Among snacks and beverages, up to 71% of students want hot cooked cocoa. Structured interviewing has confirmed this finding. Structured interview is focused on applying the product to the Canvas Business Model Canvas.

Research/practical implications: This whole idea of connecting a business model with the product was meant to lead to practical use. The purpose of this article is basically a concept for the product usage in practice by means of the business model.

Originality/value: The business focus on university students represents the bottomless resource in respect to future. For students, this product represents a source of energy and health, as well as its nostalgic connection with childhood memory. The uniqueness of this article is based on a product that is demanded by students and not available on the market. This product, combined with the Business Model Canvas application, has a huge start-up potential.

Keywords: Business model canvas, cocoa, business opportunity

JEL Codes: M13, M19, I12

Introduction

Business of small and medium-sized companies has great importance, because businesses of this category are still an important factor in the development of municipalities, cities and regions (Habjan & Pucihar, 2017).

Even if the business models are nothing new, their scope and speed have no equivalent in history. The core of business model innovation is to create new value for customers, companies, and the entire society (Sorescu, Frambach, Singh, Rangaswamy, & Bridges, 2011).

Value is created, when someone does something important and shares it with the world (Zhang, Liang, & Wang, 2016). This article describes creation of value through a new product sold at universities, which is chosen on the basis of research conducted on students.

1 Theoretical background

1.1 Business model Canvas

In recent years, business models have become a very popular topic in research and practice (Zott, Amit, Massa, 2011). This popularity is based on the diversity of their application in value creation as well as on the use as a tool for analysis (Ostarwalder, 2004), (Chesbrough & Rosenbloom, 2002), (Stewart & Zhao, 2000), (Teece, 2010). As there is a growing number of publications in this area, there is a great variety in understanding business models and their number of definitions is growing (Zolnowski & Böhmann, 2011), (Ostarwalder, 2004), (Al-Debei & Fitzgerald, 2010), (Magretta, 2002), (Perić, Vitezić & Đurkin, 2017). Also, a number of business model concepts are growing (Al-Debei & Fitzgerald, 2010), (Afuah & Tucci, 2001), (Timmers, 1998), (Zott & Amit, 2007).

Business models comprise all elements relevant to the value offering provided to the firm´s target customers, including internal and external value creation as well as its underlying resources and capabilities, along with the revenue generation logic applied by the firm (Špaček & Vacík, 2016).

The benefit of the Canvas business model lies not only in improving the functionality and economy of the business, but also in looking for and developing the competitive advantage that a business that realizes the broadest sense of the business model (Slávik, 2011).

The Business Model Canvas describes business model through nine key elements showing the logic of how it earns money (Osterwalder, Pigneur, & Smith, 2010).

Tab. 1: Building elemetnts Business model Canvas

BUILING ELEMENT	DESCRIPTION
Customer segments	define different groups of people or entities the company wants to focus on
Value propositions	describe the combination of products and services, that create value for a certain customer segment
Channels	describe how the company communicates with customer segments and how to reach them to sell value proposition
Customer relationships	describe forms of relationships, which are built by the company with individual customer segments
Revenue streams	include cash generated by the company from each customer segment
Key resources	describe the most important assets needed by the company to make the business model work
Key activities	determine the most important business activities of the company to make the business model work
Key Partnerships	are a network of suppliers and partners, which is needed to make the business model work
The cost structure	includes all costs associated with operation of the business model

Source: Fritscher & Pigneur, 2014

1.2 Cocoa

Any mixture of milk, cocoa powder and sugar, which contains 28% or less of cocoa powder is called cocoa (Decree No. 148/2015 Coll.). It has been proven, that cocoa product, which is a rich source of flavonoids, reduces blood pressure and the risk of cardiovascular diseases (Tokede, Gaziano, & Djoussé, 2011). Cocoa was used even in the past especially in the medicine field to treat fatigue, malnutrition, fever, and angina, cardiac and respiratory problems.

2 Research

There were two main ideas before the start of the research. The first idea was an interesting product and the second idea was its model of conception of ideal solution in a plane usable to both a customer and a business. The research in the customer environment was necessary in order to confirm the correctness of these ideas.

2.1 Methodology

The primary research was focused on the target group of customers directly in the academic environment, specifically in premises of Brno University of Technology faculties. Within the

primary research a quantitative survey was conducted in the form of a simple questionnaire. The questionnaire contained twenty questions oriented on relationship to the product, which respected the logic of individual chapters of business model itself.

The survey ran from December 2016 to October 2017.

The survey was conducted in all refreshment areas or similarly oriented premises on every faculty of Brno University of Technology. A total of 560 students was addressed. 100% of the questionnaires was returned thanks to personal approach, i.e. the questionnaire was filled in by a student and returned to a questioner immediately. A qualitative research method based on a structured interview was used for detailed specification of findings of the quantitative survey. The questionnaire, which was focused on detailed opinion of a respondent, was created for this interview. A total of 410 structured interviews was conducted within the qualitative survey, where the respondents answered twelve questions. Return rate is 100%.

For a secondary research, a quantity of sources from the field of professional literature was used, focused on both the issue of the business model as well as the product itself.

2.2   The area of examination

Academic premises of individual faculties of Brno University of Technology, especially refreshment areas including cafes, buffets etc. were used as the research area, i.e. the environment where the target group is located. The logical reason for this was to obtain opinions of the target group, when from the biological point of view, the demand for the product is as strong as possible.

Research was on the Faculty of Business and Management (FBM), Faculty of Electrical Engineering and Communication (FEEC), Faculty of Information Technology (FIT), Faculty of Chemistry (FCH), Faculty of Mechanical Engineering (FME) and Faculty of Civil Engineering (FCE).

2.3   Respondents

As mentioned in the previous chapters, the target group are students. The quantitative and qualitative researches were oriented on this target group. There are obviously other employees or teachers in Brno University of Technology environment. Because of a requirement for clear distinction and correct identification for the business model, the research was oriented only on students. 560 students (FBM 99 students, FEEC 83 students, FIT 91 students, FCH 73 students, FME 112 students and FCE 102 students), who were willing to fill in and submit the

questionnaire with twenty questions, were approached for the quantitative research. The research was conducted within period of four months by four questioners. 410 students were approached for the qualitative research (FBM 81 students, FEEC 75 students, FIT 66 students, FCH 69 students, FME 58 students and FCE 61 students). They answered twelve questions during the structured interview which lasted for about twenty minutes. Also in this case the research was conducted by four interviewers and it was focused especially on a detailed specification of results of the quantitative research.

3   Discussion

Health has always been and is likely to remain a demanded commodity in developed economies, even after all reforms. From a social aspects point of view, hot cocoa is a preferred drink in compare to substitutional drinks (tea, hot chocolate, coffee, energy drinks).

Traditional hot cocoa is highly demanded by university students, but this product has disappeared from the market and has been inaccessible for a long time. Up to 71% of respondents chose this product in the questionnaire survey.

Due to comparison of caffeine content in a cup of cocoa (www.kafe.sk) (170 ml) (10-30 mg), to a cup of tea (50-60 mg), or a cup of coffee (150-300 mg) and energy drinks (80mg), while considering the brain activity and content of substances with beneficial effects on human organism in cocoa, the students as well as university employees take to drink cocoa rather than tea, coffee or energy drinks.

There is plenty of opportunities to buy tea, coffee and energy drinks in university microenvironment, but cocoa, which is the healthiest of them, is missing. While the history of cocoa dates back to the time when America was discovered.

Fig. 1: Canvas Business Model Application

Key Partners 🔗	Key Activities ✔	Value Propositions 🎁	Customer Relationships ♥	Customer Segments
- SUPPLIERS OF THE BEST AVAILABLE INGREDIENTS - FACULTY MANAGEMENT -SERVICE -CUSTOMERS	- COMPANY MANAGEMENT - LOGISTICS -MARKETING -THE PRODUCTION AND SALE OF HOT COOKED COCOA - PROFESSIONAL SERVICE -OPTION TO PAY WITH ISIC **Key Resources** 👷 - PHYSICAL RESOURCES - INTELLECTUAL RESOURCES -HUMAN RESOURCES - FINANCIAL RESOURCES	- EXCELLENT PRODUCT (TRADITIONAL HOT COOKED COCOA) - CERAMIC CUP - PAY WITH ISIC	PERSONAL ASSISTANCE BASED ON HUMAN INTERACTION **Channels** 🚚 - PLEASANT SERVICE - WEBSITE - FACEBOOK -BANNER	MASS MARKET - STUDENTS - UNIVERSITY STAFF

Cost Structure 🏷	Revenue Streams 💲
- FIXED COST - VARIABLE COSTS -THE COST ASSOCIATED WITH ESTABLISHMENT OF BUSINESS	- SALE OF COCOA - FRANCHISE

Source: own processing by Osterwalder, Pigneur, & Smith (2010)

3.1 Customer segments

Ninety-five percent of students in a structured interview said they should be oriented to **the mass market** when selling hot cooked cocoa. The reason is, that the product, which is new to the market, becomes generally a popular matter throughout all age groups of customers.

Forty percent of students in a structured interview stated that a further breakdown is necessary - the focus on the mass market for **students** and **university staff** is precisely because of the common needs of the customer, ie the taste, the desire to satisfy the need under conditions of a good price with a very good added value.

Eighty-nine percent of students emphasized **diversification**. It may be a bold statement, because perception of differences of individual food products on the market - the beverage products - is very subjective. But this business strategy wants to focus only on one high- quality product in several different variants. These variants of the product, i.e. hot cocoa, are variable flavors depending on the type of used ingredients. The basic ingredient is always traditional cooked cocoa, while sweetening is possible by adding honey, cane sugar, white sugar and it can be flavored by adding egg cognac or chocolate liqueur.

Interesting is the explanation of one of the students: „*Basic principle of this diversification is a model based on an unrelated customer segment within food industry, which is not currently represented on the market. It is necessary to considerate the difference between sale of cocoa and hot chocolate. The sale of hot chocolate is low because of a low quality of this product, which is mostly instant. Strategic logic of this diversification is based on idea of a high-quality product, which is based on customer popularity of beverage range of goods and new flavor based on strong traditions and knowledge of all consumers.*"

3.2 Value propositions

All 410 students interviewed in a structured interview matched the value proposition. Value proposition for customer is an **excellent product (traditional hot cooked cocoa)** in high quality, served in pleasant scented environment with great service, where atmosphere, which relieves stress thanks to nostalgia (cocoa, or semolina reminds us of childhood). The customer feels relaxed, refreshed and in a good mood.

„*In addition to an excellent product, a value for the customer is also created by a specific product culture, where traditional hot cooked cocoa is offered in **a ceramic cup** with a spoon (there remains an option to serve the product in a cheap plastic cup, that does not increase the price because it is already included). Option **to pay with ISIC**, including the possibility to charge ISIC credit, is a matter of course*", said a student of the Faculty Business and Management.

And he adds: „*Quality of services is defined as follows: speed, reliability, safety, comfort and complexity.*"

3.3 Channels

Within the channels, students have leaned forward to communicate with their customers through **a pleasant service**, but also by a **website, Facebook account** or a **banner** during operation hours.

The student of the Faculty of Information Technology at Communications immediately remembers the website. „*A website will serve for the communication with customers in a specific matter concerning contact placements and other rudimentary data, while simplicity and clarity will be emphasized.*"

Other communication channel is good references from students and employees, bringing new customers to our business. Significant emphasis will be placed on this way of communication, 50% of students agreed to respond to the possibility of communication.

Student of the Faculty of Business and management insists that a statement saying "*good product sells itself*" is in marketing strategies considered to be insufficient. But a good product reference can be a very valuable tool for reaching new customers.

3.4   Customer relationship

Business model concept designed by students is to acquire and retain customer through **personal assistance based on human interaction**. A customer will communicate with real representative of the company (pleasant service), who is always nice, communicative, and informs the customer of any change in the range of goods (e.g. the cold cocoa served during summer months). Pleasant service can therefore create friendly personal relationships. Customers will return not only because of actual desire for cocoa, but also for the pleasure and habit of drinking cocoa and for the pleasant service with personal approach. The student of the Faculty of Chemistry is pleased with his knowledge.

3.5   Revenue streams

As customers embody the heart of the business model, revenue streams are its arteries. The main revenue stream will be sale revenue, i.e. **the sale of cocoa**.

Other revenues will be generated from **franchise** and a patent for traditional hot cocoa. „These revenue streams are based on providing a recipe for traditional hot cocoa, protected by trademark, and the use of this business model, which will enable to start business in defined area without initial knowledge, tedious learning and practice under reduced risk. Franchise will be mainly about provision of operating system and procedures", a student of the Faculty of Civil Engineering speaks of his vision.

3.6   Key resources

The most important resources needed to make business model work are divided into four groups as follows: **physical, intellectual human and financial**, students of the Faculty of Business and Management without hesitation say the lesson learned, obviously, on the exam.

- Physical resources: equipment of establishment, ISIC payment mechanism, cash register, ceramic cups with spoons.
- Intellectual resources: traditional hot cooked cocoa trademark, know-how.

- Human Resources: employees, business owner, suppliers, lawyers, customers.
- Financial resources: cash.

3.7 Key activities

The most important key activities are described in detail by a student who is doing coffee.

- **Company management** – the owner is the controlling element. Among other things, he represents the roles of general, executive, financial and economic director, IT and quality assurance manager, manager of revenue, work organizer, budget analyst and accountant specialist.

- **Logistics** - logistics includes several areas. Information flow, transportation, storage, inventory, material handling and security. The owner makes market research, evaluates the best ingredients and selects the best quality and the most beautiful ceramic cups with spoons. Purchased equipment is stored in establishment, represented by a stand where the cocoa is sold.

- **Marketing** – the business policy is to influence demand through a Facebook page linked to a website, billboard or banner, and last but not least, pleasant service ensuring good references from students or employees.

- **The production and sale of hot cooked cocoa** - this key activity includes creation, manufacture and supply of high quality cooked hot cocoa in 2.5 dc amount.

- **Professional service** - it is not enough for service to finish an order and to give a drink to a customer. They need to make contact with them. The stand service must be kind, nice, assertive and courteous. In addition to medical fitness, service must also have a food certificate,

- **Option to pay with ISIC**, including the possibility to recharge ISIC credit.

3.8 Key partnership

Key partners are suppliers and partners, that are needed for the business model, 54% of students say:

- **Suppliers of the best available ingredients** - cocoa, milk, cane sugar, white sugar, honey, eggs and chocolate liquor,
- **Faculty management** providing premises for establishment,
- **Service** - their professional appearance towards customers,

- **Customers** - set of all students and faculty employees, who will address and persuade each other, that they need and want to drink traditional hot cooked cocoa.

3.9   Cost structure

Eighty-one percent of students thought, apart from the usual monthly costs, also at the expense of the company.

- **The costs associated with establishment of business**: fees related to founding a new company, construction of a stand, stand equipment, trademark.
- **Fixed costs**: rental, marketing, website fee, system fee for use of ISIC payment, stand insurance, product and service innovation (cash register software).
- **Variable costs**: logistics, wages, energy, raw materials, ceramic cups with spoon, repairs and maintenance.

Conclusion

Presented study is focused on creation of a business model for a small business. Scope of business is production and sale of hot cooked cocoa. Establishments will be at the Brno University of Technology faculties. The main vision of the business is to have a well-prosperous company with attractive offer providing complete services, satisfying needs of all customers, expand its product range, increase its market share and increase profits.

The main limitation of research is the place where research has taken place. Czechs and Slovaks who were studying at Brno University of Technology were drinking drunk in their childhood. Not everywhere, however, the traditional hot cocoa drink is used.

Another constraint is the season - in the colder months, students need to warm up. In the summer months, they would prefer something rather cold, for example, a lily.

The phase of the semester also has a big impact - the students are naturally drawn to the sweet over the exam period. Their preferences therefore differ.

Future research should focus on expanding to other universities in the Czech Republic and abroad. The influence of the semester and the seasons phase on the students' preference should also be studied.

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Contact

Simona Megová

Brno University of Technology

Kolejní 2906/4, 612 00 Brno, Czech Republic

megova@fbm.vutbr.cz

Ladisla Pálka

Brno University of Technology

Kolejní 2906/4, 612 00 Brno, Czech Republic

ladislav.palka@csystem.cz

ANALYSIS OF ENTREPRENEURIAL ECO-SYSTEM FOR REFUGEE ENTREPRENEURIAL ACTIVITIES IN GERMANY

Hartmut Meyer

Abstract

Purpose: The research is analysing the challenges refugee-entrepreneurs face while engaging in entrepreneurial activities. The research is analysing factors which influence entrepreneurial activities by refugees as well as determine the implications for the entrepreneurial eco-system to support entrepreneurship by refugees.

Design/methodology/approach: The research builds upon the research framework of Wauters and Lambrecht 2009 and on earlier own research work. By using a framework of three entities as access to entrepreneurship, human capital and entrepreneurial environment different variables have been evaluated for qualitative analysis of the current situation of refugee migrants. The results of the paper are based on 17 in depth interviews in North Germany with refugee entrepreneurs while engaging in entrepreneurial activities.

Findings: The paper gives first insights on the factors determining entrepreneurial activities of refugees. The results demonstrate quite clearly that refugees start their entrepreneurial career in the informal sector due to a lacking support by the entrepreneurial eco-system and formalize their activities after some time in operation. Education is one of the central variables which has a decisive role in two aspects. Low and untrained refugees are often pushed into entrepreneurship as they are not able to meet labour market standards. Higher education has a negative impact in taking up long term entrepreneurial activities.

Research/practical implications: The paper suggests for policy makers and the various organisations of the economy a clear need to improve the communication between refugees and the entrepreneurial eco-system. In particular, financial assistance and accountancy services should be provided in order to offer the necessary information for a sustainable entrepreneurship by refugees.

Originality/value: The paper provides a suggestion which factors are positively and negatively associated with the process of developing entrepreneurial activities by refugees. The proposed model suggests the value of education and language skills need to be seen in a new light. The result outlines the quality of assistance needed to guide refugees' entrepreneurs during the attempt of developing entrepreneurial activities.

Keywords: Entrepreneurship education, Germany, migrant, education, integration

JEL Codes: L26, J78, N74, 038

Introduction

More than 1 million refugees arrived in Germany since 2015 and are challenging since then the political and social system in Germany (BAMF 2016). Due to the experiences with Turkish migrants and Russian migrants, Germany developed for the refugee-migrants a particular welcome culture in order to promote their integration. For example, various organisations of the economy and the industry designed a number of training schemes and opportunities in order to boost integration by employment opportunities. As the German labour market is currently regarded as a satisfied market, the refugees are regarded as an opportunity to ease the problems of the labour shortage (Brücker et al 2015) as well as to boost entrepreneurship (GEM Monitor 2015, KFW 2015).

In the literature, migrants are discussed as highly entrepreneurial in comparison to nationals (Vandor and Franke 2016). According to research studies, the rate of self-employment and entrepreneurship among migrants and refugee migrants is high. In Germany they count for more than 50% of all entrepreneurial activities (KFW Research, 2015). On the other hand, there is evidence that points out a high discontinuation rate between nascent entrepreneurs and actual startups. The main reasons were found for a restricted access to finance and a fear of failure (Kay and Günterberg, 2015).

Currently, refugees are also treated as a particular social cluster within the group of migrants. Therefore, one is attempted to transfer the experiences and knowledge of migrants' refugees too. Nevertheless, refugees are entering a host country mainly for political rather than for private or economic reasons. Therefore, it becomes questionable whether these experiences can be transferred directly.

The paper aims to study the situation and to outline possible problem areas which refugee entrepreneurs face while engaging in entrepreneurial activities. The main goal of the paper is to define on the basis of a qualitative research approach first insights of specific requirements to promote refugee entrepreneurship. On the basis of the results in Germany, the paper should provide new insights to enhance the quality of interaction between the refugee entrepreneur and the entrepreneurial eco-system.

1   Literature and Theoretical Background of the Paper

Research on refugee entrepreneurship is a fairly new problem and is missing itself on agreed definitions and research frameworks as well as a clear definition. The research work in this areas is inductive in their nature and trying to use observations and qualitative research methods as a core approach to analyse entrepreneurial activities by migrants (Heilbrunn and Lennon 2017). The term and concept are often mentioned in one breath with migrant, ethnic or diaspora entrepreneurship. Migrant entrepreneurs are understood as non-nationals entering a host country with the objective of live and work in the selected country. They use or create business opportunities and engaging in entrepreneurial activities for income generation (Heilbrunn and Lannone 2017; Haimour, Harima and Freiling 2017, GEM Monitor 2017). The income aspect is one of the key drivers of migrant entrepreneurship. The main values towards employment as well as the implication to the society where content of reserach. Ethnic entrepreneurship in contrast, is more concerned with entrepreneurial activities towards one ethnic group like e.g. Islamic banking. They offer services to a specific ethnic group of the society. In contrast, diaspora entrepreneurship is offering services and products from their home countries for peer migrants or nationals. The distinctive nature of refugee entrepreneurship is that these entrepreneurs were forced to leave their home country and therefore also to Waldinger et al (1990) regarded as a particular group of migrants (see also Aldrawadieh et al 2018). Although they recognize to some extend a political shelter, they need in the end to follow a specific registration process without own or a small transfer income.

In general, migrant entrepreneurs have many positive effects to the labour market such as bringing new skills to the labour market (Waldinger et al, 1990; Hunt, 2011; Ottaviano and Peri, 2012), access and knowledge of their home countries (Ghosh, 2005; Portes et al., 2002). Moreover, it could be measured that due to migrants the domestic demand increases due to new services and market growth in size. These entrepreneurial activities offer new employment possibilities, in particular for peer nationals or family members, but also offer the chance for new innovations on the ground of a different service design (Brücker and Wolff 2016). There are known positive consequences on both employment rates and social security systems (Lacomba and Lagos, 2010). Moreover, it is expected that a developing refugee entrepreneurship will foster trade relationships with today's countries in civil war (KFW 2015).

Research on entrepreneurial activities by migrants is often based by a number of push and pull factors (Waldinger et al 1990, Kay/Günterberg 2015, Ionessen 2016, Ghosh 2005). Thereby pull factors are regarded as success factors. The success of migrant entrepreneurs refers to their

cross-cultural experiences and their ability to adjust business models of their home countries to the host country which give them a competitive edge (Vandor and Franke 2016). Push factors are regarded in the need to generate an income in order to survive in the host country and to support their residency application process. As migrants do often have problems to meet the labour market standards within more advanced economies like Europe, they often use entrepreneurship as a quick mean for income generation. In the literature, there exists also a discussion whether migrants and in particular refugees are more entrepreneurial than nationals (see e.g. Naude et al 2017). This discussion could not be clearly answered, however, due to the experience of migration and in particular the war experience to escape a country, they appear to have developed a reluctant attitude towards risk (Ionessen 2016).

In order to develop an own research framework to understand the challenges refugees face while engaging in an entrepreneurial process, different behavioural and entrepreneurial models guide the recent analysis. The model of the United Nation provides an understanding of the requirements for a social and economic integration and complies also with the German approach to integration (IAB Stellungnahme 4/2016 and BAMF 2016). According to this model, there are three major phases over a duration of 7 years that a migrant must go through until he has been integrated. The main point is here to reduce push factors and to allow for a cultural orientation, including the training of the language.

With the objective to understand the challenges refugees face in order to develop entrepreneurial activities in advanced economies, the classification of the economic development stages by Porter (1990) has been reviewed (see also World Economic Forum and Global Entrepreneurship Monitor (GEM). The key point for this research is that refugees developing entrepreneurial activities need to understand the change of entrepreneurial behaviour from a survival to an innovation driven economy (Meyer 2015). In particular, the change from an unstable environment to a highly organized environment requires an entrepreneurial strategy in order to meet national financial and management standards (Heilbrunn/Rosa 2017 and Grewe-Salfeld 2017). These expectations often cannot be met due to a missing entrepreneurial training and false interpretations of their own personal entrepreneurial capabilities (Kay and Günterberg, 2015).

The entrepreneurial eco-system model has been employed in various pieces of entrepreneurial research (see GEM Monitor 2015). The main focus of the research was the question how an entrepreneurial environment should be designed in order to support entrepreneurial activities (Isenberg 2011). According to the research, one finds here several entities which have their

origin in the definition of factors determining national competitiveness. One major point of the discussion in respect to this research is the question to develop human capital to manage entrepreneurial processes (Wauters and Lambrecht 2009). This demand includes the importance to build up training opportunities in order to deal e.g. with marketing issues or to build up an entrepreneurial community for knowledge and information transfer.

Concerning the process of developing entrepreneurial activities Grewe-Salfeld (2017) suggests that migrants start in the informal business due on the basis of mutual trust and a closed business community as the customers are migrants themselves. Only once the enterprise starts to grow and the demands for capital raises or the turnover structure change up to a higher number of customers of the host country, they start to leave the informal sector (Greve-Salfeld 2017).

2   Research Methodology

The research is exploratory in nature in order to understand the challenges refugees face while engaging in entrepreneurial activities. Thereby entrepreneurial activities are understood as any activity in order to pursue business activities on their own. Research towards entrepreneurial activities and to analyse their drivers of entrepreneurial activities can rely back on a number of previous research and models based on the GEM research monitor or Ajzen's (1991) model of planned behaviour or by various stage models (Bygrave 1990). The models in particular reflect personal and social factors determining entrepreneurial activities. In order to analyse the quality of the communication between the environment and the prospective entrepreneur the entrepreneurial the model of Isenberg (2011) offers here various entities of analysis.

The prime research question was to evaluate after a few years of the refugee crisis to analyse their first entrepreneurial activities. Thereby particular interest was laid on how refugees found access to entrepreneurship, their human capital towards entrepreneurship and knowledge of entrepreneurship as well as the quality of the interaction between the refugee entrepreneur and the environmental eco-system. The research framework refers to the research of Wauters and Lambrecht (2009) which has been employed. Also for this research the challenge was to concentrate on refugees, although the body of knowledge so far refers more to migrant and ethnic entrepreneurship. Nevertheless, the clear sampling by characteristics of refugees and motivation to enter a host country should reduce the problem. Thereby, the management to deal with the time pressure within the integration process was of particular interest. .

The research has been organized in two major stages: in the first stage, demographic data of migrants have been collected for a better understanding of the personal characteristics of potential migrant entrepreneurs and their entrepreneurial experiences. This data has been generated by actual migration statistics from the German office for migrations (BAMF 2016). In the second stage, 17 in-depth interviews of migrants have been conducted. These interviews took place in the time period of March to September 2017.

The respondents were randomly selected on the basis of registration files and came from Syria, Afghanistan, Iraq and Eritrea. The respondents were only male in the age group of 21 up to 35 years. These in-depth interviews included an analysis of their social setting by their CV. The interviews were semi structured asking for their professional background, expectations as well as motivation to take up entrepreneurial activities. Also perceived images of their task as migrant entrepreneur in Germany have been asked. The respondents were selected randomly in collaboration with the local authorities in the area of Stade and Hamburg, North Germany as part of volunteer work to assist refugees in their attempt to find professional training or a professional job. The interviews were recorded and each single case was analysed according to the content method by Mayring (2000). This method allows mainly descriptive qualitative analysis in order to identify and define the variables of importance for future research.

Fig. 1: Research Framework.
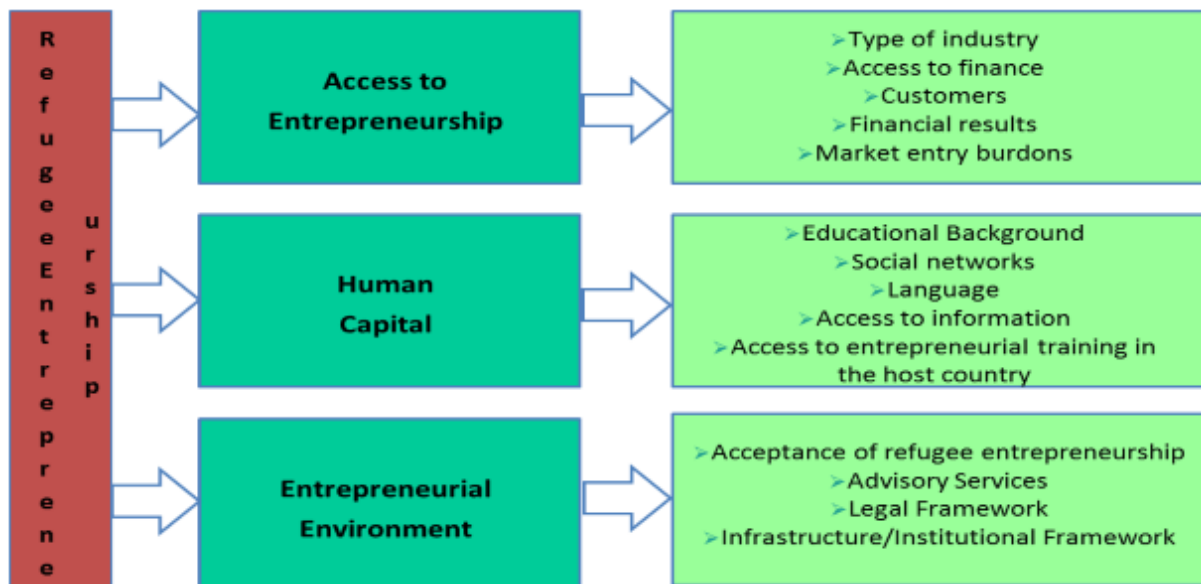
Source: Waters and Lambrecht (2009) with own amendments

3 Results of the Study

3.1 Access to entrepreneurship

Most refugees found access to entrepreneurship by the service and trade industry and selected a low budget entry for entrepreneurship. This was mainly due to missing own funding and not having had the opportunity to gain external funding. In many cases this was also restricted due to an uncompleted permanent refugee application process. Therefore, they operated as restaurant owners, retail managers or offered industrial/premises services. The internal cash flow has been used to develop further entrepreneurial activities. All selected branches are highly competitive branches in Germany and require defined marketing strategies for success. On the other hand, these branches are known not to require specific trainings or certificates. All selected branches are highly competitive branches in Germany and require defined marketing strategies for success. In all cases was no specific market strategy employed apart from transferring their cultural experiences into their services or to reflect market gaps within a certain regional space.

Within the sample it was notable that all entrepreneurs started their entrepreneurial career through the informal sector. The reasons for this were that they felt pushed to undertake entrepreneurial activities in order to generate income and they felt obliged to pay back initial loans within their community or to accumulate first profits for cash-flow investments. The duration of the informal sector period varied between six months up to 2 years. The reasons for leaving where either the need to leave a cash based business, the need to bill customers well as the fear to lose the refugee status due to unpaid taxes. The development of entrepreneurial activities was not led by a clear market strategy apart from to generate a customer basis for income generation. The customer base was often dominated by other refugees or migrants since the understanding of their needs and the language abilities were a USP. The proportion of German customers remained often to residents of that particular area.

The profitability of the enterprises were moderate and remained below the benchmarks of the industry. The profits were enough to support a living and were based on long working hours. Most of the enterprises were reporting on high payments of taxes and penalties due to overstepping unknown regulations. The location of the enterprise has been selected by chance or provided by premises within the migrant society.

3.2 Human Capital

Considering the demographics of migrants, the majority of the sample were younger than 30 years and male. In 12 cases the respondent claimed to have had a vocational training and 4 cases started to have a university degree. The rest did not have any formal training. This follows suit with other public statistics. (BAMF 2016, Brücker et al 2016). One could find a consistency in the entrepreneurial education which was obtained in enterprises managed by relatives without any further formal education. Accounting requirements and formal governance of enterprises were mainly unknown. Moreover, the entrepreneurial implications between a survival and innovation based economy towards entrepreneurial activities were unknown, in particular to rely on stable political and economic system. Most of the respondents felt at the start of engaging in entrepreneurial activities have sufficient managerial competencies. One could find that refugee entrepreneurs relayed on their own interpretations or within their social community in the conduct of entrepreneurial obligations. Nevertheless, networking competencies and the ability to organize information was high and could compensate for a lack of strategy.

The motivation to enter entrepreneurship was guided by the approach to become an independent member of the society and being rewarded by economic and social freedom as well as to comply with migration requirements. Entrepreneurship was valued highly by the respondents and treated as one major option in particular for refugees with a small educational background and the feeling not being able to meet the labour market standards within a short period of time. While also developing particular services for other refugees or migrants also the pressure to learn the language eased.

Concerning the push and pull factors, it is notable that in some cases where refugees were able to refer to a professional training it in their home countries, they regarded entrepreneurship only as an interim option as they were not able to work in their professions without further substantial training. The phase of entrepreneurial activities was used in order to attend further language and other professional training courses while operating meanwhile a grocery shop or a restaurant. There was a clear attitude that they regarded their entrepreneurial activities as a temporary period to close the time gap until their professional qualifications were accepted by the labour market. Furthermore, they regarded the period of entrepreneurship also as a chance to make social contacts to be used for future applications. The motivation to enter entrepreneurship were often driven which the approach to apply own trade knowledge to the local market, but were less associated with innovative ideas.

3.3 Entrepreneurial Ecosystem

The development of entrepreneurial activities by refugees was not accompanied by any outside advisor. In order to sort out the necessary formalities, most of them had some assistance and information through their own refugee networks who got into contact with German institutions Business advisors like accountants or management consultants havae been contacted with the objective to leave the informal sector. The main reason for such a behaviour were false perceptions of fees and public support has been evaluated by high institutional barriers.

However, all interviewed cases stated that the advisory services did only reflect the situation of the refugees in a comprehensive way and the transfer of knowledge and assistance was restricted to language barriers. The environmental system in Germany was unclear to them and most entrepreneurs felt in a vacuum while starting entrepreneurial activities. They started entrepreneurial activities started without external funding at the beginning and sometimes without a bank account for their enterprise. The development of entrepreneurial activities has been financed by small loans within the migrant community which had to be paid back by the initial cash flow. Most refugees felt this as a prior obligation in order to maintain trust within their community.

In respect to find access to the entrepreneurial eco-system, one could observe that contacts with the various institutions were restricted to organisations offering further services for refugees. Moreover, there has been a fear of being rejected or to receive complications within the registration process. One particular point of criticism where the conduct of the language courses as part of the welcome stage. The access to language courses was described as difficult and time consuming. This was to some extend surprising and contradictory as the attendance of a language course is required in order to achieve the legal status of a permanent resident. In respect to entrepreneurship is was criticized too, that no references were made to entrepreneurship. Therefore, it was highly difficult to obtain information at all. Refugees used instead web sides of entrepreneurship which have been translated by google-translator. In consequence they entered the entrepreneurial process with little or no information and relied on their own personal perception, interpretations and first own learned lessons.

The interviews showed that they often expected public funding due to a lack of funding from the banks. The availability of grants was not pursued as they these grants are administered by banks where no contacts exist. Moreover, most of them reported that banks were very reluctant to support entrepreneurial activities by refugees. Only the grants given by the department of labour have been used which is donated as a substitute for unemployment benefits.

4   Discussion of the results

The research has been guided by the entrepreneurial theory and integration theory and confirm the need of a structured approach in order to guide entrepreneurial activities by refugees. The results show that there is a strong need to reduce the barriers for consultancy and advisory services in order to channel entrepreneurial intentions by refugees. There is a clear need for public investments in order to reduce entry barriers in the communication with the entrepreneurial eco-system. This requirement goes along with the demand to reduce push factors, by the clarification of the legal status and access to regular transfer income (Meyer 2016, Brücker, Möller and Wolf 2016, Hunt 2011). This applies in particular to young refugees who are willing to engage in a period of training without the need to support themselves by own entrepreneurial activities.

The results show further that due to missing opportunity cost, the entrepreneurial intentions are based on the strong perceptions with invalid information to succeed through entrepreneurship. Although there is a general perception of risk, the consequences of a failure due to a low budget start up and missing employment option low. This makes the decision to engage into entrepreneurial activities easier.

This type of qualitative research indicated that the matching process between the needs of prospective entrepreneurs and the existing entrepreneurial eco-system is not compatible. The results confirmed the existence of a high risk that refugee entrepreneurs form a parallel group to the society with all its negative consequences. Entrepreneurial activities are often started within their own social clusters and develop from this point. Only transparency and target orientated information can break up this isolation (Haimor, Harima and Freiling 2017). This applies also for refugees who use entrepreneurship as a mean for temporary income generation and to gain time.

In reflection of the results one can determine several factors determining entrepreneurial intentions and later entrepreneurial behaviour (Ajzen 1991). The suggested model as a result of this qualitative research should be used for further qualitative testing and refers back to other pieces of research (Wauters and Lambrecht 2009) and can be outlined as follows:

Fig. 2: Future research model for refugee entrepreneurship
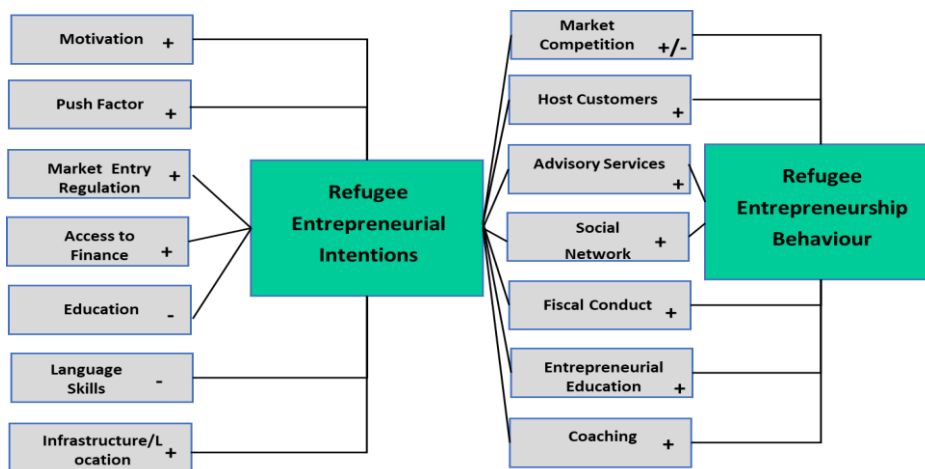
Source: own Source in relation to Wauters and Lambrecht (2009)

This suggested model should be seen as a first result of this research and splits up the entrepreneurial activities into two phases with factors determining entrepreneurial intentions and later entrepreneurial behaviour. Factors such as to find a location, access to finance and the management of market entry barriers will be positively deceived on the question to engage in entrepreneurial activities. Although education and language skills are associated negatively with a prospective start up, the provision of language facilities and clear strategy to adjust their education to the labour market standards of the host country will reduce push factors. The quality of dealing with these issues will also reduce the need to start entrepreneurial activities informal. In order to enhance entrepreneurial behaviour and to reduce personal risk, a series of consultancy and advisory services should be developed on the ground of the knowledge and skills of refugees. The likelihood of a sustainable refugee entrepreneurship is depended from factors determining the professionalism of the entrepreneurial conduct. The main challenge to the eco-system will be to provide the information and coaching required to accompany the start-up phase of entrepreneurial activities by refugees.

Conclusion

The results of the research confirm that early entrepreneurial training within the welcome stage is invaluable. There is a need to develop entrepreneurial training and consultancy for better knowledge transfer on the basis of the migrant's entrepreneurial behaviour. In order to foster entrepreneurial activities by refugees, a strict hands-on-approach by the institutions managing entrepreneurship is requested. The results of the paper suggest that it is vital to recognize the

motivation of migrant entrepreneurs and to support it through the provision of coaching possibilities.

Above all, the research confirms existing findings presented in the literature review that there is high entrepreneurial potential within the migrants, allowing for new chances in the market. On the other hand, the required financial investments into refugee entrepreneurship need to be seen from a German standpoint as a long term investment. If all these tasks are correctly performed, a lot of business opportunities in Germany will appear in the future. The result suggests also that there is a need to adjust the entrepreneurial eco-system by reducing entry barriers in order to enhance success. Investments into advisory support schemes or coaching arrangements will boost the image of refugee entrepreneurship and to allow also the economic effects to the host countries become accessible.

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Contact:

Hartmut–Heinrich Meyer

Fachhochschule für Ökonomie und Management (FOM)

Linzer Strasse 7, 28359 Bremen, Germany

hartmut.heinrich.meyer@fom-net.de

RELATION BETWEEN CSR AND FINANCIAL PERFORMANCE IN SMEs

Jan Mísař – Adriana Válová – Jitka Srpová

Abstract

Purpose: The aim of this paper is to explore and analyse an implementation of corporate social responsibility (CSR) by small and medium-sized enterprises (SMEs) in the Czech Republic and explore if there is a relation between CSR activities and financial performance. Even though CSR has been in the spotlight for quite some time, it has been mainly due to activities of corporation, whereas activities of SMEs still tend avoid any publicizing. There is also lack of studies on this topic and most of the existing ones were conducted prior to the Czech National Strategic Plan on CSR. Results of this study therefore show whether there has been any development in the wake of this programme.

Design/methodology/approach: The research follows study from Torugsa, O'Donohue and Hecker (2012) published in the Journal of Business Ethics and further develops this study by adding new areas as suggested by Srpová, Kunz and Mísař (2012). The research was conducted among Czech SMEs, using contacts from the Albertina database. The pilot study was done on 10 respondents prior to the main research and in order to improve the overall quality. Data collection was conducted by a phone communication followed by sending a questionnaire to the selected e-mail addresses and (if necessary) follow up communication with respondents. The majority of questionnaires were filled in by business owners or top managers. After rejecting uncompleted questionnaires, the final research sample consisted of 463 SMEs. Authors are aware that there are research limitations connected to the representativeness due to the fact that the contact list came from a research database. However, the number of respondents is still almost three times higher than in the original paper from the Journal of Business Ethics, where the authors clearly stated that they used mainly personal contacts to get respondents, which clearly led to biased selection. This also further supports our claim that there is simply a lack of good studies on this topic. The data was analysed using SPSS and Excel. The main method was Spearman's correlation coefficient which helped to determine validation of hypothesis: CSR is positively associated with SMEs financial performance.

Findings: The findings show the progress in perception as well as implementation of CSR among Czech SMEs, the areas of their focus and how they perceive advantages of these activities. The leap between 2012 and 2016 is significant. The paper proved that there is a link between CSR and financial performance in SMEs through an empiric quantitative study. The positive monotonic correlation is weak which proves that there is still a lot of room for improvement during implementation and planning.

Research/practical implications: The research clearly shows that CSR is no longer a playground for corporations only but that there is a strong trend among small enterprises to behave responsibly. Proof of positive relation between CSR and financial performance will encourage yet reluctant entrepreneurs to implement CSR activities.

Originality/value: The research brings a fresh look on CSR activities of SMEs just after nationwide promotion of this concept. It is one of very few papers aimed at financial efficiency of CSR in SMEs as many authors avoid this topic due to its difficult and lengthy process of both data collection and consequent analysis and interpretation.

Keywords: Corporate social responsibility, empiric research, SMEs, the Czech Republic

JEL Codes: M00, M14

Introduction

SMEs reportedly do not implement CSR because they do not have the money, time nor people. But what if small and medium-sized enterprises actually are socially responsible but they do not report it anywhere? The situation in the Czech Republic is even more puzzling as studies among SMEs are usually focused just on their level of knowledge about this topic and usually consist only between 120 and 200 respondents (Srpová, Kunz, Mísař, 2012). This area thus remains largely unexplored, as it is far easier to approach large companies (that nowadays have a position of CSR manager) and get the data from them. The aim of this paper is to 1) explore which specific activities SMEs do and 2) to examine relation between CSR activities and their economical impact on enterprises.

Aragon-Correa (2008) proved that there is a positive relation between proactive environmentally focused CSR activities and financial performance of SMEs. These findings were later supported in a following research by Hammannem (2009) who proved that these activities lead to decreased costs and thus increased profit. All of these findings are validated and even deepened by an Australian research by Torugsa, O'Donohue and Hecker (2012). This research proved that proactive CSR really has a positive effect on an SME, no matter their focus as long as they develop these three key areas: shared vision, stakeholder management and proactive strategy. The only problem here is that some activities have a long term effect and are therefore difficult to measure. The term "Proactive CSR strategy" refers to a situation, where enterprise is developing their own activities based on their surrounding opportunities / stakeholder needs, instead of just blindly copying them in a desperate or lazy attempt to follow "the flow" or as they often say "the pressure from market".

Authors find this approach appealing because it guides SMEs to focus on their strengths (being close to customers, flexibility, etc.) while developing tailor made CSR activities. This approach gives these activities whole new meaning because entrepreneurs developed them themselves and thus have specific expectations from their results, which is the same result we have witnessed among our student-entrepreneurs. From our very own experience as teachers and tutors of CSR, these entrepreneurs gain far better understanding of their impact on society, get more creative with their CSR activities and later transfer this approach to their day-to-day business processes, thus gaining in return competitive advantage.

The paper is based on data from 463 respondents, which were analysed using SPSS and Excel. The paper assesses the effectiveness of CSR activities among SMEs using self evaluation

method and analysed through quantitative methods, mainly Spearman's correlation coefficient. This approach assumes that the enterprise itself knows best if the CSR activities are bringing it any merits / benefits.

The first part of the paper deals with the specifics of CSR and SMEs, since CSR is nowadays a widely known topic, we focused on its benefits and our point of view on this topic. The second part briefly introduces relevant studies on this topic. These studies had direct impact on our methodology, as they are the only available studies focusing on effectiveness of CSR among SMEs. The third part presents the research - its methodology, information about research sample and finally the results. This is followed by conclusion and further discussion.

1   Review on CSR

Since the concept of Corporate Social Responsibility is nowadays widely known, this chapter will include strictly only need to know basis for the purpose of 1) describing this topic to unfamiliar readers, 2) defining authors' point of view on this topic and 3) to flesh out advantages of these activities for enterprises.

CSR is typically divided into three pillars - people (social), profit (economic) and planet (environment). There is a seemingly endless amount of definitions for CSR, yet they are very similar. What all the definitions have in common - and which is also our perception of this topic - is that they require enterprises to behave in responsible and ethical manner towards their surrounding environment, which includes not only employees, customers and suppliers but other affected parties as well. The very foundation of these activities is based on a fact that they always go beyond the legal obligations and their character is long term as well as voluntary. Enterprises which engage in such activities are said to cultivate business environment, but also have an impact on their direct surroundings.

Hristea (2011) states that CSR is a way of sustainable development, which allows society to deal with environmental challenges and problems in social sphere that will always be connected to business operations. Enterprises, that implement social responsible activities, act upon the idea that socially responsible relationships among enterprises and local communities are mutually beneficial. At one hand they help create profit for enterprises and on the other hand they provide support for social groups or communities that are in a need of help, thus helping the overall development.

Bhattacharya et al. (2012) argued that only a few enterprises actually realize how bad investment strategy into social initiatives can influence their stakeholders. Some investments bring results that are fast and measurable, e.g., recycling, energy saving. Social investments are expected to bare long term advantages - loyal customers increasing their purchase, attractiveness for investors, access to wider talent pool, etc.

Brammer (2007) found in his study that employee perception of CSR has a significant impact on organization's commitment. Benefit of this commitment is as important as job satisfaction. Women prefer discrete behaviour and fair work processes, meaning they may prefer procedural fairness, while men prefer professional preparation.

Kotler and Lee (2005) state that CSR has unique ability to create real and strong bonds with local communities and it also helps to motivate employees. CSR improves image and provides opportunities to present goods and services.

The state of CSR in the Czech Republic has been researched since the early 2000's, when academics first started to pay attention to this topic (e.g., Jeřábková & Hartl, 2003). These studies showed that there was low level of awareness about CSR, ranging from 20 to 40 % (20 % being SMEs). One of the leading agencies has always been the Business Leaders Forum CZ, which has conducted numerous studies on this topic over the years, even though their activity has declined during the last 6 years. Still, compared to large companies / corporations, only small attention has been paid to SMEs. These studies are usually of a general character - lacking specific aim, just asking about their knowledge of CSR and which activities are being implemented. To promote CSR among SMEs, many academics as well as NGOs (e.g., Kunz, 2012) suggested using corporations and their activities as good examples, that would show what is CSR about, which activities can be implemented and what merits are associated with them. The Czech National Program for CSR, which was the first Czech program promoted on nationwide scale by the government, promoted this topic in the same spirit - using corporations as a carrier for promoting CSR activities among all enterprises no matter the size.

Authors' point of view is based on their long term experience from several research projects aimed at CSR, as well as their teaching and coaching experience with entrepreneurs (authors are from Department of Entrepreneurship where they help students with starting their companies). SMEs usually do not know how to implement CSR and choose activities randomly based on their own liking or much rather on convenience (i.e. "easy to go" activities). We noticed that easy to master models, like CSR Canvas, are very helpful in creating targeted activities that tend to be creative and have an actual impact. This proactive approach brigs

entrepreneurs completely different experience because they are absorbed into their projects which they understand thoroughly and know what exactly to expect as an outcome.

2   SMEs and Financial Effectiveness of CSR

There are three main studies concerning CSR and financial performance / effectiveness that reached into impacted journals. Aragon-Correa (2008) was first to prove that environmental-oriented CSR has an impact on economic performance of CSR. Hammann et al. (2009) found a link between CSR and favorable financial outcomes - cost reduction and increase in profit.

Finally the study by Torugsa, O'Donohue and Hecker (2012) which is by far the most developed method, as it operates with scales for all CSR pillars. It was conducted among 171 small and medium-sized enterprises in Australia. Questionnaires were sent directly to business owners, who filled out 70 % of them without any assistance of their employees. The aim was to find out the relationship between the proactive approach to CSR and the financial efficiency of the company. The data was collected using a questionnaire and evaluated by quantitative methods.

The findings of also extended the work of Lepoutre and Heene (2006), which concludes that "those companies that are able to incorporate social responsibility into their strategic management focus on win - win situations - that leads to returns, increasing their organizational visibility, etc., will partly be able to overcome their resource limitations." The Torugsa et al. study confirms the importance of a proactive approach to CSR, which at the same time promotes economic growth and prosperity, social cohesion and the environment and prevention, as a vital strategic mechanism to strengthen the financial performance of SMEs. The findings of the study provide support for the idea that strategic engagement in active CSR is a suitable business model for SMEs. Conclusions of the study specifically confirm the importance of the following capabilities for successful implementation of proactive CSR:

- Create a strategic integration of collective values around organizational goals,
- build trust - relationships with internal and external stakeholders,
- promote the exploitation of new business opportunities.

The results show that organizations have to focus on the development of three areas: common visions, stakeholder management and a proactive CSR strategy. These capabilities can effectively support the response to stakeholder pressure on sustainability and provide the basis for delivering benefits for financial performance that may follow the adoption of a proactive approach to CSR in the economic, social and environmental dimensions. Sharing a vision and

its goals has a major role in CSR in the company and its impact on corporate culture, which then makes it easier to develop new ideas and skills for creating proactive CSR.

Monitoring and proactive management of new opportunities can enable SMEs to take advantage of new emerging specialized markets for responsible innovative products. By using three areas, enterprises will engage in proactive CSR, which at the same time promotes economic growth and prosperity, social cohesion and justice, environmental integration. Research findings show that it is possible for small and medium-sized enterprises to achieve excellent financial performance.

3   Methodology

The study builds on the paper by Torugsa et al. (2012), which was published in Journal of Business Ethics, and also adds new parts from research by Srpová, Kunz and Mísař (2012), which helps to get more insight into the research sample as well as better understanding behind respondents' answers, because the original research consisted only of questions with scale system. The aim of the added questions was to get better understanding of the respondents - their knowledge and attitude towards CSR, the focus of their activities and their overall awareness of the market and stakeholders. These question were mainly expanding the identification part.

Building upon available research evidence in connection with impact of CSR on financial performance in SMEs (see chapter 2), we formed a single hypothesis:

H_1: CSR is positively associated with SMEs financial performance.

This hypothesis would be tested using the original scale system and Spearman's correlation coefficient that would decide whether there really is a positive monotonic correlation. Based on our professional experience with CSR and SMEs, we expected the relation to be between very weak and weak, because Czech enterprises have usually passive or reactive approach towards their implementation and these activities are believed to have smaller impact than proactive ones.

The questionnaire from Torugsa et al. was double translated to make sure that the original meaning of questions remained the same. The scale system was also kept completely intact. CSR activities were measured using 36 items divided in three sections according to pillars of CSR. All items used a five-point scale (1 = "not addressed issue at all" to 5 = "we are leaders on this issue") as it was in the original study. Respondents showed to which extent their

enterprises implemented CSR compared to similar firms in their sector. Cronbach's alpha for each section was as following:

Tab. 1: Cronbach's alpha

Area	Number of items	Cronbach's α
Economic pillar	9	0.632
Social pillar	18	0.731
Environmental pillar	8	0.744

Source: Authors

Financial performance was measured through two items – return on assets and net profits to sales. Respondents rated these items over the course of the last year compared to similar firms in their sector, using a five point scale (1 = "much worse" to 5 = "much better") and according to their perception and estimate, which has higher likelihood to be answered than if they had been asked to give specific economical results. A high score indicated a high level of financial performance.

The data from CSR pillars and economic performance were then compared using Pearson's correlation coefficient to find out whether there is a relation between commitment to CSR and financial performance.

The pilot study took place in April 2016. The questionnaire was tested on 10 respondents. The focus was put on their understanding of each question. After that, several questions were slightly modified (shortened / rephrased) in order to make them clear to understand.

The survey was conducted among Czech small and medium-sized enterprises using contacts from Albertina database - a paid-to-access database, which is commonly used for such purposes. Authors of this paper had no ties to any of the respondents to avoid the selection bias. All the contacts from the database were approached in the same manner with no distinctions or preferences. This is already a step forward from the original research that was done only among friends and other personal ties, using the snowball effect, and still achieving only 171 respondents in Australia (pop. 25 mil compared to 10 mil of CZE). At the same time, authors are fully aware that there are certain limitations stemming from the fact that all the contacts came from the research database. Therefore the results will be mostly drawn to the Albertina database and only loosely to the whole Czech Republic, even though the original research had only one third of our total respondents and it was still considered to be enough for an impacted journal. To address non-response bias we used time-trend extrapolation procedure as suggested

by Armstrong and Overton (1977). One way ANOVA did not reveal any significant differences between early and late questionnaires.

Data collection was done in three phases which had one month gap between them. The first two phases were focused on general data collection and consisted of telephone and e-mail communication with the respondents. The telephone communication proved to be crucial for the whole process of data gathering as the respondents who answered our phone communication were more likely to fill in the questionnaire than those who had not answered. Those respondents, whose questionnaires were not completed or were wrongly filled in, were contacted to clarify their answers - either via email or phone. This was the third and final phase of data collection. If the respondent had not answered then the whole questionnaire was discarded. Therefore, only data from fully and rightly filled questionnaires were used for the study. The data collection stopped when we were certain that it is not possible to get any more respondents.

In April 2016, 10 000 emails were sent, some of which returned due to disconnected e-mail address. These enterprises had probably ceased to exist which is not surprising as the total number of SMEs very fluid in time. The total number of undelivered e-mails was 2066. After removing unfinished or wrongly filled in questionnaires, the final research sample consisted of 463 small and medium-sized enterprises. The research sample consisted of 363 small enterprises and 100 medium-sized enterprises. In 348 cases the responded was the business owner / partner and in the rest of the cases either top or middle management.

This fact is really important as it shows that only those who have deep insight into their enterprise answered the questions. If the questionnaire were to be filled by some random worker, the results would have no value. Though, this might not be the case in micro enterprises (where is stronger link between employees and business owner / enterprise itself), it would most definitely be the case in the medium-sized enterprises that may have up to 250 employees. The data then underwent statistical analysis using SPSS and Excel.

4   Results

First we will take a closer look in the information that help us to define the sample and its specifics. The results show that social activities are more common than those from other two areas. Meanwhile both environmental and economical activities are almost identical in all observed values.

Tab. 2: Cumulative percentages of all three pillars

Area	Yes, we do them.	We could develop them.	We do not do / want to do them.
Economic pillar	43.07	20.16	36.77
Social pillar	62.36	13.85	23.79
Environmental pillar	45.76	19.14	35.10

Source: Authors

The results in Tab. 2 show than social activities are more likely to be expanded upon than other activities, which goes in line with our findings from previous survey (Mísař & Srpová, 2015) that SMEs mainly focus on their employees, customers and local community.

The absolute numbers for each enterprise are also very important as they show us how many activities are done per one enterprise. Modern approach believes that SMEs should focus only on a few activities (especially micro and small enterprises should have no more than 3 activities). Fig. 1 shows this is not the case for enterprises in this sample.

Fig. 1: Distribution of activities among enterprises
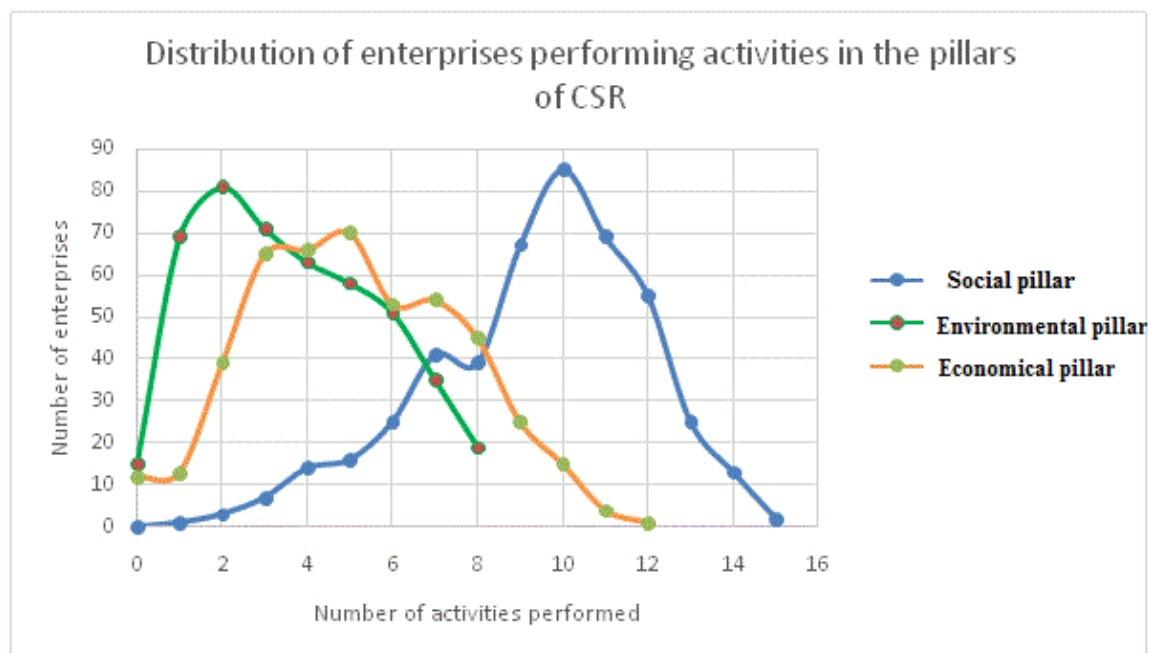
Source: Authors

Deeper analysis shows that if an enterprise commits to CSR, they are more likely to have more undergoing activities, where social activities are again the most numerous. The average number of activities for the rest of the enterprises was 12 for medium-sized and 6 for small enterprises, which goes way beyond the suggested number of activities. The number of activities in medium enterprises is more reasonable the further they get from the bottom limit (50) of employees - the larger the enterprise gets, more it expands its departments and thus gets more room for these

activities. This is supported by the fact that 20 of them stated they are using an implementation method for CSR. Overall 61 % of respondents claimed to inspiring to be socially responsible, though many of the other respondents also implement socially responsible activities without labelling themselves as responsible, which also support our previous findings that SMEs often do CSR activities without knowing so or calling them by this term.

The most important part of the paper deals with the relationship between corporate responsibility and financial performance. Spearman's correlation coefficient for relation between individual pillars (as well as whole CSR) and the financial performance is shown in the following Tab. 3. Colored in gray are statistically insignificant values. Although the correlation values are low, they point out that there really is a relation between the level of CSR and perceived financial performance. The Spearman's correlation coefficient r_s is for all the categories in range between .20 and .39 which means that there is a weak positive monotonic correlation. The financial performance is only slightly affected by CSR with r_s=0.244. Environmental activities have almost zero impact on financial performance, which is actually not that surprising as these activities consist mainly of recycling, energy saving and other activities that we consider to be passive or reactive. We have already met with this kind of thinking that enterprises believe those activities to be easy to implement on a basic level and feel they are expected to do them, therefore they lack any sort of focus or deeper understanding / expectations.

Tab. 3: Spearman correlation coefficients of CSR pillars and performance

Area	Size of Enterprise	Financial performance
Economic pillar	.432**	.201**
Social pillar	.215**	.271**
Environmental pillar	.207**	.074
CSR summarized	.338**	.244**

* Correlation is significant at level of 0,05

** Correlation is significant at level of 0,01

Source: Authors

Nevertheless, this positive monotonic correlation shows that our hypothesis, that CSR is positively associated with SMEs financial performance, is validated and that the strength of this relation is weak, which was our most optimistic prediction.

We have also proven that there is a weak correlation between the size of the enterprise and the number of activities - the important fact about is that economic activities show far greater correlation (having a moderate positive monotonic correlation) than social activities (r_s= 0.432

compared to $r_s = 0.215$), which had the highest number of activities among all three pillars. This means that economic activities are attractive only as the enterprise reaches certain threshold in employee numbers, while the popularity of social activities is not very impacted by the size, which comes as a little bit surprising as most of these activities are usually targeted towards employees and it would be logical to assume that more employees there are the more activities can be developed and implemented.

Conclusion

The results prove that Czech SMEs are familiar with CSR, which is a new thing, as early 2000s studies tell quite opposite story, and thus show that the National Plan for CSR was a success. On the other hand there is still a lot of room for improvement. SMEs are currently doing random CSR activities in even more random amount just to belong into "responsible" bandwagon. As shown in previous study (Mísař & Srpová, 2015), there is only little planning behind their activities and their final impact is unknown even to their owners, let alone to their stakeholders. Many authors suggested to use corporations as good examples while   promoting CSR among SMEs. This made sense as corporations had already practiced CSR for many years by then and thus had a lot of experience with it and therefore provided a lot of case studies usable for promotion of CSR. However, at the moment it seems that this method was indeed effective in spreading awareness about CSR but at the same time it provided SMEs with unachievable goals. SMEs are trying to mimic approach of corporations and they have too many activities at once. These activities often lack any personification and have similar traits as mass produced goods, which goes against strengths of SMEs, which   rely on the close personal contact with their costumers which further leads to tailoring of their product according to specific needs. Their CSR activities need to be implemented in the same way - low range of quality custom made activities that are tailored to the specifics of the   enterprises and its stakeholders. To improve this situation they ought to start using models for   implementation of CSR, such as CSR Canvas, that would guide them through the planning and implementation process and would allow them to focus on individual thought-out activities, instead of some random copied activities with no personal connection to the enterprise nor its stakeholders.

Acknowledgment

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Contact

Jan Mísař

Faculty of Business Administration, Department of Entrepreneurship

University of Economics in Prague

W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic

jan.misar@vse.cz

Adriana Válová

Faculty of Business Administration, Department of Entrepreneurship

University of Economics in Prague

W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic

adriana.valova@vse.cz

Jitka Srpová

Faculty of Business Administration, Department of Entrepreneurship

University of Economics in Prague

W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic

jitka.srpova@vse.cz

CREATING A PLATFORM BASED BUSINESS MODEL IN DENTAL INDUSTRY

Anatoly Molodchik – Dimitar Dimitrakiev – Galina Ostapenko

Abstract

Purpose: The article considers one of the possible approaches to building a fundamentally new business model for dental industry with a concept of a self-organizing industry management system based on blockchain platform, crypto currency and reward for consumer target behavior.

Design/methodology/approach: The theoretical design based on literature review, the content analysis and practical experience of business model transformation in digital platform economy and innovative blockchain technology, while the authors develop, describe and implement a new concept of a new business model in dentistry. The factual basis was the materials of an experiment conducted in the Netherlands to create a platform community Dentacoin based on blockchain platform.

Findings: The developed concept of the business model in dentistry shows the main mechanisms that make the model attractive to the consumer services: obtaining objective information about services and producers; formation of a contract on the basis of independent diagnostics and its insurance; financial and logistical support of the service.

Research/practical implications: The results of theoretical and practical research confirmed the possibility and expediency of the business model innovation of dental industry. The analysis of the current stage of Dentacoin Project implementation shows that business model works.

Originality/value: The proposed concept of business model based on blockchain technology is fundamentally new for the dental industry. It is the first time describe and systemize a new management mechanism of value creation together with utilizing the blockchain advantages. The creation and implementation of the first blockchain-based platform in dentistry allows achieving transformative change of a whole industry and will greatly enrich both the theory and practice of transformational phenomena.

Keywords: Business model innovation, dentistry, blockchain, self-organization and self-development

JEL Codes: 014, 033, M13

Introduction

The digital platform economy today is one of the most important trends in the cardinal change in the construction of business model systems both for companies and entire industry. The process of platform business model construction is a main part of digital business strategy, as it drives the innovation model, creates an environment for collaboration and enables ecosystem-value creation. Tapscot and Tapscot (2016) wrote, that blockchain technology is bringing us the Internet of value: a new, distributed platform that can help us reshape the world of business and transform the old order of human affairs for the better. As a result of digital transformation it will be the predominant business model of the 21st century.

The companies that run a business in the platform business model, whether they go from scratch or already operate on some other business model, because a profound disruption to the existing traditional business models in the competing industries, challenging the status quo of these industries. Today, these same types of disruptive business models are popping up not only in telecommunications, media, financial-services, energy, retail sector, but also in a health care. That is why it is very important and timely to introduce the concept of fundamentally new platform based business model based on blockchain technology with new management mechanism for dental industry and the first steps of model implementation.

1 Business model innovation in digital platform economy: literature review and practice perspective

The business model concept is well established in academic disciplines, but in recent years of the so called digital transformation (revolution), the business model transformation and innovation has been the focus of great attention from both academics and practitioners. It is accepted that technology itself has a small or no inherent value, and on its own, is not a source of sustainable competitive advantage (Peppard and Ward, 2004). What is valuable is a business model behind the technology determining the success of this technology, leading to achieve the company's strategic objectives and business success (Kavadias et al., 2016). Most of the business model definitions comprise out of three broad categories: value proposition, value creation, and value capture (Amit and Zott, 2001; Osterwalder and Pigneur, 2010). The reliability of the business model architecture to generate and capture value depends on a deep and comprehensive understanding of customer needs (Teece, 2010).The success rate of created business model innovation can be multiplied by rationally set regulation criteria, which in the long-term leads to sustainability of the system (Špaček and Vacík, 2016). Validating a business

model is the most crucial part of starting a company. Entrepreneurs create business models based on their individual beliefs and perceptions, imaginations, and social interacting with the environment (Alvarez et.al., 2013).

Digitization enables the development of entirely new forms of creating and capturing value and entirety novel value proposition (Westerman et al., 2014). After introduction the platform technology, innovative platform based business model arrived. We are moving from linear to networked business models, from dumb pipes to intelligent platforms. A platform is a business model that creates value by facilitating exchanges between two or more interdependent groups (usually consumers and producers) of a given value. While a linear business creates value by manufacturing products or services, platforms create value by building connections and "manufacturing" transactions (Mozard, 2016). In the context of the economy of the platform, the supply side of economy represents an effort of the platform management to attract as many customers as possible to create and continuously increase the network effect. Demand economies of scale are driven by efficiencies in social networks, demand aggregation, app development, and other phenomena that make bigger networks more valuable to their users. They can give the company in a platform market a network effect advantage, that extremely difficult from competitor to overcome (Parker et.al., 2016). While business model innovation may require new capabilities, these new capabilities will constitute business innovation only when they significantly disrupt the competitive dynamics of an industry (Euchner and Ganguly, 2014). When a platform enters the marketplace of a pure pipeline business, the platform nearly always wins, causing the transformative change to the industries: so, Amazon changed retail buying patterns; Bitcoin challenged traditional currency; Tesla reshaped the auto industry; Airbnb upset the status quo of hotel industry; Uber disrupted the taxi industry.

Today is a decade from the time when the first blockchain technology was created. There are many definitions of blockchain. In its core, blockchain is a public, cryptographic database, or a distributed, cryptographic ledger. A distributed ledger is a digital record of ownership that is not centrally owned, but distributed across an open network that validates the transactions to lead to consensus within the network. There is a widespread recognition by academics and practitioners about revolutionary role of this technology, who named it as institutional technology or foundation technology. This is more foundation technology with the potential to create new foundations for global economic and social systems—than a disruptive technology, which typically "attack a traditional business model with a lower-cost solution and overtake incumbent firms quickly" (Iansiti, Lakhani, 2017).

On our mind, blockchain technology can be integrated into multiple areas. This means that specific blockchain applications may be a disruptive innovation, because substantially lower-cost solutions can be instantiated, which can disrupt existing business models. Blockchain protocols facilitate businesses to use new methods of processing digital transactions. Examples include a payment system in digital currency such as Bitcoin, Ethereum and Bitshares, crowdsales, or implementing decentralized Prediction markets. What differentiates blockchain technology from other ledger technologies is that blockchain is an enabler for decentralization. Decentralization makes a system more robust, flexible, secure and efficient. This makes blockchain technology as an institutional technology, a potential competitor of organizations or markets (Davidson et al., 2016). The transparent nature of the technology, and the integrity and immutability of the data in a blockchain creates trust among participants. The peer-to-peer network that is used as base for the blockchain technology, and the pseudonyms that are used to secure the participants privacy on the other hand encourage people to participate in the network (Seebacher & Schüritz, 2017). Modern Information Technologies are creating network structures in which the main mechanisms are self-organization and self-development (Molodchick et. al., 2013). The use of platform technologies, Blockchain, in combination with fundamentally new management technologies, can fundamentally change the industry for the benefit of the consumer and the manufacturer. Platforms with blockchain – based technologies are shaking up heavy industry, global logistics, energy, financial services, and FMCG market. They have the potential to transform health care, placing the patient at the center of the health care ecosystem, increasing the security, privacy, of health data

2 Research questions and methodology used

Our research is based on a comprehensive literature review (in the areas of business model innovation research, especially and in a field of blockchain technology). By the use of existing contemporary literature reviews we attempted to apply conceptual approach to design a novel blockchain business model which can transform dentistry and to show the concrete steps of its implementation trough real Dentacoin Project. There is also important gap between the academic perspective and the practical needs of entrepreneurs, who want to create and develop the novel business model. Over the past years the platform based business models have been developed in healthcare companies, but they neither developed themselves on blockchain platform, nor in dental industry. The research questions are: (1) what business models are workable /feasible in dentistry environment? (2) What is the concept of a new platform business model in dentistry; the conceptual mechanism of value creation and value capture for both

parties (consumers and producers i.e. dental service providers) and ecosystem as whole? (3) What are the novel propositions, instruments, the concrete steps and the results of the concept implementation trough Dentacoin Project in Dentistry? Practical aspects of the research were explored in a rapidly changing dental industry. The factual basis was the materials of an experiment conducted in the Netherlands to create a platform community Dentacoin based on blockchain platform.

3   Blockchain implementation in dental industry.

3.1   Dentistry is on a period of transformation

It is obvious that dentistry today is a growing, high-tech oriented industry and in a period of transformation. We should mention a few challenges and obstacles for industry's rapidly transformation. Dental industry is global, massive and fragmented, with high-cost barrier to entry and time-consuming customer attraction and retention. In the dentistry system, interactions between different organizations or entities are not solely limited to collaboration; competition between the different actors can also exist. Consumers are becoming more astute purchasers of health care and seeking value for their spending. There are conflicts of interest between dentists and patients, because the costs of acquiring and nurturing patients are getting higher and this naturally leads to increase in the costs for end customers. Nowadays a treatment with crowns and bridges fixed on implants is not affordable for most people. Patients are forced to choose unreliable, insufficient dentures. With time, this leads to a number of health issues, problems with self-esteem and an overall low quality of life. Thus, the presence of these factors confirms that the industry in the provision of dental services requires a reform. It is in this industry that an experiment has now begun on the formation of a new business model and its IT infrastructure. Dentacoin Foundation is a an innovative start- up (already established and registered in Maastricht, The Netherlands on the 03.03.2017) [12] which was founded with a mission to improve the quality of dental care worldwide, reduce treatment costs and create a global dental community, by putting power in the hands of the people. So, Dentacoin is one-of-a-kind feedback platform which uses the current state of the existing industry and introduces strategic organizational and technological value-creation solutions to specific problems. It is of great importance to have more precise appreciation of how these technological innovations can help overcome the majority of the dental industries' major constraints, how they might be

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[12] The co-author of this article is a founder of Dentacoin Foundation.

adopted by users and link with the performance through the conceptual design and implementation of a novel business model for dentistry.

3.2 The conceptual design for blockchain based model implementation

The conceptual design of the newly developed model for the dental industry focused on feedback with a new management system is presented in Fig1. The basis of the model is a self-organizing and self-developing industry management system based on the information platform blockchain, crypto-currencies and rewarding the target behavior of producers and consumers. Essentially important is a new mechanism for motivating the consumer, forming his loyal behavior to enter and actively participate in the self-organizing community.

Fig. 1: Design of novel business model for dentistry
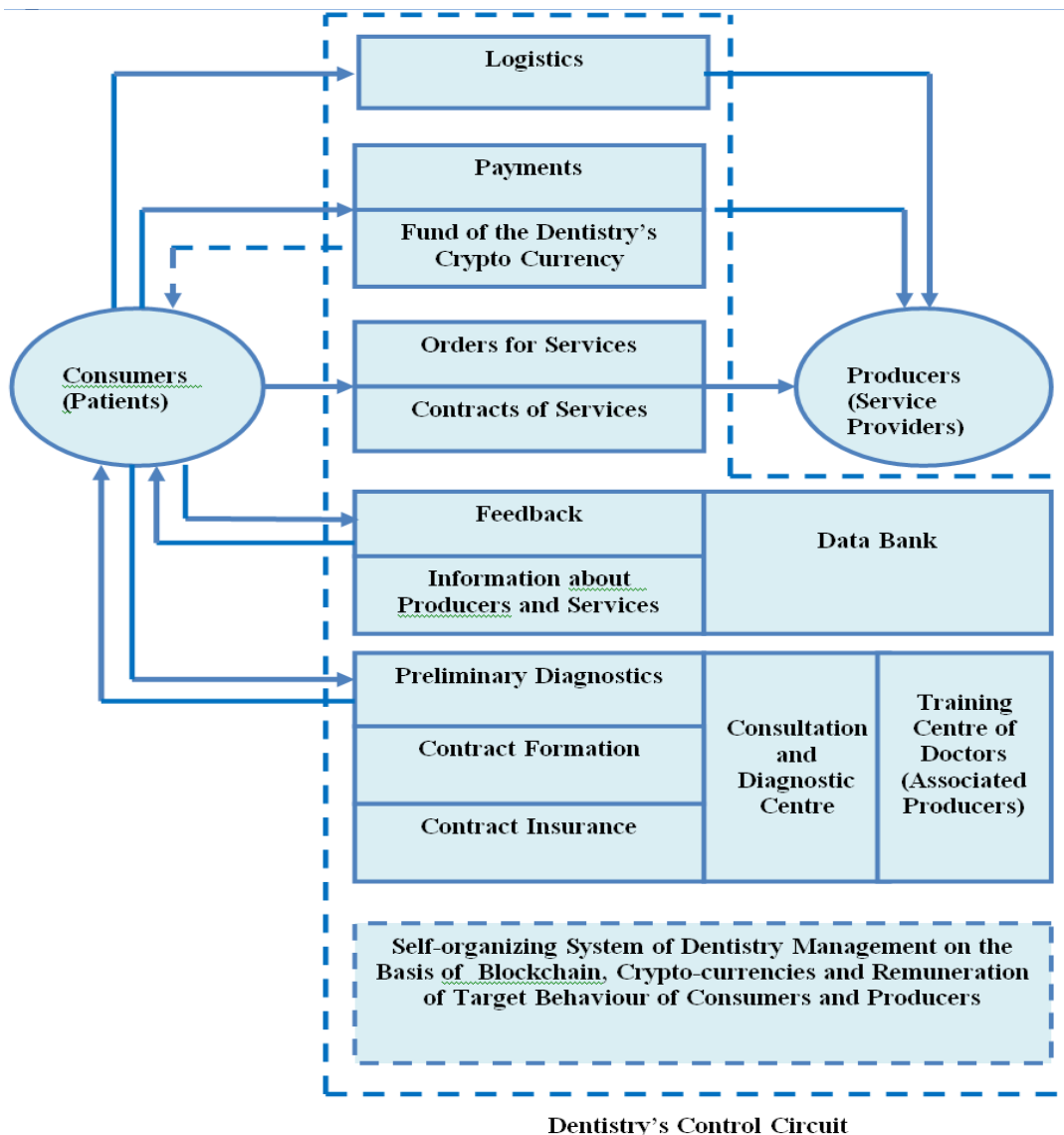
Source: author's elaboration

The concept assumes that the control circuit is removed from the subordination of the service producer and is built on the principles of self-organization of consumers actualizing their expectations in the new values. Values for consumers:1)objective information about services and manufacturers (price, quality);2) free diagnostics and preparation of insured contract (service selection, risk reduction);3) logistics services (time, transportation, accommodation).4) motivation of a loyal consumer (fair price, discounts for loyal customers, opportunity of financial participation in business and obtaining long-term benefits).

A fundamentally new basis for the realization of these values is a unified global information platform on the services of producers, which is based on objective feedback from consumers using blockchain technology. To implement the system, an independent infrastructure is formed that allows the client to undergo preliminary free diagnostics, choose the most suitable dental clinic and doctor, prepare a service contract and an insurance contract in case of possible deviations. To this end, the training, consulting and diagnostic center for the doctors of associated dental clinics is created from among highly qualified specialists. The prepared service contract is sent for agreement to the service's producer, and then signed by both parties. The proposed business model allows user to choose a dental clinic belonging to the association of service producers from another country. In this case, the client is provided with a convenient logistic scheme (transport, hotel, food, etc.), which allows optimal price and comfort to get to the right place for the period of treatment. The aggregate of services provided to the consumer and the guaranteed quality of dental treatment make this system as attractive as possible, since it is aimed primarily at solving customer problems. In our case, the self-organizing community of patients is the best controller of the development of the industry, focused on long-term success. Active and objective participation of patients in the formation of the information platform is encouraged from the industry-specific crypto currency (also named Dentacoin, DCN) fund. By creating and implementing the first Etherium - based blockchain platform for trusted reviews of dental treatment, the Dentacoin Foundation will allow patients to increase their voices. At the same time, dentists will have access to the latest, extremely valuable data on market research and qualified feedback from the patient - the most powerful tool for improving the quality of care and creating a local patient base. Thanks to the self-enforcing Smart Contract (the platform is already on the market), the Dentacoin reviews` platform ensures optimal autonomy, trust, speed and security.

Having dealt with the mechanisms of consumer loyalty in relation to the new business model of managing the dental industry, it is natural to ask the question, what is the benefit for service

providers - private practices, dental clinics and hospitals, institutions? The answer is quiet simple. This is beneficial only for clinics and doctors, focused on long-term success and winning a high reputation. The new model will be selected only by bona fide companies, and do not leave chances for clinics focused on short-term "at any cost" financial success. As a reward, medical service providers, early adopters of a new industry management system will receive :1) guaranteed order flow; 2) reduced marketing costs (Self-developed Marketing); 3) improving the quality and development of technology based on constructive feedback and shared experience; 4) development of doctors' competence; 5) opportunity for monetary share.

There will be a community of Dentacoin, which will create the preconditions for further steps of penetration to the world market, will provide valuable results of market research. That would generate benefits for the whole dental industry by transforming the existing industry into a pro-active one.

4   Findings and Discussion

From the beginning of its implementation, i.e. less than one year, blockchain based model proved to be working effectively in dentistry, forming the challenge to traditional ways of doing business. In Figure 2 we present the logic way of long term Dentacoin Project with the first Blockchain concept designed for the Global Dental Industry. The platform supports the dental community by building and creating solutions devoted to improving the quality of dental care worldwide. Certainly there are risks and challengers, especially on the first phase on Dentacoin Project implementation. The main is to overcome mistrust within the both parties (producers and customers) who decided already or who are coming to use cryptocurrency. We mean, that cryptocurrency requires every party that does monetary transactions to adopt it, challenging governments and institutions that have long handled and overseen such transactions. It is a high level of inertia among patients and dentists. Consumers have to change their behavior and understand how to implement the new functional capability of the cryptocurrency. Another kind of risk is, that a tremendous degree of coordination and clarity on how smart contracts are designed, verified, implemented, and enforced will be required (Iansiti, M., Lakhani 2017). So, several rationally set regulation criteria and added value creation solutions were created, which with mechanism of self-developing determined the success rate of created business model innovation and lead to sustainability of the whole ecosystem. With a first tool (Trusted Review Platform) to give voting rights to all coin holders and being used as a united cryptocurrency for

the dental industry, - DCN provides other value-creating tools: a feedback system, a dental care app, an educational website.

Fig. 2: Stages of Dentacoin concept implementation
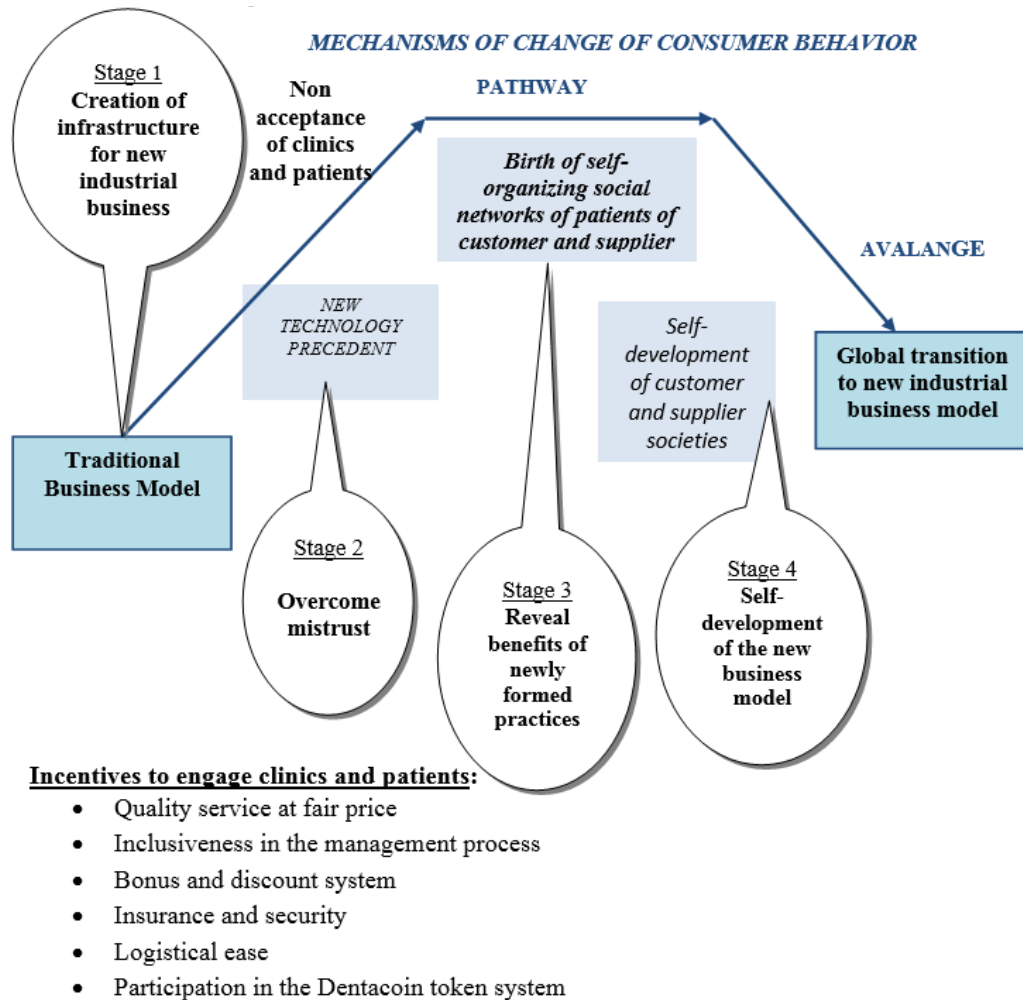
Source: author's elaboration

Nowadays there already some metrics to measure the first results of business model performance. The Trusted Review Platform for global use already functioning on the main Ethereum net as the first transparent, tamper-resistant and manipulation-protected platform of its kind. The Dentacoin Token is already traded in many international exchange platforms. The first partner dental clinics such as: LifDental (New York), Dental on Flinders Melbourne, Australia); Dentech Dental Care (Pure, India); Contident (Budapest, Hungary); F3T Dental Clinic (London, UK); Bredent (Germany); Swiss Dentaprime (Varna, Bulgaria) have already implemented Dentacoin as a payment method and as a basis of their Patient Loyalty Program which rewards patients for sending feedback, writing reviews, making recommendations. According to partners and from the first experiences gathered, Dentacoin is a highly beneficial

tool for creating a community with the patients and for improving the service quality by aligning it with patients needs.

Conclusion

The paper deals with industry model innovation. We determined business innovation model possibilities and advantages which give blockchain technology. These possibilities of new technology can become the advantages through business model concept implementation, when they are working together with new management mechanism of value creation. On the example of Dentistry and the first step of Dentacoin project implementation we introduced the management mechanism, where a new frontier, the new system of value creation emerging, replete with fresh opportunities. We have been demonstrated, that focusing on the patient's needs is the driving engine of the Dentacoin concept. In the classical business model, there is independence between dental practices' management and patients' needs. With a platform-driven model based on blockchain technology, the self-organizing ecosystem of customers is the utmost force shaping and driving the industry towards long-term success. In this new frontier the role of the consumer has changed from isolated to connected, from unaware to informed, from passive to active. We have also shown, that model is viable for produces and early adopters. The implementation of DNC as payment methods by digitalized world clinics proved the organizational and financial model validation.

Experience of the implementation of the Dentacoin Project going together with new management mechanisms discussed in the article are unique, both from the perspective of practice and from the development of new approaches to the transformation of industry business models. Many industries in the near future will face with this reality. There are no ready-made recipes yet on this path. One thing is clear, only innovative approaches, using the behavioral mechanisms of people management, motivating the processes of self-organization and self-development, combined with modern IT on the basis of blockchain advantages are highly relevant to the healthcare services market and can radically change the industry for the benefit of the consumer and conscientious producer. Further validation of this model in dentistry practice is the future challenge for the applied research.

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Contact

Dimitar Dimitrakiev
Nikola Vaptsarov Naval Academy
"Vasil Drumev" 73, 9002 Varna Center, Varna, Bulgaria
ddimitrakiev@yahoo.com

Molodchik Anatoliy
Management and Marketing Department
Perm National Research Polytechnic University, (PNRPU)
29 Komsomolsky prospect, Perm, Perm krai, 614990 Russian Federation
mavperm@gmail.com

Ostapenko Galina
Management and Marketing Department
Perm National Research Polytechnic University
29 Komsomolsky prospect, Perm, Perm krai, 614990 Russian Federation
waygs@mail.ru; prahaedu2018@gmail.com

IMPLEMENTATION OF AGILE METHOD IN RUSSIAN UNIVERSITY

Natalia Molodchik – Natalia Nagibina

Abstract

Purpose: The purpose of the article is to elaborate agile based model „University-Student-Enterprise" and explore its applicability in the case of Russian university. Impactful global social, economic and political challenges call for corrections in the current labor market needs and raise the importance of university education improvement. In conditions of state educational institutions optimization, transformation is the only viable option for most of the Russian universities.

Design/methodology/approach: The theoretical design is based on literature review, concept analysis and practical experience of agile technology in higher education, when the authors develop a new agile based model "University-Student-Enterprise". The implementation design is based on the action research with regard to the Russian university bachelor programs.

Findings: The study finds out that agile-based work can qualitatively change the interaction between participants and impact the organizational and motivational configuration of the educational process and product of the educational system. The designed agile model helps define the core principles and tools of the educational process management.

Research/practical implications: Agile based model can be applied in other universities. Practical results of its implementation prove its effectiveness through the following metrics: quality improvement, acceleration of processes, cost reduction. The key difference between the Agile model and the conventional university education model concerns the format and nature of interaction between the education process participants (University-Student-Enterprise).

Originality/value: The paper makes a valuable contribution in the field of research and implementation of management innovations in the educational environment. The suggested model contains description of specific organizational and motivational devices that ensure agile, flexible, transformation-inducing configuration of the university educational system.

Keywords: Agile model, university, practice-oriented education

JEL Codes: M10, M12, I23

Introduction

Volatility, uncertainty, complexity and ambiguity - V.U.C.A. – as defined by John J. Sullivan (2016) underlie the contemporary dynamics in Russia. Globalization, transiency of leadership in the market, accelerated adoption of changes, demand for the new innovative products cause the need in faster training of specialists with required competencies focused on development of cognitive skills instead of "stowing" the students with knowledge. Digitalization of economy and society, automation, robotics and artificial intelligence make a powerful impact on the changing demands of employers, consequently altering the labor market. Organizations cannot afford lengthy periods of expectation for "delivery" of the fresh, innovatively trained bachelor specialists. At the same time, the present state of the educational system in Russia is characterized by low adaptation ability, low flexibility and insufficient customer (organization) orientation; therefore, the product of the universities does not fully meet the needs of the employer. Based on the research findings of the Boston Consulting Group (2017), the lack of practical knowledge in bachelors is reported by 91% employers. This dynamics calls for the much-needed search for new forms of interaction between universities and employers, along with the new devices and models of the educational process management.

The need for transformative changes in the educational system urged the authors to study the existing Agile concept and test it in application to management of of Perm National Research Polytechnic University (PNRPU). The authors assume that the use of agile principles in management may produce a significant positive impact on improvement of the educational process effectiveness and competitive performance of the educational unit and the university in general.

Agile: theoretical and practical review

In search of breakthrough technologies for competitive advantage improvement in all areas and fields of activity, the "Agile" concept becomes a subject of a rapidly increasing number of discussions. Interest of the authors of this paper in application of Agile approach in the University and in study of the previous research on this problem served as a foundation for practical implementation of the proposed model.

Aaron De Smet, Wouter Aghina (2015) view Agile in terms of organizational flexibility and describe it as "nimble, mobile, spry, quick, expedient, dexterous, and maneuverable". DarrellK. Rigby, JeffSutherland, HirotakaTakeuchi (2016) describe Agile as an adaptive model. Steve Denning (2015) analyzes the three laws of Agile organization: Law of the Small Team, Law of

the Customer and Law of the Network, to prove that "We are heading towards the future, I believe, where… Agile will be easy to manage, and Agile will be a regular way of managing a company". Whereas we fully agree with the above description, we also share the point of AgileAlliance participants, which define Agile as the ability to generate changes and respond to them in order to succeed in a volatile and turbulent environment.

Drawing on the existing theoretical and practical approaches, the authors assumed the following: in order to receive the finished product (e.g. in the field of education) in conditions of multi-teaming, tighter timings and cost reduction, two approaches can be applied:

1. If Agile is described with an adjective "flexible" and is referred to as a new style of management, a way of organizational activity, a set of tools, a method of flexible approach to management, a family of flexible methodologies (2013), then **individual components of Agile are applied, or Agile is applied during implementation of individual projects and tasks.**

2. If Agile is understood as a new cultural phenomenon, a mode of thinking, a philosophy, the core of which is "… not the organization but humanism: an increasing role of an individual consumer and employees of the organization …» (2016), when "Individuals and interactions are over processes and tools", then **Agile concept is applied in its widest sense**.

The history of publications over the ten years following the adoption of the Manifesto is reviewed in the research of Torgeir Dingsøyr, Sridhar Nerur,Venu Gopal Balijepally, Nils Brede Moe (2012): the earlier works on the subject of Agile are dedicated to the integration of Agile into the operations of an organization, later the authors discussed the role of Agile methods in organizational management, and most recently – the results of Agile application in knowledge management and personality research.

The results of increasing use of Agile beyond development of IT products look quite promising: the research of VersionOne (2017) makes a point of rapid growth of the number of participants from various spheres: finance, consulting, insurance, medicine, state sector, telecommunications, transport, production, and education.

Over the recent 15 years, the practice demonstrates expansion of Agile beyond the scope of software development: Silicon Valley, Facebook, Amazon, Google and Yandex, Uber, Intel, Dell, Tesco and other giants have adopted Agile approaches. Unilever implements Agile Working, a career philosophy of the future. Frank Saucier (2015), coach in FreeStanding

Agility, shares his experience in personal performance improvement by means of Agile tools application in personal life. Foreign labor market has multiple openings for Agile Project Managers (there is no counterpart role in Russia), with an average salary of 40,600 pounds sterling per year (based on the analysis of salaries for 31 jobs).

In Russia Agile has been applied in state institutions – the Ministry of Education and the Government of Moscow. Alpha Bank openly invites banking sector specialists to participate in the AlfaAgile business game. Sbergile, the most radical transformation throughout the 175 years of history of Sberbank, started from implementation of the philosophy during deployment of mobile applications and is presently being expanded to the entire retail business through handover to the corporate services sector. N. Gulchevskaya promotes Agile in the area of secondary school and higher education.

The brightest example of Agile approach application in the development trajectory of Russian education is University 3.0 concept. It has been prompted by the Agency for Strategic Initiatives of Russia and is presently undergoing staged pilot implementation. Its full adoption across Russia will be completed by 2020. The key difference between Agile and conventional university concept lies in the principles of proactive training and network interaction between all educational process participants without rigid territorial allocation, which help to eliminate the problem of a lag between university development pace and changes in the external environment. The key elements of University 3.0 are: digital platform; educational engineering; educational activities database (including neurotechnology); new financing scheme.

It could be interesting and useful to consider the experience of Agile application in the educational environment abroad. EduScrum is a specialized foundation established with support of the Netherlands business community (pioneers of agile approach in school education). It helps teachers and students learn the flexible Scrum methodology and apply it in the process of school education.

Studying Agile as a project management method and a new approach to improvement of processes is included in curriculums of many reputable universities: Oxford, Villanova University, The University of Sydney (e.g. the course of Agile Business Management). Agile is a part of education management system in Cornell University and Northern Arizona University.

These multiple instances of Agile approach implementation in the practice of commercial and state organizations confirm the need of its further development.

Therefore, the authors attempt to contribute to academic discussion in the field of agile based management by elaborating a model with a specific focus to University-Student-Enterprise interaction.

2   Elaboration of agile-based model "University-Student-Enterprise" (USE)

The following Agile principles form the foundation of the agile-based model:

- *The model approach is focused on innovative re-thinking in the process of the product creation*. Based on an understanding that the product is a student, the authors have created a model which helps continuously focus on the innovative re-thinking of trajectories and technology of the students' development.

- *Focus on a new role of a customer as a participant of the product development.* In our case, the customer is both the student and the enterprise. The new model of the educational process suggests that the two customers are active participants of agile interaction in a team.

- *Focus on result – finished functional product fully compatible with the customer's needs*. In order to best match the product, i.e. the student, to the needs of the customer, the authors focus not only on the end result (the graduate), but also on the intermediate results. Students of each year of study starting from the first year are the intermediate result. Focusing on students of, e.g., second year of study requires a competency profile of a second-year undergraduate student as viewed by the enterprise; hence we need to define a realistic framework for the student's preparedness at this exact stage of his/her professional and personal development, and respectively position him/her in the current operations of an enterprise.

- *Individual approach to creation of the product.* a) development of a vast majority of the students is built on individual flexible approach adopted by the enterprise and the university; b) minimization of work required for preparation of documentation confirming that the student attended an organization to save time and improve accessibility of organizations; c) formats of cooperation with enterprises and of training courses are in the process of continuous improvement and have an end result.

- *Team- and customer-oriented approach: "emotional" (amicable) group – self-organizing cross-functional team*. The collaboration model "University-Student-Enterprise" is based on empathy and psychological safety, and ensures good synergy.

- *Flexible methodology*: open educational resources at the educational portal of the university, regular updates of formats of conferences and contests for students.

▪ *Scrum as a flexible management framework.* Model of Agile interaction between participants in the "University-Student-Enterprise" team has a flexible management configuration. Continuous interaction between participants in partnership mode helps maintain the picture updated and timely respond to changes.

Agile interaction model "USE" focuses on the development of professional, personal and motivational competencies, which meet the enterprise's demands, is presented on the figure below.

The key difference between agile model and the conventional university education model involves the change of format and nature of interaction between the educational process participants (University-Student-Enterprise). The model of agile interaction implies that each of its participants is an active element of the system and can at any time initiate any proposals or changes. The model can be formally separated into 5 main blocks: educational process; professors of the university; curators of enterprises; sought-after graduate; motivated applicant. Detailed review of each block is presented further.
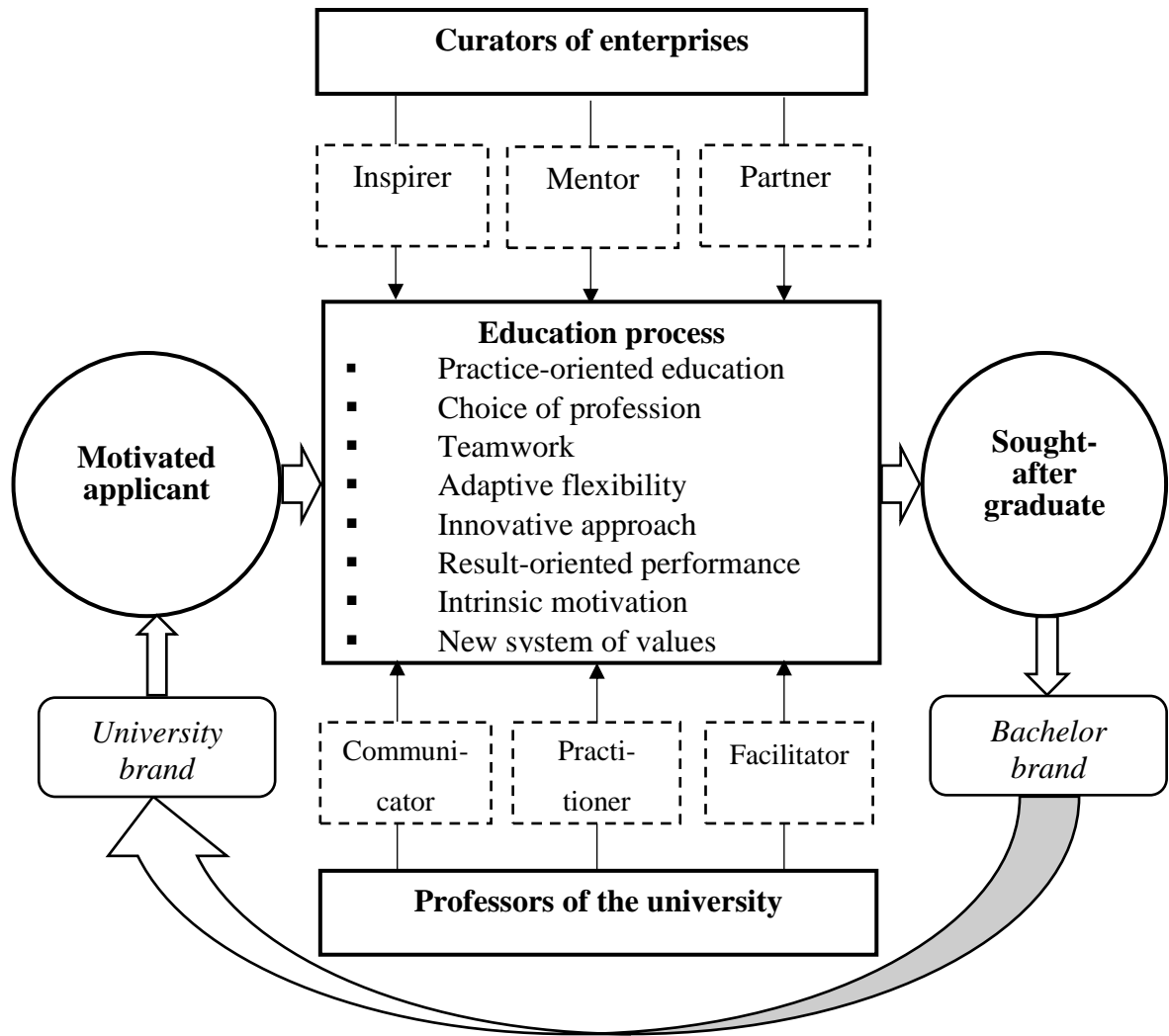
Fig. 1. Agile-based model "University-Student-Enterprise"

Education process is the central element of the model, the core of all changes. _Practice-oriented education_ is the first part in it. Practice-oriented education means that the students have an opportunity to attend enterprises for trainee practice once per week throughout the term during all the period of study, to learn about production processes and to acquire practical skills of solving different organizational tasks.

While studying at the University the students have an opportunity to complete a trainee course (practical training) in enterprises of different industries, try themselves in a variety of areas of organizational activity, which helps them _choose profession._

Teamwork as one of the organizational and motivational devices of the model helps achieve synergy effect from interaction between participants of the "University-Student-Enterprise" model. Contrary to the conventional model of education, Agile model changes the format and

nature of interaction between these participants. Student and Enterprise turn from "passive" consumers of the educational system into actors who contribute to the common result. The key goal of the team is establishment of professional, personal and motivational competencies of the students in response to the requirements and challenges of contemporary environment. Proactive behavior of all Agile model subjects allows to build a self-organizing cross-functional team.

Functioning of the educational system is always accompanied by changes, whether internal or external. Therefore, an important quality of the system or an organizational tool is *adaptive flexibility*. Firstly, each participant of the system is open-minded. Secondly, the organizational environment consists of processes and procedures that enable quick rearrangement and introduction of change. In other words, the structure, the decision-making system and the motivational devices are designed to ensure adaptation.

In order to maintain a high level of educational services quality, and to support competitive ability, another feature of Agile model – *innovative approach* – comes into play. It is expressed in such aspects as the content of the educational process, technologies and formats of training, and behavioral competencies of the model participants.

Result-oriented performance is another device used in Agile model of practice-oriented education. It is reinforced by both organizational and motivational tools. It is important to note that in comparison to the conventional system of higher education, Agile model has two distinguishing features. Firstly, it is the result, which is understood as not only the final result (i.e. the graduate student), but also intermediate results – a student of a certain year of education with a certain set of competencies who undergoes a trainee course in an enterprise. Secondly, the perception of the result by each professor providing the knowledge and skills depends on the integrative interaction with other disciplines and is connected to the professional and, importantly, personal and motivational competencies.

Viability and performance of Agile model is built on the *intrinsic motivation* of its participants. It goes without saying that each participant has individual intrinsic motivation, but they are all joined in the achievement motive – the need to be sought-for and to succeed in a competition. The students' motivation requires a more detailed description. In order to raise their activity, the device of "tension" is used. It is a set of organizational and motivational tools aimed at creation of an atmosphere of competition, ambition and public recognition.

New system of values is a foundation of the new approach to the process of education, and implies focus on practice, adaptiveness, flexibility, and innovation. They come in place of the classic values of the university – academic approach, consistency, and fundamentality.

Thus, the central block of the agile model is a set of organizational and motivational devices that shape the transformative educational environment where all participants (University, Student, Enterprise) play a proactive role to achieve their common goal.

Professors of the university as the model's element**.** Agile model changes the professor's profile. Being a participant of the system, in addition to the basic role (knowledge carrier) the professor acquires new roles as a communicator, practitioner, and facilitator. All these roles are based on the fact that the professor is a connecting link between the student and the enterprise and is expected to maintain the connections within the system on different levels, such as knowledge, skills, and emotions.

Curators of enterprises are another element of Agile model. The enterprise becomes a partner in the system and makes a significant impact on it. The enterprise has two focuses of attention in regard to the students. The first one is a student engaged in a trainee program, who is perceived as a temporary labor resource possessing a number of competencies on a certain level (depending on the training course and personal characteristics); the second focus of attention is a student as a potential staff member of the enterprise in the future. Active interaction between students and the enterprise starting from the first year of study helps continuously update expectations of enterprise and correct abilities and attitude of the students as well as the content of training courses. In Agile model the enterprise obtains a new profile as a curator. It consists of roles: inspirer, mentor, partner.

Sought-after graduate is the fourth element of Agile model. It is a product or a result of the educational system. It is an indicator of quality of the model performance and at the same time a way to attract **motivated applicants** using the brand of the university.

Thus, Agile principles laid at the foundation of model University-Student-Enterprise help transform the conventional education system thanks to the flexible organizational and motivational devices, new roles and values of the model participants. The outcome is a self-developing adaptive system of fostering labor resources in response to the needs of enterprises.

3   Methodology

In order to validate elaborated agile based model the authors use action research method. According to Bryman and Bell (2011) action research can be defined as "an approach in which the action researcher and a client collaborate in the diagnosis of the problem and in the development of a solution based on the diagnosis". In this study the authors collaborate with the representatives of university, in particular, with the professors and the students, and with the representatives of the enterprises. The purpose of this collaboration was to apply agile based principles in the triple interaction processes and to improve their quality, to accelerate them and to reduce costs.

The authors investigate university-student-enterprise relationships in Russian state university – Perm National esearch Polytechnical University (PNRPU).

Here is a brief description of the participants of the triple interaction processes. University is represented by the Department of Management. It consists of 32 professors and it works for more than 20 years. There are four courses of bachelor students. Each course contains twenty-five or thirty-five students. The enterprises are represented by organizations of different industries, for example, finance sector, manufacturing, construction, chemistry, service companies.

The authors attempt to validate elaborated model (Fig.1) with the help of basic agile metrics that characterize **quality**, **speed** and **costs** of educational process. In the sense of **quality improvement** the authors apply such metrics as: a) percentage of students, successfully (assessed as 4 or 5 on 5-grade scale) passing examination in major subjects; b) level of students' satisfaction with the educational process. The speed aspect presented in **acceleration of educational processes** is disclosed by the authors in metrics: a) percentage of students whose professional employment started during their years of study at the University; b) annual number of enterprises requesting to select a student for employment. These metrics show that with the help of the model we can produce the finished product faster. In other words - the student in a shorter time acquires practical skills and is able to integrate into the life of the enterprise. The authors assume that the **cost reduction** can be measured by time saving (because time is a valuable resource) and by financial cost saving, in particular: a) number of enterprises with trainee programs (potential employers) in the database; b) payment for professors. The last indicator illustrates the saving by the reduction of professor's classroom hours as the result of the replacing these hours by practice of students at the enterprises.

Data collection for the indicators was performed by a variety of methods: processing of statistic data collected by the department during the process of education, and survey method.

4   Implementation of "USE" model in Russian University

Two years ago the Management Department of PNRPU acknowledged the need to update the approaches to the educational process management based on the present-day challenges. Firstly, at the macro-level A.V. Molodchik (2017) in his research mentions the current need in setting new objectives to the university to support the country's economic innovation potential development. Secondly, the competition between universities in the process of admission is increasing. Thirdly, there is more reputation-related competitive tension between the universities at the stage of employment of graduates, since enterprises prefer the graduates whose competencies are a best match to their requirements and needs. All these factors (challenges) were accounted for and summarized in a new practice-oriented approach which was embodied in agile-model "USE".

The baseline of changes dates back to 2016 when the transition to applied bachelor degree program in Management occurred, involving a significant modification of the curriculum. Consequently the number of practical training hours in the curriculum increased by 6 times - from 9 credit points to 54 credit points. In addition to the practical, on-the-job and pre-degree training, term practice was introduced for eight major subjects. As a result, the students have got an opportunity to attend enterprises for trainee practice once per week throughout the term during all the period of study, to learn about production processes and to acquire practical skills of solving different organizational tasks.

From the beginning of "USE" model implementation, i.e. over the last one and a half years, agile model of practice-oriented education proved to be effective. The metrics presented in the table below reflect the dynamics of changes. They are captured "before" and "after" the model implementation. The analysis of the educational process performance before the model implementation uses average values for 2014-2015 years.

Tab. 1:. Metrics of effectiveness model implementation

Type of metrics	Metrics	Before the model implementation	After the model implementation
Quality improvement	Percentage of students, successfully (assessed as 4 or 5 on 5-grade scale) passing examination in major subjects	69 %	84%
	Level of students' satisfaction with the educational process on 100-grade scale measured by survey and broken down by subjects	62 %	79%
Acceleration of processes	Percentage of students whose professional employment started during their years of study at the University	12 %	32%
	Annual number of enterprises requesting to select a student for employment	3	10
Cost reduction	Number of enterprises with trainee programs (potential employers) in the database	7	38
	Payment for professors	100 %	83 %

In general, all indicators demonstrate three classical positive effects from implementation of agile technology: **quality improvement, acceleration of processes, cost reduction**. Moreover there are an indirectly positive effects for all participants of the triple interaction processes after "USE" model implementation. Indirectly positive effect for **University**: no major investment is required to attract applicants as the department's reputable brand and its successful graduates are the best marketing means to promote the educational services. Indirectly positive effect for **Students**: saving time when looking for a job. Indirectly positive effect for **Enterprises**: adaptation and training of graduates (in employment) does not require significant investment because their professional competences on a high level.

Thus, the presented statistical data and positive dynamics prove that the implemented management innovation was successful and demonstrate a significant increment in quality and reduction in the timespan of the educational process.

5   Conclusion

The results of implementation of Agile model of practice-oriented education of students in the department of PNRPU reveal the acquired benefits: transformation of the management model significantly improves management quality, shaping the "new generation" of professors, growth of human capital being one of the key tasks in the field of education. Changes in the format of interaction between the University and the Enterprise ensure process acceleration and

proactive offer of "finished" product as the educational programs' focus shifts from acquirement of professional knowledge and memorizing information to development of personal and meta-subject competencies (The Boston Consulting Group – Target Competency Model 2025 (2017)). The next implementation stage of the proposed approach is digitalization of interaction between the participants of Agile model, in line with the established task of digital economy development in Russia.

Implementation of Agile concept in educational, research and commercial activity of the University's educational unit determines the target and area of our future studies and underlies the recommendations for future changes in the conventional ways of working and development of the department. In order to mitigate resistance of the personnel to changes in management methods, the team has to be deeply involved in the study of Agile concept, conditions of its successful implementation and possible risks; change of roles and further fostering of Agile culture in the educational unit; development of the teachers' competencies – training in Agile technologies and tools. There is no doubt that the expected result, i.e. improvement of performance and competitive ability of the educational unit and the University in general, can only be achieved with full support of the management team and by staged implementation of the flexible approaches.

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Contact

Natalia Molodchik

Department of Management and marketing

Perm National Research Polytechnic University

29 Komsomolsky prospect, 614990 Perm, Perm krai, Russian Federation

Namdom@yandex.ru

Natalia Nagibina

Department of Management and marketing

Perm National Research Polytechnic University

29 Komsomolsky prospect, 614990 Perm, Perm krai, Russian Federation

Nagibinan@list.ru

PARKING AS AN IMPORTANT SERVICE OF INNOVATIVE HOTELS: A CASE OF CROATIA

Edna Mrnjavac – Nadia Pavia – Robert Maršanić

Abstract

Purpose: Innovative hotels are a recent phenomenon. The innovation of their product is based on a personalized service with cultural and autochthonous content and experiences. The aim of the research was to obtain better understanding of the role of parking in the product of innovative hotels: whether parking is a component of a hotel product, whether parking problems exist, and what the importance is compared with other elements of a hotel product. The purpose of the study is to draw attention to the state of parking in innovative hotels and to shape guidelines for an optimal model of parking services.

Design/methodology/approach: Primary and secondary data were used. Secondary data served to define the characteristics and functions of innovative hotels and the role of parking services. Primary data were collected directly from the managers, through their descriptive responses to a questionnaire. The responses were systemised according to similarities and differences and according to the special features of innovative hotels. The study involved 10 innovative hotels in the Republic of Croatia. Insight gained from the study should help managers to enhance the competitiveness and improve inovation of the hotel product.

Findings: Most of the innovative hotels have parking-related problems, because they either lack a sufficient number of parking spaces or have no parking space at all. Hotels' managements and guests consider parking services a vital element of the hotel product. The resolution of parking-related problems depends upon location. Hotels located in town centres have no possibilities for building their own car parks. The only solution is to rent a number of parking spaces through the local government or from parking companies. If a hotel cannot provide parking services, it is important for the guests to be fully informed of this.

Research/practical implications: The study has confirmed that the parking service is an essential element of the innovative hotel product. Hotels should have their own car parks and, if needed, rent additional parking spaces in the nearest public car parks or parking garages. The research has indicated that cooperation with local government is crucial because of its decisive role in shaping parking polices and mobility in the destination. In this way it indirectly effects on the competitive ability of the hotel product. Future research should focus on models of cooperation with local government in ensuring parking spaces and mobility within destination.

Originality/value: Parking as a part of the product of innovative hotels has not been researched jet. The value consists in findings that parking is an essential element of the competitiveness of innovative-hotel products and that there is a correlation between guest satisfaction with their stay at the hotel and the availability of parking. A special contribution is the perception of importance of parking among other elements of product of innovative hotels as well as the role of local government in resolving parking problems. The results are applicable to other european destinations that are working on innovative hotels' product.

Keywords: Innovation, innovative hotels, hotel product, parking service

JEL Codes: Z32

Introduction

Tourism development is characterised by the constant quantitative and qualitative growth of demand. Tourist destinations are under pressure to create and offer original and innovative products that will distinguish them from other destinations. Innovations do not represent a new way of doing business, they are the only way to survive on the market. Accommodation services are a vital element of any destination product, and hotels have a great impact on how the market perceives a destination. This applies to hotels in particular. A hotel product comprises different elements of the offering which well-organised business processes must bring together to form a consistent whole. From the guests' perspective, one of the attributes of a hotel product must always be "corresponding value-for-money". Accommodation facilities are subject to diversification, which evolves with regard to numerous criteria. Recently, a set of innovative hotel facilities has begun to stand out from others. These facilities include integrated, diffused (multi-building) and heritage hotels, whose offerings target specific market segments. Their offering is customised and based on indigenous products and local culture and tradition. By integrating various business functions, these hotels can cut costs and maintain new innovative product.

1 Theoretical background

1.1 Innovative hotels in a destination's offering

In recent years, tourism has undergone great changes. Considering the nature of tourism as a business, it is evident that tourism is organised as a dynamic system that creates numerous commercial and non-commercial activities to shape a tourism product (Simonceska, 2012). The competitive tourism market and increasingly discerning tourists are compelling tourism supply providers to make structural changes. New trends in tourism demand indicate the need for new and sophisticated tourist accommodations, offering extraordinary experiences (Porotlan, 2010).

The development of tourism supply, among other things, depends on the quality and innovativeness of all elements of the offering, including the quality of hotels. Innovation in tourism and hospitality refers to the designing of new products, services or processes. Innovations are essential for both the viability and competitiveness of hotel. According Dzhandzhugzova, Blinova, and Orlova (2016) there is a need for systematic and continuous innovation with the aim to increase hotel competitiveness. According to Tüzünkan (2017) hotels choose the type of innovation according to the reasons for development. For instance, a

hotel that wants to grow can choose to make innovations to the process or to tourist market. Based on the innovation of services, innovations in tourism generate greater value for tourism supply consumers. Increasingly, tourists are seeking innovative alternatives, authentic tourism offerings, and experiences based on authenticity and sustainability. They want to learn about local cultures and traditions, but they also want all the amenities they are used to. Unique, personalised services, capable of providing tourists with a special experience and a high level of satisfaction, will most definitely ensure repeat visits of tourists to the destination and the accommodation facility (Pavia and Floričić, 2016). Not only does service quality emerge as a key factor of the satisfaction of consumers of the tourism offering, it also affects the consumers' decision in choosing a specific tourism offering. Innovative hotels surpass non-innovative ones because they offer differentiated products and services. According to Dragičević, Tomašević, Stanović and Avejić (2016), an innovative hotel (diffused hotel) can contribute greatly to maintaining the distinctness of the countryside, retaining the population, boosting other tourism activities and products, and ensuring the revitalisation of old abandoned houses. The concept of innovative hotels (heritage, diffused and integrated) focuses on linking tourism products in a specific tourist destination to improve the tourism offering.

Combining innovative accommodations and an indigenous offering is the way to gain a satisfied guest who will always return. A heritage hotel consists of part of a building, an entire building or two buildings, at the most, usually in old, traditional structures, while a diffused hotel comprises three or more buildings also in old and traditional structures. Both types of hotels are decorated and equipped in a traditional manner. An integrated hotel is a form of accommodation made up of three or more buildings, located in a single area and not part of the traditional heritage. All these accommodation facilities must have a joint lobby with a front desk, joint accommodation units, joint restrooms and other tourism and hospitality services and facilities. A special feature of the integrated hotel is that it also allows services to be provided by external providers – registered legal and physical persons and the local community – that make their facilities/services available for consumption in tourism and hospitality.

The main advantages of integrated, diffused and heritage hotels are their locations in old town centres, their respect for culture and authenticity, and their ability to create experiences. The aim of innovative hotels is to generate new value based on an integrated tourism product.

With regard to the characteristics of this set of hotels, their locations being mostly in historical town cores, and the dominant role of automobiles in tourism, providing parking services has emerged as a special challenge as very important determinate of innovative sollutions.

1.2 Parking services as part of a hotel product

Most guests use automobiles either as a primary mode of transportation from an outbound market or as a means of getting around a destination in combination with air travel to the destination. In either case, guests expect to have a parking space as close to the hotel as possible.

Given the dynamics of automobile use – the alternation of periods of stasis and movement, which even the user can find hard to predict – the capacity and location of parking areas is a vital issue in modern destinations. Broad in scope, this issue has resulted in studies dealing with the dynamics of traffic flows that represent demand for parking capacities. Optimal capacities in city destinations have been studied using the queueing theory (Maršanić, Zenzerović and Mrnjavac, 2010; Maršanić, Zenzerović and Mrnjavac, 2011). The studies indicate that the function of parking in hotel facilities differs from that of public car parks in the destination. They also point out that correlations with the local government and other stakeholders in a destination, based on the objectives of traffic and parking policies, could result in long-term environmentally sustainable and economically effective solutions and, accordingly, play a key role in parking in destinations (Pupovac and Maršanić, 2010). Parking services are a component of a hotel product and the fact that a hotel provides parking spaces has a direct effect on the satisfaction of guests with the hotel offering as a whole (Maršanić and Mrnjavac, 2015). The economic position of hotel parking services can only be considered within the context of hotel operations as a whole. Up to date, no studies have been conducted concerning the parking service of innovative hotels and how it contributes to the quality, competitiveness and innovation of a hotel product. Innovative hotels, inspired by Italian "diffuse hotels", are located in the historic core, where guests can stay in separate accommodation units scattered across the wider area, in order to have a better and easier access to local culture and customs.

Given the features of innovative accommodation facilities, heritage and diffused hotels in particular, it is highly unlikely they can provide a sufficient number of parking spaces, if any at all. The location of these facilities in old town cores could mean there are no car parks or that access by motor vehicles is not allowed or is possible only under specific conditions – during certain time intervals, along defined corridors, only if the vehicle is driven by a hotel-authorized person, etc. Nevertheless, considering the quality level of the hotel offering, hotels in this group should endeavour to ensure parking services for their guests.

The owners and managers of innovative hotel facilities are faced with a challenge: Is there any way to ensure parking space? What is the optimal model for satisfying the parking-related demands of their guests?

Based on the above, the primary hypothesis is formulated: Parking service is an essential element of the competitive ability and innovation of hotel product. Auxiliary hypotheses are also defined: 1. There is a correlation between guest expectations regarding available parking space and the quality of the hotel product of innovative hotels. 2. Innovative hotels resolve parking-related problems in cooperation with local governments. 3. Innovative hotels face the same parking-related problems as other hotel facilities and resolve them in an identical way.

2 Materials and methods

Research was carried out in two phases. In the first phase, secondary data were collected regarding the characteristics and functions of innovative hotels and the way their hotel offerings are organised. The primary and auxiliary hypotheses were defined.

The second phase consisted of primary research involving ten innovative hotels in Croatia, out of a total of 47 facilities listed in the records of the Croatian Ministry of Tourism (www.mint.hr). Primary research was conducted using the survey method, with questionnaires sent to hotel managers.

The questionnaire comprised ten questions: Does the hotel have a car park for its guests? How many parking spaces are enough? How is any shortage of parking spaces resolved? What is the usage regime with regard to payment? How satisfied are guests with the existing state of parking services? How important is parking to the quality of the overall hotel offering? What are the plans, if any, to increase parking capacity? What is the level of cooperation with the local government regarding the parking issue? At the end, the managers were asked to state any opinions they might have about parking services that the previous questions did not cover.

The survey method with questionnaire was selected because managers possess detailed and comprehensive information about the offering of the hotel they manage. Considering they are highly educated experts with experience and broad knowledge of the tourism business, it was assumed they would be capable of interpreting the causes and consequences of certain phenomena and articulating guidelines for resolving issues.

The same methodology and questionnaire were used to study the role of parking services in general-type hotels in Croatia in 2016. As this survey also involved hotel managers, it was assumed that it would be possible to compare results and define regularities, if any.

Research was conducted in the period from July to November 2017. The fact that innovative hotels fall into three groups of hotels can be considered a limitation, because each group has

different characteristics and, in turn, differs according to parking services. Because of the small number of units in each group, it was judged that research by group would not provide representative results. Understanding the differences in the characteristics of each group made it possible for this study to result in differentiated conclusions. This could serve as a platform for further research of each individual group, providing their numbers continue to grow at the same rate as in recent years.

3 Results and discussion

The rule for general-type hotels, which typically have substantially greater accommodation capacities, is that the highest level of parking services is provided by newly constructed hotels or hotel complexes in areas where there was enough space to build a car park or a parking garage. Hotels of the highest category generally have their own parking or garage facilities, as a result of the correlation of accommodation prices, hotel service quality and capital. Many hotel facilities are not able to provide such a level of quality for parking services. This applies to most innovative hotels with small accommodation capacities. The quality of parking services for guests is affected by the location of the facility, the category of the facility, the year-round or seasonal nature of operations, the structure of guests (length of stay, purchasing power, age, education, special interests, motivations for staying at a hotel and in a destination, parking conditions in the destination, etc.), and the hotel's strategy and business policies.

This study included heritage, diffused and integrated hotel facilities. Only one hotel, located in a town core, does not have a car park, nor does it cooperate with stakeholders in the parking segment that could provide such a service to its guests. Four facilities have a sufficient number of parking spaces in their own car park, because one parking space was planned for each accommodation unit. These are hotels in smaller tourist destinations, where their location in the town centre has no effect on parking conditions. The remaining five hotels have a small number of their own parking places, but thanks to good cooperation with local government, they are able to provide the required number of additional parking spaces to guests at a public car park or they can rent the needed capacities directly from parking companies.

Most hotels (7) charge no special parking fee as it is included in the price of hotel services.

Parking problems occur in innovative hotels with larger accommodation capacities, located in larger towns. Usually, these towns already have an existing problem with parking capacities. In such cases, cooperation with town authorities, no matter how good, cannot resolve the parking

problem. For hotels in towns where a larger percentage of guests arrive by air, the parking problem is less pronounced.

The hotel managers unable to provide parking space have only one option. They must make every effort to inform their guests accordingly. In addition to posting the information on the hotels' websites, they should even go so far as to contact guests directly to forewarn them of the lack of parking services. It is always recommended to provide detailed information about parking conditions in public parking garages and car parks.

This is the only way to mitigate low satisfaction levels with hotel services caused by a hotel's inability to provide parking space. In the experience of hotel managers, the parking service is important to guests and impacts their satisfaction with their stay in a hotel. In this respect, all hotels share the same fate.

When a hotel lacks sufficient parking space, cooperation with local government has been shown to be vital in finding a solution, which usually comes down to renting a certain number of parking spaces under preferential conditions. With regard to hotels in town centres where access by motor vehicle is not physically possible, the regulation of town traffic, in particular public urban transport, is especially important to ensure conditions for the mobility of hotel guests.

In town centres where access by motor vehicle is not allowed, electric vehicles are especially convenient because of their many uses: transporting guests and luggage from the car park to the hotel and back, sightseeing, procurement, waste disposal, simple catering services, etc. In this context, the town administration plays a huge and indispensable role, because it is responsible for developing traffic policies, which it can carry out through public enterprises or through a public-private partnership.

Research confirms the primary hypothesis stating that parking service is an essential element of the competitiveness of the products of innovative hotels. Using a scale of 1 to 10, hotel managers rated this with an average score of 7.8, indicating the great importance of parking services.

The auxiliary hypothesis stating that there is a correlation between guest expectations regarding available parking space and the quality of the hotel product of innovative hotels is partially confirmed. Generally, hotels of higher categories have few if any issues with parking; they have a sufficient number of parking spaces in their own car park or garage, and if more spaces are needed, they can be quickly arranged at the nearest public car park or parking garage. This,

however, does not apply to innovative hotels. Because of their location in town cores, many heritage hotels do not have a car park nor can they arrange parking spaces for their guests. As the accommodation units of integrated hotels are scattered across the entire town, it is not always possible to ensure a parking space at each and every location, even in facilities that provide high category hotel services.

The second auxiliary hypothesis concerning the resolution of parking issues in cooperation with local government can be considered confirmed. Effective in intervening with parking companies to ensure the parking spaces hotels need, the local government is the first address that hotels turn to.

The third auxiliary hypothesis can also be considered confirmed, as there are no essential differences in the contents of parking-related problems with regard to the type of hotel, and the manners in which the problems are resolved are basically the same. It should be noted that every hotel has its own specific characteristics – based on the degree of seasonality, the structure of guests, location, the financial power of the hotel's owners, hotel category, traffic organisation in the destination, destination accessibility per modes of transportation, cooperation with the environment, etc. – which affect parking possibilities for hotel guests.

The sample of innovative hotels was not counted because their number in the Republic of Croatia is relatively small. Considering the return rate of 21% of questionnaires, the picture is different and indicates the value of the obtained results. The Croatian model of innovative hotels relies on Italian experience and practice, while heritage hotels are present in many of the old city centres throughout Europe. Therefore, the results of this research about the role that parking service has in the innovation of a hotel product is applicable to all hotels of this type regardless of European destinations. All owners or managers of innovative hotels in the development of innovative business concepts should keep in mind the importance of parking for their guests and the influence upon satisfaction with the hotel product. Additional value of the research consists in results that emphasizes different approaches and ways, especially in co-operation with local government, to provide parking services and to improve general mobility of tourists in destinations. In the end, it is expected from these research results to be a stimulus to explore different aspects of parking in hotel industry.

Conclusion

One of the key factors for the development of accommodation offerings are innovations that, are encouraged by market changes. Innovative accommodation facilities include heritage, diffused and integrated hotels. These hotels are becoming increasingly important factors of the hotel offering because they offer a customised product, based on indigenous products, local culture and tradition. Also by integrating various business functions, they are able to cut costs and reach the innovation of hotel offer.

Given the large number of guests arriving by car, or by air and using rental cars, hotels are expected to provide parking services, as one of the factors that has considerable influence on innovative hotel offer. The study included more than one-fifth of the innovative accommodation facilities in Croatia. All the facilities, with the exception of one, provided some type of parking service. They either provided a sufficient number of parking spaces in their own car parks, combined their own parking spaces with rented spaces in public car parks, or provided rented parking spaces in public car parks. Most hotels charge no special parking fee as it is included in the price of hotel services.

Hotel managers assess parking services as being a very important element of hotel product quality. Although there is a correlation between hotel category and parking services, innovative hotels are specific. Unlike other types of hotels, many heritage hotels because of their location in town cores, neither possess nor can arrange for parking spaces. Many integrated hotels with accommodation units scattered around the town cannot provide a parking place at each and every location.

In all situations where a hotel is unable to provide parking services, it is of the utmost importance to inform guests about this, repeatedly if necessary, as this is the only way in which to minimise the negative effect that the lack of this element of the hotel product could have on guest satisfaction.

Local governments play a large and indispensable role in providing the parking spaces hotels lack, and are the first address hotel managers turn to in resolving parking issues. As a rule, cooperation results in the resolution or, at least, in the mitigation of the problem.

The problem of providing parking services is similar in innovative hotels and other types of hotels. As a group, innovative hotels share common characteristics that affect parking services for their guests. However, it should be noted that each hotel has its own specific characteristics which affect parking possibilities for hotel guests.

In this context, further research about parking in hotel industry would be very valuable both to improve knowledge and to entrepreneurs. Since innovative hotels are not limited to the Republic of Croatia, the Croatian model, based on the Italian, and the heritage hotels, are in the town cores of many European cities, research results are applicable to all hotels of this kind throughout Europe. They can help others to understand the importance of parking service in an innovative hotel product, but also to raise the quality of it. In addition to the previous, it may be possible to expand research to different types of cooperation between innovative hotels, local government and stakeholders in the destination.

The accommodation offer is inseparably tied to innovations that are more numerous and more complex in tourism then in other business sectors. When chosing a hotel, priority is given to innovative accommodation facilities that offer various programs, contents, attractions and parking services as one of the important element of the hotel product.

Acknowledgment

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Contact

Edna Mrnjavac

Faculty of Tourism and Hospitality Management

University of Rijeka

Primorska 42, 51410 Opatija, Croatia

ednam@fthm.hr

Nadia Pavia

Faculty of Tourism and Hospitality Management

University of Rijeka

Primorska 42, 51410 Opatija, Croatia

nadiap@fthm.hr

Robert Maršanić

Rijeka promet d.d.

Fiumara 13, 51000 Rijeka, Croatia

robert.marsanic@ri.t-com.hr

STRENGTHS AND WEAKNESSES OF FAMILY BUSINESS OF THE CZECH REPUBLIC: CASE OF FAMILY WINE FIRMS

Anastasia Murinova – Vojtěch Koráb

Abstract

Purpose: The purpose of the paper is to identify the characteristics of family business dividing them into strengths and weaknesses. The subject of this study is main characteristics of the family business, its complexity and difficulties faced thereby lying in the base of two main components: the family and business system. The objective of the paper is to expand the results of previous studies, to measure out the main characteristics of the selected family wine firms in the Czech Republic.

Design/methodology/approach: A brief comprehensive literature review about the main features of family business was carried out followed by case study using a SWOT analysis to inquire the generic strengths and weaknesses of family wine business. Primary data were obtained from face-to-face structured interviews with 10 representatives of the family wine business in South Moravia Region of the Czech Republic conducted in 2017. Each item of SWOT analysis was evaluated and acquired a rating and weight assumed. Then obtained data were examined and accounted for the overall picture for each category. Further, the final balance was calculated to determine the possibilities for enhancement and focus.

Findings: As a result, we obtained brief review about family business definitions. Furthermore, the main strengths and weaknesses of selected family wine firms. Wine family business is a bright type of business that keeps and transfer traditions from one generation to another in the Czech Republic.

Research/practical implications: The main contribution of this study is creation of a synoptic overview of the actual position of family business in the Czech Republic. There are summarizing results from previous empirical studies that help to create a sufficient basis for the future research.

Originality/value: This research enhances the understanding of family business from the internal and external factors perspective that influence family wine firms.

Keywords: Family, wine business, family business, strengths, weaknesses

JEL Codes: D10, M50, R10

Introduction

The phenomenon of family business has become the subject of many recent discussions not only at the academic level but also at the national and international level. Many scientific works contributed to this, which pointed to the significant importance of family firms in national economies. The subject of family business is studied not only by scientific centers. Today, there is a large number of special institutions that study this topic and provide support and consultations to family firms. It is important to study and develop the theme of family business because they represent the majority of all registered firms in the world, they form most of the workplaces and contribute to GDP. Besides that, the family business field is still being unexplored and neglected in some countries for years, including in the Czech Republic. Some authors consider the family business as a future motor of the Czech Republic (Koráb et al., 2008), therefore it is necessary to support this business type and amend legislation (Machek and Pokorný, 2016). It is significant for a family business to come to the forefront of the state interest.

Family firms have been guiding humanity for a very long time. They have historically laid the foundations for business as such and are still an important part of national economies (Hesková and Vojtko, 2008). Within the European Union they are important and in many countries, these business entities are the biggest driving force of the whole national economy (Korab et al., 2008). Usually, wine and gastronomy are ranked as exemplary bearers of the cultural identity of a region (López-Guzmán et al., 2014). The great tradition of different countries in grape cultivation and wine production (Kamsu-Foguem and Flammang, 2014) has resulted in becoming the world's largest wine producers and thereby tourism destinations (Gómez et al., 2015; Lombardi et al., 2016). Czech wine industry is now a part of industry which is rapidly developing and gaining momentum (Murinova, 2016). It is particular part of the Czech wine industry given the significance of viticulture and winemaking for the agricultural economy illustrated by 17,600 hectares of vineyards within the country with 18,500 registered grape growers (Rozbroj, 2014). However, research on family business in the wine sector is practically non-existent (Soler at al., 2017), especially with regard to the Czech Republic. There is potential advantage of the Czech Republic in the world market based on the natural and climatic conditions in this country ensure originality and exclusive taste of domestic wines (Šperková and Hejmalová, 2012). Therefore, for scientific and national purposes, there is a need to study this topic. Consequently, a case study was conducted in the framework of family wine business.

1 Identification of Family Business Definition

If we rely on browsing about the definition of family business and reckon for the conditions in the Czech Republic including the authors´ experience, the definition of family business will be defined in the following way: "*Family firm is a firm that is owned and controlled by one family or some members of that family; in addition, there is reason to believe that in the future the current generation will transfer its right of firm's ownership and management to the next generation*". (Petlina, 2016) The Civil Code of the Czech Republic (Civil Code of the Czech Republic, 2014), describes the family business as an enterprise, where the spouses work together or their relatives (up to the third degree) work with at least one of the spouses; and this enterprise is owned by one of these persons (Janku and Marek, 2016).

There is no an apparent definition for the family in the legislation of the Czech Republic. The basic feature of a family definition is the matrimony. Thus, we designed a family as "a grouping that is connected with each other not only by marriage but also a generic mode of life". According to Jan Spacil, from Ambruz & Dark Deloitte Legal, the family business in the Czech Republic should include three basic forms: business companies, entrepreneurship, and family farms (Kropík, 2016). According to Kropík (2016), the key parameters that this type of business should fulfill are 1) the ownership of the family in business activities and 2) the share of family members in managerial decision-making. Authors Hnilica et al. (2014) attempt to create the database of family firms in the Czech Republic based on the algorithm of match of surnames in database. That database is the first of kind in the Czech Republic but it this is not appropriate for our case of family wine firms, where one of the dominant group of family ties is "Spouses" (more details are described below), because the algorithm cannot detect companies where husband and wife have different last names. The Association of Small and Medium-Sized Enterprises and Tradesmen of the Czech Republic (AMSE) (succeed a discussion with the business, public and academic sphere followed by other EU countries and, in cooperation with the law firm) provides a definition for the domestic environment (Brenova, 2015):

- The family business is a family company or family entrepreneurship or a family farm.
- A family business is an absolute majority of the sum of the cash and non-cash contributions of the company's share capital and at least one of the members of the family is a member of the statutory body or statutory body of the family business.
- A family entrepreneurship is a business activity where at least two members of the family share their work or property, and at least one family member is the holder of a trade certificate.

- A family farm is a farmed production where at least two members of the family are involved in their work and/or property and at least one of the family members is the holder of the relevant certificate.

- Thereby, family members are relatives in direct line or siblings or spouses. A family member in a family business may be a person from the age of 15 (Brenova, 2015).

Then, before the main primary research, it is needful to explore the type of family relationships in the firm that pretends to be a family firm. For this purpose and further deep investigations, the methodology and research results can be used from Murinova (2017). The results of this study demonstrate the following four dominant types of family ties: 1. Father + son. 2. Spouses. 3. Parents +Son. 4. Brothers. The study was focused on the family wine firms in the Czech Republic, particularly in the South Moravia, the research sample was 108 family wine firms.

The family business has a fairly short tradition in the modern history of the Czech Republic. For relieve to understand the essence of the family wine business, in the Czech Republic it is needful to define the current position and distinguish its strengths and weaknesses.

2   Difficulties Faced By Family Firms

If we want to detect the difficulties faced by the family business, first of all, it is necessary to understand the essence of the whole problem. First, it is worth to analyze the main characteristics of this type of business and their mutual influence on each other. The family business is very complex, it can be seen from the perspective of family, property, management, and firm. All these perspectives are inherent in themselves, and they are the subject to time dynamics. Since cycles are not necessarily performed synchronously in individual dimensions, a large number of combinations of individual perspectives is generated (Veber, 2009). Therefore, family firms must be understood as multi-dimensional systems. Each family business represents a unique combination of individual dynamically developing dimensions that can be viewed in isolation and also in combination with other dimensions. The family business faces many pitfalls, which are usually caused by two different systems of the family business, namely the family and firm system (Koráb et al., 2008). These two systems are connected tightly. Each of system is founded on a different basis and has own goals, priorities, and expectations. The family system is characterized by an emotional perspective, inward orientation, and stability. Its task is to encourage, develop self-esteem and educate children. On the contrary, the features of the firm system include a specific aspect, outward orientation, and frequent changes. Its goal is to generate profits and develop skills. Therefore, there is a conflict

zone. The problem phenomenon of two-circle model appears in the double role of the owner: businessman and a family member (Odehnalová, 2011). Besides, the scheme of these two systems can be expanded by ownership system (Utrilla al., 2012). This scheme illustrates the interconnection between tree systems: family, management, and ownership, which is called the "Model of three circles" (Tagiuri and Davis, 1992).

2.1 Strengths and Weaknesses of Family Business

A successful family business should have the following values: credibility, collective good, education and development, ethical behavior, emphasis on values, justice, openness, practical realism, willingness to take risks, self-confidence, entrepreneurship and strong values (Taguiri and Davis, 1996; Brenova, 2015). In order to clarify family business issues, it is necessary to define pros and cons, which is an integral part of the family business. Some of family business attributes can serve to overcome various pitfalls and obstacles associated with business. But at the same time we should not lose sight of those attributes that complicate business activities. Every firm has its own strengths and weaknesses. Strengths are represented by what the business does better than others, while weaknesses are opposite (Souček, 2015).

2.2   SWOT Analysis of Family Wine Firms in the Czech Republic

There is a case study based on updated SWOT analysis that determines the strengths and weaknesses of the family business particularly in the wine sector, including internal and external influencing factors. This analysis is based on the research experience and previous research of the authors (Petlina and Koráb, 2015), including also face-to-face interviews. This kind of survey was chosen based on the greater likelihood of respondents' consent to participate in the research. The analysis was reinforced by exclusive interviews with 10 owners and family business representatives in the wine sector in the Czech Republic in South Moravia and previous studies in this field. The survey was conducted in September-October 2017. A prerequisite for being chosen was participation in historical folk wine festivals "Slavnosti vína" and "Svatomartinské slavnosti" in South Moravia Region in the Czech Republic as active representative of micro or small wine business. Choosing such representative for an interview was carried out randomly. All representatives answered questions properly. The wine sector was chosen as lively representative of the family business, where for decades the traditions and skills have been transferred from generation to generation (Woodfield and Husted, 2017; Neuber, et al., 1998).

During the interview the questions were addressed to relative characteristics for respondents, which was created by authors based on aforementioned literature review and own view on needed determinative features to build comprehensive view of strengths and weaknesses family firms in the wine sector in the Czech Republic. The results will allow to formulate research questions and hypothesis in the future. Received data was complete, in other words there were no missing or incomplete answers. The sample includes 60% of business owners, and 40% of family members of business owner. The size of the firms was measured by the number of employees. Thereby, 100% represented firms were identified as micro firms (firm with less than 10 employees) (Small and Medium-Sized Enterprises, 2016).

A short presentation of the background and definition of SWOT was made prior to the survey. The list of potential features of family wine firms was provided to each and every respondent to reinforce spoken interpretation of the nature and definition of strengths, weaknesses, opportunities and threats. It was noted that there are no 'correct' and 'incorrect' answers, and that responses call for individual judgment. Totally there were 44 questions about selected features of the family business based on the Table 1. These questions related to the following blocks: relationships between the family members and their values and views, their relation to time, resources, business and its output; relation of family to processes according to decision-making process, planning, corporative culture, environment, business advantages and specifications of industry. Further respondents were asked to evaluate each item (to carry out a rating) using scale from 1 to 5 (details are described below). Moreover, they were asked to comment the possible weight in each category: strengths, weaknesses, opportunities and threats. Besides, it was noted that the total weight of all items in each category should be equal 100% (in the process of analysis the percentages was converted into a decimal). The authors then collected and examined all of the ratings and comments from each of SWOT categories and accounted for the overall picture. Subsequently, this allowed the authors to conduct an overall rating of each selected feature and its specific weight in the category.

Table 1 below demonstrates the results of analyses: the strengths and weaknesses together with opportunities and threats in contrast with non-family business firms. The table represents the average value of the results of respondents' answers. Thereby, each item has an average rating and weight assumed. Initially, evaluation of parameters is based on the following procedures. The strengths and opportunities were estimated with help of a positive scale from 1 to 5, where the 5 indicates the highest rating and the 1 performs a value of the lowest significance. As to the weaknesses and threats, negative scale was used from -1 (lowest dissatisfaction) to -5

(highest dissatisfaction) (Petlina and Koráb, 2015). Afterwards, each item of the analysis was evaluated. The evaluation 5 means the authors´ satisfaction with the item, and in this case, it is not needful to revise anything. Conversely, the evaluation 1 means the contrary, i.e. the item should be pondered and refined. Each item of the SWOT analysis had got the weight or significance within the given categories of strengths, weaknesses, opportunities and threats. The sum of weights in each category has to be equal to 1. Furthermore, the higher is the number, the greater the significance of that item in the category (Petlina and Koráb, 2015).

Afterwards, there was a multiplication of the weight and rating of each item, and the values were summed up for each category. Thus, there was an accumulation for each category to form an internal part of SWOT analysis (strengths and weaknesses) and external part (opportunities and threats). Further, the final balance was calculated to determine the possibilities for enhancement and focus. If the resulted value equals to 0, it is required to improve that. In event of negative output, the reasons should ponder gravely. In event of positive output, the next procedure can be applied: the higher result, the preferable situation of the family business sector on the market. There is an aggregated result of the SWOT analysis (1,814) that relatively positive. But there are items that could be refined. This concerns the items with the highest weight but lower satisfaction italicized in the table. At the same time, these items refer to the main characteristics and might be featured in the proposal part.

The conducted analyses indicate that selected family wine firms in the Czech Republic are wholesome, economically stable and growing. Generally the family business has its own strengths and opportunities that ensure a potential growth. One of the most important cornerstones of the selected family firms is the team of long working-arranged family members with deep ideas and experience in a certain field and the desire to preserve the family traditions of production and service at a high level (Stážovská et al., 2008). That results find echoes in other scientific works about the family wine business (Dyer and Whetten, 2006). According to literature and obtained research results, one of general distinguished feature of small and medium-sized family firms is tong-term planning. Many studies confirm that (Dyer, 2003; Lumpkin, Brigham and Moss, 2010; Zellweger, 2007). This results were also detected in the AMSP's 32nd survey with the title "Situation of Family Business in CZ" in 2015 (Brenova, 2015). It was revealed that 62% of family firms in that research in the SME segment put an emphasis on long-term planning. There is a logical interpretation for this, nevertheless, it does not match to general information about the SME segment. For instance, most firms in the SME segment put emphasis on short-term and medium-term planning (Breckova, 2016). The family

firms have constantly centered on customers' needs. It is referred in the versatility in work, time and money of family members as a team. Although this is manifested in the pride and certainty in the own business and its commodity that was confirmed in the research of Brenova (2015). The family firms in wine sector are effectively using resources at the own disposal. This feature is especially evident in times when it is necessary to resist economic shocks or some crises. That was confirmed by other authors (Benacek and Michalikova, 2012; Arregle et al., 2007; Tagiury and Davis, 1996). The family business in wine sector has the feature as typical lore for own activities. According to authors' observation, usually, there are family secrets about the cultivation of grapes and processing technology that family keeps and transfer from generation to generation. This is the subject of the family pride and the pushing force for the further maintenance and development of the family wine business. The similar results were revealed in the research of Woodfield and Husted (2017). They underline the benefits of knowledge sharing between generations. Besides that, the authors propose that families need "*an overt awareness of both obverse knowledge sharing (senior to next generation) and reverse knowledge sharing (next to senior generation)*". For that purpose families might engage with governing knowledge sharing (Woodfield and Husted, 2017; Foss, 2007; Foss et al., 2010). According to our research, the next feature of family business is cognizance and assurance of the family firms' commodity by local customers (Petlina and Koráb, 2015). The study results of Gabzdylova, Raffensperger and Castka (2009) on the New Zealand wine industry assumed that one of the greatest indicators for the sustainable environment is satisfaction with the profession. In our study many respondents emphasized that they are contented with their professional field and add that one of their success factors is the availability of vineyards in prestigious dorps.

Tab. 1: SWOT Analysis of Family Wine firms in the Czech Republic: Summary

SWOT ANALYSIS							
STRENGTHS	Weight	Rating		**WEAKNESSES**	Weight	Rating	
Reciprocal consent between the family members	0,04	4	0,16	*Robust ties in the family*	0,18	-2	-0,36
Commitment	0,17	5	0,85	Shortage of skillful labor force in the family	0,041	-2	-0,082
Typical lore for own activities (family undercover technologies)	0,14	5	0,7	Existent or ineffective motivate system	0,015	-1	-0,015
Versatility regarding the work, time and money	0,1	5	0,5	*The need of high-quality communication channels among the family and business*	0,072	-3	-0,216
Long-term plan	0,08	4	0,32	*The lack/ obstacle of resolving according to successor*	0,2	-3	-0,6
Steady corporate culture	0,02	3	0,06	Fortification of ownership structure	0,01	-2	-0,02
Speed in decision-making	0,07	4	0,28	Poser of dual and vague roles in the family and family business	0,02	-1	-0,02
Teamwork	*0,08*	*4*	*0,32*	*Trend of authoritarianism amid the representatives of the older generation*	*0,21*	*-3*	*-0,63*
Pride and certainty	0,11	5	0,55	The drawback of own capital for further growth	0,02	-5	-0,1
Productivity (intensity of capital per employee)	0,03	5	0,15	Complication of the production renewal	0,007	-5	-0,035
Efficiency (application resources at the own disposal)	0,11	5	0,55	Resistance to change employees	0,01	-1	-0,01
Socially responsible behavior	0,01	3	0,03	Disregard to systematic control of marketing and sales	0,007	-2	-0,014
Optimistic posture according to business problems	0,02	3	0,06	Mistrust to business advices of a consultancy agency lack	0,002	-2	-0,004
Applying of internal financing	0,02	5	0,1	Owner´s flow of business and managerial skill	0,002	-2	-0,004
				Efforts to control high-stress load	0,001	-3	-0,003
				Reduced ability to react on global opportunities	0,09	-3	-0,27
				High potential for conflicts	0,07	-3	-0,21
				Unwillingness to external sources of financing	0,043	-1	-0,043
Total	1		4,63	**Total**	1		-2,636
OPPORTUNITIES				**THREATS**			
Closeness of local markets	0,22	5	1,1	Shortage of market information	0,1	-2	-0,2
Job creation	0,09	3	0,27	*Barriers to hook external investor*	0,21	-5	-1,05
Focus on quality	0,2	5	1	Tense relationship among the firm and local community	0,11	-1	-0,11
High customer assurance in the commodity of family firm	0,21	5	1,05	Shortage of local resources	0,2	-2	-0,4
Tax benefits in specific sectors of the economy (agriculture etc.)	*0,09*	*1*	*0,09*	*Low competitive ability in comparison with corporations (price, advertising etc.)*	0,28	-5	-1,4
Advantage of lending in specific sectors of the economy	*0,19*	*2*	*0,38*	The process of transferring production facilities to a nature-friendly requires large investments	0,1	-4	-0,4
Total	1		3,38	**Total**	1		-0,18
Internal factors	1,994						
External factors	-0,18						
Total	1,814						

Source: Updated by authors based on Petlina and Koráb (2015); Koráb et al. (2008).

The family business weaknesses can be parted in two groups: external and internal. Internal slackers pour out from the essence of these institutions (Frank, et al., 2011). The majority of internal strains are parted into the emotional and managerial parts. As mentioned above, the main reason for this is the involvement of the family system in the business system. Conflicts in the family business can arise because of strong family ties, also sometimes because of the lack of choice of an heir to business (Petlina, 2015). García, Castejón and Pérez (2014) states based on their research results that the further reasons of conflicts are the processes of delegation of responsibilities based on family closeness. All this requires the establishment of well-qualified communication channels among the family members and their business. These conflicts can also be explained by the laborious nature of the family business (Levinson, 1971; Fock et al., 1998). There are several possibilities to eliminate the emotional conflicts mentioned above. Communication plays a key role here. Leach (2008) reports that in most family firms there is no proper communication. A "helping hand" in solving communication problems is provided by an independent mediator who mediates communication between the parties. Generally speaking, similar problems have a negative effect on the firm's competitiveness. Problems of a corporate character represent the second group of internal weaknesses of family businesses. The interaction between family and business means that everything that has been written about emotional problems is the source of corporate pressures. These problems can be found at all stages of the management process, i.e. planning, organization, management, and control. A strategic planning in family firms is more comprehensive than in non-family firms, and therefore even more complicated. A strategic plan must respect both business and family systems. As Souček (2010) says, excellent leaders can predict the future, but the geniuses create the future. He also mentions that the greatest successes in business are based and will always be based on a correct assessment of future events. Business partners determine their aims and how they want to achieve them. They create own goals, which they try to transfer into the real world. Unfortunately, strategic planning is often underestimated in the family firms and can be the reason for the high failure (Souček, 2010). This issue also includes generational exchange, the process of rewarding family members, reinvesting profits (Koráb et al., 2008). Therefore, it is possible to assume that Czech family firms have already reach the point where they need to decide whether to maintain for the future generation or sell the business. Generational exchanges are considered to be one of the most difficult times for family business, where unsuccessful surrendering and the disappearance of the family business can happen (Puklová, 2016, Rydvalovám 2015). The authors Hnátek and Hnátková (2013) affirm in their research that family firms and the running replacement of business generations in the Czech Republic is

actual issue, and there is insufficient attention and support from the state institutions. Among the significant pitfalls of family business, Poza and Daugherty (2014) also ranks succession planning. There are many mistakes that the business owner should try to avoid. This is, for example, a procrastination in planning the transfer of firm and ignoring the possibility of potential owner's death (Poza and Daugherty, 2014). According to Johnson (2016), the main purpose of succession planning should be that customers do not notice a change in management. For example, unless there is no straight and smooth transition to the next generation, product quality will deteriorate, which may then weaken the entire business (Johnson, 2016).

Thus, the family wine business has certain shortcomings, but it has no direct influence on them, but at times a family firm can control these processes intermediately. The majority of family business owners tend to be unaware of what public opinion is showing in their activities, despite the fact that these firms represent the real pillars of a productive economy (Koráb et al., 2008). Besides that, family wine firms have a low competitive ability in comparison with corporations: the majority of family wine firms in the Czech Republic is micro and small-sized firms (Murínová, 2017). Thereby, they can not afford many competitive tools as, for example, "price wars", powerful advertising campaigns etc. (Koráb et al., 2008). Furthermore, many studies show that it is typical for SMEs, especially as regards their experience with supported investments and training of qualified personnel (Breckova, 2015; Havlíček et al., 2013). The growth is the further invocation for family wine firms (Friedman, et al., 1991).

Summing up, we can agree with Sorenson (1999) and other scholars (Břečková and Havlíček, 2013; Moini et al., 2010) that qualitative tuition, consulting and research in this area can help overcome in general these obstacles and increase the competitiveness. One of the main today's tasks is to help preserve family traditions associated with wine production because this is one of the oldest national economic activities in the Czech Republic that is currently undergoing an important development moment.

3   Potential development of Family Business Firms in the Czech Republic

If there is a necessity to specifically support and monitor Czech family business performance and contribution to the Czech economy, it will be clear in the Czech legal order. Today Czech law knows only the legal institute of the family plant institute enshrined in the new Civil Code, which is not sufficient for this purpose (Korab et al, 2008). It is not easy to say how large a percentage of GDP is made up of the family business in the Czech Republic. The Association of Small and Medium Enterprises of the Czech Republic, however, estimates that today it is up

to 30% (Brenova, 2015). Family firms in the Czech Republic still play a significant role, despite the lack of attention. In order to improve the situation, it is necessary that the state, state authorities and scientists, as well as the general public or entrepreneurs, become interested in this issue. Family firms can also be assisted by family associations, for example an association whose task is, inter alia, to exchange experiences. Undoubtedly, the independent development and education of the family business is an integral part of the overall development process (Petrů and Havlíček, 2016; Sorenson, 1999). Moini, Kalouda and Tesar (2010) claimed in their research that the creation of effective government program that educates owners of family firms will provide opportunities for the further growth including exports. A needful move is making the family firms more professional with a clear implementation of strategic management and definition of the correct balance between the traditions and innovations (Román et al., 2017; Leach and Harvey-Jones, 1994).

Conclusion

It should be noted that the main limitation of that paper is the small sample size of respondents who contributed for this research during interviews. The next research will be expended with the purpose to verify and add more details to obtained results.

The key result of the research is confirmation of the relevance of family business issues and the identification of the main strengths and weaknesses of the family business' example in the wine sector in the Czech Republic. Based on the literature and statistics it is possible to affirm the family business is a keystone of most national economies all over the world, inclusively the Czech Republic (Hnilica et al., 2014; Strazovska and Jancikova, 2016; Stevanovic, 2014; Maret, 2012; Patel, Pieper and Hair, 2012). The family firms are considered to be historically the oldest and most widespread way of farming and all existence in the countryside in the Czech Republic, built on the principle of full responsibility of the farmer and his family. The key parameters of the family business are the ownership of the family in business activities and the decent share of family members in managerial decision-making.

As for Czech family firms, they are paying less attention than in the Western world. Family firms are more stable there, more resilient to economic fluctuations, and more responsive to their employees. However, according to former Secretary of Ministry of Industry and Trade in the Czech Republic Mr. Mládek, the family firms are the real motor of the Czech economy (Adamcová, 2016). They offer deeper relationship to business, tradition, and continuity of development. They are stable and extremely important segment that deserves our support in the

legislative area, for example by dictating the definition of a family business so that they can also target specific support programs. The AMSE has therefore launched a nationwide initiative aimed at clearly defining what a family business is in the Czech legal order. Ministers also support the creation of the law. Ultimately, this should mainly allow specific support for family businesses from both national and European sources.

To determine the overall picture of the family business in the wine sector, it was decided to conduct a SWOT analysis where strengths and weaknesses were identified. Thus, the study of weaknesses and the strengthening of the strong could help in the further development of family firms and enhance their competitiveness. In short, the strengths contribute to specific situations of the family firms during being forced to react to obstacles (Hanzelková, 2004). Generally, the advantages of Czech family firms are the high workload of the founders. Based on conducted interviews it is actual also for selected Czech wine firms.

The generic strengths of family wine firms are reciprocal consent between the family members; commitment; versatility in work, time and money; steady business culture; the speed of decision-making; pride and certainty; effectiveness; the higher motivation of family members as workers; product quality and long-term intention and planning (Petlina and Koráb, 2015; Brenova, 2015; Sorenson, 1999). One of the main features of selected family wine firms is the team of long working-arranged family members with deep ideas and experience in a certain field. That results were detected in other studies about family wine business in other countries (Soler, Gemar and Guerrero-Murillo, 2017; Pavel, 2013). Moreover, the desire to preserve the family traditions of production and service at a high level is one generic feature of family wine firms in the Czech Republic (Stážovská et al., 2008).

 In addition, it was found that close family ties is one of the causes of its weaknesses. Besides, the weaknesses are caused by the following reasons: the need of high-quality communication channels among the family and family business; unwillingness to external financing sources; the high potential for conflicts; low ability to react on global challenges.

In conclusion, research on family businesses in the wine sector is practically non-existent (Soler at al., 2017). Several scholars have analyzed certain aspects of the family wine business in different countries (Gallucci, Santulli and Calabrò, 2015; Pavel's, 2013; Woodfield and Husted, 2017) including in the Czech Republic (Koráb and Murinova, 2018; Šperková and Skýpalová, 2012; Šebestová, 2011; Rosenberg and Bumberová, 2010; Stážovská et al., 2008). Nevertheless, one of the most interesting conclusions of this study is suggestion that the family

business growth in wine sector is primarily conditioned by family reasons rather than business reasons (Lombardo, Ortiz and Martos, 2008). Hereby, despite the significance of theoretical contribution of this study to knowledge of strengths and weaknesses of family firms, the value of this work steams from the fact no previous research attention has been focused on the real features of family-owned wine firms in the Czech Republic. This work will establish a starting point for further study within this important sector for the Czech Republic.

Thus, in order to solve the obstacles of the family wine business, it is possible to use the following tools for micro and small-sized family wine firms in the Czech Republic: becoming more professional through highly qualified education for family members and business heirs, a quality application of strategic management and choosing the right balance between traditions and innovation as a necessity for further growth and competitiveness. In some developed countries, there are special centers for consultations and training for the representatives of the family business. Furthermore, the investigations in this field will contribute to the family business for providing the constructive analyses of issues and obstacles and will help to find the probable solutions.

Acknowledgment

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Contact

Anastasia Murínová

Brno University of Technology

Kolejní 2906/4, 612 00 Brno-Královo Pole, Czech Republic

petlina@fbm.vutbr.cz

Vojtěch Koráb

Brno University of Technology

Kolejní 2906/4, 612 00 Brno-Královo Pole, Czech Republic

korab@fbm.vutbr.cz

IMPACT OF THE BOARD MEETING AND GENDER DIVERSITY TO FIRM PERFORMANCE: AN EMPIRICAL STUDY IN VIETNAM

Hanh Le Thi My – Hoanh Lam Thi Hoang

Abstract

Purpose: The purpose of this paper is to determine the influence of the board of director's (BOD's) characteristics, such as the board meeting frequency, the participants and the gender diversity of listed companies on the firm performance in Vietnam.

Design/methodology/approach: Dependent variables represented the firm performance are measured by financial ratios, such as ROA. The research sample include 78 companies in the Top VN100 companies (ranked in 2014) listed on the Vietnamese stock exchange in the period from 2013 to 2015 with a total of 234 observations. The authors collected and analyzed data from the audited financial statements, management reports, and annual reports of companies.

Findings: The research results show that the frequency of board meetings negatively affect the firm performance. The boards meet more often following poor financial performance. The proportion of members attending the meeting does not affect the firm performance. In addition, the female directors enhance BOD's effectiveness.

Research/practical implications: The findings of this study will help Vietnamese firms, investors and regulators to review the implications of the current board activities, especially improve the quality of board meetings and the board gender diversity to get more effectively in Vietnam to increase firm performance. Future studies may expand the sample size and study period in combination with other related variables such as ratio of board attendance or examining the effect of various kinds of meetings on firm performance to obtain more valuable research results.

Originality/value: we suggest the policy debate by providing empirical evidence supporting the business case for board diversity.

Keywords: Firm performance, frequency of board meetings, gender diversity

JEL Codes: M14

Introduction

The firm performance is one of the top target of companies. Board of directors strive to find opportunities, focus on the high human resources and the other resources to create the best return. There are number of studies mentioned factors affecting corporate performance, such as corporate identity or corporate governance, some outstanding researches can be investigated: the BOD size (Jensen, 1993; Yermack, 1996; Weisbach and Hermalin, 2000), the gender diversity in the BOD (Adams & Ferreira, 2009; Hoang & Vo, 2014, and the BOD's structure (Arosa et al., 2013; Tsegba et al., 2014; Orazalin et al., 2014).

The role of BOD becomes more and more important in crisis, period of time Jensen (1993) stated that boards in a well-run company are less likely to encounter conflict. Besides, during the times of company trouble, regular meetings are important and it is a way to deal with tough times.

Frequent meetings of the Board provide greater quality control and monitoring, and thus have a positive impact on the company performance (Vefeas, 1999; Ntim, 2009). Mangena & Tauringana (2008) argued that board meetings can help managers better understand the company's problems, thereby speeding up emerging issues. Companies that are well versed in setting appropriate board frequencies can reduce the costs involved and thus increase corporate governance (Vafeas, 1999). Conger et al. (1998) stated that board meetings are an important resource for improving the efficiency of the Board. BOD carries out the monitor by meetings in order to performing their responsibility to protect the shareholders' interest (Johl et al., 2015).

Thereby, it can be seen that, the board meetings play an important role in the existence and development of a company, the members of the board often meet will have more time to exchange, discuss, share ideas and plan strategies for the company, this is very necessary. However, in Vietnam, currently, there is very less empirical studies considered whether the BOD and the firm performance are interrelated or not. In this study, the authors want to look at the relationship between the Board of Directors and the Board of Management of listed companies in the Vietnamese stock market. Meanswhile, the authors also consider the impact of this year's BOD meeting on the financial year of the next financial year. Research results will help information users (expert knowledge and lack of professional knowledge) to evaluate companies' corporate performance through the following signs: the frequency of BOD, the percentage of members on BOD. In addition, gender diversity in the company's board is gaining much attention. With the increase of women in the BOD the company has shown that there are

advances in women's rights and the involvement of women in economic activities but it does not clearly prove that the role of female members of the board influence the national team or not.

The paper will help the authorities as well as the board of directors in the company to develop suitable policies for recruiting female staff, thereby improving the firm performance.

In Vietnam, several previous studies examined the relationship between BOD and corporate performance. However, most studies focus only on what factors affect the company's corporate governance (not related to the board meeting). Rarely, the studies related to board meetings and gender diversity to firm performance. The study investigates the importance of board meeting frequency and gender diversity to the firm performance be an open question. This paper investigates BOD's characteristics such as board meeting, gender diversity so that It can contribute to give new approaches for researchers and regulators on the importance of BOD's monitoring activities and firm performance, specifically in the Vietnamese context, a developing country.

The remainder of the paper is organized as follows. Section 1 refers literature review and hypotheses development of this paper. Section 2 introduces the research method. It also presents the regression models for testing. Section 3 describes the statistics of the sample and reports the main empirical results. The final section is the conclusion of the paper.

1   Literature review and hypotheses development

Some previous studies referred to the frequency group and gender diversity in the board. Carcello et al (2002) gave a different result to Vefeas (1999), who argues that the frequency of board meetings in a fiscal year has a positive impact on corporate profitability. Mangena and Tauringans (2008) found a positive relationship between the frequency of BOD's meetings and the firm performance. Ntim and Osei (2011) continued to develop research for this relationship and showed that there is a positive impact between the frequency of BOD's meetings and the company performance. When the members in board attend meetings regularly, that will increase their counseling, supervision and disciplinary capacity, thereby creating greater firms' financial efficiency. In addition, the authors also demonstrate that, despite the large or small number of board meetings, there is a positive impact on corporate profitability.

Irshad et al. (2015) stated that independent members of the board, the frequency of board meetings, and the size of the board had a positive effect on corporate performance, measured

by Q ratio and ROA. Okon Akpan (2014) also found similar results with the study using the 79 listed companies in the Nigerian from 2010 to 2012. Other studies (including Carcello et al., 2002; Fich and Shivdasani, 2006; Francis, 2012; Mangena and Tauringan, 2008) also found a significant and positive association between the frequencies of BOD meetings with firm performance. The board meetings are more frequently, they will improve the firm's performance and monitor management more effectively (Aryani et al., 2017).

However, the association between board meeting frequency and firm value is not a priori clear. Vafeas (1999) suggested that the frequency of BOD meetings had a negative impact on corporate performance recently, represented by Tobin's Q, because the Board meetings would be very costly in terms of management time, travel costs, organizational costs and some other fees for meetings. However, the authors found that the company performance improved significantly in recent years. This shows that the members of the board often interact with each other to help them make better decisions and increase their ability to monitor the company's performance. The potential benefits of effective monitoring are reflected for the company's parent company in the following year. The frequency of BOD meetings takes time to promote the Company's performance. The study of Amram in Malaysia found that the higher the frequency of board meetings, the worse the corporate governance (Amran, 2011).

In other results, Horvath and Spirollari (2012) and Jackling and Johl (2009) don't find any link between the company's performance and the frequency of the BOD meetings. Le., et al. (2016) suggested that the frequency of BOD meetings had a negative impact on listed companies' performance.

Based on the above discussion, we propose the following prediction:

H1: The firm performance is positively related to the frequency of the company's board meetings.

In addition to the frequency of board meetings, the previous studies found that the attendance of the meetings also influence on the firm performance. If the BOD doesn't attend the board meetings regularly, it can be seen as a director is unwilling or unable to fulfill his/her duties. Fich and Shivdasani (2006) found that the directors are usually busy or absent in the board meetings, their firms are associated with weaker firm performance. The directors need to attend their firm's board meetings to monitor or to make the important decisions for it. Chou et al. (2013) argued that board meeting attendance by directors themselves is positive to firm performance. Therefore, attending board meetings is to accomplish a director's responsibility

and should be related with subsequent higher firm performance. Board meetings and attendance of the meetings are the essential job that directors get the information fully and understand the firm strategy more clearly for fulfill their monitoring role (Adams and Ferreira, 2008; Chou et al., 2013).

Based on the above discussion, we state the hypothesis:

H2: The firm performance is positively associated with the attendance percentage of the board members of the company.

There are also some previous studies about *the association between board gender diversity and firm performance*. With controlling for a large series of corporate governance mechanisms, Terjesen et al. (2016) identified that the business performance is higher in the companies with more female directors. Although the other studies in Australia showed that the women hold relatively few highly visible decision- making positions (Rubin 2000; Jurkus et al. 2011), Vafaei et al. (2015) found that board diversity is positively associated with financial performance.

Adams and Ferreira (2009) explored that female directors have better attendance records than male directors and board gender diversity increase the monitoring efficiency. Nguyen and Faff (2007) argued that board diversity improves company performance. Board diversity leads to a greater knowledge base, creativity and innovation and therefore provides higher competitive advantage to the firm (Gul et al., 2013)

In other finding, Chapple & Humphrey (2013) stated that some regulators required firms all over the world to solve the lack of women representation in important positions in the firms. Chapple & Humphrey (2013) showed that some weak evidences of a negative association between board multiple women and firm performance, but It has also the positive evidence about the relationship between them in some industries diversity in Australia.

In Vietnam, Hoang and Vo (2014) showed that the percentage of women in the BOD is positively correlated with the company performance based on the market value but does not affect the company performance based on the book value. In addition, this study also found that when the number of female members in the board of three or more members increases the efficiency of the company performance is calculated based on market value and accounting value.

Based on the above discussion, we propose the hypothesis as follow:

H3: Gender diversity in the board helps to increase the firm performance

There is relationship between past performance and changes in board activity (Vafeas, 1999). Boards meet more often following poor performance (Vafeas, 1999). Boards respond to poor performance by raising their level of board activity, which in turn is associated with improved operating performance (Gilson, 1990; Weisbach & Hermalin, 2000). Board monitoring activities are important to improve the firm performance. Laoworapong et al. (2015) found that the board that work effectively increases long-term firm value. However, Le et al. (2016) found that the frequency of meetings of BOD of the previous year has no relationship with the company in the next fiscal year.

Based on the above discussion, we give the following hypothesis:

H4: The frequency of the Board meeting and the gender diversity of the current year affect the performance of the company in the following year.

2   Research method

2.1   The sample

The sample in this study consists of listed firms that focusing on listed firms of Top VN100. These are the firms that represent Vietnamese stock market because of the largest capitalization and the high liquidity. In the sample of Top VN100, we used 78 listed firms qualified for this study (banks and financial firms inconsistent with the research data were removed), corresponding to 234 observations in the period of 3 years, 2013, 2014 and 2015. The annual report and information data was hand collected from the Ho Chi Minh Stock Exchange's (HOSE) and firms' website.

2.2   Measurement of variables in the model

Dependent variable: firm performance (FPi): firm performance is measured by metrics: returns on asset (ROA) like the measurement of Vafeas (1999). Measurement of variables is stated in Table 1 as follows:

Tab.1: Definitions of variables

Variable	Description	Definition
Independent Variables: Firm performance (FPi)		
ROA	Return on Assets	The ratio of Return on total Assets
Dependent Variables:		
$FBMs_i$	Frequency of board meetings in year i	Total board meetings of the firm in the year i.
MM	The ratio of meeting members	Total meeting attendees/total number of board
NoW	The gender diversity in the board.	Number of members in the board are female.
Control Variables:		
DEBT	The ratio of debt	The total liabilities on Equity in year i

Source: Authors' calculation

2.3 Regression model

The regression model 1 is formed as following:

$$FP_i = \alpha + \beta_1 FBMS_i + \beta_2 MM_i + \beta_3 DEBT_i + \beta_4\,Now_i + \varepsilon$$

In this model, we focus on the characteristic of Board meetings such as the frequency of meetings, the ratio of meeting members. We also consider the relationship between the numbers of female members in the board with firm performance.

Moreover, we suggest the second model to examine the effect of Board meeting frequency and the gender diversity in the current year on the firm performance in the following year as follow:

The regression model 2 is formed as following:

$$FP_{i+1} = \alpha + \beta_1 FBMS_i + \beta_2 MM_{i+1} + \beta_3 DEBT_{i+1} + \beta_4\,NoW_{i+1} + \varepsilon$$

3 Findings and discussion

3.1 Descriptive statistics

We carry out the descriptive statistics as follow:

Tab. 2: Descriptive statistics board meetings frequency, gender diversity and firm performance (From 2013 to 2015)

N=78	Mean			Median			Min			Max		
Year	20 13	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
FBMS	10,84	11,25	13,78	6,00	7,50	8,00	2,00	2,00	3,00	88,00	65,00	84,00
MM	93,67	92,00	91,14	99,25	97,60	98,50	60,00	51,00	35,90	100,00	100,00	100,00
NOW	1,03	1,05	1,11	1,00	1,00	1,00	0,00	0,00	0,00	6,00	4,00	4,00
DEBT	1,29	1,29	1,24	1,12	0,98	1,00	0,02	0,03	0,02	6,04	8,01	5,79
ROA	7,95	8,17	9,67	6,47	6,84	6,80	-7,15	-24,89	-0,02	29,89	30,04	78,37

Source: Authors' calculation

Based on Tab. 2, the result shows that the board meetings frequency increases from 2013 to 2015 but the ratio of meeting members decreases more and more. We also find out some interesting information. Some firms have only 2 meetings per year but other ones have over 80 meetings per year. The gap between the maximum and minimum frequency of meeting is very high. The ratio of firm debt doesn't change much. The number of women in board tends to increase. Besides, there are a lot of firms with bad firm performance and still suffered losses although these are the firms in Top 100 in Vietnamese stock market whose stocks have the highest trading values in ranking.

3.2 Multivariate tests

We carry out to test the relationship between board meetings frequency, gender diversity and firm performance as follow:

Tab. 3: Results of regression coefficients

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Bet			Tolerance	VIF
1	(Constant)	9,445	4,220		2,239	0,026		
	FBMS	-0,062	0,037	-0,096	-1,673	**0,096**	0,951	1,052
	MM	0,038	0,044	0,049	0,860	0,391	0,973	1,028
	DEBT	-3,645	0,442	-0,474	-8,247	0,000	0,951	1,052
	NOW	1,014	0,446	0,129	2,273	**0,024**	0,978	1,023

Dependent Variable: ROA

Source: Author's calculation

Base on Tab.3, the first regression result shows that board meeting frequency, debt and number of women in the board have significant but the ratio of meeting members hasn't significant. We continue running the second regression, the result as following:

Tab. 4: Results of the second regression coefficients.

Model	R	R Square	Adjusted R Square
1	.527[a]	.278	.268

a. Predictors: (Constant), Number of Women, Debt, Meeting Frequency

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
2	(Constant)	12.963	.936		13.852	.000		
	FBMS	-.064	.037	-.099	-1.731	.085	.955	1.047
	Debt	-3.689	.439	-.480	-8.406	.000	.964	1.037
	NoW	1.044	.445	.133	2.349	.020	.984	1.017

Dependent Variable: ROA; Adjusted R Square = 0.268.

Source: Author's calculation

Tab. 5 shows that there is the association between firm performance and independent variables, specifically:

- FBMS has sig. = 0.085. This shows that firm performance negatively affected the frequency of board meetings at 10% significant level. It means that the more the meetings are held, the lower the firm performance. The monitoring role of board control is not effective.

- Debt has sig. = 0.0. This shows that firm performance negatively affected the debt at 1% significant level. The more the debt is, the lower the firm performance.

- NoW has sig. = 0.02. This shows that firm performance positively affected the number of women in the board at 5% significant level. It means that the more the women in the board, the better the firm performance. The characteristic of women helps the firm operate more effectively.

3.3   The board meeting frequency, gender diversity in the current year and the firm performance next year

We continue to test the relationship between the board meeting frequency, gender diversity in the current year and the firm performance next year with the tab. 5 below:

Tab. 5: firm performance next year and board meeting frequency, gender diversity in the current year

	ROA_{i+1}
Independent Variables	
$FBMS_i$	-0.072 (0.244)
MM_{i+1}	0.045 (0.509)
NoW_{i+1}	**1.206** (0.060)**
$DEBT_{i+1}$	**-2.683*** (0.000)**
Constant	7.743
Adjusted R^2	0.139
F Statistic	7.249
P – Value	0.000
Mean VIF	1.008

Statistical significance is indicated by ***, ** and * for 1%, 5% and 10% respectively

Source: Author's calculation

The results show that the more women in the board is not only increase the firm performance of this year but also the next year. In contrast, when the debt of the companies negatively affected firm performance. We don't find the association between the current board meeting frequency and the following firm performance.

Conclusion

There are a lot of studies about firm performance but there are very few studies about the association between the board meeting frequency, gender diversity in the current year and the firm performance.

This study investigates the relationship between firm financial performance and frequency of board meetings of firms with the market's largest capitalization and high liquidity on HOSE, with 234 observations for the period 2013 - 2015. Our findings suggest that the frequency of board meetings in this year negatively affects firm performance. This result is contrast with the findings of Carcello et al., 2002; Fich and Shivdasani, 2006; Adams and Ferreira (2008), Mangena and Tauringans (2008), Ntim and Osei (2011), Irshad & Ali (2015) but it is consistent

with the findings of Vafeas (1999), Jensen (1993), Jackling and Johl (2009), Johl et al. (2015) when they investigated in other countries. Besides, we also find that boards meet more often following poor financial performance. It means that the firms have a trend to meet board more when they have poor financial performance, but this didn't improve financial performance. On the other hand, this may due to more meetings are organized, the more costs including energy costs, travel expenses, and expenses incurred for the meeting, therefore the firm has to suffer. These costs negatively influence performance of the firm. The study also explored the relationship between the gender diversity and firm performance of the following year. These results also suggest policies for firms to review their meeting schedules and duration as well as agenda innovation in order to bring more benefits to their firms. Besides, our findings also provide evidence that the female directors enhance BOD effectiveness. This result is consistent with many previous studies (Adams and Ferreira, 2009; Gul et al., 2013; Nguyen and Faff, 2007; Perryman et al., 2016; Terjesen, 2016; Vafaei et al., 2015). The women play the important role to increase the firm performance. Thus, we suggest the policy debate by providing empirical evidence supporting the business case for board diversity. Overall, the findings of this study will help Vietnamese firms, investors and regulators to review the implications of the current board activities, especially improve the quality of board meetings and the board gender diversity to get more effectively in Vietnam to increase firm performance. Future studies may expand the sample size and study period in combination with other related variables such as ratio of board attendance or examining the effect of various kinds of meetings on firm performance to obtain more valuable research results.

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Contact

Hanh Le Thi My
Faculty of Accounting
Ton Duc Thang University, Ho Chi Minh, Vietnam
19 Nguyen Huu Tho St., Tan Phong Ward, District 7, Ho Chi Minh city, Vietnam
lethimyhanh@tdt.edu.vn

Hoanh Lam Thi Hoang
Faculty of Accounting
Ton Duc Thang University, Ho Chi Minh, Vietnam
19 Nguyen Huu Tho St., Tan Phong Ward, District 7, Ho Chi Minh city, Vietnam
lamthihoanghoanh@tdt.edu.vn

DIGITALIZATION'S IMPACT ON LEAN GLOBAL, START-UP FIRMS' INTERNATIONALIZATION SPEED

Michael Neubert

Abstract

Purpose: This paper aims to understand the impact of digitalization on international, lean, global start-ups' speeds (LGS). It closes a gap in the literature by defining better the benefits and the impact of digitalization on the speed of internationalization and models regarding the international market evaluation process. Furthermore, it outlines why and how digitalization is important throughout the internationalization process, and it expands the study of international management and business by including a broader and deeper range of digitalization aspects than is normally found in the international management and business literature.

Design/Methodology/Approach: The paper opted for a qualitative multiple case-study research design using different sources of evidence, including 51 responses from senior managers of lean, global, start-up firms. The case-study firms were selected using a simple random sampling method. The data were collected in September and October 2017, and analyzed using grounded theory to develop categories and to understand consistencies and differences. The revised Uppsala internationalization process model was used as the theoretical framework to analyze the impact of digitalization on the speed of LGS internationalization.

Findings: The paper provides empirical insights about the impact of digitalization on the speed of LGS internationalization. Digitalization allows LGS to increase decision-making efficiency and to optimize international market evaluation strategies and processes. It suggests that international managers act as "integrating forces" on several levels: by applying a disciplined and structured internationalization process with regular reviews, by mediating between local market realities and corporate goals, understanding the limits and benefits of digitalization, and optimizing decision-making.

Research/Practical Implications: The findings are relevant for researchers, scholars, managers, and policy makers who support activities that promote digital engagement, to understand better the impact of digitalization on the speed of LGS internationalization, to increase the efficiency of decision-making processes, and to optimize international market evaluation strategies, processes, training, and (financial) support projects. Future scholarly work might also include quantitative assessments of subject-matter experts' (SMEs') perceptions, whose qualitative data can provide greater clarification of the study's statistical significance or replicate it with other SME from different industries and markets.

Originality/Value: This paper fulfills an identified need and a call for research to study the impact of digitalization on the speed of LGS internationalization.

Keywords: International business, international management, big data analytics, market entry decisions, international entrepreneurship

JEL Codes: M00, M16, M31

Introduction

LGS need to understand the impact of digitalization on internationalization. Digitalization of internationalization processes especially helps LGS with limited resources to internationalize earlier and faster, which finally means that they need fewer resources to reach their business goals. Digitalization helps LGS collect and analyze data about international markets to speed up decision-making processes. The impact of digitalization is especially high in foreign markets, because LGS needs to create knowledge and to develop networks there to operate successfully. The speed of creating this intellectual and social capital determines the speed of internationalization. Because LGS often are pioneers and global market leaders in a small, global, market niches, early and fast internationalization is necessary to be competitive. Pricing is one example. LGS need to understand their own costs, as well as market prices and their products' value, to select correct prices and pricing models (Neubert, 2016; 2017).

The purpose of this study is to identify the impact of digitalization on the speed of LGS internationalization. The paper's rationale is to close a gap in the literature and to understand better the benefits and impacts of digitalization on the speed of internationalization. The paper proposes modeling an international market evaluation process and outlines why and how digitalization is important throughout [the whole process]. It aims to expand the study of international management by including a deeper and broader range of digitalization aspects than is normally found in the international management literature.

A call for research by Coviello, Kano, & Liesch (2017) and Vahlne & Johanson (2017) provided impetus for this study. Their papers called for further research about the impact of digitalization on internationalization research. Digitalization is instrumental in facilitating earlier and faster internationalization through digitalized knowledge, network creation, and decision-making processes. Therefore, it should be addressed through qualitative research methods, for example, multiple case studies. (Vahlne & Johanson, 2017). Merkert, Mueller, & Hubl (2015) also stress the need for further research about the usefulness of machine learning (ML) for decision-making purposes. Their findings suggest that the advantages of ML in decision-support systems are higher effectiveness and reduction of manual work.

1   Literature Review and Theoretical Framework

The theoretical framework of this study is based on a review of the literature regarding the Uppsala internationalization process model (Vahlne & Johanson, 2017; Coviello, Kano & Liesch, 2017) and LGS firms (Neubert, 2017; Tanev, 2017).

1.1 The Uppsala Internationalization Process Model

In 1977, Johanson and Vahlne developed the Uppsala internationalization process model (Vahlne & Johanson, 2017). Their most important finding was that firms enter new markets using a so-called establishment chain. In the first step of this gradual internationalization process, firms enter geographically and culturally closer markets. Therefore, they mainly use market-entry modes with low risk and low resource requirements. Typical examples are "direct export," "licensing," or "franchising." Often LGS collaborate with local partners such as importers, licensees, or franchisees, which dispose of local market knowledge and client networks (Neubert & Van Der Krogt, 2017). With growing international success, networks, and market information, LGS might increase their market commitment through additional resources. Thus, they might establish a wholly-owned subsidiary or enter more distant foreign markets. Certainly, if market attractiveness decreases, the level of commitment to a foreign market might also change, leading to outcomes such as lower investments to or exit from this market (Vahlne & Johanson, 2017; Neubert, 2013).

Johanson and Vahlne's second finding is about the liability of foreign ownership. LGS need numerous specific advantages in every international market to compensate for the liability of being a new competitor in the market without contacts, clients, or market knowledge. The larger the economical, geographical, administrative, and cultural distance between foreign and home markets, the larger the liability of being a foreign-owned company, and the larger the required number of advantages (Vahlne & Johanson, 2017). Local partners, such as importers, licensees, or franchisees, help to bridge these differences. Internationalization speed depends on the rapidity of knowledge creation (Vahlne & Johanson, 2017), learning (Neubert, 2017), and network creation in every new foreign market. In all foreign markets, this means that a LGS must be able to transfer its firm-specific advantages to a network of relevant and sustainable competitive advantages in a dynamic, permanently changing environment, to compensate for its status as an outsider (Vahlne & Johanson, 2017). Thus, a firm needs to develop its intellectual capital permanently through knowledge creation and its social capital through network creation in every market.

In most cases, internationalization requires a dynamic capability, but for firms with past international experience, the process is easier if the firms build on proven managerial practices (Neubert, 2017; Vahlne & Johanson, 2017). In this sense, internationalization can become an advantage (Neubert, 2013).

1.2 Lean, Global, Start-Ups

An LGS is a new type of firm (Tanev, 2017; Neubert, 2017). Compared with a born-global firm (BGF), an LGS creates a new market niche, using innovative technology and a new business model (Tanev, 2017). Its internationalization strategy is developed in advance and it is part of its initial business plan (Tanev, 2017). An LGS implements a business plan in incremental and iterative product cycles (Tanev, 2017), developing modest, viable products that are tested in the market (Neubert, 2017). Because of the immediate feedback in this process, products and services can be quickly adapted to market needs (Tanev, 2017).

LGS often start their global operations through up-stream activities (e.g., R&D and co-innovation with global partners) before engaging in downstream activities (e.g., market development and export) (Neubert, 2017). In this sense, LGS are new, international ventures (INV), rather than a BGF (Neubert, 2017). However, the case studies in this research project are classified as LGS because they use a lean internationalization process for their market development activities, within the framework of the Uppsala internationalization process model (Neubert, 2013; 2017).

Fig. 1: The International Market Development Process
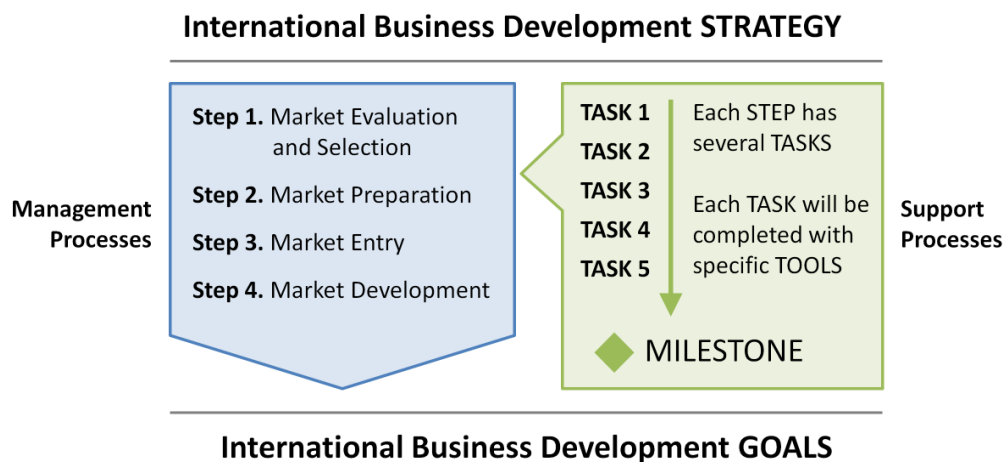
Source: Neubert, 2017

1.3 Digitalization of International Market Development

Digitalization creates online platforms and exchanges involving economic (e.g.,., Alibaba and Amazon) and social (e.g., LinkedIn) transactions (Coviello, Kano, & Liesch, 2017) to identify efficient sales opportunities in new foreign markets. These platforms and exchanges offer tools and information (e.g., logistical support, export insurance, export documentation, and financing) to execute these sales opportunities.

Digitalization also increases the effectiveness and reduces the manual work of decision-support processes (Merkert, Mueller, & Hubl, 2015; Holsapple, Lee-Post, & Pakath, 2014). Traditional data-driven and fact-based decision-making processes increase the productivity and profitability of companies by 5–6% compared to their competitors (Bohanec, Borštnar, & Robnik-Šikonja, 2017). Companies using prescriptive, analytics-based, ML algorithms increase their revenues by more than 15% (Kawas, Squillante, Subramanian, & Varshney, 2013).

Digitalization creates social data (market networks) and intellectual data (market knowledge) about foreign markets earlier and faster than other methods, while also improving firms' attractiveness, decision processes, and decision makers (Clark, Li & Shepherd, 2017). While decisions are often based on historical data or on experiences from other markets, a new market entry is a long-term investment in the future attractiveness of an untested foreign country (Neubert, 2017). If an LGS decides to enter a new foreign market in 2018, the decision is often based on historical market data (2016 and earlier), but the effects of the decision (e.g., significant new clients and sales revenues) will take place approximately two years later. Therefore, predictive algorithms should be used to assess future markets' attractiveness. Although predictive algorithms cannot eliminate uncertainty, they can improve allocation of resources and prioritizing of projects. International managers must manage digitalization carefully by mediating between local market realities and corporate goals and understanding the limits and benefits of digitalization (Ransbotham, Kiron, & Prentice, 2015). Early warning systems that once would have taken years to create now can be rapidly developed and optimized from real-world data. To assess the usefulness of prediction models, we must evaluate them not on their ability to recapitulate historical trends, but instead on their accuracy in predicting future events.

Fig. 2: How Digitalization Might Affect the Speed of Internationalization
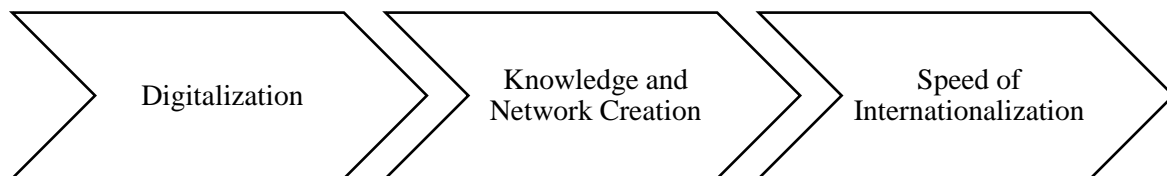
Source: The author

2   Research Methodology

The purpose of the study has led to the following research question: what are the perceptions of SMEs about the impact of digitalization on LGS internationalization?

The choice of the research method is based on the purpose of this study and the research question. A qualitative multiple case-study research method was used to contrast and compare subject-matter experts' (SMEs') perceptions about the impact of digitalization on LGS internationalization (Yin, 2015). In contrast to a survey or an experimental design, a multiple case study allows in-depth analysis of complex research problems within a highly-contextualized environment, has more flexibility, and allows comparison across cases (Yin, 2015).

The choice of the sampling strategy is based on the purpose of this study. After drawing a simple random sample from a database of 1.475 LGS applying a 90% confidence level and a margin of error of 8, the online questionnaire was sent to the randomly selected 100 SMEs, which are all senior managers of an LGS, for data collection in September 2017. 51 SMEs completed the questionnaire until October 2017, which results in an effective response rate of 51%. All LGS are high-tech firms, which are domiciled in Germany, Austria, or Switzerland, and export their products and services to foreign markets. Due to the low response rate, the final sample is not considered as representative resulting in a predominately qualitative data analysis.

Based on our research goal, the data analysis followed a logical sequence, starting with an individual case analysis followed by a quantitative and qualitative cross-case comparison to identify differences and similarities between the different cases (and categories). Therefore, we coded the responses to the questions and remarks with a "label", which we attached to a word or a short sequence of words (example: "level of digitalization"), created categories based on the codes (example: four categories based on the "level of digitalization"), and developed themes as a higher level of categorization (example: "SME expect a high impact of digitalization on revenue growth"). Further, we tried to identify correlations between the different answers to support our arguments and to validate the answers of the SMEs (example: correlation between knowledge/ experience and application).

3   Findings

To answer this research question, the results of this multiple case study are presented in this chapter. Analysis of the data collected from SME interviews revealed the following findings:

Traditional data-driven and fact-based decision-making processes increased the productivity and profitability of companies by 5–6% compared to their competitors (Bohanec, Borštnar, & Robnik-Šikonja, 2017). Companies using prescriptive, analytics-based ML algorithms increased their revenues by more than 15% (Kawas, Squillante, Subramanian, & Varshney, 2013). This survey's results partially confirmed the results in the literature. The 51 SMEs in this survey expected significant improvements of digitalization in productivity, profitability, revenue growth, and cost reductions (compare to table 1). The expected impact of digitalization on productivity, profitability, and revenues is high, very similar, and higher than on cost reductions. The statements of SMEs confirm this finding, because most LGSs have implemented an international growth strategy with a strong focus on profitable and efficient revenue growth in foreign markets.

Tab. 1: Impact of Digitalization on LGS Internationalization

51 SME responses (number / percentage)	No impact (0%)	Improvement (1–5%)	Improvement (6–10%)	Improvement (> 10%)
Productivity	5 (9.8%)	13 (25.5%)	22 (43.1%)	11 (21.6%)
Profitability	2 (3.9%)	15 (29.4%)	21 (41.2%)	13 (25.5%)
Revenues	2 (3.9%)	14 (27.5%)	23 (45.1%)	12 (23.5%)
Cost reductions	8 (15.7%)	22 (43.1%)	18 (35.3%)	3 (5.9%)

Source: The Author.

For the further analysis, we wanted to understand which SMEs expected the greatest positive impact. Therefore, we divided the 51 SMEs into four categories depending on their level of digitalization of international market development activities (compared to Table 2).

Tab. 2: SME categories depending on the level of digitalization

Category Number	Number of SME	Level of digitalization of international market development activities
1	Four (4)	These SMEs are currently digitalizing their international market development activities.
2	Nineteen (19)	These SMEs are planning to digitalize their international market development activities.
3	Twenty-three (23)	These SMEs are interested in digitalizing their international market development activities.
4	Seven (7)	These SMEs are not interested in digitalizing their international market development activities.

Source: The Author.

The analysis of the four categories shows that only four (8%) SMEs currently digitalize their international market development activities. The majority of the SMEs is interested (45%) or is planning (37%) to digitalize their international market activities. Only seven (14%) of all SMEs are not interested in digitalizing their international market development activities, because they do not see any concrete benefits or use cases.

The data analysis also shows that SMEs in Category 4 often do not expect any significant impact. The highest impact is expected from SMEs of Category 3, followed by the SMEs of Category 1 and 2. This result shows that SMEs only interested in digitalizing their international market development activities (Category 3) expect the highest impact from digitalization of LGS internationalization. This enthusiasm, with expectations higher than actual results, often is caused by digitalization projects still in the implementation and optimization phase, which do not exploit the full potential of international digitalization yet. Further analysis of the data shows that SMEs in Category 1 have the greatest experience and knowledge about international digitalization, followed by Categories 2, 3, and 4 (e.g., positive correlation between knowledge, experience, and application).

In the next step, we tried to understand where the SMEs expect the highest economic benefit. 56% of all SMEs expect the highest economic benefit derived from digitalization in strategic planning and controlling, and 53% in the international market development process. This includes the acquisition and development of clients and distribution partners in steps 2 and 3 (= more efficient network creation), and the evaluation and selection of new foreign markets in step 1 (see Exhibit 1) based on a more efficient creation of market knowledge. SMEs understand digitalization as an improved usage of internal and external data to analyze their current situation and to predict the future attractiveness of foreign markets. This helps them analyze future market developments, make faster and better-informed decisions, allocate resources more efficiently to different markets, and react more quickly to market changes.

Another important, but rather unexpected finding is that many SMEs currently hesitate to make important decisions due to a lack of reliable data and powerful data analytic tools, and prefer a step-wise decision-making process to reduce risk.

The following finding is based on individual SME statements: Optimization of the international market development process (see Exhibit 1) focuses mainly on reducing client acquisition costs by increasing the efficiency of marketing and acquisition activities (e.g., higher conversion rates

and client retention). Here SMEs expect to receive additional information about the probability of cross-selling, reselling, and up-selling, as well as client retention.

In general, SMEs expect higher efficiency in all international market development processes to internationalize earlier and faster. Furthermore, they plan to develop internationalization into a core competency, which might offer them a competitive advantage. According to several statements of SMEs, they often have higher expectations about the impact of digitalization on internationalization than they can realize in practice.

Conclusion

This study provides additional evidence about the impact of digitalization in LGS internationalization, using the Uppsala internationalization process model and the LGS concept as theoretical frameworks. The method is a qualitative multiple case-study research design. The data are collected through SME interviews as a primary source of evidence. Grounded theory is used to analyze the collected data.

The findings show that SMEs see a significant impact of digitalization on LGS internationalization. This result confirms the findings of other studies (Bohanec et al., 2017; Kawas et al., 2013). Digitalization allows LGS to create knowledge and networks at a faster rate, increasing the speed of internationalization. In detail, digitalization increases the efficiency of decision-making processes using internal and external data to predict future market development, allowing LGS to act on several levels: by applying a structured and disciplined internationalization process with regular reviews, by mediating between local market realities and strategic goals, understanding the limits and benefits of digitalization, and optimizing decision-making processes due to better information.

The findings are relevant for scholars, researchers, managers, and policy makers who support activities that promote digitalization, to better understand the impact of digitalization on LGS internationalization speed, to increase the efficiency of decision-making processes, and to optimize international market evaluation strategies, processes, training, and (financial) support projects.

While offering new ideas for future research, a multiple case study research design has several limitations in scope and size. Future scholarly work should include more robust quantitative assessments of SMEs' perceptions with qualitative and quantitative data to provide greater

clarification of the statistical significance of the study's variables or replicate it with other case-study firms belonging to different countries or industries and at different stages of development.

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Contact

Michael Neubert

ISM International School of Management

17, Boulevard Raspail, 75007 Paris, France

michael.neubert@faculty.ism.edu

IMPACT OF BUSINESS INTELLIGENCE ON EXPORT OF SOFTWARE FIRMS

Michael Neubert – Augustinus van der Krogt

Abstract

Purpose: The paper aims to understand the use and expected impact of business intelligence on Paraguayan ICT firms' export performance. This paper contributes to the literature to better understand the use, benefit, and impact of business intelligence on export performance. It proposes a modelling evaluation framework for the international market and outlines the importance of business intelligence in the whole process. The study includes broader aspects in addition to those found in the study of international management and business intelligence.

Design/methodology/approach: This paper adopted a multiple case-study research design using different sources of evidence, including 15 responses from subject-matter experts (SMEs). The subject-matter experts (SME) were selected using a purposive sampling method. Data collected in November and October 2017 were analyzed using grounded theory to develop patterns and categories, and to understand differences and consistencies. The revised Uppsala internationalization process model is used as a theoretical framework to analyze the use and impact of business intelligence on export performance and internationalization.

Findings: This paper provides empirical insights on the impact of business intelligence in the sense of big data and predictive analytics on the export performance of ICT firms. Although only a few SMEs currently use business intelligence solutions in terms of big data and predictive analytics to support international strategic decision-making processes, the majority indicate their intention to use business intelligence solutions in expectation of positive impact on export performance and international competitiveness. The main factors for selecting a business intelligence solution are transparency of cost and benefits, an excellent client service and an attractive pricing model.

Research/practical implications: The study results are relevant for policy makers, researchers, and international managers, who support the development, training, and application of business intelligence systems and its impact on the export performance and internationalization of Paraguayan ICT firms. Future scholarly work should include quantitative assessments of SME perceptions and quantitative data to provide greater clarification of the statistical significance of the variables of this study or to replicate it with other SMEs from different industries and countries.

Originality/value: The paper fulfils an identified need and a call for research to study the use and impact of business intelligence on export performance and the competence to globalize Paraguayan ICT firms.

Keywords: International business, international management, international entrepreneurship, business intelligence, Paraguay

JEL Codes: M00, M16, M31

Introduction

There is a need for Paraguayan ICT firms to understand the impact of business intelligence on export performance. Paraguay's open economy is home to a few innovative ICT firms (Neubert & Van Der Krogt, 2017). Paraguayan ICT firms need speed to get their new products to international market to refinance their research and development cost (Neubert, 2016). These firms use business intelligence comprising strategies and technologies to collect and analyze foreign markets data and predict their future attractiveness (Dedić & Stanier, 2016). Business intelligence helps in increasing the speed of internationalization by gaining knowledge, creating networks about new foreign markets with limited resources, increasing efficient decision making during market evaluation and selecting the most attractive foreign markets. Further applications such as international pricing decisions (Neubert, 2017) or the acquisition of domestic distributors might benefit from the use of business intelligence systems. Thus, the Paraguayan ICT sector might counter future competitiveness using business intelligence to develop international markets.

This study aims to understand the use and expected impact of business intelligence on Paraguayan ICT exports and internationalization activities of firms. This paper contributes to the literature to better understand the use, benefit, and impact of business intelligence on export performance and internationalization. It proposes a modelling evaluation framework for the international market and outlines the importance of business intelligence in the whole process. The study includes broader aspects in addition to those found in the study of international entrepreneurship and business intelligence.

This study is part of research by Coviello, Kano & Liesch (2017) and Vahlne & Johanson (2017) and continues the research of Neubert & Van Der Krogt (2017). Their papers call for further research about the impact of business intelligence on internationalization. Vahlne & Johanson (2017) suggested that this need should be addressed through qualitative research methods like for example multiple case-study research. Owing to the need for expeditious internationalization (Neubert & Van Der Krogt, 2017), the expected impact of business intelligence might be important for Paraguayan ICT firms as an example for high-tech firms from emerging markets (Neubert & Van Der Krogt, 2017), which is the main motivation for this study.

1   Literature Review and Theoretical Framework

In 1977, Johanson and Vahlne developed the Uppsala internationalization process model (Vahlne & Johanson, 2017), which became the most popular theoretical framework of the first stages of internationalization (Santangelo & Meyer, 2017) and probably also the most challenged (Håkanson, & Kappen, 2017; Santangelo & Meyer, 2017). Their most important finding was that companies like ICT firms enter new foreign markets using a so-called establishment chain (Vahlne & Johanson, 2017). As the first step of this step-by-step internationalization process, Paraguayan ICT firms enter culturally and geographically closer markets such as Brazil, Bolivia, or Argentina with low-risk and low resource-consuming market-entry modes, such as 'service export' or 'software licensing', mostly in collaboration with domestic distributors (Neubert & Van Der Krogt, 2017). With growing success, Paraguayan ICT firms might increase their presence in these markets, establishing, for example, a wholly owned subsidiary or acquiring their domestic distributor. In parallel, they also might begin to enter more distant foreign markets such as Chile and Mexico or follow their existing key account clients to even more distant markets. The allure of foreign markets is often volatile. It might change quickly due to the acquisition of a new client or the loss of an established sales channel, leading also to outcomes such as a decreasing market commitment (Clarke & Liesch, 2017) or even a market exit (Neubert, 2015).

Johanson and Vahlne's second finding is about the liability of foreignness and outsidership (Vahlne & Johanson, 2017). Paraguayan ICT firms need a bundle of firm-specific competitive advantages in every foreign market to compensate the liability of foreignness and outsidership. The larger the economical, geographical, administrative, and cultural distance between the foreign target market and the home market, the larger the liability of outsidership and foreignness, and the larger the need for firm-specific competitive advantages (Vahlne & Johanson, 2017). Domestic distributors help Paraguayan ICT firms to bridge these differences. They might help Paraguayan ICT firms to adapt their product features, pricing, marketing communication, or terms of doing business (e.g. payment conditions and warranties). In addition, they might offer services like import, legal & compliance advice, logistics (including storage), client acquisition and service, and accounts receivable management (Neubert, 2017; 2016). Thus, the speed of internationalization depends on the speed of knowledge and network creation (Vahlne & Johanson, 2017; Neubert, 2017; 2016) in each new foreign market, preferably with the support of a local partner.

The Uppsala internationalization process model is chosen as theoretical concept because it has been adopted by all Paraguayan ICT firms of this sample to develop the neighboring foreign markets (Neubert & Van Der Krogt, 2017). Paraguayan SMEs consider speedy internationalization as important for the long-term survival of their ICT firm due to the limited size of their domestic home market (Neubert & Van Der Krogt, 2017). However, they often are confronted with significant delay in the execution of their international market development activities in comparison to the time planned in their business plans (Neubert & Van Der Krogt, 2017). The main reason is an often unplanned and unstructured internationalization behavior (Neubert & Van Der Krogt, 2017). Paraguayan ICT firms often enter new foreign markets based on their existing networks and clients by using market opportunities or by following existing clients without analyzing the attractiveness of new foreign markets in detail (Neubert & Van Der Krogt, 2017). SMEs understand that this reduces the speed of international market development. They acknowledge the importance of a structured market development process starting from a detailed evaluation and selection of foreign markets before they actually enter them (Neubert & Van Der Krogt, 2017). All SMEs understand that their capabilities are crucial for their international success. The faster they learn how to do business and to acquire customers in new foreign markets, the higher the speed of internationalization will be (Neubert & Van Der Krogt, 2017). This is especially challenging for Paraguayan ICT firms, because they internationalize from an emerging to an often higher developed market (Buckley, Doh, & Benischke, 2017).

2   Research Methodology and Research Questions

The purpose of this study has brought up the following three research questions:

- Research Question 1: What are the perceptions of SMEs about the use of business intelligence?
- Research Question 2: What are the opinions of SMEs regarding the expected impact of business intelligence on export performance and internationalization?
- Research Question 3: What are the views of SMEs about the factors that determine the use and the selection of business intelligence services?

The choice of research method is based on the purpose of this study. This study uses a multiple case-study research design to answer the explanatory research questions (Yin, 2015). In contrast to an experimental design or a survey, a multiple case study method presents more flexibility, allows an in-depth analysis of a complex research problem (Yin, 2015) within a highly-

contextualized environment and allows for a comparison between different cases. This research design helps answer the research questions because it allows the use of the replication logic as a possibility to obtain external and internal validities as well as to analyze pattern-matching properties between theories and cases (Yin, 2015).

This study used different sources of evidence to derive robust conclusions and to achieve construct validity. Therefore, we applied the triangulation concept to the data collection phase to guarantee that different sources of evidence were used to collect data from each case. The primary source for data collection comprised qualitative, semi-structured, in-depth, individual face-to-face interviews with SMEs. The SMEs are all founders and/or CEOs of Paraguayan ICT firms with significant international management experience and higher education. Their ICT firms focus on the development of products and services for niche markets which can compete at domestic and foreign markets (Neubert & Van Der Krogt, 2017). Other sources of evidence were firm and product flyers and brochures, corporate website, internal documents provided by the SMEs and other secondary data. The data were collected in October and November 2017. The reliability criteria were met by using the same questionnaire, the same study protocol and the same data structure in the data collection phase. The duration of the SME interviews was in average 90 minutes.

The data analysis followed a logical sequence, starting with an individual analysis of each interview, followed by a cross comparison of the results to identify differences and similarities between the answers of the different SMEs, and finally a theoretical and literal replication using a pattern-matching approach. The main goal of this approach is to increase the possibility to transfer and generalize the findings to other contexts.

The choice of the sampling strategy is based on the purpose of this study that uses a purposive case selection strategy. After drawing a random sample from a database of 60 Paraguayan firms, which are active in the software services sector, 15 typical cases of the sample exporting software products were selected. According to Yin (2015), if at least 6 to 10 cases are selected, this sampling strategy produces a statistically representative sample. Data saturation was achieved with 15 SME interviews. This higher than required sample size allows for a better triangulation of data and helps to strengthen the results of the whole study (Yin, 2015).

3 Findings

The results of this multiple case study are presented to answer the research questions individually.

3.1. Answer to research question 1

The analysis of the data collected from the in-depth, semi-structured, qualitative, face-to-face SME interviews revealed the following findings answering the first research question:

What are the perceptions of SMEs about the use of business intelligence?

Only one (7%) of the SMEs use internationalization theories, country market data and predictive analytics in the form of market studies to evaluate the attractiveness of foreign markets. According to the SMEs, the limited use of big data and predictive analytics in strategic decision making can be explained by the incipient stage of the use of business intelligence in Paraguay as an emerging economy in general. At this moment, business intelligence strategies are still confined to the few larger – multinational – companies in the telecommunications and financial sector. While macroeconomic data are mostly available, there are very limited sector-specific data available in industry and services sectors, as indicated by most SMEs. Business intelligence and especially big data analytics is therefore still in a premature stage and difficult to use to support business objectives in Paraguay. The majority of the SMEs mention that this is further complicated by a lack of data analysis and interpretation capacity in the country.

Despite more advanced availability of macro-economic and sector-specific data in other countries such as Brazil and Mexico and in developed countries, the situation in Paraguay affects the knowledge, experience and expectations of data usage for internationalization in industry and services. In the specific case of the ICT sector, the study indicates that a majority of the companies do not have sufficient knowledge (40%) and experience (35%) to make effective use of business intelligence in general and predictive data in particular. Among the Paraguayan ICT firms, only one company is currently using predictive data to identify foreign market opportunities. Other companies indicate that the limited use of data is partially explained by a lack of time to study and apply it. Therefore, effective use of predictive data would require companies to allocate time and training resources.

The main finding of research question 1 is that only a minority of SMEs and their ICT firms currently use business intelligence solutions in terms of big data and predictive analytics to

support international strategic decision-making processes like foreign market evaluation and selection.

3.2.   Answer to research question 2

The analysis of the data collected from the in-depth, semi-structured, qualitative, face-to-face SME interviews revealed the following findings that answer the second research question:

What are the opinions of SMEs regarding the expected impact of business intelligence on export performance and internationalization?

Despite of the current knowledge and experience, nine (70%) of the SMEs are interested in using business intelligence in terms of big data and predictive analytics to support their internationalization strategy in the short term. Eleven (85%) of the SMEs can envisage using business intelligence in terms of big data and predictive analytics in the long term because they are currently identifying new foreign market opportunities and want a better insight in the market potential. However, it is prudent to observe that the SMEs also reveal that the actual acquisition and usage of predictive data may be rather limited due to time constraints and low willingness to pay for data services, combined with high expectations of the integrality and flexibility of data sets.

The research provides detailed insights in the perceived short-term impact of business intelligence in terms of big data and predictive analytics on sales. In the short term, the SMEs indicate that predictive data can assist mainly in the identification of new markets, market segments, leads and clients. It can also assist in better planning, management and control of sales. To a lesser extent, the data are thought to be useful to choose sales channels and sales funnel optimization. They also feel that business intelligence in terms of big data and predictive analytics are less effective to increase loyalty and sales volume of the existing clients.

The SMEs expect an even stronger long-term impact on productivity and profitability of international operations. About 77% can envisage more than 6% increase in profitability and growth and 54% of the SMEs indicate more than 6% in productivity increase. As much as 85% of the SMEs expect these improvements because of a better forecast of the service needs of existing clients. A large majority of the participating companies also indicate a potential contribution by better calculations of the attractiveness of foreign markets, predictions of market developments in specific subsectors and mitigation of market risks. The companies' expectations with regard to contribution to reduction in costs, forecasting of revenues, price developments and competition are fewer. A majority of 62% of the SMEs expected an improved

sales process in terms of improved efficiency of sales negotiations, a faster and better decision making and a reduction of sales risks. Almost half of the SMEs can imagine that business intelligence in terms of big data and predictive analytics will contribute to an increased turnover per client, improved relationship with clients and more motivated salespeople.

The main finding of research question 2 is that the majority of SMEs wants to use business intelligence in terms of big data and predictive analytics because they believe that there is a significant positive impact on export performance and on their competitiveness in international market development.

3.3. Answer to research question 3

The analysis of the data collected from the in-depth, semi-structured, qualitative, face-to-face SME interviews revealed the following findings to answer the third research question:

What are the views of SMEs about the factors that determine the use and the selection of business intelligence services?

When considering the use of a business intelligence service in terms of big data and predictive analytics, the SMEs are inhibited by a diverse set of assumptions. SMEs are concerned about a lack of support in configuration and an unclear selection and processing and evaluation of data (= black-box-effect). They further assume inflated cost of data services in relation to the small size of their business. SMEs also consider obscure benefits and a lack of specific relevance for the software sector and a lack of motivation of the client to collaborate in using predictive data. Contrary to what could be expected, fewer SMEs are worried about the management of the software and training of employees.

To select a business intelligence platform to support internationalization the SMEs will mainly consider a business intelligence solution that responds to the expected problems mentioned earlier. Over 85% of the SMEs would choose based on an excellent after-sales client service that accompanies the company in the use of the service. SMEs will consider recommendations and references by existing clients. They further expect a low price that reflects their limited size of business, along with a high level of flexibility and integrality. Fewer SMEs are concerned about the size and reputation of the provider and additional services as professional training and consulting services.

The main finding of research question 3 is that the main factors that determine the use and the selection of business intelligence services are transparency of cost and benefits. Further, SMEs expect an excellent client service and an attractive pricing model.

Conclusions

This paper fulfils an identified need and a call for research to study the use and the impact of business intelligence on export performance and the competence to internationalize Paraguayan ICT firms. The study provides additional new evidence about the possible impact of business intelligence on the export performance of Paraguayan ICT firms using the Uppsala internationalization process model as the theoretical framework. The research method is a multiple case-study research design. Data are collected through 15 SME interviews as a primary source of evidence. Grounded theory is used to analyze the collected data.

The answer to research question 1 is that only a minority of SMEs and their ICT firms currently use business intelligence solutions in terms of big data and predictive analytics to support international strategic decision-making processes like foreign market evaluation and selection.

The answer to research question 2 is that the majority of SMEs indicate their intention to use business intelligence in terms of big data and predictive analytics because they believe there is a significant positive impact on export performance and on their competitiveness in international market development.

The main finding of research question 3 is that the main factors that determine the use and the selection of business intelligence services are transparency of cost and benefits. Further, SMEs expect an excellent client service and an attractive pricing model.

The results are relevant for policy makers, researchers, and international managers, who support all kind of activities that promote engagement into the development, training, and application of business intelligence systems because they better understand the impact of business intelligence on the export performance and internationalization of Paraguayan ICT firms. The results are highly relevant for the future competitiveness of the entire Paraguayan ICT sector and should motivate all stakeholders to continue this research stream.

This multiple case-study research design has several limitations in scope and size that offer new ideas for additional research. Future scholarly work should also include quantitative assessments of SME perceptions and that with quantitative data to provide greater clarification

of the statistical significance of the variables of this study or to replicate it with other ICT firms from different country markets.

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Contact

Michael Neubert

ISM International School of Management

17, Boulevard Raspail, 75007 Paris, France

michael.neubert@faculty.ism.edu

Augustinus Van Der Krogt

UPA Universidad Paraguayo Alemana

Lope de Vega 1279, Asuncion, Paraguay

vander.krogt@upa.edu.py

IDENTIFICATION OF GLOBAL VALUE CHAINS IMPACT ON CZECH MANUFACTURING INDUSTRY

Inka Neumaierová – Ivan Neumaier

Abstract

Identifying the impact of Global Value Chains (GVCs) is rather challenging as their activities go beyond national states while statistical monitoring is closed within national statistics. In addition, willingness of GVCs to provide information is limited. In order to map the influence of GVC we used the indirect method, with the help of three Input-Output (I-O) indicators of manufacturing industry in Czech Statistical Office (CSO) tables for years between 1990 and 2013.

Purpose: The reason for writing this article is the fact that there is a lot of talk about the influence of global value chains (GVC) on the economy of the Czech Republic, but there are few data analyses to support this debate. The aim of the article is to analyse the influence of GVC on manufacturing industry in the Czech Republic.

Design/methodology/approach: In order to map the influence of GVC we used the indirect method (Ordinary Least Squares), with the help of three Input-Output (I-O) indicators in CSO tables: the import demand of exports, the share of added value in production and the total share of exports in resources. The sample is represented by all businesses in manufacturing industry in the Czech Republic. Through trends in the values of the indicators researched we verified the assumption that GVC put businesses in the territory of the Czech Republic into the assembly or production sector.

Findings: We have ascertained that in the time period in question the share of businesses under foreign control in manufacturing industry increased from zero to the majority of production. The results show the suitability of our assumption, primarily in the case of the import demand of exports. The total share of exports in resources indicator proved to be generally appropriate. Using the share of added value in production can be recommended for identifying GVC less.

Research/practical implications: The results show the consequences of involvement in GVC for individual sectors of manufacturing industry in the Czech Republic. They are a challenge for considering how to get optimally involved in GVC. A proposal for future research is to perform the calculations for all sectors in the Czech Republic and also for similar economies, such as Slovakia, Hungary, etc.

Originality/value: Identifying the influence of GVC is fairly demanding, as their activities exceed the limits of national states, whereas statistical monitoring is closed as a part of national statistics. In addition, their willingness to provide information is limited. It is original analytical and data material that provides evidence of the influence of GVC on manufacturing industry in the Czech Republic.

Keywords: Global Value Chains, imports content of exports, manufacturing, I-O tables

JEL Codes: M210, G300

Introduction

Globalization is changing the operation of the world economy. We are witnesses to the new global division of labour in vertically integrated companies. Vertical links between suppliers and customers are creating a new key unit of the globalized economy. In it there is trading not only in intermediate products, but also in research and development and in services and support activities (e.g. human resources management, customer support, ...). More important than the resulting product are activities that businesses or states perform. Products go through a chain of activities (primarily activities and support activities), during which they obtain added value.

A value chain breaks down buyers, suppliers and businesses into independent, but mutually related activities that are a source of value (Porter, 1998, pp. 16). Porter's value chain has become global. Each activity can take place in a different country. Production is being moved abroad (offshoring) and external resources are being used (outsourcing). The existence of global value chains enables concentration on the part of a process for which businesses or countries have the best conditions. It is, however, necessary to take into consideration that the different price and demanding nature of individual activities in a GVC leads to an uneven division of added value. (UNCTAD, 2013, pp. 123).

The literature on investigating GVC is limited. Van den Broeck, Swinnen and Maertens (2017) investigate the impact of expansion of GVC and large scaled export oriented farms in Senegal. They estimate fixed effects regressions on panel data and find that income inequality reduced much faster in the researched area than in other sectors. Brancati, Brancati and Maresca (2017) analyse the impact of the Great Recession on the GVCs. They found major differences among the participants of GVCs favouring subjects which took part heavily in R&D.

Graph 1, called the Stan Shih smiling curve, approximates the relationship of added value and individual activities of a value chain. It is clear that the main gainful activities are product development (research, development, branding, design) and services (distribution, marketing, sales service), which are linked to skilled professionals, last a long time and are expensive. In contrast to this, the actual production and assembly make a minimum contribution to the price of a product and bring little added value.

Fig. 1: Stan Shih "Smiling curve"
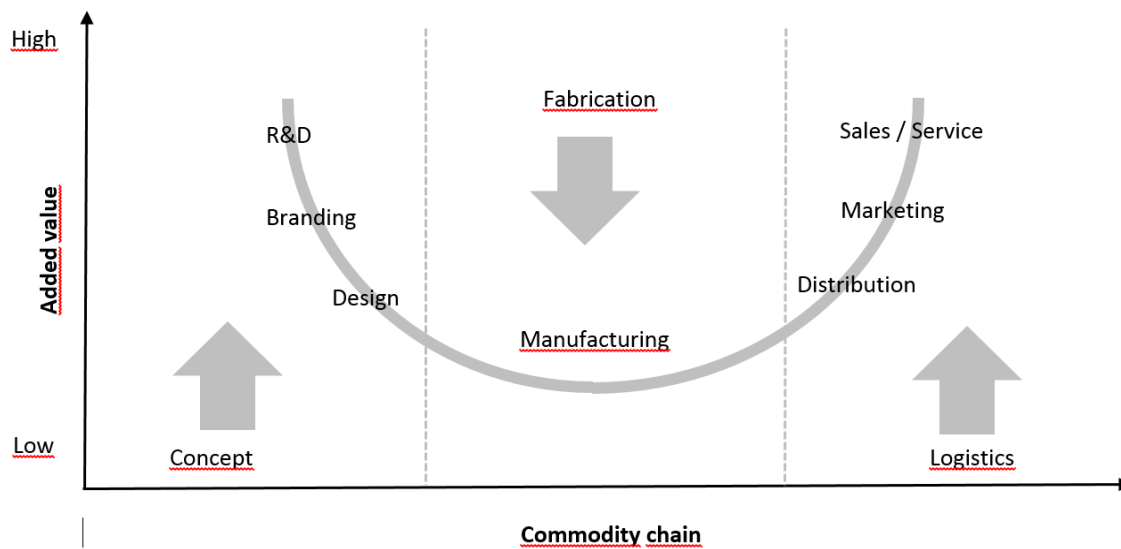
In addition, large multinational corporations are moving lucrative activities to countries with favourable tax regimes (in Europe, for example, the Netherlands, Ireland and Luxembourg) for the purpose of tax optimization.

The development of GVC has led to the creation of another method of measuring international trade (TiVA), which is shown by Trade in Value-Added. It shows the real benefit of trade for a country (OECD, WTO, WORLD BANK, 2014, pp. 18). Thanks to these statistics it is possible to see, to a significant extent that trade is accounted for by intermediate products and services holding a chain together (transport, communication, finance, distribution). Services such as support, licensing and retail comprise more than half of added value in the final product!

We resolved the specific task of identifying the influence of global value chains (GVC) on manufacturing industry in the Czech Republic. The chances of obtaining data from businesses under foreign control are very limited. Reading the necessary data directly from statistical data is also not possible because the necessary data are not monitored and are closed in a national framework.

We assume that GVC put businesses in the territory of the Czech Republic in the assembly and production sector, i.e. in part of a chain with the lowest added value. This fact should have an

influence: on an increase in necessary imports for exports, on a fall in the share of added value in production and on growth in the total share of exports in resources.

The aim of the article is to ascertain whether this assumption is correct.

1   Methodology and Data

In the OECD they calculate imports necessary for exports from Input-Output (I-O) tables (OECD, 2017). The I-O table method monitors added value in individual sectors and countries as a part of a value chain and attributes added value to them. I-O tables show mutual links in the whole economy.

The Czech Statistical Office (CSO) has calculated I-O tables for 1990, 1995, 2000, 2005, 2010 and 2013 (CSO, 2017). For 2015 the CSO has not drafted them, as the preparation of I-O tables is delayed by about two years. Based on the CSO's I-O tables we calculated the necessary imports for exports, the share of added value in production and the share of exports in total resources. The CSO publishes I-O tables for the whole economy, the use of domestic products (Ad) and imported products (Am). The tables also contain exports, added value, production and imports.

$$NDV = u * Am * \left(I - Ad \right)^{-1} * EX / \sum EX \qquad (1)$$

NDV = necessary imports for exports
u = denotes an 1 x n vector each of whose components is 1 for corresponding import types
Am = use of products from imports
I = unit matrix
Ad = use of domestic products
EX = vector export

$$PHP = PH / P \qquad (2)$$

, where

PHP = share of added value in production
AV = added value
P = production

$$PU = E / \left(P + D \right) \qquad (3)$$

, where

PU = share of exports in total resources

E = exports

P = production

D = imports

Based on analytical materials of the Ministry of Industry and Trade of the Czech Republic (MIT) Financial Analysis (MIT, 2017) we ascertained the share of businesses under foreign control in production in manufacturing industry for the period for which I-O Tables are available (see Tab. 1). In practice, the share of foreign businesses in 1990 to 2013 rose from 0% to 83%. Certainly, not all businesses under foreign control are part of a GVC. However, the largest businesses in manufacturing industry are in GVC and so we will view businesses under foreign control as businesses in a GVC. In 1990 there was no influence of GVC and in 2013 GVC decided the character of output from manufacturing industry. Shares are calculated from the Financial Analysis, i.e. large and medium-sized companies. We did not obtain the data for 1995.

Tab. 1: Share of Foreign Businesses in Manufacturing Industry in Production

1990	1995	2000	2005	2010	2013
0%	.	41%	62%	86%	83%

Source: MIT [2017], own calculations

1.1 Import Demand of Exports

The integration of businesses in the territory of the Czech Republic in GVC means a higher division of labour (unfortunately often into assembly activities with a lower benefit for the creation of added value), where such specialization is leading to higher demand from exports for imports. Production connections as a part of a GVC are concentrated, in particular, in manufacturing industry (MI). According to assumptions of the import demand of exports in 1990 to 2013 there was an increase in manufacturing industry almost to double, by 84% (see Table 2).

In the individual sectors there were different trends, as is visible from the table. The biggest increase in necessary imports for exports was recorded in 30 (by 361%), 27 (by 329%), 18 (by 178%) and 17 (by 122%). Many sectors, such as 26, 29, etc., increased the share of necessary imports for exports by around 100%. The share in 2013 was the largest in 19 (84%) and 26 (68%). Many sectors were around 50%.

Tab. 2: Share of Imports in Exports (as a %)

	Year	1990	1995	2000	2005	2010	2013
10	Food products	24,44	29,61	28,59	33,34	38,11	35,42
11	Beverages	22,24	31,29	27,25	23,45	27,76	30,27
12	Tobacco products	17,42	26,75	23,29	25,73	29,01	34,74
13	Textiles	27,43	39,41	39,76	42,43	42,68	48,22
14	Wearing apparel	24,54	17,05	23,83	35,11	37,34	35,07
15	Leather and related products	41,56	47,46	43,75	51,18	55,12	46,50
16	Wood and of products of wood and cork	20,47	17,01	20,20	22,05	29,49	32,81
17	Paper and paper products	21,72	30,94	40,90	39,48	41,91	48,24
18	Printing and reproduction of recorded media	13,03	44,61	29,87	32,06	32,95	36,26
19	Coke and refined petroleum products	69,73	66,07	77,48	77,21	83,18	83,97
20	Chemicals and chemical products	36,49	37,28	46,15	46,69	50,57	56,07
21	Pharmaceutical products and preparations	18,35	28,47	25,75	30,78	28,19	35,96
22	Rubber and plastic products	28,77	56,38	44,65	54,53	50,34	52,40
23	Other non-metallic mineral products	21,17	25,98	27,53	31,37	33,02	38,40
24	Basic metals	30,32	34,76	43,63	48,55	61,08	59,30
25	Fabricated metal products	22,78	26,22	36,08	40,08	40,78	42,48
26	Computer, electronic and optical products	35,73	39,17	48,04	66,43	72,13	68,32
27	Electrical equipment	12,52	39,07	39,77	49,24	53,87	53,67
28	Machinery and equipment n.e.c.	30,66	33,20	37,16	38,99	42,82	42,49
29	Motor vehicles, trailers and semi-trailers	29,68	39,73	50,20	55,67	56,54	59,11
30	Other transport equipment	11,17	31,35	30,22	47,02	51,61	51,50
31	Furniture	20,84	21,07	31,88	37,74	35,13	39,76
32	Other manufacturing	22,74	28,86	29,33	32,75	41,22	43,79
33	Repair and installation of machinery and equipment	40,40	21,68	18,74	22,67	26,63	28,51
C	Manufacturing	28,60	34,82	40,83	48,48	52,39	52,67
	Economy Total	25,91	29,36	35,38	43,52	46,07	47,46

Source: CSO [2017]; own calculations

1.2 Share of Added Value in Production

We assume a falling share of added value in production as a consequence of the involvement of businesses in the territory of the Czech Republic in GVC (see Table 3). Trends in this share are not that clear in connection with trends in the share of foreign capital.

Confirmation of our assumption is evident for manufacturing industry as a whole. Of the 24 sectors of manufacturing industry, it applies to 15, i.e. a majority. For some sectors the fall in added value in production is very marked, e.g. a fall by 78 per cent for 19 or a fall by 58 per cent for 27.

1.3 Share of Exports in Total Resources

We assume that increased involvement in a GVC means a higher share of exports in total resources (see Table 4). The values in table 4 show the appropriateness of our assumption.

In manufacturing industry the share of exports in resources increased by 78 per cent. In manufacturing industry there was an increase in the share of exports in resources for the vast majority of the sector. There is an exception, for example, in 15 and 18.

Tab. 3: Share of Added Value in Production (as a %)

	Year	1990	1995	2000	2005	2010	2013
10	Food products	13,15	16,71	20,71	18,21	21,06	19,90
11	Beverages	21,44	25,27	33,36	41,12	35,97	36,27
12	Tobacco products	28,80	26,03	40,90	40,36	41,48	33,68
13	Textiles	30,80	21,30	29,64	28,04	29,96	28,38
14	Wearing apparel	31,01	64,65	50,57	43,61	44,43	46,34
15	Leather and related products	18,71	25,49	33,93	32,39	39,54	40,69
16	Wood and of products of wood and cork	27,28	35,34	31,06	30,15	27,19	24,71
17	Paper and paper products	35,77	33,71	26,47	26,32	25,33	20,82
18	Printing and reproduction of recorded media	72,19	19,66	41,71	34,74	34,05	34,02
19	Coke and refined petroleum products	15,56	11,91	12,78	4,94	0,87	3,45
20	Chemicals and chemical products	26,15	29,23	24,64	22,31	18,84	15,68
21	Pharmaceutical products and preparations	59,53	46,95	51,71	45,20	42,72	40,44
22	Rubber and plastic products	36,73	12,09	32,17	24,08	29,44	28,75
23	Other non-metallic mineral products	40,15	36,38	41,03	33,47	34,28	34,76
24	Basic metals	26,17	25,71	22,12	22,56	10,24	15,24
25	Fabricated metal products	34,61	38,59	33,16	31,42	33,71	33,66
26	Computer, electronic and optical products	23,94	34,11	26,44	15,06	15,82	16,88
27	Electrical equipment	70,87	26,43	34,46	29,83	30,44	29,75
28	Machinery and equipment n.e.c.	29,46	35,47	35,42	32,06	31,82	31,38
29	Motor vehicles, trailers and semi-trailers	28,35	18,37	18,24	19,42	19,46	17,52
30	Other transport equipment	75,50	23,01	30,69	29,99	30,63	32,15
31	Furniture	35,32	42,69	32,51	35,35	32,95	31,36
32	Other manufacturing	33,32	38,93	43,74	44,97	39,14	38,06
33	Repair and installation of machinery and equipment	7,30	42,59	46,24	39,43	39,73	39,76
C	Manufacturing	28,58	27,86	28,66	25,42	24,68	24,14
	Economy Total	41,48	41,75	40,94	39,46	38,70	38,03

Source: CSO [2017]; own calculations

2   Result and Discussion

Even if they are not observed that closely (I-O tables are not drafted every year), we performed a calculation of the dependence of all three monitored indicators in the share of foreign businesses in production which we regard as GVCs' share in production, for manufacturing industry (see Table 5, 6 and 7). The model is for imports necessary for exports in accordance with expectations, where the p-value is small and R-squared high (see Table 5).

The share of added value is not fully appropriate to identify the influence of GVC (see Table 6), which is evident from the p-values, where for value x it is at the limit of acceptability, as is R-squared. In the case of this indicator other influences have an effect, not only the share of foreign ownership.

Trends in the share of exports in resources are a generally suitable indicator to identify GVC (see Table 7), as is evident from the p-values, where the value x is acceptable, as is the value R-squared.

Tab. 4: Share of Exports in Total Resources (as a %)

	Year	1990	1995	2000	2005	2010	2013
10	Food products	14,00	11,97	11,16	16,01	20,28	25,87
11	Beverages	11,48	15,75	15,12	15,26	16,31	19,50
12	Tobacco products	61,95	21,46	15,81	23,09	50,01	58,05
13	Textiles	35,95	39,00	41,42	46,59	52,96	54,45
14	Wearing apparel	34,24	28,33	41,93	37,11	30,68	42,81
15	Leather and related products	41,69	37,03	22,26	25,78	28,81	31,18
16	Wood and of products of wood and cork	34,02	33,35	31,16	26,61	29,72	34,65
17	Paper and paper products	25,58	27,77	32,30	33,66	38,13	40,26
18	Printing and reproduction of recorded media	10,42	15,38	11,96	4,72	2,39	4,40
19	Coke and refined petroleum products	10,73	17,26	15,58	14,93	20,16	20,33
20	Chemicals and chemical products	39,37	32,54	28,32	31,92	35,78	37,78
21	Pharmaceutical products and preparations	20,82	12,18	19,07	21,78	29,70	34,28
22	Rubber and plastic products	27,91	28,95	32,52	30,45	35,76	40,72
23	Other non-metallic mineral products	39,64	44,97	42,25	39,05	37,78	41,06
24	Basic metals	27,07	28,50	26,21	27,84	30,92	36,77
25	Fabricated metal products	22,57	32,74	40,07	37,62	37,03	42,20
26	Computer, electronic and optical products	15,36	14,57	23,18	50,07	44,23	46,29
27	Electrical equipment	17,20	32,31	43,96	57,45	53,47	56,80
28	Machinery and equipment n.e.c.	29,54	24,88	39,07	60,35	60,09	62,82
29	Motor vehicles, trailers and semi-trailers	34,50	38,86	47,86	53,93	53,85	56,09
30	Other transport equipment	20,08	42,59	43,65	39,25	41,70	53,79
31	Furniture	25,20	23,05	18,99	35,00	29,04	31,27
32	Other manufacturing	19,91	30,42	39,92	50,58	45,74	50,64
33	Repair and installation of machinery and equipment	0,14	0,08	1,98	0,02	4,18	5,26
C	Manufacturing	24,74	26,16	31,03	38,28	40,26	44,14
	Economy Total	15,56	15,44	17,66	21,58	22,36	25,17

Source: CSO [2017]; own calculations

Tab. 5: Dependence of Necessary Imports for Exports on Share of Foreign Capital in Manufacturing Industry

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	31.6279	I.02	19.8892	<0.0001	***
year	0.250084	0.0276749	9.0365	0.0008	***
Mean dependent var	42.96500		S.D. dependent var	9.906416	
Sum squared resid	22.91363		S.E. of regression	2.393409	
R-squared	0.953303		Adjusted R-squared	0.941629	
F(1, 4)	81.65824		P-value(F)	0.000831	
Log-likelihood	−12.53355		Akaike criterion	29.06710	
Schwarz criterion	28.65062		Hannan-Quinn	27.39989	

Source: own calculations

Tab. 6: Dependence of Share of Added Value in Production on Share of Foreign Capital in Manufacturing Industry

	Coefficient	Std. Error	t-ratio	p-value	
const	28.6551	0.731208	39.1887	<0.0001	***
year	−0.0462893	0.0127255	−3.6375	0.0220	**
Mean dependent var	26.55667		S.D. dependent var	2.043073	
Sum squared resid	4.844750		S.E. of regression	1.100540	
R-squared	0.767869		Adjusted R-squared	0.709836	
F(1, 4)	13.23163		P-value(F)	0.022013	
Log-likelihood	−7.872040		Akaike criterion	19.74408	
Schwarz criterion	19.32760		Hannan-Quinn	18.07687	

Source: own calculations

Tab. 7: Dependence of Share of Exports in Total Resources on Share of Foreign Capital in Manufacturing Industry

	Coefficient	Std. Error	t-ratio	p-value	
const	25.0347	1.37391	18.2215	<0.0001	***
year	0.200007	0.0239107	638293	0.0011	***
Mean dependent var	34.10167		S.D. dependent var	7.953586	
Sum squared resid	17.10435		S.E. of regression	2.067870	
R-squared	0.945923		Adjusted R-squared	0.932404	
F(1, 4)	69.96895		P-value(F)	0.001117	
Log-likelihood	−11.65635		Akaike criterion	27.31270	
Schwarz criterion	26.89622		Hannan-Quinn	25.64549	

Source: own calculations

Conclusion

It is not possible to isolate ourselves from global value chains, which are an integral part of the global economy, but it is possible to recognize them and try to influence their impact.

GVC are an objective reality and a challenge in terms of participating in them in an optimum manner with activities with high added value. Moving higher in a global value chain (i.e. in the smiling curve towards the tops) is not easy, as countries are not the main movers of GVC, but the conditions are determined by the policy of multinational corporations.

GVC enables the use in manufacturing of sophisticated products also for less-developed economies. Participation in added value depends on the position in a chain, however. The least added value is brought by activities such as assembly and production.

We tried to identify involvement in GVC through three selected indicators.

Clearly, the best involvement is identified by necessary imports for exports. The share of exports in total resources is generally suitable for identifying GVC. The share of added value

in production can be recommend less for such identification, because this share is affected by other factors that could eliminate the "outflow of profits abroad".

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Contact

Inka Neumaierová

University of Economics, Prague, Faculty of Business Administration, Department of Strategy

Winston Churchill Sq. 4, 130 67 Prague 3, Czech Republic

neumaier@vse.cz

Ivan Neumaier

Ministry of Industry and Trade of the Czech Republic, Department of Economic Analyses

Na Františku 32, 110 15 Prague 1, Czech Republic

neumaier@mpo.cz

THE RELATIONSHIP BETWEEN CUSTOMER LEVERAGE AND PROCESS INNOVATION: AN EMPIRICAL INVESTIGATION IN GLOBAL MANUFACTURING INDUSTRY

Hung Nguyen – Norma Harrison

Abstract

Purpose: With the current unpredictable and turbulent business environment, manufacturers are leveraging customer knowledge as the source of innovation and competitive advantage. Drawing upon the knowledge-based view, this study argues that customer leverage is the source of firms' process innovation and has a positive impact on manufacturing performance.

Design/methodology/approach: The empirical study included results from 650 manufacturers in 10 countries, including more than twenty manufacturing industries. The conceptual framework and hypotheses are then derived from literature review, in particular, the theory of knowledge-based view and transaction cost economics. A structural equation model was used to test the hypotheses.

Findings: The empirical results showed a strong association between a manufacturing firm's customer leverage and its process innovation and performance. Process innovation acts as mediating roles in absorbing and transforming customer knowledge in improving costs and financial measures. In a more dynamic market, customer leverage strengthens the positive impacts on process innovation.

Research/practical implications: These results extend the limited existing research on global manufacturing context that the customer knowledge are effective sources for increasing innovative processes. The higher the market turbulence, the stronger the pressures for customer leverage demanded by process innovation. The findings also confirm that process innovation plays a mediating role in absorbing and transforming customer knowledge in improving costs and financial measures. This is an important result that highlights the mechanism by which customer knowledge can influence a firm's bottom line.

Originality/value: This study examined the linkages between a marketing concept and operations and supply chain management.

Keywords: Leverage, customer knowledge, knowledge management and innovation

JEL Codes: M10, O32

Introduction

Recent literature re-emphasized the importance of process innovation, especially in combination with internal and external sources to yield superior results (Krishnan & Jha, 2011). However, literature concluded that knowledge acquisition and knowledge sharing are the most frequently studied processes. Thus, more research is needed to elaborate the usage and application of customer knowledge and the impact on processes and performance. This current study addresses the above by defining the concept of customer leverage (CL) below, and examining its relationship with process innovation and performance (financial and cost measures). This study investigates the following questions:

- To what extent does customer leverage affect customer-firm innovation processes?
- How do these value dimensions of customer leverage impact costs and financial outcomes?
- How is the relationship between customer leverage and process innovation influenced by the dynamics of the markets?

It is intended that findings of this empirical study would provide a deeper understanding of the performance outcomes associated with process innovation allows organisations, especially small manufacturing firms, to better decide when, how much, and where to invest resources to enhance performances. Furthermore, the current study contributes to the existing literature by investigating the proposed relationships in a more global context with 10 countries, representing different stages of economic development.

The paper is set out as follows. The first section provides theoretical background from process innovation and customer-buyer relationship literature. Next, the study provides the development of the research model and hypotheses. The study design section describes methods and findings. The last section offers interpretations, contributions and limitations.

1 Theoretical background and research hypotheses

1.1 Customer Leverage (CL) and performance

There exist three streams of research that examine customer knowledge. The first stream focuses on the importance of acquisition (Drechsler & Natter, 2012; West & Bogers, 2014). The second line of research into CL highlights the importance of in sharing knowledge (Peng Wong & Yew Wong, 2011; Wong, Wong, & Boon-itt, 2013) and the third area of research offering opportunity for improvement (Wagner & Bode, 2014; Wang, Zhang, Sun, & Zhu,

2016). Taking the tenets from three streams, this study defines a firm's customer leveraging capability as the extent of the focal firms' usage of their obtained knowledge from customers in developing new products and services, and in improving processes (Thakur & Workman, 2016). Furthermore, firms can combine customer knowledge and leverage process innovations as a strategic resource, thereby increasing entry barriers for competitors hence protecting the firms' market advantage (Smagalla, 2004). Learning and applying knowledge from customers in response to market changes and technological innovation can reduce uncertainty and opportunism in the ongoing partnerships with customers, thus lowering transaction costs. Thus, this study argues that:

Hypothesis 1: A manufacturer's customer leveraging capability exerts a direct positive effect in cost efficiency.

Furthermore, customer knowledge could facilitate the process of sensing the new innovation as customers and also as end users. The latter would know the most about the market, thus enlarging market share and creating new engines for growth. This social capital can directly influence the performance such as market share and cost reduction. Collectively, these capabilities suggested that the new obtained customer knowledge provides opportunities for creating innovative processes resulting in operations efficiency and future market share. Accordingly, this study proposes that:

Hypothesis 2: A manufacturer's customer leveraging capability exerts a direct positive effect on financial performance.

Additionally, this study argues that the effect of customer knowledge on performance will be greater in organizations involved in process innovations. After having deployed customer leverage, a manufacturer seeks to earn the returns on its investment and is therefore interested in sustaining a long-term relationship with the corresponding customer firm. The process innovations could be a possible means to strengthen the relationship, because the buying firm benefits from process innovations such as quality improvements and cost reductions on the buying firm's side (Kim, 2000). Collectively, the above support the following hypothesis:

Hypothesis 3: Customer leverage has a positive relationship with process innovation

Theoretically in the Resource-Based View (RBV), resources that are rare, valuable, difficult to substitute, and imperfectly imitable will contribute to sustainable performance and competitive advantage Most studies argue that customers possess unique knowledge about their preferences

(Poetz & Schreier, 2012), and therefore, it is reasonable to expect their involvement increases success in terms of product–customer needs fit (Alam & Perry, 2002), consequently in financial measures such as profit (Lau, Tang, & Yam, 2010), or market share (Joshi & Sharma, 2004). Thus, this study proposes that:

Hypothesis 4: Process innovation strategy has a positive relationship with costs, and Hypothesis 5: Process innovation strategy has a positive relationship with financial performance.

Fig.1: Research model
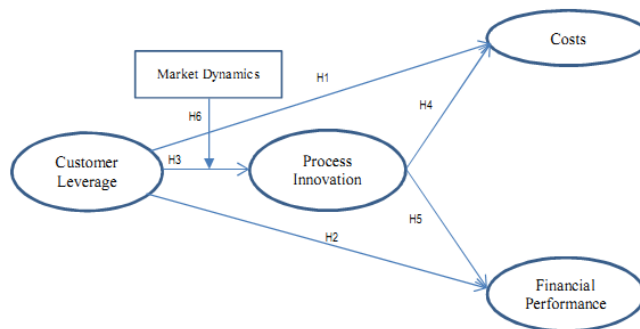
Firms with more stable markets might deploy the process incremental or exploitative innovation (Wang, Dou, Zhu, & Zhou, 2015) whereas exploratory innovation is more speculative and focused on changing market dynamics. Economic theory lends empirical support that higher levels of market dynamics are associated with introducing new processes more frequently. This allows a manufacturer to align operations with changing customer requirements, develop unique capabilities that can reduce costs and lead times associated with customisation, and benefit from market dynamics (Liu, Shah, & Babakus, 2012). Thus, this study hypothesizes that:

Hypothesis 6: Market dynamics strengthens the positive relationship between customer leverage and process innovation

1.2   Research Design

The data collection was done via email using an interactive PDF questionnaire which targeted production and manufacturing managers as key respondents. This questionnaire was developed through the Global Manufacturing Research Group (GMRG) project conducted in 2014. The questionnaire distributed to the sample firms was developed in a rigorous process by key operations management scholars (Whybark, Wacker, & Sheu, 2009).

Tab.   1:   Respondent   country   profiles

Country	Frequency	Percent	Ave. GDP per capita	R&D Budget*	Investment New Process*	Training Staff*
Developed						
Australia	10	1.53	$65,600	0.51-0.75%	5-8%	1.1-1.5%
Korea	72	11.1	$45,091	0.76-1%	9-12%	1.6-2%
USA	83	12.8	$52,392	0.51-0.75%	5-8%	1.1-1.5%
Emerging						
Hungary	31	4.8	$13,403	0.26-0.50%	1-4%	0.51-1%
India	54	8.3	$1,548	0.51-0.75%	5-8%	1.1-1.5%
China	27	4.2	$6,626	0.76-1%	9-12%	1.6-2%
Poland	71	10.9	$13,760	0.26-0.50%	1-4%	0.51-1%
Taiwan	40	6.2	$31,900	0.51-0.75%	5-8%	1.1-1.5%
Developing						
Croatia	111	17.1	$13,490	0.26-0.50%	1-4%	0.51-1%
Vietnam	151	23.2	$1,868	0.51-0.75%	5-8%	1.1-1.5%
Total	650	100.0				

Notes: * as a percentage of total plant sales

Table 1 provides the company profiles in this study. The sample consists primarily of small and medium sized companies (74.6%) of the sample. Included in the survey are more than twenty manufacturing industries. It can be seen that emerging industries in China, Korea and Taiwan have made significant investments in new processes compared to other developing and developed countries.

1.3   The research constructs and reliability, validity and discriminant validity tests

The model includes process innovation construct, which focuses on firms' ability to learn more about new processes than their competitors; to be first within the industry in applying new processes; and to be updated with the latest processes (Malhotra, Gosain, & El Sawy, 2007; Menor, Kristal, & Rosenzweig, 2007). Customer leverage focuses on the manufacturer's extent in obtaining, acquiring and applying new customer knowledge (Choi, Wu, Ellram, & Koka, 2002). Financial performance was measured objectively based on market share, revenue and profit increased relative to competitors (Choi et al., 2002). First, the internal consistency reliability test revealed that Cronbach's alphas ranged from 0.701 (Process Innovation) to 0.882 (Financial performance), which exceeds 0.60, the threshold value (Hair, Black, Babin, & Anderson, 2010). Table 2 provides constructs' mean of measurement items, standard deviation, loading and p-values. Second, the confirmatory factor analysis (CFA) measurement models confirmed the presence of five unique constructs, and their CFA details are presented in Table

3. The model fit indices were $\chi 2/df = 1.85$, which lies in the recommended range of 1 to 3. Further, the RMSEA value of 0.036 suggests a good model fit. The results in Table 3 showed that all of the average square root values (AVE) were higher than the correlations, again indicating acceptable discriminant validity. In addition, both MSV and ASV values are smaller than AVE (Hair et al., 2010).

1.4   Hypothesis testing

A structural equation model (SEM) was used to test the hypotheses. The fit indices indicate a good model fit as shown in Table 4. Table 4 displays the directions and significance of the hypothesized relationships among the constructs. The results supported H1,H3, H4 & H5, which confirmed the positive impacts of process innovation on both costs and financial measures; where customer leverage strongly support costs (H1) but not financial performance (H2). The results supported H1 confirming significant gains on process innovation from customer leverage.

Tab. 2: Constructs means and reliability measures

Research measurements	Estimate	Mean	SD
Costs (α= 0.823)			
Total product unit costs	0.71	4.39	1.20
Raw material unit costs	0.85	4.48	1.22
Product performance	0.69	4.46	1.14
Financial Performance (α= 0.848)			
Total sales	0.85	4.34	1.21
Profitability	0.88	4.28	1.02
Market share	0.71	4.32	1.13
Market Dynamics (α= 0.738)			
There are many substitutes in the market for your products	0.76	4.50	1.23
Demand for your products is difficult to predict	0.67	4.36	1.02
Suppliers of critical inputs have significant bargaining power	0.70	4.40	1.28
Your industry is subject to rapid technological change	0.68	4.20	1.31
Process Innovation (α= 0.701)			
We are learning more about the newest processes than our competitors	0.79	4.18	1.52
We are the first within the industry to deploy new processes	0.77	4.80	1.33
We keep up with the latest process developments	0.73	5.05	1.40
Process innovation is important to this plant	0.70	4.23	1.23
We frequently introduce processes that are radically different from	0.61	4.33	1.39
We have no difficulty in introducing processes that are radically different from existing processes in the industry	0.71	4.23	1.26
Customer Leverage (α= 0.832)			
We are able to obtain a tremendous amount of technical knowhow from our customers	0.65	4.43	1.14
We rapidly respond to technological changes in our industry by applying what we know from our customer	0.72	4.63	1.26
As soon as we acquire new knowledge from our customer, we try to find applications for it	0.65	4.36	1.21
Our key customer's technological knowledge enriched the basic understanding of our innovation activities	0.88	4.51	1.02
Our key customer's technological knowledge reduced the uncertainty of our innovation activities	0.85	4.52	1.06
Our key customer's technological knowledge helps us to identify new aspects of innovation activities that would otherwise have gone	0.81	4.26	1.23

Note: $\chi 2 = 205.8$; df = 111; $\chi 2/df = 1.85$; CFI = 0.985; NFI = 0.973; RMSEA = 0.036

Notes: SD: Standard Deviation; RMSEA=Root Mean Square Error of Approximation, GFI=Goodness-of-fit Index, CFI=Comparative Fit Index. The scale format for each of these measures was 1=strongly disagree to 7=strongly agree.

Tab. 3: Correlation matrix and construct validity measures

Research Constructs	CR	MSV	ASV	AVE	[1]	[2]	[3]	[4]	[5]
[1] Costs	0.796	0.114	0.071	0.568	**0.754**				
[2] Process Innovation	0.837	0.200	0.101	0.508	0.263**	**0.713**			
[3] Customer Leverage	0.892	0.200	0.102	0.582	0.256**	0.447**	**0.763**		
[4] Market Dynamics	0.675	0.107	0.052	0.506	0.185*	0.261**	0.327**	**0.716**	
[5] Financial Performance	0.853	0.114	0.054	0.662	0.337**	0.258**	0.186**	0.025	**0.814**

Note: Diagonal elements in (bold-underlined) are the square root of the average variance extracted (AVE) between the constructs and their measures. Off diagonal elements are correlations between constructs. MSV – Max shared variance and ASV – Average shared variance. For discriminate validity, AVE should be greater than off-diagonal elements. ** Correlation is significant at 0.001.

Tab. 4: Results of the hypothesis testing

Research constructs and impacts			Estimate	S.E.	C.R.	P	Hypotheses
Costs	<---	Customer Leverage	0.150	0.040	2.717	0.007	H1-Suppported
Financial	<---	Customer Leverage	0.013	0.063	0.269	0.788	H2-Not supported
Costs	<---	Process Inno	0.294	0.046	4.932	***	H2-Suppported
Process Inno	<---	Customer Leverage	0.477	0.048	9.465	***	H3-Supported
Financial	<---	Process Inno	0.350	0.071	6.532	***	H5-Suppported

$\chi 2 = 300.251$; df = 158; $\chi 2$/df = 1.900; CFI = 0.986; NFI = 0.957; RFI = 0.941; RMSEA = 0.031. Note: S.E = Standard Errors;

P = *** Correlation is significant at 0.001.

Tab. 5: Moderating effects from market dynamics

Fig. 3: Moderating effects from market dynamics on process innovation

*** Correlation is significant at 0.001; * Correlation is significant at 0.05

	Process Innovation	
	Model 1	Model 2
Size	0.22 ***	0.22***
Customer Leverage	0.46 ***	0.47***
Market Dynamics		0.30***
Customer Leverage x Market Dynamics		0.12*
R	0.541	0.654
Adjusted R²	0.290	0.420
F Change	88.97***	59.15***
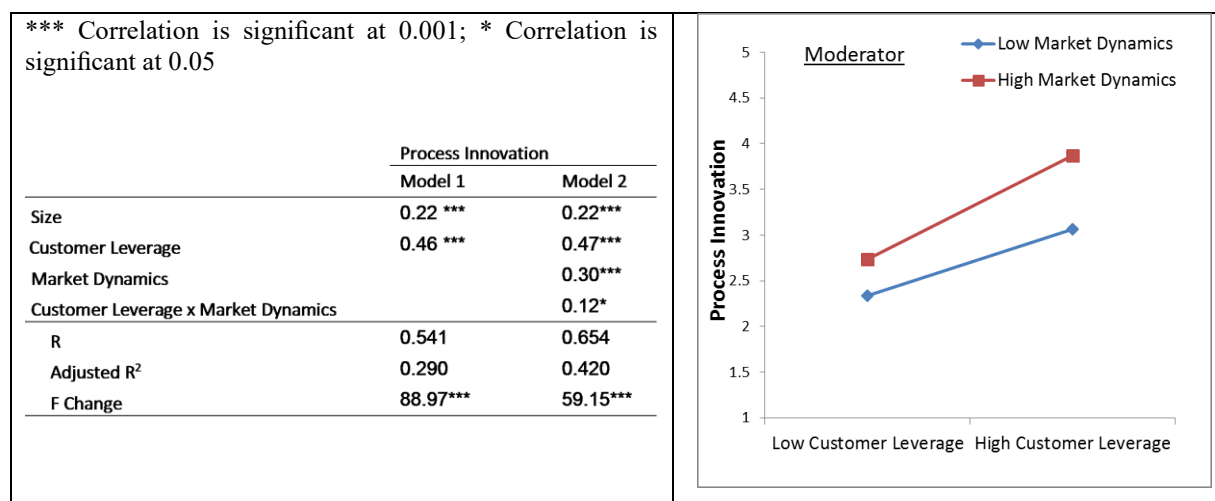
1.5   Moderating effects by Market Dynamics (H6)

Hypothesis H6 suggested that process innovation will be pursued with different emphases based on the degree of market dynamics. A moderated regression analysis was run to test the hypotheses. This procedure provides further refining results supporting the structural models (see Table 4). Table 5 confirms that customer leverage strongly supports process innovation ($\beta = 0.47$ at $p < 0.001$). The moderating effects were tested by creating the product terms between these variables using their standardized scores. The dependent variable, Process Innovation, is jointly determined by the interaction of the predictors (Market dynamics x Customer leverage). The findings show that market dynamics strengthens the positive relationship between customer leverage and process innovation ($\beta = 0.12$ at $p < 0.05$). Therefore, H6 is supported the interaction and the mixed impacts on process innovation are presented in Fig.3.

Discussion and implication

This study examined the linkages between a marketing concept, customer leverage and manufacturing performance via process innovation, which in turn affect cost efficiency and the firm's financial performance. Drawing upon the knowledge-based view, this study confirmed that customer leverage has a strong influence on process innovation, where co-created knowledge between customers and manufacturers is able to reconfigure the existing processes to respond rapidly to the unpredictable and turbulent market. Where demand is unpredictable and customer and technological factors change frequently, the effect of perceived customer perception and its accumulative knowledge on process innovation can vary significantly. Process innovation, on the other hand, exerts a mediating effect between customer leverage and performance, including both cost efficiency and financial measures, grounded in transaction cost economics. Collectively, the results shown above provide support to the argument of the importance of leveraging customer knowledge in enhancing process innovation and performance.

From a theoretical perspective, these results extend the limited existing research on global manufacturing context that customer knowledge forms an effective source for increasing innovative processes and enhancing the ability of manufacturing companies to adapt in new and different markets. These results are consistent with previous studies (Anne Jalkala, 2010; Liao & Barnes, 2015) that customer knowledge is a source for innovation strategies. This finding asserts that, in the manufacturing context, customer knowledge is an essential factor to enhance process innovation. This study defines a firm's customer leveraging as the extent the

focal firms depend on customers in developing new product, services and improving processes. The findings confirm that the speed and frequency of applying the acquired knowledge from customers will potentially decrease competitive uncertainty and thus lead to improved process innovation. In essence, customer leverage plays a significant role as "business intelligence" in closing the gaps in traditional marketing and initiates process changes through organizational boundaries.

The higher the market turbulence, the stronger the pressures for customer leverage demanded by process innovation. The results of moderating effects from market dynamics on the relationship between customer leverage and process innovation (e.g., Table 5 and Fig. 3) have shown that in dynamic markets (characterized by many substitutes, fluctuating demand and rapid technological change) investments through customer leverage could help push process innovation to adapt to market changes. These findings enhance the understanding of the important role of knowledge management in supply chain management, especially when the market is fluctuating (Abrell, 2016; Revilla & Villena, 2012). The results in Table 6 confirmed that process innovation plays a mediating role in absorbing and transforming customer knowledge in improving costs and financial measures. This is an important result that highlights the mechanism by which customer knowledge can influence a firm's bottom line.

Limitations and future research

The results of this study are subject to several limitations. First, this study was conducted for manufacturing organizations across different industries, thereby potentially resulting in a greater source of variance, with the generalizability of this study's findings to other types of industry sectors other than manufacturing being quite limited. Hence, future researchers may replicate and extend this study to sectors other than manufacturing. Second, the data points were collected from single sources (i.e., CEOs or supply chain managers). Although they were considered to be the more relevant informants, the most desirable data collection procedure would have used a design of multiple respondents.

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Contact

Hung Nguyen

School of Business and Management

RMIT University Vietnam

702 Nguyen Van Linh, District 7, Ho Chi Minh City, Hồ Chí Minh 700000, Vietnam

Hung.nguyen@rmit.edu.vn

Norma Harrison

Faculty of Business & Economics

Macquarie Graduate School of Management

Macquarie University

NSW, 2109, Australia

Norma.harrison@mgsm.edu.au

EDUCATIONAL ANTECEDENTS OF ENTREPRENEURS' COGNITIVE STYLES IN NEW VENTURE FINANCING DECISIONS

Hanna Nowak

Abstract

Purpose: The aim of the research was to verify the relationship between the educational patterns understood as antecedents of cognitive styles of entrepreneurs, and their decisions regarding type of venture creation and development's sources of financing.

Design/methodology/approach: 87 micro and small firms from the Wielkopolska region in Poland were selected from the database of enterprises which received institutional support. The sample was divided into two groups of enterprises according to the received type of financing: non-repayable subventions or repayable aid (e.g. credits, loans), which are supposed to represent different ways of entrepreneurial thinking (cognitive styles). Non-parametric test (Chi square) was used to verify the relationship between educational antecedents (different patterns of the entrepreneurial knowledge and skills' acquisition) and venture financing decisions.

Findings: The results do not suggest the statistically important relationship between venture financing decisions and educational factors, such as: level of education and patterns of the entrepreneurial knowledge and skills acquisition (e.g. general formal education, self-education or family-transferred knowledge). The statistically important significance was found in cases of trainings or courses and additional forms of formal education (e.g. postgraduate studies and professional courses).

Research/practical implications: The research suggests that educational factors which help in gathering specific (no general) entrepreneurial knowledge and skills can differentiate the styles of venture financing decisions. The difference may be related to the previous cognitive characteristics of individuals (e.g. ability scripts, self-confidence or risk-taking attitude).

Originality/value: The paper contributes to the relatively limited research in the field of entrepreneurial cognitions in CEE economies, especially to the study of antecedents of entrepreneurial styles of thinking and financial decision-making.

Keywords: Institutional context, educational factors, entrepreneurial cognitions, venture creation, financing decisions.

JEL Codes: D91, D83, D25

Introduction

The way of entrepreneurs' thinking is a matter of interest in entrepreneurial cognition research (Lim et al., 2010). Cognitive styles or scripts are supposed to impact the important decisions in the process of new venture creation (Tipu, 2015, Angel Ferrero and Bessière, 2016). On the other hand, researchers seek for the factors (e.g. personal, educational, cultural, social or institutional context variables) which play a role of entrepreneurial cognitions' antecedents, as this kind of relationship seems not to be well recognized (Lim et al., 2010). In this line of research, the decision of an entrepreneur regarding the sources of venture creation and development's financing, depends on a wide range of context-related factors, such as available instruments of a public policy or educational patterns of an individual, which influence the entrepreneurial cognitive styles of thinking (see Fig. 1). In the opportunities' recognition process entrepreneurs used to utilize different formal and informal sources of information, as well as one's own knowledge gathered from the previous work and learning experiences (Groves et al., 2011).

Fig. 1: Relationship of factors influencing the decision-making process of venture creation and development

ANTECEDENTS:
range of context-related factors influencing the resources' acquisition possibilities and options (e.g. knowledge, networking, financing, etc.)

ENTREPRENEURIAL COGNITIONS:
cognitive scripts of entrepreneurs

KEY DECISIONS:
decisions in the venture creation and development's process (e.g. sources of venture financing)

Source: own elaboration based on: (Lim et al. 2010).

The paper concentrates on the educational factors, which can be partly responsible for the entrepreneurial cognitive scripts of entrepreneurs, who make the decisions regarding the process of venture creation and development. The data reflects the specific institutional context of Wielkopolska region in Poland, one of the examples of the Central and Eastern European (CEE) economies.

The aim of the paper is to empirically verify the relationship between the declared patterns of acquisition of entrepreneurial knowledge and abilities through the different forms of educational experiences, and the decisions regarding the option of new venture financing (non-repayable versus repayable).

The first chapter refers to the lines of research in entrepreneurial cognitions, their antecedents and impact on the decision-making process. It also describes the particular features of the Wielkopolska region in Poland. The next one presents the sample characteristics, as well as the method and the results of the study. The paper finishes with the conclusions and the limitations of the research.

1 Relationship between antecedents of entrepreneurial cognitions and decision-making process of venture creation and development

Entrepreneurial cognition research can still be viewed as a relatively „infant field", which requires more efforts to explore the ways of entrepreneurs' thinking and their implications (Arend et al. 2016). Frequently cited definition of entrepreneurial cognitions is that of Mitchell et al. (2002, p. 97), which referrs to „the knowledge structures" utilized by individuals in different phases of entrepreneurial process (e.g. creation and growth), not only to assess the available options, but also to make the decisions. As it was identified in the literature, people use both styles of information processing: intuition and analitical mode of thinking, however, many choices are made intuitively (Barbosa et al., 2008). It is also recognized that people, among them entrepreneurs, used to utilize heuristics in their decision-making processes (Arend et al., 2016) and that cognitive bias may affect their business performance (Adomdza et al., 2016).

The mode of thinking is also related to the problem of risk-taking in entrepreneurial behaviors (Barbosa et al., 2008). Moreover, the style of entrepreneurs' thinking can differ according to the specific conditions such as the scarcity of resources or the decisions of other entities (Arend et al., 2016). On the other hand, cognitively biased entrepreneurs, if they are persuasive, may attract strong-tie investors (e.g. family and friends) and impact their investment decisions (Adomdza et al., 2016).

Another important issue that has implications for the public policy is that types of thinking and choices the entrepreneurs make, may be influenced by different forms of their knowledge sourcing networks which change according to the stages of the company lifecycle (Huggins et al., 2015). In relation to that, educational factors seem to be important in shaping entrepreneurs' styles of thinking. Groves et al. (2011) found that educational background, in particular years of formal education enhanced more balanced, linear and nonlinear, style of thinking. According to Barbosa et al. (2008) educational programmes which help students to participate in social networks can reduce risk related to the venture creation and survival by facilitation of the access

to partners, knowledge and financial capital. Lim et al. (2010) postulated the need for future investigation of the relationship between educational system and entrepreneurial cognitions insisting that particular type of entrepreneurship-centered education can be more important for entrepreneurial cognitions than general level of education. They found some marginal significant relationship between system of education and ability scripts. In the same study they revealed that available forms of financial capital (equity or bank-based) did not significantly impact venture willingness scripts (Lim et al. 2010).

The literature review suggests the relationship between institutional environment (e.g. legal, financial and educational systems) and entrepreneurial cognitive styles which mediate the decision-making processes of individuals (e.g. Lim et al., 2010). For this reason, the process of venture creation and development is affected by a configuration of factors in different institutional contexts, which are time and geographically-dependent. In particular, different educational patterns and experiences in a given place can shape different mental models of individuals and their entrepreneurial behaviors. In the decisions regarding venture creation (e.g. financing decisions) the availability of the financial instruments is also of the high importance (e.g. access to bank loans, private equity capital, governmental aid or EU structural funds). In general, institutional context of any location depends on the public and regional policy, decisions of private financial organizations, availability of organizations supporting entrepreneurship, formal regulations, but also on informal norms, values, beliefs and educational factors, which shape the modes of thinking of individuals in the society (Bruton et al., 2010, Manolova et al., 2008). The changing institutional environment, such as in economies of Central and Eastern European countries, is for that an interesting context for the researchers to study the impact of institutional factors on firms performance (Kafouros and Aliyev, 2016).

Poland is one of a good examples of CEE economies to observe how institutional environment, through shaping entrepreneurial cognitions, impacts people's entrepreneurial behaviours and decisions.

The paper refers to the institutional context of one of the 16 regions (provinces) in Poland, which is Wielkopolska region, located in the west part of the country. The table 1 presents the main characteristics of that region.

As it can be observed, the Wielkopolska region is one of the biggest provinces in Poland in terms of surface and population, and it has also better economic situation in comparison to the average indicators of the country.

Tab. 1: Socio-economic characteristics of the Wielkopolska region in 2016

Characteristics	Wielkopolska	Poland
Surface area in km^2	29 826 (2nd place in Poland)	312 679
Population in thousands	3 475,3 (3rd place in Poland)	38 437,2
GDP per capita in PLN (2015)	50 790	46 792
Rate of unemployment in %	4,9	8,2
Number of natural persons engaged in economic activity per 1000 habitants	86	77
New entities registered in REGON per 1000 habitants	9,7	9,1
Entities deleted from REGON register per 1000 habitants	8,2	7,7

Source: own elaboration based on: Polish Central Statistical Office (2016, 2017, 2018).

2 Data and results

The sample of 87 micro and small enterprises was selected for the study from the database of 270 enterprises gathered in the research project regarding formal and informal institutional factors supporting new firm survival in the Wielkopolska region of Poland. Enterprises were created during the years 2005-2011 and they were active in 2012. The data was collected based on purposive sampling survey and the owners-founders were investigated by using a questionnaire. From the perspective of formal institutions, respondents benefited from different forms of private and public institutional support, e.g. bank loans, governmental aid, programmes and instruments for SMEs within two periods of EU financial perspectives: 2004-2006 and 2007-2013. The firms were localized through collaboration with regional institutions and organizations in the Wielkopolska region, which support SMEs and entrepreneurship development, or from their websites.

In order to achieve the aim of the study, two groups of firms were selected according to the form of venture creation and development's financing: (1) non-repayable subventions (governmental aid from district job centres for unemployed people or aid co-financed from EU funds), (2) repayable financial aid (credits and loans). These two groups of enterprises were supposed to represent different modes of entrepreneurial thinking regarding the choice of the sources of venture financing. Firms which used mixed sources of financing (1 and 2) were eliminated from the sample. The descriptive statistics of the sample are presented in table 2.

Tab. 2: Sample characteristics of micro and small enterprises from the Wielkopolska region (n=87)

Characteristics	Number and percentage of enterprises	
size of enterprise	selfemployment 59 (67,8%)	with employees (micro and small) 28 (32,2%)
age of enterprise	less than three years old 54 (62,1%)	from three till eight years old 33 (37,9%)
sex of entrepreneurs	female 39 (44,8%)	male 48 (55,2%)
type of financing	non-repayable subventions 59 (67,8%)	repayable financial aid 28 (32,2%)

Source: own elaboration based on empirical studies

To analyse the data, nonparametric statistical test (Chi square; $p<0,05$) was conducted in order to verify the statistical significance of relationship between the declared form of acquisition of the entrepreneurial knowledge and skills (that impacted entrepreneurial cognitions), and the entrepreneurial decisions regarding form of venture financing (see Tab. 3).

Entrepreneurs declared different patterns of gaining the knowledge and skills necessary for running their own business, so their "knowledge structures" were constructed in different ways. The aim was to verify, if those educational factors understood as antecedents, by shaping entrepreneurial cognitions, had any statistically significant relationship with entrepreneurs' decisions regarding venture creation and development's financing. Two groups of entrepreneurs from the Wielkopolska region represented two distinct modes of financing decisions which were supposed to be linked with different cognitive features of individuals (such as: attitude toward risk-taking or self-confidence). The results of the study suggest no statistically important relationship in most cases of investigated educational patterns, except of training and courses and additional forms of formal education (e.g. professional courses or postgraduate studies).

Moreover, two groups of entrepreneurs were significantly differentiated by the following characteristics: age of the company ($p=0,000009$), size of the company ($p=0,000003$), sex of entrepreneur ($p=0,010412$), but no statistically important difference was found according to the level of education of entrepreneur.

Tab. 3: Relationship between the daclared patterns of entrepreneurial knowledge and skills' acquisition and venture financing decisions (n=87), Chi squere test, p<0,05

Declared patterns of knowledge and skills' acquisition		Number of answers		p-value
		non-repayable subventions (59)	repayable financial aid (28)	
formal education	yes	43	16	p=0,142107
	no	16	12	
forms of training and courses	yes	44	13	**p=0,009865**
	no	15	15	
press and Internet	yes	21	13	p=0,333206
	no	38	15	
family/intergenarational transferred knowledge	yes	14	8	p=0,627332
	no	45	20	
additional forms of formal education (e.g. postgraduate studies, professional courses)	yes	17	1	**p=0,006620**
	no	42	27	
consulting and informational servicies of business environment institutions	yes	9	6	p=0,476299
	no	50	22	
self-education based on own interests	yes	39	19	p=0,871093
	no	20	9	

Source: own elaboration based on empirical studies

Conclusion

The research suggests that, in the sample of micro and small enterprises from the Wielkopolska region in Poland, the importance of educational experiences which helped to gain more specific entrepreneurial knowledge and skills, could be significantly related to the different decisions regarding venture financing. It is in line with Lim et al.' (2010) findings that specific entrepreneurship education can impact entrepreneurial cognitions more than general education. Although the level of formal education of entrepreneurs in the sample was not significantly

related to the type of financing decision, the additional formal education (e.g. professional courses or postgraduate studies) could help entrepreneurs who received non-repayable subventions to gain more balanced, linear and nonlinear type of thinking (see Groves et al. 2011). The significant relationship between the company lifecycle and the type of venture financing decision could be also related to the changing situation of entrepreneurs regarding the availability of financing, as well as to different knowledge sourcing networks (see Huggins et al., 2015).

The differences between two groups of selected enterprises may depend on the previous cognitive characteristics of individuals (e.g. ability scripts, self-confidence or risk-taking attitude). Probably, those entrepreneurs who chose non-repayable forms of financing were less self-confident and their attitude toward risk-taking was more reserved in comparison to entrepreneurs who opted for credits and loans. For that reason, it can be supposed that additional forms of specific entrepreneurship education could help them to change unfavourable cognitive characteristics.

The study confirms the value of the specific entrepreneurship education which can bring benefits to individuals regardless of the type and level of their education. Additional forms of entrepreneurship education can complete previous knowledge and skills' deficiencies which impede the process of decision-making in the context of company creation, survival and development. Cognitive structures of people shaped by formal and informal factors in less favourable environment for entrepreneurs (e.g. in former communist countries) can be modified by a range of educational endeavours.

The research suffers from some limitations. Firstly, the results cannot be generalized to the whole population of the micro and small companies in Poland, because of the purposive sampling and some specific characteristics of the Wielkopolska region. Moreover, the entrepreneurs could underestimate or overestimate the impact of their educational patterns, as their declarations were based on subjective impressions.

Future research should look for more comprehensive tools for studying the relationship between educational antecedents of cognitive styles and venture financing decisions. Especially, the process of cognitive structures modification through different forms of specific entrepreneurship education should be verify. The future studies can also explore and compare the cognitive styles in venture financing decisions of entrepreneurs in other institutional contexts (e.g. in other CEE economies).

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Contact

Hanna Nowak

Department of Microeconomics, Faculty of Management

Poznań University of Economics and Business

al. Niepodległości 10, 61-875 Poznań, Poland

hanna.nowak@ue.poznan.pl

DOES ENVIRONMENTAL COST AFFECT JAPANESE FIRMS' PERFORMANCE

Nila Nuzula

Abstract

Purpose: This article aims to examine the effect of environmental cost to financial performances, measured by profitability and firm value in Japanese chemical industry during 2012-2015. Examining about this matter in Japan case is suitable since the government has settled guidelines that assist the companies to record and report their activities in environmental preservation. This study focuses on chemical industry in Japan because the industry has been potential to create hazardous wastes along with its daily businesses. In Japan, the companies are involved in Japan Chemical Industry Association (JCIA) that initiates international environmental programs called Responsible Care.

Design/methodology/approach: This study uses 27 chemical companies listing in Japan Exchange Group (JPX) first section during 2013-2015 periods or 81 company-year. Environmental data is taken from the websites of each company. Independent variable of this study is environmental cost, measured by the amount of environmental costs spent by the companies as stated in their annual sustainability reports. There are five dependent variables, i.e. Return on Asset (ROA), Return on Equity (ROE), Net Profit Margin (NPM), Price to Earnings Ratio (PER), and Tobin's Q. The author then runs five times regression analysis to examine whether environmental costs affect five dependent variables.

Findings: The results show that: 1) environmental cost is negatively affecting ROA; 2) environmental cost has no effect on ROE; 3) environmental cost is negatively affecting NPM; 4) environmental cost has no effect on PER; 5) environmental cost is influencing Tobin's Q negatively.

Research/practical implications: This study helps to determine whether the company could take benefit from financing environmental activities. Managers should acknowledge that if the companies spend greater costs on environmental programs, it might deteriorate the profitability measured by ROA and NPM. The costs could decline Tobin's Q, the proxy for firm value, as well.

Originality/value: The results allow readers to grasp that environmental financing affects profitability measured by ROA and NPM, instead of ROE. This study fills the gap of profitability and firm value indicators which are significantly affected by firms' strategies on environmental programs.

Keywords: Environmental cost, Japan, Environmental Accounting Guidelines, profitability, firm value

JEL Codes: Q51, Q56

Introduction

In Japan, the government has initiated practices on environmental accounting. The Ministry of the Environment (MOE), through the Environment Agency Japan (EAJ) has encouraged Japanese corporations to adhere ISO14001. In 2000, MOE published Guideline for Introducing an Environmental Accounting System that contains environmental accounting system, conservation cost, and conservation and economic effects. Meanwhile, the Ministry of Economy, Trade and Industry (METI) established a committee for environmental accounting that focuses on research and development of environmental management accounting tools. Both projects are complementary to each other corresponding to the needs of Japanese companies. These schemes show that the government has an essential role in environmental preservation and sustainability (Kokubu & Kurasaka, 2002).

Environmental accounting allows managers reappraise the relative significance of social, environmental, and economic benefits and risks in the conventional corporate accounting system. The branch is developed to complement the conventional one, to provide prudent information for evaluating corporate activities which have ecological impacts, and then to handle externalities. It becomes a system by which a company can collect and analyze the costs and effectiveness of environmental protection in business activities from qualitative perspective. For the public, the information illustrates efforts of the firm to engage in environmental protection initiatives while also achieving the businesses' goal. Therefore, understanding the impact of environmental cost to financial performances is important to determine to what extent the companies could take benefits from financing environmental activities. This article examines the influences of environmental costs on Return on Asset (ROA), Return on Equity (ROE), Net Profit Margin (NPM), Price to Earnings Ratio (PER), and Tobin's Q. While the first three represent profitability measurements, the rest two denote for firm value measurements.

Environmental Accounting in Japan

The study examines the first section chemical companies listed in Japan Exchange Group that have reported and published environmental cost in their annual corporate social responsibility or corporate sustainability reports. The companies are implementing environmental accounting standards so-called as Environmental Accounting Guidelines 2005 issued by the Ministry of Environment Japan. By applying environmental accounting, the company is able to maintain a favorable relationship with the community and to conduct environmental conservation

activities (Environmental Accounting Guidelines, 2005). The Guideline also discusses the concept, function, role and benefits of environmental accounting for the companies.

According to the Guideline, there are two functions of environmental accounting, i.e. internal functions and external functions. Internally, it helps the company identifying the costs of environmental conservation and analyzing environmental activities. The points of the analysis are to answer whether the monetary benefits are higher than the cost incurred, and whether the costs are able to improve the effectiveness and efficiency of environmental conservation activities through appropriate decision-making. Externally, the guideline functions as an instrument to convince wide stakeholders such as buyers, business partners, investors, and local communities that the company has improved their environmental management. After the release, Kokubu & Kurasaka (2002) created a survey and found that the guideline has several benefits for the company, i.e.: 1) improve corporate image and increase environmental awareness within the company, 2) reduce environmental load, 3) reduce environmental costs, and 4) develop environmentally friendly products and improve decisions.

Environmental Accounting Guidelines infers environmental costs as environmental conservation costs that include expenditures aimed to invest on assets for improving the quality of environment and costs allocated for prevention, mitigation and define methods for reducing environmental impacts, such as disaster recovery, environmental restoration, and other activities. Therefore, total environmental conservation cost is the sum of expenses incurred for environmental conservation purposes. Total cost includes the cost of depreciation of the asset. The guideline classifies environmental conservation costs into seven categories based on its business activities, i.e. business area costs, upstream/downstream costs, administration costs, research & development costs, social activity costs, environmental remediation and other costs.

Environmental Cost and Profitability

Scholars have examined environmental costs and investments within corporate social responsibility framework (Nakamura, 2011). Business activities in environmental areas is one part of the efforts to deal with social problems, aside from the corporate's main focus to maximize the wealth of shareholders. The environmental activities are recognized as one of important corporate strategies to improve the economic performance. According to Kokubu & Kurasaka (2002), applying environmental accounting is beneficial since it supports decision making in specific purposes, such as investment decision, price setting, and performance evaluation.

This study assumes that companies voluntarily disclose their effort to preserve environmental aspects voluntarily. Clarkson et al. (2008) suggest that this kind of companies is having proactive environmental strategy by which allowing them to disclose more environmental information to their stakeholders, including investors. This group of companies is superior that poor environmental performers cannot easily imitate the actions. Nakamura (2011) suggests the impact of environmental investment on both short- and long-term period. When a company deals with environmental problems, it can enhance the corporate image and then increase the stock price and profitability.

Hypotheses

Following the explanation above, the author sets the hypotheses.

H_1: Environmental cost influences ROA

H_2: Environmental cost influences ROE

H_3: Environmental cost influences NPM

H_4: Environmental cost influences PER

H_5: Environmental cost influences Tobin's Q

Methods

This study follows the Ministry of Environment Japan's definition of environmental cost. As stated in the Environmental Accounting Guideline 2005, environmental conservation cost contains the monetary value of investments and costs, allocated to prevent, reduce, and/ or to avoid the environmental impact, to remove such impact, to restore damages after the occurrence of a disaster, and other activities. This study uses 27 chemical companies listing in Japan Exchange Group (JPX) first section during 2013-2015 periods. Using three years of analysis, total companies-years analysis is 81. The author obtained environmental data from the websites of the each company. This study applies four criteria in determining samples that the companies must: 1) listed consecutively in the JPX during 2013-2015, 2) published their annual reports and social responsibility reports in English version, and 3) did not experience loss during the period of analysis.

Independent variable of this study is environmental cost, measured by the amount of environmental costs spent by the companies as stated in their annual sustainability reports. This study applies five dependent variables, that are Return on Asset (ROA), Return on Equity

(ROE), Net Profit Margin (NPM), Price to Earnings Ratio (PER), and Tobin's Q. The author then runs five times univariate regression analysis to examine whether environmental costs affect five dependent variables. The following is the regression formula for each dependent variable.

$$Y_n = a + b \cdot X$$

Results and Discussion

1 Results of statistical analysis

Results from univariate regressions for five independent variables and Environmental Cost as the dependent variable are described in the Table 2 below.

Tab. 1: Results of regression analysis

	Models				
	1	2	3	4	5
Dependent variables	ROA	ROE	NPM	PER	Tobin's Q
B Coefficients	-0.094	-0.017	-0.156	0.014	-0.080
Constants	3.619	2.287	4.985	2.454	1.692
R Square	0.080	0.003	0.177	0.003	0.119
t	-2.627*	-0.519	-4.124*	0.471	-3.260*
Sig.	0.010	0.604	0.000	0.639	0.002

Source: Processed data (2017)

Table above shows that, in Model I, if the dependent variable is ROA and the independent variable is environmental cost, regression coefficient for environmental cost is -0.094. The regression formulas of those five models are as follows.

Model 1 $ROA = 3.619 - 0.094 \cdot EnvironmentalCost$

Model 2 $ROE = 2.287 - 0.017 \cdot EnvironmentalCost$

Model 3 $NPM = 4.985 - 0.156 \cdot EnvironmentalCost$

Model 4 $PER = 2.454 + 0.014 \cdot EnvironmentalCost$

Model 5 $Tobin'sQ = 1.692 - 0.080 \cdot EnvironmentalCost$

Negative coefficients indicate that environmental cost influences ROA, ROE, NPM, and Tobin's Q inversely, meaning that adding one value of environmental cost would cause ROA decreases 9.4%, others are constant, and soon. The influence of environmental cost to ROA is

low 8%, showing that other variables that are not examined in this study have more valuable contribution to determine ROA. With the same interpretations applies for other variables, the results show that environmental cost influences ROE, NPM and Tobin's Q negatively while it has positive influence only for PER. Further, t-students show that environmental cost significantly affects dependent variables only in Model I, III, and V. These results suggest the author to reject null hypotheses for Model 1, Model 3 and Model 5, and to conclude that Environmental Costs are affecting ROA, NPM, and Tobin's Q significantly.

2   The influence of environmental cost to profitability

Results of regression analysis show that environmental cost has significant and negative influence on profitability, measured by ROA and NPM. The environmental cost does not significantly affect ROE. This study is somewhat different with results of previous studies such as Cortez & Penacerrada (2010), Cortez & Cudia (2010), Chiang, et al. (2015). The previous researchers examined relationship between environmental costs with various indicators of firms' financial performance and suggested that the higher cost for environmental activities will cause financial performance increases. Probably, different sectors as the object of studies cause the results differ. For example, the three studies above conducted their researches in electronic and automotive sectors in Japan.

This study has similar findings with the finding of Yamaguchi (2009). Using static and dynamic panel data, he examined that environmental conservation cost had relationships with firms' financial performance measured by ROA, while it did not affect ROE. Environmental cost is the expenses incurred to prevent the occurrence of or to repair environmental damage resulting from business activities undertaken by the company. The higher expenditures it will reduce the company's profits. This current study confirms the negative relationships, that the higher environmental cost spent by Japanese companies, the lesser ROA and NPM.

Nonetheless, according to Yamaguchi (2009), environmental conservation cost could affect the profits either in positive or negative ways. Positive influence is occurred when the company is able to save the energy that could be higher if the company does not spend the costs, for example, to fund the maintenance and prevent the possible environmental damage. The cost could affect the profits negatively from the increasing of the cost itself, mainly if the company is unable to take monetary advantages of environmental expenditures. Japanese companies allocated environmental costs to develop energy-saving equipment. Therefore, the cost-saving effect would not occur soon after the expenditures consumed instead it appears gradually.

Curcio and Worf (1996) acknowledge that the Japanese companies also recycled residual raw materials employed in their daily business process. The activity can reduce production and disposal costs.

Apparently, the enactment of environmental accounting by the Japanese Ministry of Environment has caused transformation in the company level. Companies must have good environmental and management strategies to be environmentally responsible and not make environmental responsibility a burden. The companies must develop strategies for reducing the costs for environmental-related business activities. Good strategies would lead to better implementation of environmental accounting management, measured by the gradual reduction of costs to maintain various material emissions and to save energies. This current study support Yamaguchi's (2009) statement that in short term, environmental conservation cost cause a negative effect for management in terms of profitability. Therefore, the strategies are important to assist the companies managing the costs so that it would contribute to attain sustainable business. Environmental cost can also impact the profitability of the company negatively because sometimes the environmental cost incurred during a period will not necessarily be directly felt directly in that period. This influence will be realized in the next year, perhaps even in some later periods.

3   The influence of environmental cost to firms' value

Results of regression analysis show that environmental cost is not significantly influencing firm values measured by PER. However, if the indicator for firm value is Tobin's Q, the influence is proven significant. Further, similar with other significant variables, the influence is negative, meaning that the higher environmental cost would lessen the value of Tobin's Q. This finding is different with results of Spicer's (1978) and Yamaguchi's (2009) research. Yamaguchi (2009) studied the influence of environmental conservation cost toward ROA, profitability, and Tobin's Q in Japanese companies. The study found that static and dynamic environmental costs did not affect ROA and Tobin's Q, but the cost had negative effect on the firms' profitability.

The finding that the environmental cost is significant to determine Tobin's Q but not for PER is supporting previous research completed by Lasmin & Nuzula (2012). The study suggests that when the Japanese companies released information about environmental expenses, the capital markets and firm values were not affected. The higher environmental expenses were not determining positive responses shown by the Japanese capital markets. Investors are interested in social information, including safety and quality of products as well as environmental

activities illustrated by the managements in the annual reports. The companies disclose these additional information as signals for investors to attract them investing in the companies' stocks. Higher demand on the stocks would lead to raise the price and firm value. Some scholars use this rationalization for explaining the existence of consistent and mutual relationship between the firm social performances with the financial performance (Spicer, 1978; de Villiers & van Staden, 2010).

However, previous studies also found that social performances might not have influence on financial performance of the firm (Hassel, Nilsson & Nyquist, 2005; Lasmin & Nuzula, 2012). This may occur because investors would not perceive the social performance as a worthy achievement of the company. Investors may infer that noteworthy social and environmental performance requires considerable related costs. For them, this expenditure would create negative value since it may lessen expected earnings.

Disclosing firms' performance on environmental activities will increase transparency for various stakeholders. Issuing information such as the amount of environmental costs improves stakeholders' trust. Since transparent data helps refining the reliability of the reports, investors will positively respond the attainement, and as the impact, the stock prices and firms' value increase. For this reason, good implementation of environmental management accounting is a necessity to develop the quality of the disclosure.

According to Lasmin dan Nuzula (2012:23), there are some reasons why environmental expenditures would not influence firm value. Firstly, the market would see that the businessman and companies in Japan were actively participating in environmental activities because it has been compelled by environmental related acts issued by the Japanese Ministry of Environment. Secondly, the benefits taken from the environmental activity projects are not certain. It causes the companies are facing difficulties to determine to what extend they would gain earnings from doing current environmental related plans.

Conclusion

This study results that environmental cost is influencing profitability, measured by return on assets (ROA) and net profit margins (NPM) of the Japanese chemical firms negatively for 2013-2015 period. The higher the environmental cost, the lesser the ROA and NPM. This finding suggests that expenditures on environment activities would not provide monetary feedback in short terms. The cost could be taken as current expenses, not expenditures that would generate

returns years after.. As expenses, the increasing amount of yen used to fund the environmental activities could cause the profits lessen. In addition, this study also reveals that the occurrence of environmental costs is affecting Tobin's Q, not for Price to Earnings (PER), indicating that capital market is somehow considering to what extent the company allocates their money on environmental activities.

This study suggests further research fill the limitation of this current research by acquiring longer periods of analysis and/or longitudinal study. Applying them would allow next studies to answer questions such as: when would the current expenditures in time (t_0) cause improving returns (t+n). Another drawback of this current study is related to its ability to generalize the result into other industries. Next study may expand the analysis into other industries that have different characteristics of environmental costs.

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Contact

Nila Nuzula

Department of Business Administration, Faculty of Administrative Science

Universitas Brawijaya

Jl. MT Haryono 163 Malang, East Java Indonesia 65145, Indonesia

nilafia@ub.ac.id

MICROFINANCE AND ACCESS TO FINANCE OF SMES

Györgyi Nyikos – Gábor Soós

Abstract

Purpose: The main objective of this study is to provide an overview of the situation of access to finance of SMEs in Europe and explore the regulatory and financial background of microfinance opportunities. Besides this general approach, the paper also aims to investigate the practical approach of EU Member States to the issue of microfinance. As a result, it is expected that overall the efficiency of programmes financed from public funds will be increased through the adoption of best practices in European countries.

Design/methodology/approach: Research is being carried out using information provided by ten INTERREG project partners from seven different EU Member States and Norway, including managing authorities, microfinance institutions and enterprise development organisations. Stakeholders were interviewed through surveys and stakeholder group meetings (twelve meetings per partner), while their experiences are shared in study trips (up to six per partner) and local workshops (up to five per partner). Publicly relevant data and the academic literature related to microfinance has been also reviewed. In-depth analysis in six EU Member States (Hungary, Italy, Germany, Spain, Croatia, Poland), representing regions at various levels of development, has also been carried out.

Findings: It has been found that the lack of commercial sources of finance is still a problem for a number of European SMEs. The main problem is that many firms are deemed non-bankable by commercial banks. Nevertheless, governments have intervened to support these firms and promote microfinance initiatives. These are provided typically from national or EU sources, such as ESIF Funds, while various regional initiatives also exist in the countries investigated.

Research/practical implications: The research addresses some important regulatory and practical issues with microfinance that can prove invaluable for researchers, policy-makers or even financial institutions. The comparative analysis of Member State solutions can also provide an inspiration for other countries considering the introduction of microfinance initiatives. It is expected that following the publication of the results of the research, policy instruments related to microfinance will be improved and there will also be new projects aiming at tackling at enterprise development or improving the access to local microfinance programs.

Originality/value: The paper presents original research in the field of practical issues and solutions in microfinance, providing an invaluable insight into the approach of six different EU Member States.

Keywords: Microfinance, SMEs, financial instruments, EU Funds

JEL Codes: G21, G23, G28

Introduction

In the post-crisis era significant interventions have been made by both the European Union and Member States to ease conditions for SMEs to raise capital in the financial market. Nevertheless, many efforts are yet needed to remove obstacles to accessing finance and addressing financial exclusion; microfinance offered through various modalities across Europe has therefore remained a crucial instrument. In the short term it helps to realise prospective, however not yet bankable projects. The investments, in the medium-long term, improve the companies' competitiveness, lead to the opening up of new job opportunities and eventually contribute to local wealth creation. Moreover, the importance of the social aspects of reducing disparities, poverty and promoting inclusive growth cannot be overstated.

Concerning the above, research has been carried out with the involvement of ten project partners from seven different EU Member States (Hungary, Spain, Germany, Italy, Croatia, Poland, Belgium) and Norway. The partners included a range of institutions, namely managing authorities, microfinance institutions and organisations entrusted with the development of enterprises.[13] The main aim of the research is to provide a general overview of the situation and issues concerning microfinance in Europe. Besides the review of existing reports and other sources, an in-depth study has been carried out of the experiences with SME finance and microfinance in six EU Member States (Hungary, Italy, Germany, Spain, Croatia, and Poland).

The overall objective of the study is to improve the implementation of policies addressing enterprise development or sustainable employment in the participating regions, so that they can contribute to a better access to local microfinance programs for SMEs and self-entrepreneurs. The stidy is expected to enable regional authorities and business development organizations to develop adequate local responses to one of the key obstacles that start-ups and self-entrepreneurs are facing, i.e. the lack of credit, business development services, and financial exclusion. In the frame of the research, the relevant stakeholders have been interviewed through surveys and stakeholder group meetings and their experiences have been shared in study trips and local workshops. A total of 12 stakeholder meetings have been organized by each partner,

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[13] Participating organisations were the following: Fejér Enterprise Agency (HU), Ministry for National Economy Deputy State Secretariat Responsible for Implementing Economic Development Programs (HU), European Business and Innovation Centre of Burgos (CEEI Burgos) (ES), KIZ SINNOVA company for social innovation gGmbH (DE), Zala County Foundation for Enterprise Promotion (HU), Autonomous Region of Sardinia Regional Department for Planning (IT), PORA Regional Development Agency of Podravina and Prigorje for Promotion and Implementation of Development Activities in Koprivnica Krizevci County (HR), Microfinance Norway (NO), Świętokrzyskie Region – Marshal Office of Świętokrzyskie Region (PL), European Microfinance Network EMN aisbl (BE).

with study trips and local workshops for each partner. The results will be communicated also to policymakers and an action plan for implementing results will also be set up.

The aim of the present paper is to provide a short overview of the analysis being carried on the access to finance for SMEs. The main focus on one hand is on the theoretical, practical and regulatory issues related to microfinance in Europe and on the other hand the experience of Member States studied as regards providing microfinance. Correspondingly, the study explores international experiences in managing such public funded schemes as well as a strong emphasis will be placed on presenting to what extent relevant international expert guidance and recommendations have been embedded.

1   SME Finance in Europe – an overview

1.1   Micro-enterprises in Europe

Micro-enterprises represent 93% of all companies in the European non-financial business sector, and they contribute important shares of total economic activity and employment. However, the smaller a company the more difficult its access to finance tends to be. The relative size (or spread) of productivity differences between larger and smaller firms varies considerably across countries. In the United Kingdom for example micro manufacturing firms have about 60% the productivity level of large firms compared with around 20% in Hungary (OECD 2017). Although there is no universally accepted definition of micro firms, the vast majority of definitions focus either on the number of employees and/or the turnover of the firm. The European Commission (2003) defines micro firms according to the number of employees, annual turnover or the balance sheet total. According to this definition, micro firms have less than 10 employees and have an annual turnover or a balance sheet total of no more than EUR 2 million. However, the definition of microcredit should be rather based on the type of client targeted (underserved population by the financial institutions), on the type of institution offering it (social purpose organisations characterised by their transparency, client protection and ability to report on their social performance results), and on the type of services offered, especially considering that the provision of accompanying services (non-financial services) is a key component of microfinance. Further, the definition should not be restricted on the basis of a limited amount (EMN 2015).

1.2 Microfinance in Europe

In Europe, microfinance consists mainly of small loans (less than EUR 25,000) that are tailored to micro-enterprises. Microfinance could be considered to be a social policy tool, as it serves businesses that are not commercially attractive for the mainstream financing providers, but nevertheless are able to create social value or it is seen as a business activity, which targets viable microenterprises that are financially excluded because the traditional credit market remains underdeveloped. The EC defines microcredit as "the extension of very small loans (micro-loans) to entrepreneurs, to social economy enterprises, to employees who wish to become self-employed, to people working in the informal economy and to the unemployed and others living in poverty who are not considered bankable (European Commission 2007). It stands at the crossroads between economic and social preoccupations. It contributes to economic initiative and entrepreneurship, job creation and self-employment, the development of skills and active inclusion for people suffering disadvantages" (European Commission 2007). Microcredit can be useful even in the EU Member States also to encourage new businesses, self-employment and stimulate economic growth (Nyikos 2015).

Microfinance, characterised by a high degree of flexibility in its implementation, is a product that can be tailored to support the needs of aspiring entrepreneurs from disadvantaged labour market segments. Microfinance is the provision of basic financial services and products such as microcredit, micro-savings, micro-insurance and micro-leasing. Microfinance Institutions (MFIs) mainly focus on the financing of very small and small businesses (business microfinance) and low income or poor individuals (personal microfinance). The majority of the gross microloan portfolio (71%) is allocated for business microloans, because the large share of MFIs exclusively offers business products and the EU support and finance income generating activities.

The driving force of the microfinance market is financial and social inclusion and generally target very small (new) businesses that lack any form of collateral or credit history. Microfinance has very positive effects on different policies that are especially sensitive in our societies, such as social cohesion, economic development, via wealth creation and small business financing and public finances through encouraging the unemployed to start a business instead of receiving welfare benefits. The SAFE Analytical Report 2015 also shows that debt financing seems to be the primary source of funding for SMEs in the EU, which indicates the importance of microcredit for these types of firms (SAFE 2015).

Fig. 1: Relevance of debt financing for SMEs in the EU28, 2015
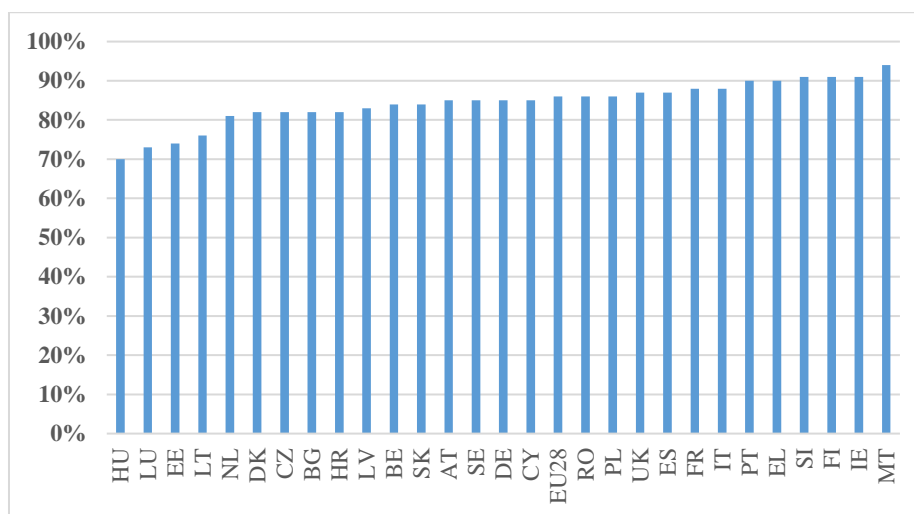
Source: SAFE (2015)

2 Regulatory issues

While it is the absence (or near absence) of formal regulation that has long given microfinance the necessary flexibility to develop as a successful financial inclusion tool, this situation has changed gradually over recent decades. The academic literature provides a number of important explanations for the cause of this phenomenon, such as the protection of the country's financial system and small depositors; addressing the consequences of rapid growth and fast commercialization of the microfinance sector; consumer protection and the fight against abusive interest rates; the entry of new providers and credit delivery mechanisms in the microfinance sector; lessons from the recent financial crisis; and fraud and financial crimes prevention (e.g. Peck Christen and Rosenberg 1999 and Chen, Rasmussen and Reille 2010).

In general, however, it is considered that non-depository MFIs should not be subject to prudential regulation, unless the nature of their activities prescribes otherwise. Indeed, credit-only MFIs generally present less risk for the financial system and, considering the large amount of small MFIs, it would simply be impossible and too costly to oversee the whole industry. All MFIs should nonetheless be subject to basic consumer protection measures, although not necessarily in a regulatory way. Soft legislation may be more appropriate, especially for very small institutions.

2.1 EU level regulation

From the regulatory point of view the situation is complex: the term microfinance currently refers to a varied set of activities having in common that they target a low-income population,

but they can be offered by operators with very different legal forms (e.g. cooperatives, banks, foundations) and be subject to multiple laws (e.g. charity, banking, capital markets).

Whereas the legislation concerning the banking sector is clear and harmonised to a certain extent by European banking law, the regulatory approach to microcredit provided by non-banks differs from country to country. For the bank model the factor determining whether an institution falls under the scope of banking legislation is the right to take deposits under European law. Many countries use this room for manoeuvre, allowing non-banks to operate credit-only activities without the need to have a banking licence. For the non-bank institutions European law only forbids deposit-taking but not lending activities per se. However, some Members States restrict almost all lending activities to banks.

The absence of prudential regulation and supervision in itself poses no binding constraint to the development of microcredit. It is important to take into account that microfinance institutions do not always have the same goals as traditional banks. They not only seek profit maximization, but also to serve 'the poor'. This may justify a differentiated regulatory treatment that enables microfinance, and does not subject it to all the constraints imposed on traditional commercial banks. Furthermore, regulation must be careful in limiting MFIs' permitted activities because this could endanger the effects of financial inclusion (Macchiavello 2017).

2.2 National regulations

Save a few countries (such as Hungary and Italy) most EU jurisdictions do not have specific laws and regulations applicable to micro-enterprises. In the Member States where legislation regarding micro-enterprises has been enacted, specific rules apply only in pre-determined fields such as tax law (for example Italian legislation provides for a specific tax regime for micro-enterprises). In most European jurisdictions, the provision of microcredit is considered a financial activity and falls in the scope of general applicable laws on financing and providing loans. Some Member States restrict almost all lending activities to banks, such as Germany where microfinance institutions act as agents, while only banks or specific financial institutions can grant loans.

Of the EU Member States, 10 have a usury rule (namely Austria, Denmark, Finland, Germany, Hungary, Italy, Poland, Romania, Spain and Sweden), while such provisions are not applicable in the remainder of the EU jurisdictions. Of the countries prohibiting usury, only Germany, Italy and Poland have defined the term, with reference to a specific figure, usually a percentage uplift or multiple of the market interest rate or a rate fixed by public authorities. In addition,

interest rate caps in the context of microcredit are operated in Poland, where microcredit is considered to be a personal credit.

There is no discernible European-wide trend for tax incentives aimed specifically at microcredit. Both micro-enterprises and microfinance institutions may be eligible for beneficial tax treatment under general tax legislation. For instance: start-ups and/or SMEs benefit from special tax rules in several Member States including Germany, Italy, Spain, tax deductions are available to the self-employed in e.g. Italy; investments in start-ups benefit from certain tax benefits in e.g. Germany, special tax regimes apply to non-profit organizations in e.g. Spain. The guarantee schemes may be public, private or mutual and may operate on a national/federal or regional/federal level. In Member States where microfinance institutions operate, loans provided by such institutions may be guaranteed through state-sponsored schemes, schemes promoted by local authorities, mutual arrangements among microfinance entities or bank-supported institution.

3 Public sources of microfinance

Microfinance institutions predominantly receive their funding from public sources at national or regional level and various European sources (such as the European Structural and Investment Funds, European Investment Fund). International aid has also been used by microfinance institutions in Eastern Europe (e.g. USAID in Slovakia and the UNDP in Bulgaria), although such funding disappeared when these countries joined the EU.

3.1 EU Sources

The EU supports entrepreneurs and businesses with a wide range of EU programmes providing financing through local financial institutions. The Access2finance portal[14] provides complete and up-to-date information on how businesses can access EU financial instruments from various EU programmes in each country and language. Every year the EU supports more than 200,000 businesses. This website allows them to get access to over EUR 100 billion of finance from various EU programmes, such as COSME Programme, InnovFin Programme (Horizon 2020), Programme for Employment and Social Innovation, European Structural and Investment Funds and European Investment Bank and European Investment Fund.

The EU set up a microfinance facility for employment to offer a new chance to the unemployed and open the road to entrepreneurship for the disadvantaged groups, including the young. The

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[14] https://europa.eu/youreurope/business/funding-grants/access-to-finance/ [Accessed 04 January 2018]

European Progress Microfinance Facility (Progress Microfinance) was launched in 2010 and managed by EIF in the 2007-2013 programming period and funded by the European Commission and the European Investment Bank. This facility is now included in the new 2014-2020 programme for EaSI, which is a European-level financing instrument managed directly by the Commission to support employment, social policy and labour mobility across the EU. The concept of social innovation is at the heart of EaSI.

The using of the cohesion policy sources for microcredit is not a completely new phenomenon. Financial instruments have been used for delivering investments for Structural Funds since the 1994-1999 programming period. Their relative importance has increased during the programming period 2007-2013 and 2014-2020 as well, and according to several experts and policymakers these are expected to be the future of the cohesion policy. Financial instruments (FI)[15] have attracted interest because of its revolving character meaning that FIs invest on a repayable basis, as opposed to grants, which are non-repayable investments[16]. Their use has been promoted because of the added value of revolving instruments compared to that of grants in terms of the efficiency of use of public resources. Secondly, by unlocking other public sector funding and private sector resources through co-financing and co-investment, FIs aim to increase the overall capital available (Nyikos 2016). Additionally, the private sector participation enables policymakers to make use of private sector skills and expertise in areas such as identifying investment, decision-making, management of commercial operations and the ability to achieve returns.

3.2 National sources

While even EU sources of funding are often described as being scarce (Nyikos and Talaga), this is even more true for purely national sources of funding. In fact government funding for microfinance in many countries, especially those in Central and Eastern Europe are dominated by EU sources of finance, while national sources are much more limited. In Hungary, national sources for economic development in the budget estimates have shrunk considerably, and the estimates never contained any funding for microfinance.

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[15] Financial instruments are the term used in preference to financial engineering instrument for the current programming period.
[16] FIs are defined also in Financial Regulation as measures of "*financial support provided from the budget in order to address one or more specific policy objectives by way of loans, guarantees, equity or quasi-equity investments or participations, or other risk-bearing instruments, possibly combined with grants*".

Apart from central government funds, an area where purely national funds are often available is at the regional or city level. These funds are usually small, however they might constitute and important funding source for micro firms at the local level. In Hungary city funds exist for example in Budapest and in Székesfehérvár. Unfortunately few data is available on the efficiency and effectiveness of these funds.

4   Country experiences with microfinance

4.1   General considerations

Broadening access to finance for SMEs - start-ups, innovative companies and other unlisted firms - is at the heart of the Capital Markets Union (CMU) Action Plan (European Commission 2015). On average around 60% of start-ups survive the first three years of activity, and those that do contribute disproportionately to job creation (OECD 2015). Young firms account for an average of only 17% of employment, but they create 42% of new jobs (OECD 2016).

The recent EIF SME Finance Index – as a composite indicator that summarises the state of SME financing in 27 EU countries – reveal some interesting findings when considering the evolution of the index over time. Greece, for example, has experienced a gradual but consistent deterioration of its index value. Comparing 2015 to 2016, the countries experiencing the biggest set-back in their SME Finance index were Latvia, the United Kingdom and Luxembourg. The biggest improvements were recorded by the Czech Republic, Denmark and Bulgaria.

European SMEs receive 75% of their funding from banks. However, their financing needs cannot always be serviced by banks in the amounts or on the terms needed. And this over-exposes SMEs to tightening bank lending policies. Despite a significant improvement in the availability of bank financing over the last years, SMEs in some Member States still face a lack of access to credit.

Fig. 3: The EIF SME Finance Index: Country comparison and evolution over time
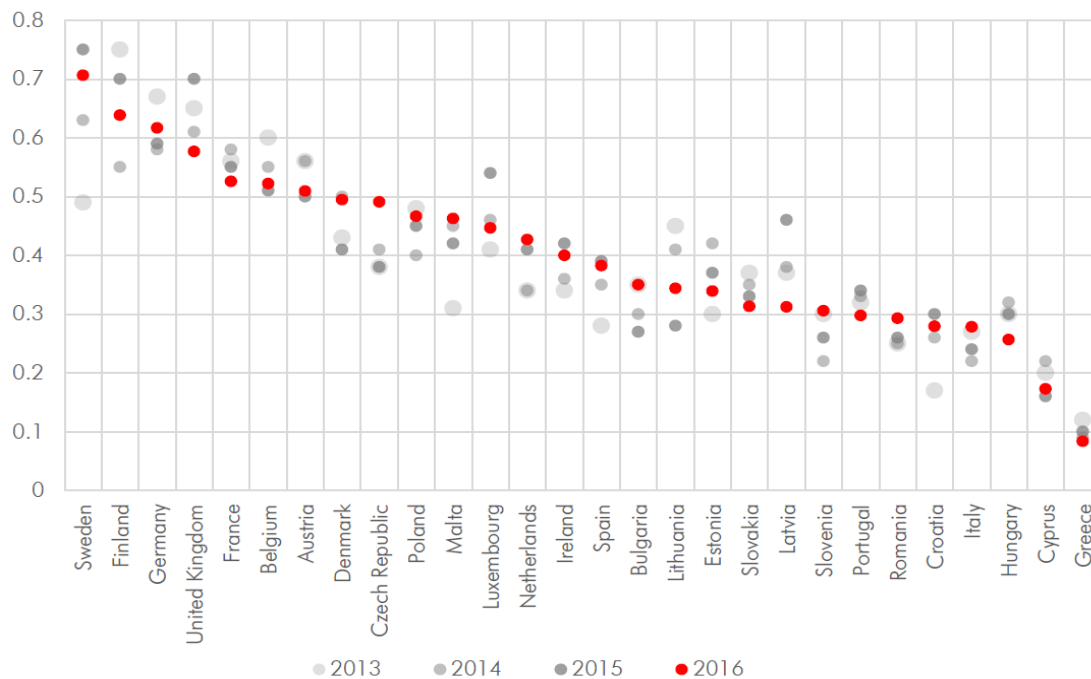
Source: OECD (2016)

Fig. 4: Reasons for bank loans being not relevant (by enterprise size class, 2016)
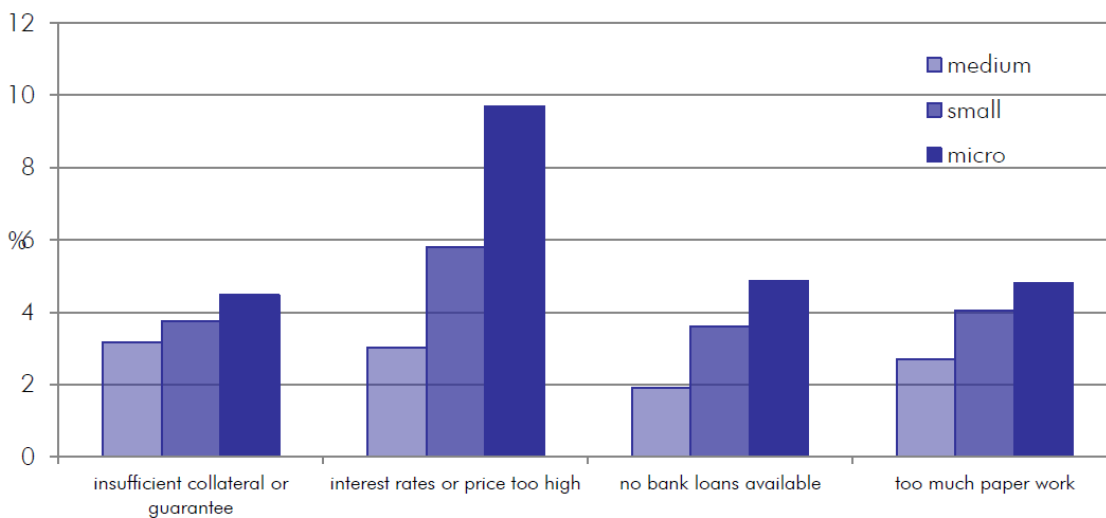
Source: SAFE (2017)

4.2 Results of case studies

As part of the research, an in-depth analysis has been made of six EU Member States[17] regarding their experiences with microfinance. The Member States concerned and the regions analysed have been selected with a view of including regions at different levels of economic development

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[17] Hungary, Italy, Germany, Spain, Croatia and Poland

in order to get a balanced picture of the issues surrounding microfinance in Europe. The results are based on the information gathered by project partners in accordance with the methodology mentioned in the Introduction. The analysis concerned a number of specific topics, namely, the availability of banking services, the financial services provided by non-banks, the barriers for SMEs in obtaining finance from banks and using banking services, financial awareness of the public and measures to increase access to finance for SMEs. Here we focus on the specific issues that are most relevant to the problems related to microfinance and the measures taken to remedy the situation by the EU Member States studied. It is expected that the results, once published, will inspire decision-makers to take appropriate action, where necessary.

Financial services are provided by both banks and non-banks in all countries surveyed. Banks are subject to much more detailed regulation, although in some countries (DE, ES) several different types of banks exist (e.g. saving banks and credit banks in Germany). Non-banks offer a more limited range of services compared to banks (e.g. they are not permitted to collect deposits), however for obtaining credit they can be a viable alternative for SMEs. Non-banks providing financial services can take various forms such as financial enterprises (HU), public entities (IT), microfinance institutions (ES), insurance and reinsurance companies, leasing companies, pension fund management companies and investment fund management companies (HR), loan companies and credit and savings unions (PL). In Germany professional provision of loans requires a banking license, and therefore loans can only be provided by banks.

As regards the barriers of obtaining finance for SMEs, almost all countries surveyed have reported certain difficulties. The exception was Germany where people and enterprises ranked as "not bankable" but who still have high potential and possibilities are able to get a credit and not being excluded anymore. On the other hand many micro firms are facing difficulties in providing sufficient guarantees and proving their ability to repay loans (HU, IT, ES, HR, PL). Some countries have stated specific problems related to a freezing of funds as a result of the financial crisis (HU, ES) and some have had difficulties as a result of a closure of banks or bank branches (ES, PL). In Poland and Hungary there have been issues related to fluctuation in currency exchange and a high amount of loans denominated in foreign currencies. Croatia reported a long list of problems related to microfinance, including lack of guarantees, range of products, documentation requirements interest rates and lack of information. Interestingly in Poland it has been reported that for entities eligible for microfinance (e.g. start-ups) less emphasis is based on liquidity, but rather the focus is on the ideas for the use of funds. In Germany business plans are also a significant element of the loan decisions.

Notably all countries surveyed have specific mechanisms to support the funding of SMEs. Central public initiatives have been implemented in Hungary. In that case the Growth Loan Programme, set up by the Central Bank of Hungary provided funding for SMEs with favourable conditions. In Croatia the Croatian Agency for SMEs, Innovation and Investments (HAMAG BICRO) since 2013 conducts a favourable credit program intended for existing micro-economic subjects operating up to 24 months and entrepreneurs who plan to start their own business. A popular means of support has been the use of financial instruments funded from EU Funds (e.g. ERDF and/or ESF in HU, IT, HR, PL). For example in the 2014-2020 programming period Hungary has allocated EUR 2.235 billion to financial instruments in its Economic Development and Innovation Operational Programme (EDIOP) and around EUR 100 million in the Competitive Central Hungary Operational Programme (CCHOP). Microcrediting with EU support is also implemented by the Croatian Bank for Reconstruction and Development (HBOR) in cooperation with commercial banks that have accepted cooperation within the Program. In most countries (IT, DE, ES, HR, PL) certain regional initiatives exist to help SMEs in a specific region of the country, although in Hungary the EDIOP aims to specifically target less developed regions. Furthermore, the SME Initiative was launched in Spain in 2015, which is co-financed by the Kingdom of Spain, the European Commission and the EIB Group. In addition, in July 2016, EIB and Castile-León Regional Government signed a 130 million Euro loan to invest in strategic sectors and to finance businesses within the region in order to strengthen production and encourage job creation through innovation and internationalisation. Many other SME specific support also exist in the countries surveyed, such as the Microcredit Fund in Sardinia, Italy or the MIQUA[18] in Germany.

The facilitation of financial capital towards the new entrepreneurs as a way to achieve higher entrepreneurial activity, higher economic growth, and higher employment rates may work (Dvouletý 2017), however the development and social effect could be also important to maintain the activity of micro firms.

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[18] A local best practice programme, which was implemented in Offenbach, Duisburg, Gelsenkirchen, Leipzig and Kiel can be seen in "MIQUA" (Mikrofinanz im Quartier). This programme helped entrepreneurs in underprivileged areas to get a microcredit in order to support their businesses.

Conclusion

European SMEs in general suffer from a lack of commercial sources of finance. The main problem is that many firms are deemed non-bankable by commercial banks, such as micro firms or small firms with little or no credit history. For better situated firms, funding is available from both banks and other non-bank institutions, although the latter are subject to less regulation at EU and at national level. For other firms various government supported initiatives exist to support those that struggle to obtain commercial forms of financing, especially loans. A popular way of support is the use of EU funding from ESIF operational programs in the form of various financial instruments, although in a number of countries various regional funds and other regional initiatives of support exist.

It is suggested that within the EU, there should be a separation between small loans that can be supplied by a bank to bankable borrowers, and those cases that should indeed be handled by a MFI or development banks (the non-bankable segment of the market). Nevertheless, it should be recognised that in some markets banks provide or support microfinance services to the non-bankable sector as well mainly as social responsibility. In the longer run, these activities may allow some borrowers to migrate from the non-bankable to the bankable. Whatever the pattern of the microfinance business in a market, it is important to avoid confusion between the bankable and non-bankable kinds of business. Each type has its distinct objectives, risk profiles, and rewards, which should be as transparent as possible.

Acknowledgement

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Contact
Györgyi Nyikos
National University of Public Service
Ludovika tér 2. H-1083 Budapest, Hungary
nyikos.gyorgyi@uni-nke.hu

Gábor Soós
National University of Public Service
Ludovika tér 2. H-1083 Budapest, Hungary
soos.gabor.gergely@uni-nke.hu

FIRMS QUEST FOR INNOVATION: THE CASE OF SLOVAK AND HUNGARIAN MANUFACTURING FIRMS

Samuel Amponsah Odei

Abstract

Purpose: This paper seeks to examine the various sources of knowledge and innovation that Slovakian and Hungarian manufacturing firms rely on to improve their innovative performance.

Design/methodology/approach: The multiple regression technique was employed using data from the community innovation survey conducted between 2010 and 2012. A sample of 3,576 manufacturing firms was used in the analysis. Their innovation performance was measured using their turnover to the market as the dependent variable and the sources of innovation as the independent variables.

Findings: The results of our empirical analysis demonstrated divergent results for both countries. Slovak firms derived their innovation from in-house activities and other sources such as from scientific journals and conferences whilst Hungarian firms relied on market sources such as cooperation with clients or customers from the private sector for their innovation as well as from scientific journals. However, there was a convergence in the results, manufacturing firms in both countries didn't collaborate with research institutions such as universities and other public and private research organisation for their innovation.

Research/practical implications: The result of the analysis has demonstrated that Slovak and Hungarian firms didn't depend on knowledge and innovation hubs for their innovation. This study therefore proposes firms to foster closer collaboration with these institutions since they are the birthplaces of innovation that can increase their competitiveness and innovation performance.

Originality/value: This study found out that there was a limited study on the sources of innovation that firms in both countries rely on. This study therefore contributes to the literature on innovation in these countries.

Keywords: Innovation, knowledge, innovation performance, Slovakia, Hungary

JEL Codes: L60, 030, 033

Introduction

The innovative prospects of firms need knowledge from diverse and reliable sources to succeed. Firm's innovation progressively depends on their ability to assimilate and appropriate external knowledge, technologies and information. Firms derive their innovation from diverse sources such as R&D cooperation with customers and suppliers, competitors, universities, fairs and trade associations and public research organizations and these sources increase their innovative performance (Tether, 2002). Firms are increasingly depending on research institutions and other higher educational institutions such as universities as a source of their knowledge and innovation (Laursen & Salter, 2004; Belderbos et al., 2016). Knowledge from these external sources helps firms to bolster their competitiveness as well as their innovation performance.

Firms that have open search strategy tend to draw their innovation from research institutions such as university and other private and public research organizations (Dahlander & Gann, 2010). Research outcomes from universities can directly be converted into new products or services for industrial development (West & Bogers, 2014). Universities have embraced their "third mission" which comprises of broad range of activities such as disseminating their research results to wider coverage outside their academic campuses and this has resulted in increased direct collaboration with industries. Industries have come to the realization that short-term research outputs from public research organizations and universities can position them better in the highly intense competitive market. Firms can rely on basic research to help in the development of new goods and services.

The remainder of our paper is organized into five sections. Section 2 focuses on theoretical background on the sources of firm's knowledge and innovation. Section 3 is devoted to the methodology describing the sources and method used for our empirical analysis. Section 4 focuses on descriptive results, while section 5 contains discussions and conclusion with some policy implications.

Firm's sources of innovation

Firms rely on diverse sources for their knowledge and innovation and their competitiveness and innovative performance dangles on how successful they are at utilize knowledge emanating from these sources (Leiponen & Helfat, 2010; West & Bogers, 2014). Schumpeter describes firm's innovation search as a processes where firms explore other avenues to look for new combinations of knowledge and other vital technologies for their production and processes.

Firm's innovation performance soars when they search for knowledge and innovation internally within the firms confines and externally from outside the boundaries of the firms.

Firms invest substantial amounts of resources such as money and time in search of improved sources of knowledge and innovation (Berchicci, 2013). Firms' can derive their innovations from the market environment. Innovation emanating from market sources play key role in firms' innovation and can lead to business success or failure. Competition among firms can force firms to innovate to survive. The intense market competition for customers means that firms will always find innovative ways to differentiate themselves from other rivals (Hashmi, 2013). Firms can rely on design to create corporate uniqueness and improved products to give their product new looks .Additionally firm's access to local and foreign markets can enable their access to foreign technologies as well as facilitate firms' market expansion. Clients and customers can influence new product development by providing complementary knowledge on their taste, requirements and preferences. These vital collaborations and exchanges between producers and consumers helps in product improvements leading to towering likelihood that these new product will be adopted by consumers. Lastly suppliers of equipment and materials can offer essential insight into the planning of logistics, production and other functions. Suppliers are also reliable sources of information because they act as the bridge between producers and consumers ensuring the flow of vital knowledge and ideas needed to develop or improve products or processes (Yeniyurt et al, 2014).

Firms have come to realize they cannot innovate in isolation without depending on R&D activities from other research institutional sources (Prokop & Stejskal, 2018). Therefore, firms are increasingly looking for other sources to supplement their in-house knowledge production capabilities that allows access to codified academic knowledge from other extraneous sources, and this are through collaborations with innovation centers such as research institutions (Laursen & Salter, 2014). University knowledge increases industrial innovation and can champion the establishment of new industries. Academic research is driven by both economic and social motives so firms will demand these innovations so long are they remain in competition and production (Odei, 2017). This collaboration comprises of the cooperation with institutions such as universities, private and public research organizations. This collaboration can be through joint research and other academic consulting or training activities. This relates to the knowledge and technology transfers networks and spillover effect of research outcomes that can be appropriated by firms for further commercialization.

Firms can acquire knowledge and innovations internally through in-house research and development activities and processes (Cassiman & Veugelers, 2006). In-house activities have become a vital source of new knowledge for firms. This involves deliberate activities carried out by employers to sharpen employee skills. These in-house activities comprises of organized internal education, workshops, coaching, mentoring and other training programs to further build and increase the internal knowledge base of employees. Staff training activities updates staff knowledge with current technologies, hence sprouting the human capital, absorptive capacity and innovation performance (Santamaría et al, 2009).

The aim of this paper is to examine the various sources of knowledge and innovation for manufacturing industries in Slovakia and Hungary. Firm's knowledge on sources of knowledge and innovation makes them to survive the intense competition, increase their productivity, efficiency and profitability (Stejskal & Hajek, 2012). This study found limited studies on the sources of knowledge and innovation for manufacturing firms in Slovakia and Hungary (see Damijan et al., 2003; Grillitsch & Trippl, 2014). In both countries the manufacturing sector are the leading drivers of economic growth and innovation (Dudin et al., 2016). This paper intends to add to the literature on university industry collaboration in these countries.

Methodology and data

Data for the empirical analysis was sourced from the Eurostat Community Innovation Survey (CIS) of innovation conducted between 2010 - 2012. The methodology and all the questions of the CIS innovation surveys are thoroughly explained in the Organization for Economic Co-operation and Development's (OECD) Oslo Manual. The use of the CIS data in the study of firm level innovation in Europe and other continent has soared (Leiponen & Helfat, 2010). CIS surveys are frequently conducted every two years by all EU member states as well as Iceland and Norway. The subject-oriented CIS questionnaire asks firms to point out their source of technological knowledge and information that influences their innovative activities. The CIS identifies 11 different sources of information and knowledge for firms' innovation and they include within the industry, universities, suppliers, and customers among others. The advantage of using CIS data is that it serves as a useful alternative to the customary measures of innovation, using patent as a proxy (Laursen & Salter, 2004).

This paper subsequently used the regression model for our analysis by sampling 3,576 manufacturing firms with at least fifty employees is used (869 from Slovakia and 2,707 from Hungary). The regression analyses are applied to establish the relationship between two or more

variables and it can help to calculate a dependent variable from independents variables (Preacher et al, 2006). Therefore, it enabled us to verify how sources of knowledge and innovation influence firm's innovation performance. Numerous studies have used the regression technique in this regard (Schneider and Spieth, 2013; Ingram et al, 2016). The general formula of the regression model is given by (Chatterjee and Hadi, 2013) as follows

$$y = \beta 0 + \beta_1 x1 + \beta 2x2 + ... + \beta nxn \qquad (1)$$
$$+ \varepsilon$$

where

y is a dependent variable;

x_1, x2 … xn are independent variables;

ε is an error term that accounts for the variability in y that cannot be explained by the linear effect of the n independent variables. The lists of independent variables are explained in table 1.

Tab. 1: Independent variables

Internal sources	Market sources	Institutional sources	Other sources
within the enterprise or enterprise group (SENTG)	Clients or customers from the public sector (SCLPU)	Universities or other higher education institutes (SUNI)	professional conferences, trade fairs, meetings (SCON)
	Competitors and other enterprises of same industry (SCOM)	Government or public research institutes (SGMT)	Scientific journals, trade/scientific publications (SJOU)
	Suppliers of equipment, materials, etc. (SSUP)	consultants, commercial labs or private R&D institutes (SINS)	Professional and industry associations (SPRO)
	Clients or customers from the private sector (SCLPR)		

Source: own research

Results

I start by looking at the sources where Slovakian and Hungarian firms derive their innovation. First of all i focus on firms that highly depend on universities as their sources of knowledge and information. In the CIS firms are asked to indicate the degree of importance of all the source of knowledge or information for their innovative activities on a scale of 0–1–2–3, (0: meaning not used; 1: low use; 2: Medium use and 3: meaning high use).

Tab. 2: Slovak and Hungarian firms relying on universities for their innovation

Industries	Slovakia						Hungary					
	Not used (%)	Low use (%)	Medium use (%)	High use (%)	Row (%)	Total	Not used (%)	Low use (%)	Medium use (%)	High use (%)	Row (%)	Total
Food, beverages & tobacco	20.4	4.3	3.2	1.1	71	93	12.3	4.5	5.5	3	74.7	440
Textiles	12.8	3.5	0	1.2	82.5	86	5.7	1.5	0	0.4	92.4	263
Wood	17.1	5.7	0	1.4	75.8	70	6.8	2	4.1	2	85.1	296
Chemical products	26.1	13	17.4	4.3	39.2	23	24.5	9.2	20.4	11.2	34.7	98
Pharmaceuticals	16.7	0	16.7	8.3	58.3	12	11.4	8.6	22.9	14.3	42.8	35
Plastics products	14.1	8.5	4.2	2.1	71.1	142	12.3	5	6.3	5.3	71.1	301
Metals products	13.5	3.6	3.6	1.8	77.5	111	8.7	3.1	3.8	1.8	82.6	392
Electronic	29.4	8.8	0	0	61.8	34	13.8	5.1	8	6.5	66.6	138
Electrical	14	22.8	3.5	1.8	57.9	57	20.4	7.4	6.8	3.1	62.3	162
Machinery	15.4	9	7.7	2.6	65.3	78	20.8	5.9	7.4	4	61.9	202
Transport	21.4	10	5.7	0	62.9	70	22.1	4.5	6.5	5	61.9	199
Others	10.8	4.3	1.1	0	83.8	93	14.7	4.8	4	2.2	74.3	272
Total	211.7	93.5	63.1	24.6	807.1		173.5	61.6	95.7	58.8	810.4	
Cumulative (%)	17.6417	7.79167	5.25833	2.05	67.2583	100	14.4583	5.13333	7.975	4.9	67.5333	100

Source: own calculations

It can be evidenced from Table 2 that in Slovakia, pharmaceutical companies highly depend on universities for their sources of knowledge and innovation, followed by chemical products firms. Additionally machinery industries and firms producing plastic products also highly rely

on firms for their innovation. Firms in the transportation and electronic industries didn't rely on universities as a source of their innovation. On the other hand, the results for Hungarian firms that highly used universities as a source of their innovation are similar to that of Slovakia. Pharmaceutical companies were the industry that highly depended on universities this was closely followed by firms producing chemical products. Electronic and plastic products firms as well as firms in the transport industry also highly relied on universities for their innovation. Again I examined the other sources of knowledge and innovation for firms that influences their innovative performance in both countries and the results are shown in table 3 below

Tab. 3: Sources of innovation for Hungarian and Slovak firms

	Slovakia $R^2=0.105679$; $R^2adj=0.06417$ P=0.0046	Hungary $R^2=0.042554$; $R^2adj=0.028047$ P=0.0115
Internal sources		
SENTG	0.0277**	0.7332
Market sources		
SSUP	0.1016	0.3434
SCLPR	0.0837*	0.0324**
SCLPU	0.1455	0.2037
SCOM	0.6965	0.0582*
Institutional sources		
SINS	0.2056	0.6967
SUNI	0.5919	0.5951
SGMT	0.6416	0.3757
Other sources		
SCON	0.0002***	0.8735
SJOU	0.0116**	0.0151**
SPRO	0.7147	0.6379

Source: own calculation

Legend: $P< 0.05$ (*); $P<0.01$ (**), $P<0.001$ (***)

It can be seen from Table 3 that Slovak firms derive their innovations and sources on knowledge from internal sources within the enterprise or enterprise group (0.0277*). Market sources didn't contribute to firm's innovation as can be seen from the lack of significance of the indicators. The only exception was clients or customers from the private sector (0.08), this confirms (Laursen & Salter, 2004) results. Again the results shows that Slovak firms do not cooperate with other institutions such as universities, government or other public research organizations, and private research institutions and consultants. This might be due to issues such as divergent institutional aims, lack of consensus on property rights, patents, and confidentiality issues might occur (McAdam et al, 2008). These institutions are the major sources of innovation, so the lack

of significance confirms other studies that firms-institutional collaboration is limited (Bušíková, 2011). Again other sources of innovation such as professional conferences, trade fairs, meetings, and scientific journals, trade or scientific publications were highly significant sources of innovation for Slovak firms. They demonstrated to be significant at 0.0116** and 0.0002*** respectively.

On the other hand the results for Hungary are quite different from that of Slovakia shown above. Among all the innovation sources this study examined, internal sources from within the enterprise or enterprise groups were not a significant source of innovation for manufacturing firms in Hungary. Among all the market sources of innovation it was only sources from clients or customers from the private sector that was a significant source of innovation, all the other sources such as clients or customers from the public sector, suppliers of equipment, materials, etc. and competitors such as enterprises of same industry were not significant sources of innovation for manufacturing firms.

Again the institutional sources which are often seen as homes of innovation have not been so beneficial for these firms. Innovation and knowledge from these research institutions (universities inclusive) didn't contribute as significant sources of innovation, this contradicts (Frenz & Ietto-Gillies, 2009) conclusion that collaborative knowledge sources are significant sources of firms innovation. This result also implies that there is no synergy among research institutions (universities, research organizations) and industries. Among the other sources of innovation, it was only the scientific journals, trade/scientific publications sources that were significant source of these firms innovation (0.0151*). The rest such as professional conferences, trade fairs, meetings and professional and industry associations were not significant drivers of firm's innovation.

Conclusion

The production, exploitation and absorption of new forms of knowledge by firms to create new products have become a crucial necessity for innovation. Firms mostly have two main sources of knowledge for innovation that influence their innovative performances and this can be lumped into internal and external sources. Firms derive knowledge internally within the confines of the firm or the enterprise group through in-house knowledge diffusion, research and development, and internal education and training activities for employees. External knowledge acquisition involves the introduction of novel knowledge from extramural sources through the procurement of machinery and equipment, employing qualified personnel, professional

conferences, trade fairs, meetings, professional and industry associations, training, workshops and licensing.

Our paper produced divergent results for both countries. Slovak manufacturing firms derive their innovations mainly from internal sources in the enterprise or enterprise consortium, as well as from other sources such as from scientific journals, trade and scientific publications and professional conferences and trade fairs. The results of innovation from institutional sources were not significant demonstrating that firms do not collaborate with universities, public and private research organizations. On the other hand, Hungarian firms derive their source of innovation from market sources such as from clients or customers from the private sector and scientific journals, trade and scientific publications. Innovation from scientific journals, trade and scientific publications were significant for both countries.

The results of the empirical analysis therefore call for policy recommendations. This study recommend firms to strengthen their collaboration with higher educational institutions such as universities and other public and private institutions since they are the birthplaces of scientific innovation, when this is done, they can have access to sustainable innovation needed increase their competitiveness.

Acknowledgment

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Contact

Samuel Amponsah Odei

Faculty of Economics and Administration

University of Pardubice

Studentska 95, Pardubice, Czech Republic

samuelamponsah.odei@upce.cz

ENTREPRENEURIAL ATTITUDE AND PERSONALITY AS PREDICTORS OF LEADERSHIP VOCATIONAL INTERESTS IN MEN AND WOMEN

Dominika Ochnik

Abstract

Purpose: The aim of this study is exploring how leadership interests are shaped across age and gender and to reveal individual factors (personality and entrepreneurial attitude orientation) of leadership vocational interests.

Methodology: The research is based on Contextual Model of Vocational Interests and consists of 3 studies. In Study 1 leadership vocational interests were measured by Vocational Potential Inventory, across age and gender within 9 359 participants. Study 2 shows personality dimensions as predictors of leadership vocational interests within 190 participants. Study 3 refers to relations between entrepreneurial attitude orientation and leadership vocational interests among 98 participants.

Findings: Two-way Anova (gender x age) in Study 1 showed significant effect for gender, with men scoring higher in leadership vocational interests. The effect of age was significant in men only, the older they were the higher leadership vocational interests they presented. Regression analyses in Study 2 showed high conscientiousness, low neuroticism and high extraversion as predictors explaining leadership vocational interests in 31%. Regression analyses in Study 3 revealed that high entrepreneurial attitude orientation and being a man are predictors explaining leadership vocational interests in 13%.

Implications: A series of surveys allowed to positively verify the Contextual Model of Vocational Preferences (Ochnik, 2017), in which leadership preferences are shaped by individual factors: personality and entrepreneurial attitude. The research allows to implicate that in the scope of leadership vocational interests, the social vocational clock - reflecting patterns of social roles related to gender and age as well as cultural factors, is more significant among men.

Originality: The Contextual Model of Vocational Interests and the concept of vocational social clock have been introduced. The studies revealed that gender differences in leadership preferences are not stable. After introducing individual factors into the model, the gender dimension is reduced, in particular with regard to personality. Entrepreneurial attitude turned out to be relevant predictor but weaker than In addition, it can be concluded that in the future, leadership preferences will be less and less attractive to men, which may be reflected in reduced gender inequality in managerial positions.

Key words: Leadership, vocational interests, gender differences, entrepreneurial attitude, vocational social clock

JEL Codes: J16, J24, M54

Introduction

Determining appropriate predispositions for management and leadership is a challenge for management psychology. Research in the field of vocational potential allows an individual to plan a professional career in accordance with their own predispositions, and employers to match employees better. Vocational interests turn out to be nontrival predictors of job performance (Rounds & Su, 2014; Van Iddekinge et al., 2011) and a better predictor of future professional career than personality traits (Stoll et al., 2017). They allow predicting earnings to a greater extent than skills and personality, as well as achieving a certain professional prestige (Rounds & Su, 2014).

Additional vital aspect related to leadership is gender inequality. Although there is a high percentage of women on managerial positions in Poland (40%) it is still difficult to gain the position of CEO or Executive Director for Polish women (Grant Thornton, 2017). Research reveal that the percentage of Polish women occupying management positions falls as roles get more senior (Spencer Stuart, 2012). The glass sailing is not considered as a pronounced barrier but rather self-concept of not being a leader as well as inability of wide promotion of own achievements in Polish women (Spencer Stuart, 2012).

Therefore it is more than crucial to analyse how leadership vocational interests evaluate across age and gender. This article aims also to verify individual factors as predictors of the leadership type of vocational preferences. Individual factors and entrepreneurial attitude were included as individual factors.

1   Theoretical background

The most frequently used model of vocational interest is the hexagonal RIASEC model of John L. Holland (1992). Enterprising type has a predisposition to manage, manipulate others in order to achieve organizational goals and economic profits (Rounds & Su, 2014). There is a significant role of personality and gender in shaping vocational preferences (Ochnik & Rosmus, 2016; Woods & Hampson, 2010; Su, Rounds, & Armstrong, 2009; Thompson, et al., 2004) and the observed differences in variability are larger in adolescence than in adulthood (Ion, Nye & Iliescu, 2017). Although, when analyzing the gender effect, it is not pronounced for entrepreneurial interests as for realistic, investigative, artistic and social interests (Su, Rounds, & Armstrong, 2009).

Entrepreneurship and management share common areas (Schendel & Hitt, 2007) however those concepts are not synonymous. It should be noted that the vital and key denominator of

miscellaneous definitions of entrepreneurship is profit (Ochnik, 2012), while management and leadership are defined rather through interpersonal relations (Avolio, et al. 2003). Although this difference, it is entrepreneurial attitude that can shape leadership interests to a large extent. Those assumptions have led to constructing The Leadership Vocational Interests scale (Ochnik, Rosmus, & Stala, 2016), based on both, entrepreneurial and leadership dimensions.

Theoretical basis for the presented research is *Contextual model of vocational preferences* (Ochnik, 2017), assuming instability of vocational preferences, whose intensity may be shaped by broad cultural factors, such as gender dimension of culture and social expectations manifested in specific gender roles adopted by women and men of all ages. The model introduces the concept of *vocational social clock*, showing the dynamics of vocational preferences due to age and gender, which are determined by social roles and cultural factors (Ochnik, 2017; Ochnik & Rosmus, 2016). (Fig.1)

Fig. 1: Contextual Model of Vocational Interests
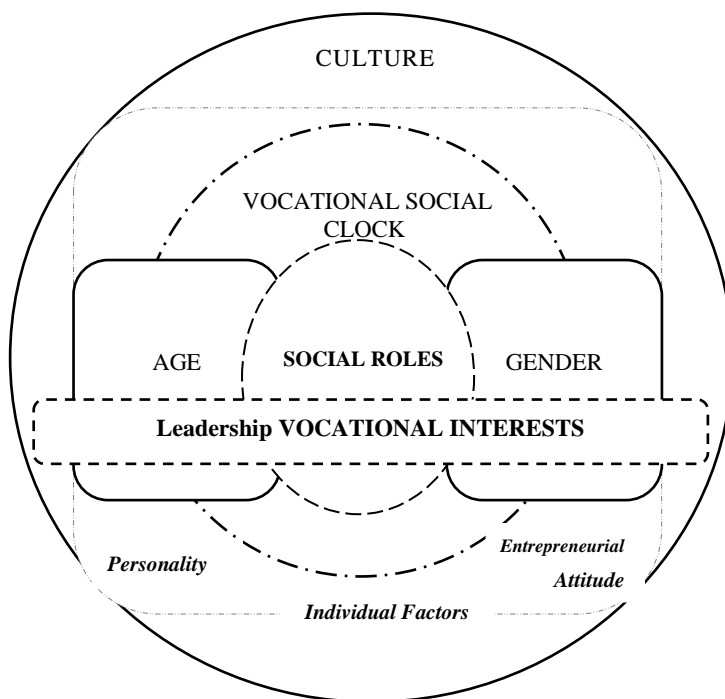
Source: Ochnik (2017)

The presented research refers to the dimension of individual factors (personality and entrepreneurial attitude), which plays a key role in the individual's reaction to socio-cultural factors and shaping vocational preferences. The research question is whether leadership vocational interests are modified across age and gender and what are the predictors of leadership

vocational interests. Therefore, it is hypothesized that there are nontrivial differences in leadership vocational interests with regard to gender and age. The second hypothesis is that the level of Individual Factors in Contextual Model of Vocational Interests (Ochnik, 2017) composed of personality traits (The Big Five) and entrepreneurial attitude orientation, is a significant predictor of Leadership Vocational Interests.

2 Method

The Vocational Potential Inventory (Ochnik & Rosmus, 2016), was applied in the series of three studies. The scale consists of 10 Skills, and 10 Traits and is reliable (α = .75) (Ochnik & Rosmus, 2016).

In study 2, the NEO-FFI Personality Questionnaire (Costa, McCrea, 1992) was used to measure personality dimensions, in the Polish adaptation (Zawadzki et al., 1998). In study 3, the *Entrepreneurial Attitude Orientation* (EAO) tool was used to measure entrepreneurial attitude (Robinson et al., 1991) in the Polish adaptation (α = .83) (Ochnik, 2016).

In study 1 9,359 people participated, including 57% women (n = 5 364) and 43% men (n = 3 995). The study was conducted on-line. In Study 2, 190 pupils (n = 90) and students (n = 100) took part, 62% were women (n = 118) and 38% men (n = 72), aged 15 to 50 (M_{age} = 22). In study 3, there were 98 students of extramural studies (M = 35, K = 63) with an average age of 26 (Age_{min} = 19, Age_{max} = 56). Studies 2 and 3 were carried out using a conventional paper-and-pencil method. Intentional selection of subjects was used. The research was carried out in accordance with the principles of voluntariness and anonymity.

3 Findings

Study 1. Leadership type x age x gender

A two-way ANOVA showed that gender effect is statistically significant (F(1,9351) = 3.89, p = .049, η^2 < .001). Men rated their leadership preferences higher than women. However, the strength of this effect can be described as very weak. The age effect as well as the interaction of age and gender turned out to be insignificant. (Fig.2)

Fig. 2: The results of the two-factor ANOVA test of gender and age interaction of the leadership type of vocational preferences
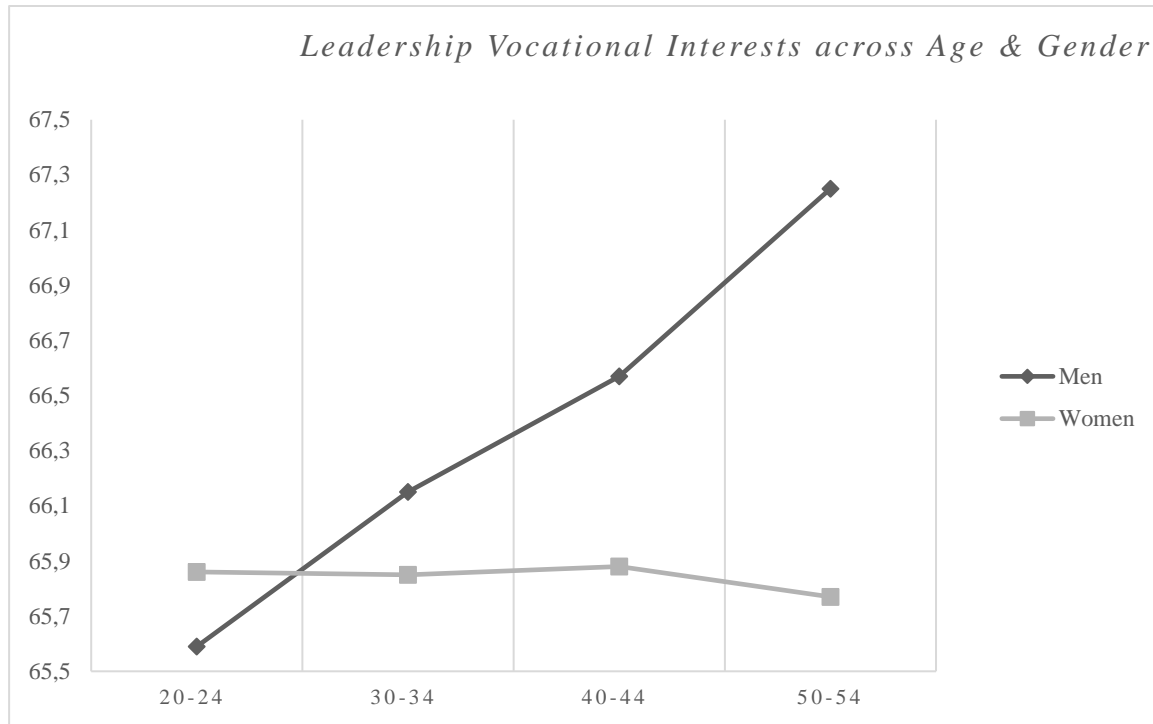
Source: Own research.

The one-way ANOVA indicated that the intensity of the leadership type is significantly different between different age groups of men, $F(3,3991) = 3.35$, p = .018. The oldest men (50-54 years old) had significantly higher level of leadership preferences than younger ones. In the group of women, the analysis of variance was irrelevant, so women did not differ in the intensity of leadership preferences due to their age.

Study 2. Leadership type x age x gender

Linear regression analysis indicated significant predictors of the type of leadership preferences. High conscientiousness, low neuroticism and high extraversion explain the variance in 31%. Variable gender and age were excluded from the model. This means that introducing personality dimensions into the model reduces the importance of gender as a predictor of the leadership type (Tab.1).

Tab. 1: Regression type analysis of vocational preferences (*N* = 190)

	β	*t*	*p*
Conscienciousness	.32	4.72	< .001
Neuroticism	- .28	-4.55	< .001
Extraversion	.28	4.05	< .001
F		28.33	< .001
R^2		.31	

Source: Own research.

Study 3. Leadership type x entrepreneurship attitude x gender

Linear regression analysis of the step method indicated significant predictors of the leadership type of vocational preferences in two steps. High intensity of entrepreneurial attitude and being a man explain the variance in 13%. (Tab.2)

Tab. 2: Regression type analysis of vocational preferences (*N* = 98)

	β	*t*	*p*
Entrepreneurial attitude (EAO)	.33	3.47	.001
Gender	- .22	-2.31	.023
F		8.10	.001
R^2		.13	

Source: Own research.

Discussion

Those results are interpreted from Contextual Model of Vocational Preferences perspective, which emphasizes the role of undertaken social roles characteristic for specific age and gender, being derived from culture. This mechanism is called *social vocational clock* (Ochnik, 2017). The inevitable fit between person and environment, with emphasizing relative instability of vocational interests is visible also in other recent research (Ion at al., 2017; Rounds & Su, 2014).

There might be at least two explanation of the difference in men and women in the age of entering the job market (20-24 years old) and the highest vocational activity (30-34 years old). The first explanation would be related to undertaking new social roles (parental or marital). In

Poland, the average age for marriage is 27 for women and 29 for men, and the median for having the first child is 29 years (GUS, 2016). In early 30s pro-social vocational interests are strengthen in women and weaken in men (Ochnik & Rosmus, 2016; Ochnik, 2017), while in turn leadership interests are streghten in men. This reflects traditional division of gender social roles.

On the other hand the research have been conducted within various age groups, therefore the enhancement of leadership vocational interests might be understood as diversified masculinity models in younger and older men. The in-depth analyses of recent study on normative narcissism (Wetzel et al., 2017) reveals that nowadays young adults (students), compared with their peers in 1990s, 2000s, & 2010s, almost year by year, presented not only lower level of normative narcissism but also drop in interests in leadership. That means students in 2015 considered own abilities and interest of being a leader much lower compared to students in 1992 or 2008.

Traditional social role of masculinity related to dominance can be fulfilled and manifested in vocational environment, and as the congruence between leadership vocational interests and traditional social norm might be stronger in older men, it is lower in younger men, who are interested in leadership as much as women in their age. Therefore, this study reveals that *social vocational clock is* stronger in men.

The results revealed Individual Factor as predictors of leadership interest. Being an entrepreneurial man predicted higher leadership interests. That shows entrepreneurial attitude as a component of leadership interests. Entrepreneurial interests in Holland's model are socially perceived as masculine (Thompson, et al., 2004). This might partially explain slightly higher leadership interests in men. Nevertheless, personality model explained leadership vocational interests to higher degree than entrepreneurial attitude model. Conscientiousness, emotional stability and extraversion predicted leadership interests. Although openness to experience was positively correlated with leadership interests, it turned out to be insignificant predictor, in favor of conscientiousness that was in turn the strongest predictor. Furthermore, after introducing personality traits to the model, gender as a predictor has been reduced.

Hence, summing up three conducted studies, gender differentiates leadership vocational interests when personality is not introduced to the model. That means the personality is stronger predictor of leadership vocational interests than gender.

Conclusions

A series of surveys allowed to positively verify the Contextual Model of Vocational Preferences (Ochnik, 2017), in which leadership preferences are shaped by individual factors: personality and entrepreneurial attitude. The research allows to conclude that in the scope of this type of preferences, the *social vocational clock* - reflecting patterns of social roles related to gender and age as well as cultural factors, is more significant among men.

Entrepreneurial attitude along with gender turned out to be nontrivial predictor of high vocational interests nevertheless personality explained leadership interests to higher degree. It can be concluded that gender differences in leadership preferences are not stable. After introducing individual factors into the model, the gender dimension is reduced, in particular with regard to personality.

In addition, it can be concluded that in the future, leadership interests will be less and less attractive to men, which may be reflected in reduced gender inequality in managerial positions.

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Contact

Dominika Ochnik

Department of Psychology

Katowice School of Economics

Ul. Harcerzy Września 3, 40-659 Katowice, Poland

dominika.ochnik@gwsh.pl

ECONOMIC POTENTIAL OF SMES IN THE REGIONAL CONTEXT OF THE CZECH REPUBLIC

Petra Pártlová – Veronika Humlerová

Abstract

Purpose: The aim of the paper is to discuss the current situation of small and middle-sized enterprises and their viability, possible trends and development in different regions. The paper deals with the financial subsidies of the European Union used by small and middle-sized enterprises and the absorption capacity – whether the enterprises used up the subsidies during the project.

Design/methodology/approach: The paper applied the statistical analysis of sample indicators, their comparison regarding different territorial units and a follow-up synthesis. Data was purchased from Ekotoxa. Part of the data was from the 2007-2016 Structural Funds outlook survey report available from the Ministry of Regional Development survey. The adjustment of time series of sample indicators was carried out, using trend functions, such as the trend of progressivity of the economic structure. Cartographic outputs were created by ArcGIS program.

Findings: The cartogram for the Czech Republic revealed that regions with a high index of progressivity of economic structures are polarized areas around major cities (see the regions of Praha, Karlovy Vary, Central Bohemia, Moravian-Silesian region). Increasing progressivity, sophistication, knowledge and technological demands of economic activities increase their concentration is in the most advanced metropolitan regions. Examples of such trend include location of large companies, progressive tertiary sector, and company headquarters of high-tech manufacturing industries. These progressive regions were able to make the best use of subsidy policies in the 2007-13 programming period, their position and trend could be strengthened.

Research/practical implications: As shown by the results of out research, different regions report great disparities, both regarding the development of SMEs and their ability to use the subsidy schemes of the European Union. The most important leaders, except Prague region are the enterprises in the regions of South Moravia, Central Bohemia, Oloumouc and Ústí nad Labem. The regions of South Bohemia, Plzeň and Pardubice were lagging behind (during the research period of ten years). These results should be used as a guideline for current and subsequent periods, allowing more precise regional policy instruments in the future.

Originality/value: The results use data that was processed into higher territorial units and thus they show the overall image and trend of the business sector (SMEs) in different regions. In addition, the progress of SMEs in the whole Czech Republic was analysed and, finally, the absorption capacity of individual legal forms was defined. The procedure shows the suitability and applicability of the individual grant titles. Furthermore, it shows the need for the dynamics and non-consistency of the sample indicators in different regions.

Keywords: SMEs, structural funds, regional development, self-employment

JEL Codes: L53, L26, R11

Introduction

Small and middle-sized enterprises account for an important part of the economy of the Czech Republic. The SME also account for 99.84% of all businesses and they employ approximately 1.8 million of people, accounting for about 50% of total employment. The SMEs include all subjects of economic activity, regardless the legal form (Synek, Kislingerová 2010; Hyršlová, Klečka, 2011).

For the purpose of using European subsidies, they are natural persons (a person registered in the Commercial Register, a non-registered person, domestic persons, etc.), a limited liability company, joint stock companies, cooperatives and then the less-used legal forms of a limited partnership and public company). Another criterion of the subsidy level is the classification of SMEs into micro-enterprises, small enterprises and middle-sized enterprises. There are three categories of the classification: number of employees, annual turnover and balance sheet total. (European Commission, 2008)

For the development of economy, the small and middle-sized enterprises are an important accelerator of the development in different regions. The prosperity of enterprises is related to a positive influence of a multiplicative character. Other areas are influenced too so that economy as the whole profits (Mandysová, 2009). The most important advantages include job creation (around 70% of employed people is employed in SMEs), support of a healthy competitive environment, including the strengthening of human capital, which plays an important role in the development of the region, as its stabilizing element in particular.

The regional potential of a small and middle-sized enterprise is defined as an ability of the region to efficiently use its own inner resources, respond flexibly to external development stimuli, create and develop activities with higher added value, acquiring new, hierarchically superior qualities, under certain circumstances. (Pokorný, 2008; Dvouletý, 2017)

The Czech Republic has become accustomed to use subsidies under the support of the European Regional Fund and the European Social Fund. There is eighty percent of total allocation in the Czech Republic used for cohesion funds. As a result, small and medium-sized enterprises were able to use different forms of grant support through the Operational Programs: Operational Program Enterprise and Innovation and Operational Program Human Resources and Employment. (Blažek and Macešková, 2010)

SMEs have a unique quality and they are highly flexible (Krugman, Obstfeld, and Melitz, 2018). On the other hand, they are less able to influence market development and they have to

struggle with a number of barriers, such as a more difficult access to financing, higher dependence on customers and suppliers (smaller bargaining power and position), greater vulnerability to negative external and internal environment (Novotný, 2008).

The business environment changes all the time. These changes require constant and recurrent exploration of corporate growth theories that described in a number of papers and research, such as the papers by Demir, Wennberg and McKelvie (2016). The above mentioned authors defined five key factors: human capital, strategy, human resources management, innovation and abilities (Dagnino, King, Tienari; 2017). The concepts of Peterson and Rondstadt (1986) are useful to characterize the main areas of successful business and the key elements of business success. They define business success and a prerequisite for company development using two factors: know-how and know-who. By some other authors, the influence of exogenous factors is less important (Carree and Thurik, 2007). Competitive environment, the emergence of new technologies and rapid changes are typical features of the modern business environment. These are all major obstacles, preventing SMEs from improving, implementing innovations, as a key factor in their survival, in the possibility of introducing new technologically more demanding products and services. The SMEs have to count on internal resources, experience and equipment (Loukis, Kyriakou, Pazalos, Popa; 2017). These are the reasons why the government of the Czech Republic and governments of the other EU Member States are developing programs and policies to support the business environment in their countries (Novotný, 2008; Syllová, 2010).

1 Business activity in different regions of the Czech Republic

Business activity was gathered in SME's in municipalities that belong to Local Action Groups (LAG). Municipalities with more than 25 000 inhabitants are not mentioned. The data was monitored for March 2011, the source is the Czech Statistical Office, the Census. The aim of these regions was to find out the current situation in rural regions. Rural areas occupy more than 90% of the territory of Czech Republic and deserve significant financial and non-financial support. For this reason, an analysis of subsidy schemes (OP EI, activity 3.2.1 and OP HRE activity 4.1.1) was carried out. The source for this analysis was Ministry of Regional Development. The aim was to show how rural regions, SMEs operating in rural regions have taken the opportunity to develop their activities through European funding.

The index of economic structure progressivity was used, expressing an analysis of the sectoral structure of employment in terms of quality and future potential. The same indicator as a trend function was used, followed by the rate of business activity, meaning a number of entrepreneurs

(natural persons) in 1,000 people, as one of the indicators of support of SMEs. It is one of the indicators used to monitor the success of SME support.

The progressivity index is constructed as the weighted sum of the shares of individual sectors in the total number of employed persons.

The progressivity index analyses the sectoral of employment regarding the quality and the future potential. The sector of better potential is assigned a higher weight. In general, agriculture and forestry are seen as industries with lower potential, together with some manufacturing industries (such as textiles and clothing). They might undergo structural changes and adversely affect the labour market and the overall economic performance of the region. Each sector was assigned the following weight: primary sector (weight 1), secondary sector (weight 2), and tertiary sector (weight 3).

$$Progressivity\ Index =$$
$$\frac{(number\ of\ employees\ in\ the\ primary\ sector * 1 + number\ of\ employees\ in\ the\ secondary\ sector * 2 + employment\ in\ the\ tertiary\ sector * 3)}{number\ of\ total\ employees}$$

(1)

Fig. 1: Progressivity of Economic Structure Index
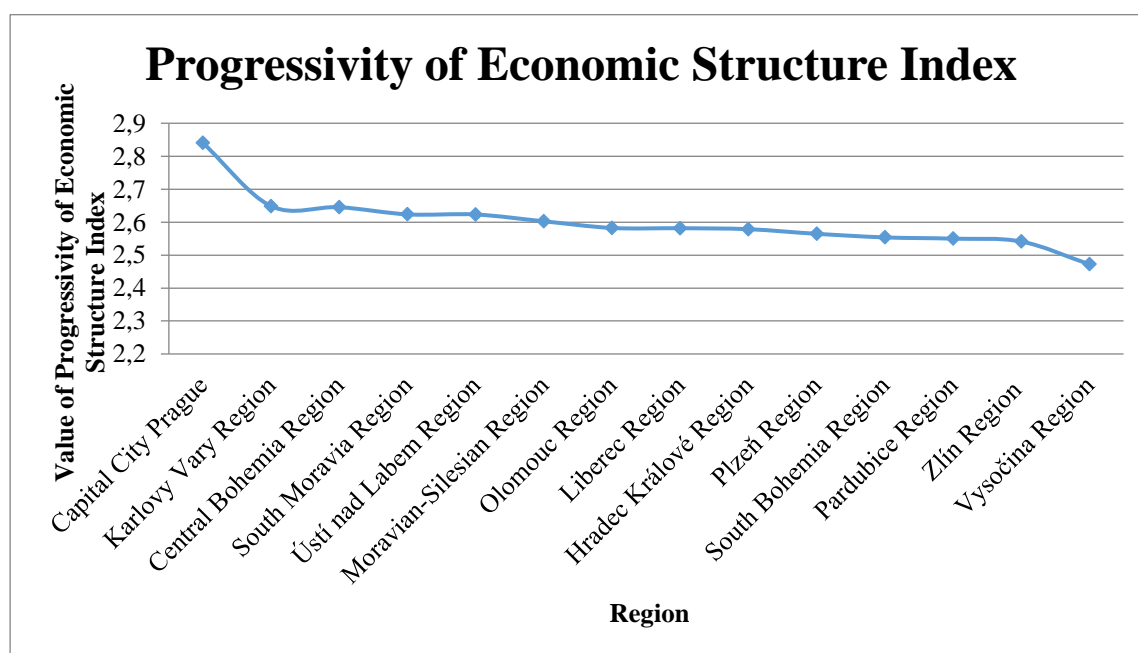
Source: Ekotoxa, 2016; edited by authors

As reported by figure 1, the first places in the research of the quality and future potential of employment structure were taken by the regions of Karlovy Vary, Central Bohemia, South Moravia and Moravian-Silesian. The regions of Plzeň, South Bohemia, Pardubice and Vysočina lag behind.

Since 2007, Central Bohemia, South Moravia and Moravian-Silesian show a steady increase in the year-on-year change in gross domestic product, and therefore the results for both the progressive index and its trend have been confirmed. In the Karlovy Vary region it is also noticeable, however, compared to the regions mentioned above, it is not so significant. To prove the achieved results, it is possible to say that in Karlovy Vary region there is a high-quality entrepreneurial environment, in the rural regions of the SME, the region initiated the creation of clusters and the coordination of regeneration of brownfields.

Fig. 2: Index Progressivity Trend
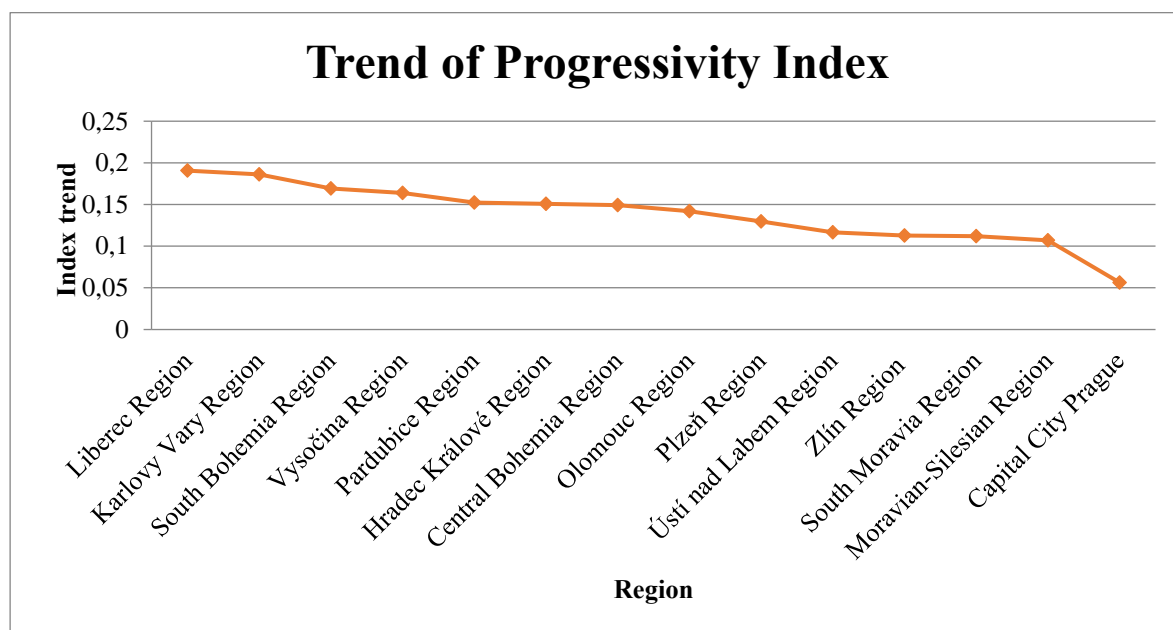
Source: Ekotoxa, 2016; edited by authors

The analysis of the sectoral structure of employment (figure 2) trend (monitored during ten years), the strongest progress was reported for the regions of Liberec, Karlovy Vary, South Bohemia and Vysočina. The lowest progressivity was reported in the Moravian-Silesian region and in the regions of South Moravia and Zlín. Such results also revealed that the region of Zlín did show any increase neither in the past nor recently. To the contrary, there was a huge progress during the ten years in Vysočina region, however such increase is not enough compared to other progressive regions. The South Bohemian Region and the Pardubice Region are also worth noticing. They do not show a large increase in the sectoral structure of employment, but it is obvious that these regions competed better in terms of increasing business activity during the past decade.

The Liberec Region is characterized by the support of start-up of projects, science and research are linked to the needs of the development of the business environment. The region has high-

quality education at all levels with potential for applying, the prestige of technical fields is increased (Technical University of Liberec).

South Bohemian Region is experiencing a gradual accretion of differences between urban and rural areas (many areas with very low population density without major regional centers in close proximity). South Bohemian countryside faces many challenges arising precisely from his sometimes peripheral position. The SME Country Strategy Strategy is therefore also aimed at supporting the elimination of these differences - for example, by encouraging the production and marketing of local produce, the development of rural tourism, or by promoting the diversification of agricultural activities. In rural areas, the microregion or LAG played an important role in the past, trying to kick-start the enterprise environment in their regions in the form of planning communities. As shown by the first results for the EU programming period 2014-2020 it remains so.

There is a low business activity in Vysočina. In addition to a number of large business entities operating mainly in the automotive, mechanical engineering and electrical engineering sectors, small and medium-sized enterprises have a crucial role to play in employment. The Vysočina Region has been connected to the South Moravian Region since 2004 and together it forms the NUTS 2 South-East Cohesion Region. Influence and links to this region are very beneficial in the development of SMEs and other investment activities (incentives), the emergence of clusters, the regeneration of brownfields.

Fig. 3: Progressivity Index Map by regions of the Czech Republic
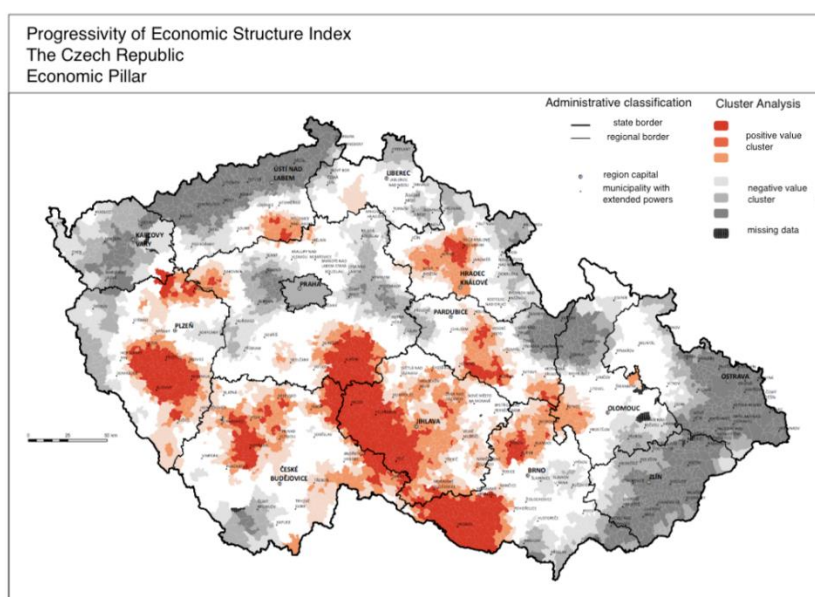
Source: Ekotoxa, 2016; edited by authors

The rate of business activity was analysed too. The rate is defined as the share of business entities to the permanent population.

$$business\ rate\ activity = \frac{number\ of\ businesses}{population} * 1000 \qquad (2)$$

This indicator mostly follows the results of the progressivity index of the economic structure as shown in Figure 4. As the indicator analyzes the success of SMEs in different regions, the most successful SMEs are reported in the regions of South Moravia, Liberec, Zlín, Olomouc and Ústí nad Labem. On the contrary, worse conditions for SMEs are in the regions of Plzeň, Hradec Králové and South Bohemia.

Fig. 4: Rate of Business Activity
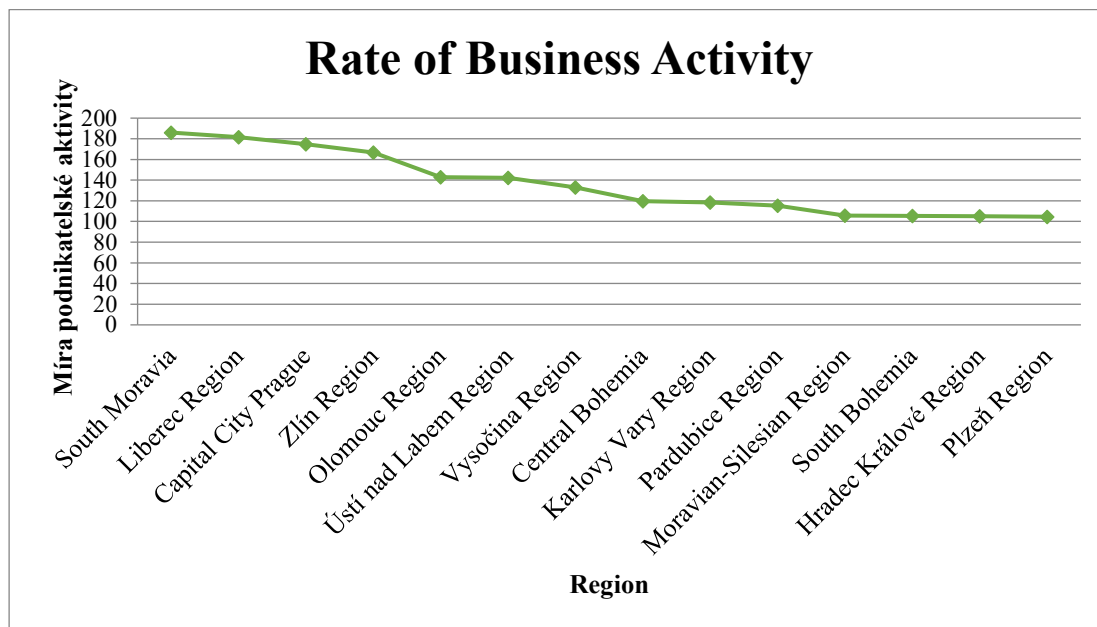
Source: Ekotoxa, 2016; edited by authors

1.1 Funds from OP EI and OP HRE for enterprise development

Next part of the survey analysed the way how the funds from the European grant titles were used in different regions. In particular the analysis dealt with funds for the development of the enterprise and for education. It discussed legal forms and the amount of European subsidies for the projects and, finally, the amount of EU subsidies that were used up after the end of the project. Such analysis shows different business activities in the region, the desire to use the UE funds, and a possibility to participate in the development of business. Getting the funds has enabled many enterprises to innovate business processes, promote their business, build research and development centres to provide progressive and demanding technology productions, and to upgrade products and services.

1.2 Use of subsidies by different legal entities for business development and education in different regions

It was revealed that Czech enterprises have become accustomed to using grant titles for the development and education, especially companies called s.r.o. (limited liability company), joint-stock companies and natural persons. Basically similar results as mentioned above were revealed. The regions of South Moravia, Zlín, and the Moravian-Silesian region were the most common; not mentioning the region of Praha, which is the first region in joint-stock companies and limited liability companies with the second greatest volume of subsidies used. High ranking of the region of Vysočina is also worth noticing, mostly due to cooperatives using the funds.

1.3 Absorption capacity of the regions

A partial analysis dealing with the absorption capacity of the enterprise shows inability of the enterprise to use the allocated amount up. Due to unclear or too rigid rules of the managing and monitoring body many businesses often either make mistakes or they fail to comply with the rules so they often can lose a part of the allocation. Subsidy administrators and project contractor, for example, who fail to comply with prescribed deadlines, may be blamed.

Conclusion

The small and middle-sized enterprises have become accustomed to use European subsidies. In the last period, the amount of 82.6 milliard CZK of the total allocation for small and middle-sized enterprises in the Czech Republic was used from the Structural funds. Such subsidies are not sufficient to mobilize investment and innovation. However, there is another tool to support the development of enterprises. Small and medium-sized enterprises can use a new financial instrument that allows zero interest throughout the project implementation and a low fixed interest rate for the whole repayment period that is limited to a maximum of ten years.

Czech enterprises see the subsidy policy as a possibility to increase the competitiveness, promote the development and education, and innovation. However, the subsidies also act as addictive, cheap and irreversible financial resources. The subsidies also cause market distortion, business cycle volatility, and the crowding-out effect of private investment.

Many enterprises, regardless their legal form, are affected by the reduction of the subsidy, known as correction. Their absorption capacity, i.e. the difference between the subsidy granted and the end-of-life subsidy, is significantly lower.

It was proved that the subsidy policy significantly influenced the development of different regions. Some of the regions (the regions of Plzeň, South Bohemia, Karlovy Vary and Hradec Králové) did not fully use the possibility, both in education and business development.

Some regions still lag behind. Based on the sample indicators in connection with the subsidy policy, it appears that a territorial-specific approach in the redistribution of subsidies should be used in the future; seeing the specific conditions, in relation to the socio-economic character and the territorial boundaries of different regions.

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Contact

Petra Pártlová

Faculty of Corporate Strategy, Department of Management

The Institute of Technology and Business in České Budějovice

Okružní 517/10, 370 01 České Budějovice, Czech Republic

vachalova.p@seznam.cz

Veronika Humlerová

Faculty of Corporate Strategy, Department of Marketing and Tourism

The Institute of Technology and Business in České Budějovice

Okružní 517/10, 370 01 České Budějovice, Czech Republic

veronika.humlerova@seznam.cz

THE BUSINES CONCEPT MAP COMPARED TO OTHER CANVAS MODELS

Attila Petheő – János Vecsenyi

Abstract

Purpose: During entrepreneurship studies educators challenge students to develop their own business idea. Without previous experiences students are facing difficulties in defining business models/concepts. To help students/entrepreneurs, new tools have been developed. In this article three different tools/methods will be compared to satisfy today's entrepreneurial need.

Design/methodology/approach: In the last 7 years more than 2000 students got the assignment to build business model using one of the tools. We were evaluating the quality and the content of the student home works and tested our new concept.

Findings: In this methodology, instead of using the Business Model Canvas, another model, the Business Concept with six major building blocks was used. The model was further developed as a standalone tool called Business Concept Map published in a 'How to cook type guidebook' (Vecsenyi, Petheő 2017).

Research/practical implications: Vecsenyi (2011) developed a website (www.startmybusiness123.com) to support students and other future entrepreneurs to develop their business concept, analyze risks and make an educated decision on stopping, postponing or starting the implementation of their business idea.

Originality/value: In this paper we would like to define, compare and differentiate the three tools. We would like to share our experience of using the tools by giving practical examples.

Keywords: Business model canvas, lean canvas, business concept MAP, entrepreneurship education

JEL Codes: L26, M13, L21

Introduction

During the last decades business model emerged as a popular term in management and entrepreneurship. Those who wanted to have a better understanding of the operation of any organization developed concepts and tools. As early as the 1960s to the 1980s during the hype of systems movement Soft System Methodology emerged. At that time a great tool, CATWOE, was developed by Checkland and colleagues (Checkland 1981).

Although the CATWOE tool was first introduced in 1981, there are signs that it is still in use at least by business analysts in design thinking (Elmansy 2014). CATWOE is a simple checklist of thinking used by people „to identify what the business is trying to achieve, what the problem areas are and how the solution is going to affect the business and people involved in it" (Pandey 2011).   It is worth listing the elements of the tool and recognizing the similarities of elements in later tools.

1. Clients/Customers
2. Actors
3. Transformation process
4. Weltanschauung or World-view
5. Owners or ownership
6. Environment

Literature review and contextualization

With the internet bubble attention turned to understanding the successes and failures of e-businesses. Experts in the field wanted to explain how these ventures make business. In a narrower sense, business models research focused primarily on the revenue stream, the way the business generates any kind of income. Business models were defined from the classical product or service direct sale through subscription, razor and blades, crowdsourcing, brokerage, to freemium (Barakonyi, 2008, Ovans 2015)

Other experts broaden the picture and consider business model as description of how an existing or a future organization creates, delivers and captures value in an uncertain environment. The breakthrough happened in this field when Osterwalder (2004), Osterwalder and Pigneur (2010) combined the two approaches: revenue generation and value creation.

Based on the increasing relevance of useful business models, tools were developed to support managers, consultants, students, nascent entrepreneurs to solve their business problems of

existing and new ventures. The tools were designed to help the users design, validate and improve business models and related business strategies either of existing firms or in the entrepreneurship arena creation new companies.

When startup and venture capital financing hype emerged the role of business plan received a kind of new perspective. Traditional venture capitalists, who wanted to minimize their risks, insisted to use extensive business plans with ample market research and financial data organized neatly in spreadsheets as a great tool of communication among stakeholders. At the same time potential investors wanted the new venture creators to be prepared based on educated decisions other than hunch. Consequently, new venture creators prepared a business plan to create a document for themselves, their key staff members and potential investors as a convincing, credible and comforting document (Bygrave 1994, Vecsenyi and Petheő 2017). At the same time, quick decision makers argued the usefulness of such an extensive business plan and wanted to have better tools.

Some practitioners even went further to challenge their right to existence. Personally, we do not share this opinion. We believe that business plan is a useful tool, but it has some limitations which might be corrected by other forms. One of the facts which makes business plan old fashion, that business plans take too long to write, are seldom updated, and almost never read by others. By the time the 100 pages long business plan attached to a 5-year spreadsheet with numbers that all show a tendency to grow in a neat diagram or chart is ready, the window of opportunity is nearly closed. Decision makers are not wasting their time to read long business plans. So, they need other solutions. One type of answers to this challenge is to use business models as a one-page business plan.

We agree that documenting entrepreneurs' hypothesis is the key to understand success. We agree with Maurya (Maruya 2012) "Document your key business model assumptions (and learning) in a portable format that you can share and discuss with people other than yourself."

We would like to present the Business Model Canvas, the Lean Canvas and Business Concept Map and highlight the pros and cons of using them to make the choice easier for future nascent entrepreneurs. We would like to investigate why these tools were introduced, what the purpose of the tool is and where and how the tool can be applied. In our view 'one size fits all' is not the right way to follow selecting the right business model tool, so everyone should select the one fits to its project the best.

Concept 1: Business Model Canvas by Osterwalder and Pigneur 2010

After Business Model Canvas became very popular the two authors prepared a book to explain more thoroughly the tool. Their book simply answers the question: How to generatethe business model for a business?

In our opinion the tool is a good option when somebody would like to describe an existing business. It helps to identify the major elements and does not require deep digging research. Later, somehow nascent entrepreneurs started to use the tool to describe a new venture. As most of the people know only this tool, the result is just a little above the satisfying level. Several questions in business model canvas cannot be answered without industry experience or considering a role model company.

However, this fact does not inhibit many nascent entrepreneurs to prepare their business model with the help of business model Canvas. We did the same in our courses.

Fig. 1: Business Model Canvas
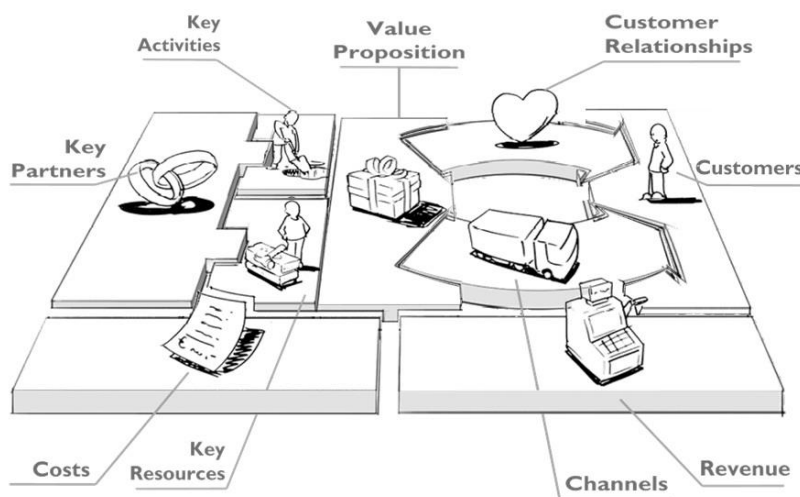
Source: Osterwalder and Pigneur (2010)

Why do so many people use the Business Model Canvas? We listed the major benefits of using the Business Model Canvas based on our practical experience with student assigmnets.

- easy to use with clear terms
- helps understanding the business model of an existing or a new venture
- helps revealing assumptions, helps to generate new business model
- easy access to the tool and explanations (home pages)
- access to examples

- popular, well-known almost everywhere

We identified the following weaknesses of the model:

- static model, hard to take trends into consideration

- growth potential, market size not part of the canvas

- less attention on competition

- entrepreneurial team is completely missing, which is a crucial element of startups, although in the resources section it can be mentioned

- no attention on special considerations of new ventures, e.g. investments needs, uniqueness of the value proposition, distinctive competence to create competitive advantages, outsourced competencies in creating values.

- no support defining needs for change, no list of actions

In addition to BMC Osterwalder and his colleagues further developed this tool, and added Value Proposition Canvas (Osterwalder and others 2014) which focuses in more detail the fit between value propositions and targeted customers.

Concept 2: Lean Canvas by Maurya (2013)

Maurya (2013) went even further and adjusted the Canvas to lean startup methodology. Maruya noticed that, due to emerging lean startup concept, highlighted by Blank (2005), Ries (2011), startuppers started using the Business Model Canvas and Values Proposition Canvas more extensively. Working extensively with startuppers and other new venture creators began using Business Model Canvas and Maruya optimized this tool for lean startups.

The Lean Canvas tool helps users to define key elements of the new business and key issues to handle.

Lean Canvas was designed for entrepreneurs, not consultants, customers, advisors, or investors. It started that, the entrepreneur can greatly benefit by engaging all stakeholders while validating their Canvas. It is more specific than the Business Model Canvas. Usually custom models and tools fits better to user needs.

From the original Business Model Canvas four elements out of nine were eliminated and four elements were added. The Lean Canvas finally covers the following nine elements listed here and shown in Figure 2.

Fig. 2: From Business Model Canvas to Lean Canvas

Source: Maurya https://blog.leanstack.com/why-lean-canvas-vs-business-model-canvas-af62c0f250f0
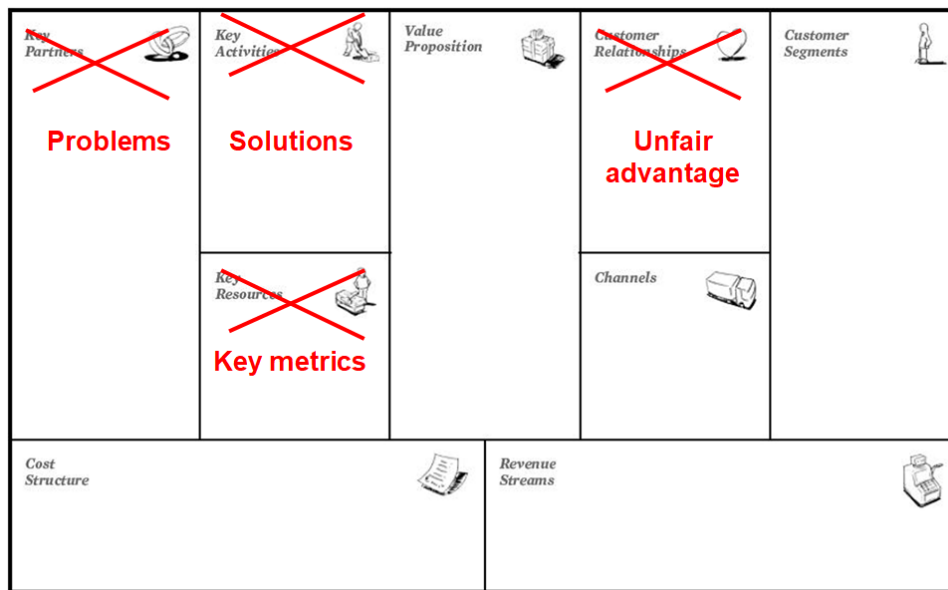
The elements Maruya took out were either overlapping with other blocks or were not crucial factor of success. Customer relationship is already part of the channel. Key partners are hard to gain in the starting phase.

Maurya also changed the suggested route of filling Lean Canvas. Defining problems becomes the second step. Market segment and early adopters got special attention at first. Cost structure is not the last any more. Unfair advantage and key metrics got special focus as they are important to become sustainable and gain market share in the long run. As the original model is under creative common license, so everyone is invited to further develop.

In our opinion after testing it with students, Mauyra's version is very good with a focus shifted toward problems. He does not mention product, rather building solution and business model gets special attention.

Lean Canvas has many valuable features which add value to the model. We suggest using it as focus on the critical elements starting a new venture. It is still very simple to use. It builds on the Canvas and keeps the clear form. It steps even further as integrates the new business formation terms like cost of customer acquisition (COCA), life time value of customer (LTV), early adopters. This model forces the user to make assumption explicit for validation, which makes it enhances its value.

On the other hand, according to our classroom experience, there is no place for competition in the model (opposite to the Porter model). Growth potential (scalability) is not handled at all.

HR is not included, as also mentioned earlier in BMC. Initial funding is not mentioned anywhere in the model. The tool is weak in finance and concentrate more on technology, business model and project management.

Concept 3: Business Concept Map by Vecsenyi (2011)

Teaching at Corvinus University of Budapest and Budapest University of Technology and Economics, Professor Vecsenyi wanted to improve the entrepreneurship education. In 2011 he developed an online platform where students could develop a short business plan using structured questions, financial planning tools, risk assessment methods, mitigation suggestions of entrepreneurs and other experts. Receiving feedback both from students, nascent entrepreneurs and other scholars, Vecsenyi developed Business Concept Map (BCM). When he formed his model, his purpose was very ambitious:

- helping smart new venture creation, define the business to start
- combine the business opportunity and value creation
- reveal assumptions for validation before developing products/ services
- provide a tool for investment pitching, give answers to questions of potential investors, partners
- create an easy to read one-page summary of major aspects of a new business

After several versions and fine tuning of the map, it arrived at a stage where more than 1200 concept formulated with its use. In our view, Business Concept Map helps to structure the business idea, and create an easy to read summary. We realized a side-effect that in the process several circles of preparing, validating and modifying the Business Concept Map answers to potential investors', product, market and business developers' questions were given. In the business concept map six major aspects of a new venture are identified. The first three define the core elements of a business opportunity, explain *why* the entrepreneur would like to pursue:

- The market need and target customers
- The value proposition and uniqueness (competitive advantages) the way the new business would like to satisfy that need
- The revenue stream and channels clarify what is the potential to generate money

The other three elements cover the business creation conditions, explaining *how* the entrepreneur would like to exploit the opportunity:

- The entrepreneur (owner) and the starting internal and external team

- The core and distinctive competencies and resources
- Cost structure, initial investment and financing

The Construction of the Business Concept Map is presented in Figure 3.

Fig. 3: The Business Concept Map
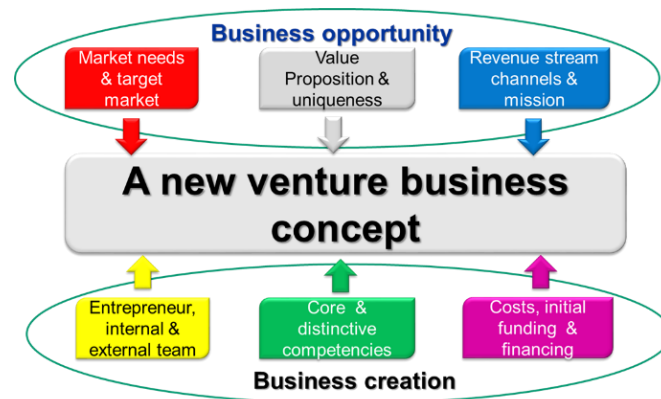
Source: Vecsenyi, Petheő 2017

This tool was found useful for those who would like to start small, traditional businesses, but start-uppers also considered it as vital tool. Here we present an example of how a sole proprietorship demonstrates the basic use of this tool.

During validation process the tools help to clarify why the business makes sense:

- Is there a real market need, are there real customers who are ready to buy?
- Is it the right product/service to satisfy that need and is it attractive enough for customers to buy it?
- Does it generate enough revenue through the channels designed and does this business fit your mission?

This model also has some week points such as:

- It requires extensive market research on the field and deep analysis for validation (stundents find Business Modell Canvas easier to use, more user friendly model)
- It is a tool demanding more time and energy to fill out the template compared with the other two canvases
- It needs to have business mindset and vocabulary

Fig. 4: Business Concept Map example
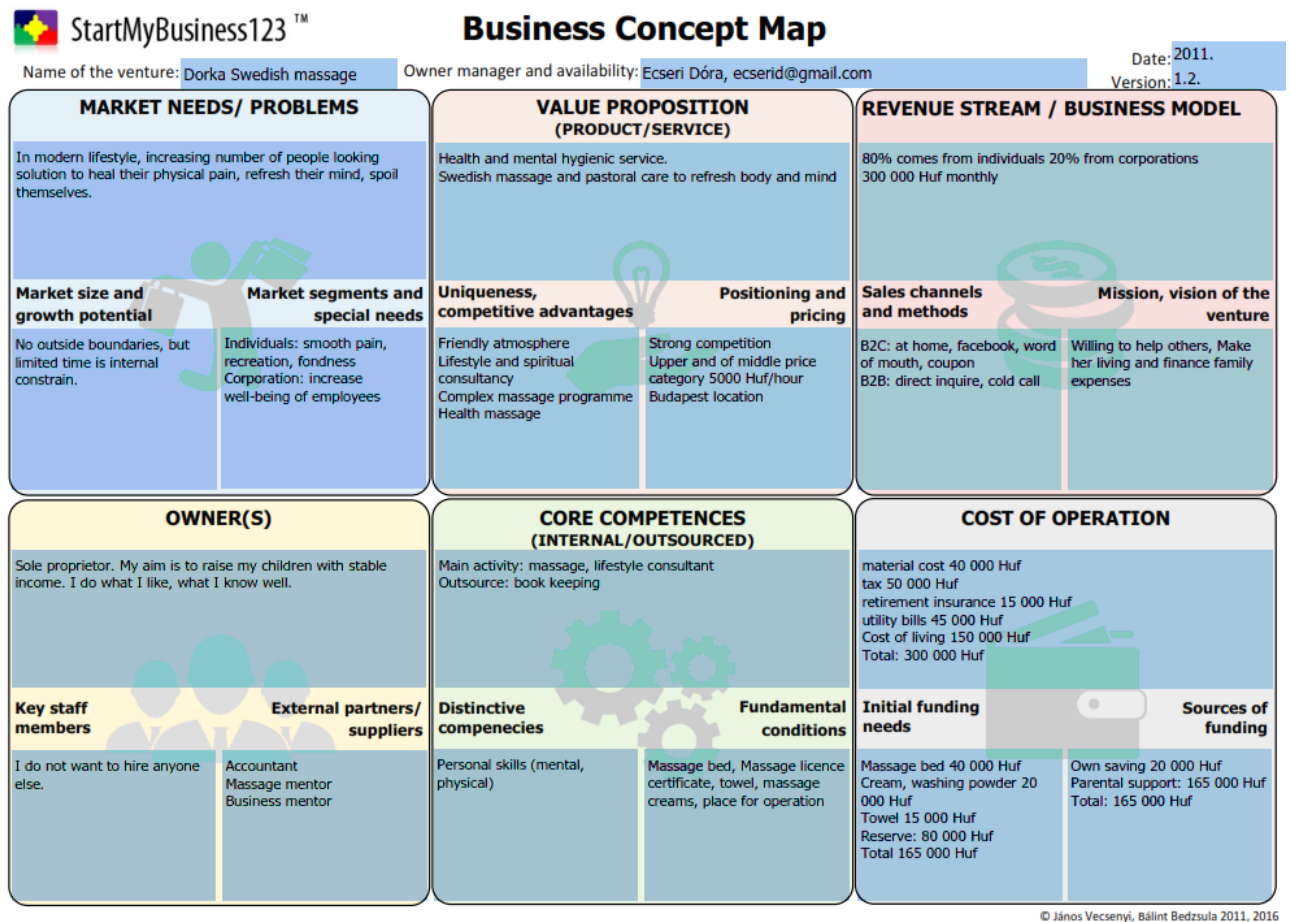
Source: Vecsenyi, Petheő 2017

Compared with the two other models, BCM covers additional aspects: growth potential and market size projections; competitive analysis and market positioning; mission statement or reason for existence; owner entrepreneur(s), key personals, external partners, suppliers; legal conditions of existence; initial investments, funding and financing.

These aspects in addition to the basic elements of the BCM, cover several questions which nascent entrepreneurs / students have never thought of earlier.

Conclusion

Recent years showed that these tools were not only published but widely used by

- students at their business or entrepreneurship courses
- practitioners, managers, consultants, analysts for improving existing firms
- entrepreneurs for clarifying business opportunity and business creation conditions

In new business creation these tools have not substituted business-plan but provided basic answers for investors' questions in a limited time. With the help of these tools the quality and clarity improved a lot. The tools helped nascent entrepreneurs/ students to have a better understanding of their business, to visualize their concept and use them as an easy to use communication tool with such stakeholders as decision maker managers, investors, or lecturers. The reasons behind authors' introdiuced the Business Concept Map to help new venture creators/ students:

- to define the imagined new business with a practical structure that covers most relevant business aspects
- to understand the business in creation, in addition to having an idea
- to reveal assumptions for validation and generation of pivot decisions and follow up actions

The major advantage of using Business Concept Map are as follows:

- almost full picture of the business in creation
- the clear definition of the business opportunity
- answers to most of the questions potential investors may have

The use of Business Concept Map is limited since

- defining of a business concept requires the understanding of business terms and having at least a limited business mindset
- developing, validating and modifying a Business Concept Map take time and energy prior to execution

Creation of the Business Concept Map is part of a 12-step process of starting a new venture from the idea to entering the market, as introduced in our recently published book (Vecsenyi and Petheő 2017). With this book and our courses at Corvinus University and Budapest University of Technology and Economic Sciences BCM became a reality in helping students and nascent entrepreneurs to identify business opportunities and to create conditions to pursue them. These tools are useful and highly recommended to have better business in our world. Developing new tools is a never-ending story. Just to give an example see Disciplined Entrepreneurship Canvas, Aulet (2017).

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Contact

Attila Petheő

Corvinus University of Budapest

1093 Budapest Fővám tér 8, Hungary

attila.petheo@uni-corvinus.hu

János Vecsenyi

Corvinus University of Budapest

1093 Budapest Fővám tér 8, Hungary

janos.vecsenyi@uni-corvinus.hu

HOME-BASED BUSINESS IN VISEGRAD COUNTRIES: GEM PERSPECTIVE

Anna Pilkova – Marian Holienka

Abstract

Purpose: Home-based businesses (HBB) represent considerable proportion within entrepreneurial activity in V4 countries, where more than half of early-stage entrepreneurs and four in ten established businesses trade or operate primarily from home. However, empirical inquiry into this phenomenon in V4 region is scarce. Therefore, the aim of our study is to analyse main characteristics of home-based entrepreneurs and their businesses within the Global Entrepreneurship Monitor (GEM) perspective, to discover similarities and differences between home-based and non-home-based entrepreneurs and their endeavours.

Design/methodology/approach: Our empirical study is based on GEM 2014 individual-level data obtained through adult population surveys in Visegrad countries. The main sample comprises of 524 home-based and 547 non-home-based entrepreneurs. These two sub-populations are compared in main attributes of individual entrepreneurs and their businesses. The studied attributes were used to create sub-categories in which the proportion of home-based businesses was analysed and assessed for statistical significance using chi-square tests.

Findings: There are several distinctive attributes differentiating home-based and non-home-based entrepreneurs and business activities in Visegrad region, as well as certain similarities. HBB is more popular among female and youth entrepreneurs, and a preferred solution for combined opportunity-necessity business entries. Also, HBBs are using the advantage of on-line trading, and represent a preferred choice for businesses in extractive sectors. On contrary, inclination towards HBB is not based on individual entrepreneurial attributes, and there is no linkage with business aspirations.

Research/practical implications: HBBs seem to be an appropriate means to support inclusive entrepreneurship of women and youth. Also, they appear as a proper direction to support business in extractive sectors and on-line sphere. However, there is no justification for creating support to increase business aspirations preferably for HBBs, as non-HBBs would considerably benefit from such increase as well. We encourage further empirical inquiry into this phenomenon in Visegrad region, both on country- or regional level, as well as in terms of more detailed deeper explorations.

Originality/value: Our study is, to our knowledge, the first comprehensive overview on home-based entrepreneurs and their business endeavours in Visegrad region. It discovers the main characteristics of this phenomenon and compares it to the rest of entrepreneur population. Thus, it helps to validate characteristics attributed to home-based businesses in the Visegrad region contexts, providing valuable insights to both policy making and academia.

Keywords: Home-based entrepreneurship, Global Entrepreneurship Monitor (GEM), Visegrad countries

JEL Codes: L26, J14, J16

Introduction

Home-based business (HBB) represents a significant and growing proportion of entrepreneurship around the world. According to OECD/EC (2017, p.6) 58% of businesses in Australia are home based, over 60% of all Austrian enterprises are one-person enterprises and it is estimated that around 50% of them are based at home, in UK 59% of businesses with no employees and 24% of small businesses with employees are home-based, and finally, in the USA around 52,2% of non-farm businesses are based at home. In the Netherlands the percentage of home-based new firm start-ups varies from 50 percent to 87 percent. Based on that evidences there is no doubt that HBBs represent not only huge and growing economic potential, but also a vehicle for realization of social and personal values, and thus deserve special attention both from policy makers and academic researchers. However, according to current research status, home-based businesses and entrepreneurs are still under-researched (Anwar and Daniel, 2016). According to Kapasi (2015) research on HBB had been conducted across several Western countries, and occasionally in developing nations' contexts. These include the US Canada, Australia, New Zealand and South Africa. In case of Europe, the majority of the studies are UK-based. Since overview by Kapasi (2015) the geographical status in HBB research hasn´t changed. Especially, no research outcome is available for Central and Eastern Europe, including Visegrad four countries. Therefore, our study attempts to fill this geographical gap. Also, as the greater part of existing research has sought to describe the business and owner characteristics of an HBB in order to "unmask" these "invisible" businesses (Dwelly et al., 2005) our study will significantly contribute to this effort as it brings important findings from region previously non-covered with this type of research.

Therefore, our study attempts to provide an initial exploration of home-based business in Visegrad countries, using the Global Entrepreneurship Monitor (GEM) data as a relevant source of information on entrepreneurial dynamics. In this attempt, we focus on the following research question: Which are the key characteristics of home-based businesses and their owners in comparison to non-home-based businesses in Visegrad countries?

1 Literature review

Initial studies investigating HBB emerged in the early 1990's. However, since that time common term and definition both for this type of businesses as well as for entrepreneurship in general are still missing. In addition to "home-based business" the following terms are used in literature: home business, home work, home firm, or home-based entrepreneur (Mason et al.,

2011; Wynarczyk and Graham, 2013; etc.). In addition to that home-based businesses have been also referred to as underground economy, grey market, little businesses and micro-enterprises (Orser, 1991). In general, the literature presents number of definitions and home-based business typologies. However, there are a few issues that influence formulation of common home-based business definition. Among them are no distinction between home-based business activities and a home-based business (Deschamps et al., 1998), or between home-based business as an enterprise and home-based entrepreneur as person (Wilson et al., 2004). Despite the differences in HBB definitions there is a common emphasis on home as the main location for this type of business. While Wynarczyk and Graham's (2013, p. 453) define HBB as "a business that uses the family residential property as a substitute for commercial premises for the conduct of business", Mason et al. (2011, p. 629) use both employment status of a person and location and understand HBB as "any business entity engaged in selling products or services into the market operated by a self-employed person, with or without employees, that uses residential property as a base". However, home as a physical location is not sufficient to distinguish between home-based entrepreneurs and those who work from home. With this respect, Salazar´s (2001) definition characterizes home-based business entrepreneurs as "those that are both self-employed and self-managed"; which distinguishes HBB from those who work from home but are employed (e.g. teleworking) and from self-employment without self-management (e.g. contracting). Kapasi (2015) went even further and developed a typology based on location at (within) home and from (outside) the home and human capital requirements that can be high and low. Based on four quadrants created by location and human capital requirements, HBBs are considered only in the quadrants referring to high human capital requirement within the home and low human capital requirement within the home. Contrary to that, OECD/EC (2017, p. 6) developed a very broad definition of home-based business: "Home-based businesses are private enterprises that have no commercial business premises but use the home of the owner as premises or base for the business activity. Most often the residential address of the owner is the business address. Home-based businesses can be registered (incorporated) or unregistered (unincorporated), and comprise the self-employed and owner managers of companies. Business activities may occur outside the owner's home. Home-based business owners may travel to provide their services or use formal and informal meeting places for their business activities. The home can be used as premises or base also when the business has employees." This broad definition is easier to operationalize as far as data collection is concerned. However, contrary to Salazar (2001), it includes also those who are self-employed but don´t have to be self-managed.

Main reasons to study home-based businesses include understanding characteristics and specifics of home-based entrepreneurs and their business activities, contexts of internationalization, on-line business, work-life balance or social enterprise, and also socio-economic impact in national and regional context (Anwar and Daniel, 2016). Following the direction of our study, we further focus on the first of the above-mentioned streams.

Frequently, home-based business is categorized as small micro-business with low growth orientation (e.g. Allinson et al., 2013,). However, according to another studies (e.g. Walker et al., 2008), HBB are the fastest-growing business segment and have the growth potential to simulate economic development on the local and regional levels. Further research should confirm or reject these conflicting findings on growth and intrinsically local or regional nature of HBB.

Also, gender topic is a very frequent one within HBB micro-business research (Anwar and Daniel, 2016) and there are numerous studies suggesting that HBB is popular among women (e.g. Loscocco and Smith-Hunter, 2004;). However, many researchers used assumptions that an HBB owner is a female and that working from home is important for her both due to family duties and as a source of employment (Walker, 2003). However, in many subsequent studies (e.g. Dwelly et al., 2005; Mason et al., 2011), the gendered assumption of HBB owners was challenged, with significantly larger percentages of males than females operating HBBs.

Researchers have also different opinion on HBB sectorial involvement. According to Thompson et al. (2009) home-based entrepreneurs are more likely to experience limited sectoral choices, given the spatial constraints of the home, which has serious implications for business credibility and restricted time investments. However, home-based entrepreneurs are rather heterogeneous group (Felstead et al., 2001), but increasingly across the sectors, it is clear that the internet has become far more influential, and many home-based businesses are now deriving the majority of revenues from selling goods and services online (Betts and Huzey, 2009). According to Anwar and Daniel (2016), research in the field of online home-based businesses is the fourth most frequent in the field of HBB and shows one of the highest growth rates. It is very probable that online HBB will be the future driver of development of this subset of small business. Understanding all the above mentioned HBB aspects firstly requires basic knowledge on characteristics and specifics of home-based entrepreneurs and their businesses within the studied region.

2   Material and methods

Our study is based on GEM individual-level adult population data from 2014[19]. GEM data are representative on country-level by age and gender, and are collected using an internationally harmonized methodology and following strict quality requirements using professional survey vendors. In 2014 annual circle, three out of V4 countries participated in GEM (Hungary, Poland and Slovakia), with the overall sample size of 6,004 adult working-age respondents. In this sample, we identified 1,084 entrepreneurs (nascent, new or established), out of which 524 (i.e. 48.3%) indicated that their business will be or is primarily trading or operating from home. In our analysis of characteristics of home-based entrepreneurs and their businesses (vs. non-home-based entrepreneurs and businesses) we considered only new and established entrepreneurs (i.e. only those individuals who own and manage businesses that had generated them income for at least three months). Thus, our main research sample comprised of 340 home-based entrepreneurs and 391 non-home-based entrepreneurs.

The attributes of home-based entrepreneurs and their businesses examined in our study were operationalized in standard GEM variables. The entrepreneurs were characterized as individuals currently trying to start a new business that had generated them income for at least three months and up to 42 months (new entrepreneurs) or individuals owning and managing a business which had been generating income for more than 42 months (established entrepreneurs). Further, we consider as "home-based" those entrepreneurs who indicated that their business is/will be primarily trading or operating from home. As for the respective attributes of entrepreneurs, we examined their gender, age category, educational attainment, household size, fear of failure, entrepreneurial self-confidence, entrepreneurial social-capital (personally knowing early-stage entrepreneurs) and main motive to start a business (purely opportunity, partly opportunity, necessity), and controlled for the country difference. Finally, as for the attributes of the business activities, we examined their sectoral orientation, innovativeness (using new product-market perspective), usage of the latest technologies, high job creation expectations (expects more than 19 jobs in 5 years), export intensity (proportion of customers living outside the country), and on-line trading (usage of internet to sell products or services).

Our exploratory study of characteristics of home-based entrepreneurs and their businesses was based on analysing the proportion of home-based vs. non-home-based entrepreneurs or

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[19] This was the last year when a question on home-based nature of the business activity was included.

businesses according to the examined attributes. Moreover, we employed chi-square tests to test the statistical significance of differences in percentages between the two examined populations, resulting to indication of differences and similarities between them.

3   Results and discussion

First, the results of our analysis of characteristics of home-based entrepreneurs are presented in Table 1 below. The table displays cross-tabulations of home-based and non-home-based entrepreneurs and the examined attributes together with the chi-square test results.

Tab. 1: Characteristics of home-based entrepreneurs

Attribute	Attribute values	% of home-based entrepreneurs	Chi-square and p-value
Gender	Male	43.3%	6.573 (.010)
	Female	53.4%	
Age category	18-24	66.7%	14.950 (.005)
	25-34	48.9%	
	35-44	44.2%	
	45-54	51.3%	
	55-64	37.0%	
Education	Pre-primary & primary	50.0%	0.252 (.882)
	Secondary	47.1%	
	Tertiary and higher	45.4%	
Household size	Single	50.0%	0.444 (.931)
	Couple	47.0%	
	3 and 4 members	46.1%	
	5+ members	45.2%	
Fear of failure	Yes	46.9%	0.014 (.906)
	No	47.4%	
Self-confidence	Yes	46.7%	0.016 (.899)
	No	47.4%	
Knowing entrepreneurs	Yes	48.1%	0.724 (.395)
	No	44.9%	
Motive to start-up	Purely opportunity	47.9%	5.494 (.064)
	Partly opportunity	58.9%	
	Necessity	42.5%	
Country	Hungary	61.0%	29.774 (.000)
	Poland	40.8%	
	Slovakia	38.3%	

Source: own elaboration based on GEM 2014 individual-level APS data

As can be seen from Table 1, among the characteristics of home-based entrepreneurs (compared to their non-home-based counterparts) in Visegrad region, significant role is played by gender, age category and partially by start-up motive. First, as for the gender, we observed a significant difference in proportion of genders in the two compared populations, with higher occurrence of home-based business among female entrepreneurs (53.4%) than among their male counterparts (43.3%). Thus, we might agree with previous findings (Walker, 2003; Loscocco and Smith-

Hunter, 2004; etc.) and conclude that home-based business is more popular entrepreneurial path for women. Second, our results indicate statistically significant difference in proportion of home- and non-home-based businesses across age categories, especially between youth and seniors. While youth entrepreneurs seem to prefer to base their endeavours at home (66.7%), the inclination of their senior counterparts is opposite (with 63% of them being non-home-based). Third, we also observed significant (at 90% confidence level) difference of home- and non-home-based entrepreneurs proportion across motives to start a business. While the highest percentage of home-based entrepreneurs was found among those who reported partly opportunity motive (i.e. combination of opportunity and no better chance to work, opportunity to maintain income), the highest share of non-home-based entrepreneurs was observed among necessity entrepreneurs. As for the other examined attributes, we found no significant difference in proportion of home-based vs. non-home-based entrepreneurs in relation to educational attainment (despite indication of a trend of decreasing proportion of HBB with increased level of education) and number of household members (again with indication of trend showing decreased HBB share with growing household size). Also, we found almost similar proportion of HBB and non-HBB irrespective the presence of fear of failure or entrepreneurial self-confidence, and no significant difference in relation to knowing other entrepreneurs. Finally, when controlling for country differences, we observed that while proportions of home-based businesses among Polish and Slovak entrepreneurs is similar (40.8% and 38.3%), their share among entrepreneurs in Hungary is significantly higher (61.0%).

Second, the results of our analysis of characteristics of home-based businesses are presented in Table 2 below. The table displays cross-tabulations of home-based and non-home-based businesses and their examined attributes together with the chi-square test results.

As can be seen from results presented in Table 2, significant difference between home-based and non-home-based businesses in Visegrad countries was observed among the two of the six examined characteristics, namely the sectoral orientation and on-line trading. First, orientation on home-based business seems to be significantly higher (68.6%) among entrepreneurs in extractive sectors (such as agriculture), while the lowest percentage of HBB was observed in transforming industries (41.9%). Secondly, in line with Betts and Huzey (2009) we might agree with high potential of on-line trading for home-based business, as we observed significantly higher presence of HBB among those business activities which used internet to sell their products or services (51.4% vs. 38.1%). On contrary, we can't agree with those researchers (e.g. Allinson et al., 2013) who declared predominantly low growth orientation of

HBBs, as our findings show almost identical proportion of home-based and non-home-based businesses, irrespective the indication of high job creation aspirations. Also, despite indications of potential patterns, our findings proved no significant difference between home-based and non-home-based businesses in case of innovativeness (in terms of introducing new products to new markets), adoption of latest technologies or export intensity.

Tab. 2: Characteristics of home-based businesses

Attribute	Attribute values	% of home-based entrepreneurs	Chi-square and p-value
Sectoral orientation	Extractive	68.6%	12.444 (.006)
	Transforming	41.9%	
	Business services	46.0%	
	Consumer oriented	47.9%	
New product-market	Yes	53.0%	2.340 (.126)
	No	45.3%	
New technology	Very latest technology	54.8%	1.319 (.517)
	New technology	47.5%	
	No new technology	45.8%	
High job expectations	Yes	46.7%	0.000 (.983)
	No	46.5%	
Export intensity	More than 75%	43.6%	1.439 (.696)
	25% to 75%	45.1%	
	Under 25%	45.2%	
	None	50.0%	
On-line trading	Yes	51.4%	12.142 (.000)
	No	38.1%	

Source: own elaboration based on GEM 2014 individual-level APS data

Conclusion

Our exploratory study on home-based businesses contributed to the existing body of knowledge by introducing research on this phenomenon in the Visegrad region, and by complementing the scarce research evidence with the regionally-specific findings. Home-based business is an important phenomenon within the entrepreneurial dynamics in Visegrad countries, comprising nearly half of the new and established businesses. While there are several distinctive attributes differentiating home-based entrepreneurs and business activities from their non-home-based counterparts, certain attributes seem to be rather common in Visegrad region, irrespective the nature of business activity's location. Mainly, we can conclude that home-based business is more popular path to entrepreneurship among female and youth, and a preferred solution when business entry is driven by co-existence of need to maintain income with perception of business opportunity. Also, home-based businesses are using the advantage of on-line trading to overcome the barriers of physically not being present in commercial locations. Finally, home-based businesses are a preferred choice for business endeavours in extractive sectors. On

contrary, we might conclude that inclination towards home-based is not based on individual entrepreneurial attributes, and there is no linkage with business aspirations related to active or passive innovativeness, export inclination or growth in terms of job creation.

Based on these findings, certain implications for entrepreneurship policy making can be developed. First, home-based businesses seem to be one of the appropriate channels to support inclusive entrepreneurship of women and youth. Second, when attempting to introduce measures to promote business activities in extractive sectors and activities in on-line sphere, home-based business appears as a proper direction to follow. Third, there is no justification for creating policy measures to support more ambitious business activities (in terms of innovativeness, export orientation or growth) aimed only at home-based businesses, as our results show that both home- and non-home-based businesses would benefit equally from improving in these areas.

As for the limitations, we believe that further country- or regional-level studies could benefit from more recent data available through repeated inclusion of HBB-related questions in GEM surveys, as well as from availability of panel data (as GEM data are cross-sectional by nature). Also, we are aware of limited information available from GEM data, as HBB was just a small fraction of its focus. On the other hand, it enabled us to extend the application of established GEM-based perspective on entrepreneurship analysis to this phenomenon.

Finally, we believe that our study and its findings showed several potential directions for further research in the context of Visegrad countries. We especially encourage deeper inquiries in the field of HBB as such to obtain a more detailed general picture on home-based entrepreneurs and their businesses, as well as specific focus on this phenomenon in the contexts of female and youth entrepreneurship, as well as in on-line business and extractive sectors.

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Contact

Anna Pilkova

Faculty of Management, Department of Strategy and Entrepreneurship

Comenius University in Bratislava

Odbojarov 10, P.O. Box 95, 820 05 Bratislava, Slovakia

anna.pilkova@fm.uniba.sk

Marian Holienka

Faculty of Management, Department of Strategy and Entrepreneurship

Comenius University in Bratislava

Odbojarov 10, P.O. Box 95, 820 05 Bratislava, Slovakia

marian.holienka@fm.uniba.sk

FACTORS AFFECTING ON THE WAGE OF EMPLOYEES IN SMALL AND MEDIUM ENTERPRISES IN RUSSIAN REGIONS

Iuliia Pinkovetskaia

Abstract

Purpose: The aim of the study was to assess the impact on the wages of employees in small and medium enterprises (SMEs) of factors that characterize the socio-economic situation of the regions where are located these enterprises. We discussed influence such factors as unemployment rate, gross regional product, incomes of residents of the region and budget expenditures of the region. In order, to ensure a comparison wage in SMEs located in different regions, the calculations are based on relative indicators. In addition, were studied the ratio between wage of SMEs employees and the subsistence minimum legally established in the regions.

Design/methodology/approach: The study used official statistical data Federal service of state statistics Russia in 2015. We used information on the actual average monthly wage of SMEs employees and indicators, which characterize social-economic position in each of the 82 Russian regions. So, in total we used 574 empirical observation. The research methods of regression and correlation analysis were used to analyze the aforementioned data. The paper offers two models: multiple nonlinear regression on the spatial data, which describes the impact of factors on wages, and function, characterizing ratio between wage of employees in SMEs and the subsistence minimum, established in the regions.

Findings: The paper proves the relationship between the average monthly wage of employees of SMEs and factors such as the share of unemployment persons in the economically active population, average monthly income per one inhabitant, average monthly gross regional product per one inhabitant, and average monthly budget expenditure of region per one inhabitant. The paper shows that wage increases with the decrease of the first factor and the growth each of the other three factors. Presented ratio of average wage of employees SMEs and subsistence minimum in regions. Identified regions with insufficient level of wages in SMEs.

Research/practical implications: The obtained new information and tools to assess the level of average wages in SMEs can be used in research on entrepreneurship, also for justification of programs for the development of this sector of the economy at the Federal, regional and municipal levels. The study provide regions authorities with information on the directions of wage increases in accordance with the Federal strategy for SMEs development that involves an increase of twice the employees' wages. Prospects for further research are related to more complex assessment analysis of the monthly wage of SMEs employees, engaged in various types of economic activity.

Originality/value: New knowledge has been gained about the factors that influence the wages of SMEs in the regions, ratios wage and subsistence minimum and also wage differentiation in SMEs by region. Our study offers a unique view on the SMEs wage system and we contribute to the existing knowledge on economy of entrepreneurship.

Keywords: SMEs, wage of employees, regression model, regions, Russia

JEL Codes: L26, C31

Introduction

Small and medium-sized enterprises (SMEs) are considered as a driver of the economy of the European Union, creating jobs and contributing to economic growth. They provide jobs for about 67% of the working population and produced 58% of gross value added, including in Germany these indicators are respectively 60% and 48% (SME Bank, 2015). SMEs have not yet received large development in Russia, their share is not more than 20% in gross value production volume and number of employees of all enterprises. This is largely due to lack of attractive wages in the SMEs sector of the economy.

The average wage of SMEs employees in Russia (19460 rubles a month or 291.9 Euro) significantly lags (Federal State Statistics Service, 2017) of the respective value for the full range of all the enterprises and organizations in Russia (34030 rubles a month or 510.45 Euro). This position has a negative impact on the possibility of attracting a high performance workforce in the SMEs sector and reduces the efficiency of work in these enterprises. Small and medium-sized entrepreneurship is one of the most important factors for sustainable economic development and growth in the modern economy (Baumol, 2004, Grigore and Dragan, 2015, Acs et al., 2008). It is SMEs, who create new jobs (Edoho, 2016). The role of entrepreneurship is increasing, at the present time, in response to the need to overcome crises (Simon-Moya et al., 2016). Features of the wage of SMEs employees in developing countries, authors discuss in such papers, as (Dung, 2017, International Labour Conference, 2015).

The aim of the study was to assess the impact on the wages of employees in SMEs of factors that characterize the socio-economic situation of the regions where are located these enterprises. We discussed influence such factors as unemployment rate, gross regional product, incomes of residents of the region and budget expenditures of the region. In order to ensure a comparison wage in SMEs located in different regions, the calculations are based on relative indicators. In addition, were studied the ratio between wage of SMEs employees and the subsistence minimum legally established in the regions.

Criteria, that characterize SMEs in Russia is specified in the Federal law "On the development of small and medium entrepreneurship in the Russian Federation", No. 209-FZ. The main criterion is number of employees. Basing on this criterion - small enterprise shall not exceed 100 employees, the medium-sized enterprise range from 101 to 250 employees. Small and medium-sized enterprises also include the so-called individual entrepreneurs.

1   Methodology and Design

Statistics indicate that the average wage of SMEs employees significantly differ in various regions of Russia. We have derived from the assumption that the values of wage are determined by the current socioeconomic situation in the regions. Among the factors describing this position were selected four factors, which as shown by analysis of pair wise correlation, have the greatest impact on the wage of SMEs employees: the level of unemployment, gross regional product, income of the region's residents and the budget expenditure of the region.

During the study were used regression and correlation analysis methods. Suggested to use multiple regression model on the spatial data characterizing the wage of employees SMEs, located in each region of Russia.

In developing this model, we considered the following relative measures: average per month wage of SMEs employees in the region, the proportion of unemployment in the number of economically active people, the average monthly income per one region's resident, the average monthly gross regional product per inhabitant of the region, the average monthly budget expenditures of the region per resident. The use of relative measures allows for a comparative analysis average monthly wage of SMEs in different regions.

For ranking regions by the level of wage of SMEs employees, can are used indicator such as the ratios of monthly wage in the regions and values of the subsistence minimum. Taking into account, that the subsistence minimum established by law for each of the Russian regions.

As shown in the earlier studies (Pinkovetskaia, 2015), we can assume probabilistic (stochastic) distribution of values this ratios. Therefore, measuring the ratios between the wage of SMEs employees and the subsistence minimum, is made using the density function of normal distribution.

The study used official statistical data Federal service of state statistics (2017) Russian Federation in 2015. We used information on the actual average monthly wage of employees of SMEs located in each of the 82 regions (subjects) of Russia. Data on wage of employees of SMEs were obtain only once every five years in the course of total observation of activity of the SMEs. In addition, used indicators Federal service of state statistics, which characterize social-economic position on every region: proportion of unemployed among the economically active population, gross regional product, incomes of residents of the region and budgetary expenditures of the region, subsistence minimum, as well as the number of residents of the region. In total, during the research process were used 574 empirical observation.

Essential in the simulation is the decision on the number of observations. Harris in his work (Harris, 1985) suggests, as the minimum value, take the number of observations equal to 52. Total number of observations on every indicator, in our study constitutes 82 (which corresponds to the number of regions of the Russian Federation) and match the specified requirements.

2   Results and Discussion

2.1   Evaluation of regression models

In the process of study was developed power multifactor regression function. At the first stage, we calculated for each of the regions, the values of the average monthly wage of SMEs, the proportion of unemployed among the economically active population, the average monthly income per inhabitant, the average monthly gross regional product per inhabitant, the average monthly budget expenditure per inhabitant of the region.

In the process of study was developed power multifactor regression function. At the first stage, we formed for each of the regions, the values of the arrays of information that included variables, needed to develop the regression model. Dependent variable is average monthly wage of SMEs (variable 1). Independent variables are the proportion of unemployed among the economically active population (variable 2), the average monthly income per inhabitant (variable 3), the average monthly gross regional product per inhabitant (variable 4) and the average monthly budget expenditure per inhabitant of the region (variable 5). Last three variables we calculated on the statistical data, which were stated in the methodology, and quantity of inhabitants in every region. Data on the quantity inhabitants in every region we took from Federal service of state statistics (2017). Descriptive statistics are presented in Table 1 below.

Tab. 1: Descriptive statistics

Variables	Mean	Median	Minimum	Maximum	Std. deviation	Observation
Variable 1	17,43	15,73	7.42	51.07	6,86	82
Variable 2	6,21	5,90	2.00	17.10	2,54	82
Variable 3	323,72	297,74	170.59	740.45	106,40	82
Variable 3	374,16	317,88	92.90	1699.93	281,52	82
Variable 4	69,77	59,26	38.41	247.62	36,54	82
Variable 5	8.99	8.31	4.63	17.36	2.30	82

Source: author's elaboration

The second stage was carried out linearization of all parameters obtained in the first stage. In the third stage, we used the least squares method to estimate the coefficients of the regression function. This function is given below.

$$w = 2,6 * u^{-0,11} * i^{0,33} * g^{0,18} * b^{0,23}$$

Where w - the average monthly wage of SMEs employees by region, thousand rubles; u - the share of unemployment persons in the economically active population, %; i - the average monthly income per one inhabitant of the region, thousand rubles; g - the average monthly gross regional product per one inhabitant of the region, thousand rubles; b - the average monthly budget expenditure of the region per one inhabitant, thousand rubles.

In the fourth stage, we evaluated the quality of the function using coefficients correlation and determination, Fisher-Snedecor test and Student's t-test. Table 2 presents the calculated values of all statistic for testing the quality of the regression function.

Tab. 2: Values of the calculated statistics of regression function

Quality assessment	Calculated values	p-values
1	2	3
R-Squared	0.86	-
Adj. R-squared	0.85	-
F-statistic	118.14	low 0.01
Calculated value of the Student's t-test on w	3.82	low 0.01
Calculated value of the Student's t-test on u	2.65	low 0.01
Calculated value of the Student's t-test on i	3.32	low 0.01
Calculated value of the Student's t-test on g	3.42	low 0.01
Calculated value of the Student's t-test on b	5.38	low 0.01

Source: author's elaboration

Comparison of calculated values listed in table 2, with the values of tests presented in the literature, showed that the regression function is of a high quality. The correlation coefficient is 0.93, and close to one. As you know the regression models are successful when the coefficients of determination are more than 0.7. In our case it is equal 0.86. The difference between the unit and the coefficient of determination describes the proportion of dispersion that is due to the influence of other factors, which are not included in the regression equation. That is, it can be concluded that the model explains 86% of variation in the dependent variables.

Accordingly, on the other factors (which not considered here) account for no more than 14%. The calculated value of statistics (118.14) is much higher than tabular value of the Fisher-Snedecor test that is 3.98 at the significance level equal to 0.05. All the calculated values of the Student's t-test are more than the table value, which at the significance level of 0.05 is 1.99. Thus, function is of a high quality.

Further, the analysis of the calculated values of significance levels was carried out (column three of table 2). He showed that the values of significance of the Fisher-Snedecor test is less than 0.01. This suggests that there is indeed a strong correlation between the average monthly wages of SMEs by region and the factors under consideration. All p-values are less than 0.01, that is, with 99 percent confidence, the coefficient and indicators of this regression function are statistically significant.

Verification with use Durbin-Watson test showed absence autocorrelation, and with use test Breus-Pagan - absence heteroscedasticity. Level of collinearity among independent variables was controlled by Variance Inflation Factors (VIF) test. Normality of residuals has been proven by Shapiro-Wilk and Kolmogorov-Smirnov tests of normality. We conclude, that presented model satisfy econometric assumptions and therefore may be used for interpretation.

The study showed that the four factors under consideration have a significant impact on the wage of SMEs employees. Unemployment creates excess supply of labor in labor markets, its growth leads to a decline in wages in the region, including for the SMEs employees. Conversely, reducing unemployment, leads creating conditions for higher wages, which is consistent with the findings of Betcherman (2013). In case of growth of each of the remaining three factors happens the increase in wages for employees of SMEs? This is due to the following reasons. Goods and services created by SMEs are intended at most for the population of the region. Therefore, the wage of employees of SMEs is affected by the incomes of the population, namely from the possibility of acquiring goods and services. A similar conclusion about the increase of wages of SMEs with growth of incomes of the population was made also in the study (Economic Policy Reforms, 2016). In addition, part of the SMEs products purchased by other enterprises (organizations) and is used by them in the production process. Therefore, growth of the gross regional product has a positive effect on the value of the average wage of employees in SMEs, what coincides with the results of the study small and medium enterprises in Malaysian (Arunagiri et al., 2015). The majority of Russian regions (64 of 82) receive subsidies from the federal budget to the regions budgets. Part of the funds of the regional budgets is spent on public procurement involving SMEs and on assisting SMEs. That is, the

expenditures of the budgets of regions have a positive impact on the wage of SMEs employees, which is consistent with the findings of Global Wage Report (2015).

In recent years, in Russia has adopted a number of programmes of economic development. Some of these programmes dedicated to the factors, which were mentioned above. Among them, the reducing of unemployment level is provided by attracting unemployed persons to individual entrepreneurship and the allocation to them grants and subsidies. It is planned to increase incomes of public servants, employees of health care, education, social sphere. In 2017, the increase notes in the gross regional product in most regions of Russia. Regional programmes intend the budgets growth in the coming years. Therefore, based on regression model we can assume that these programs are able to ensure the growth of the average wage of SMEs employees.

2.2   Measuring ratios between wage of employees of SMEs and the subsistence minimum

During the research, was calculated the ratios between the average monthly wages of employees of SMEs in each of the regions and values of the subsistence minimum in these regions. These ratios were used in the development of model (r), which describes the distribution of these ratios (s) for each of the Russian region. This model, given below, represents the density function of the normal distribution:

$$r = \frac{25,92}{0,43 * \sqrt{2 * \pi}} * e^{-\frac{(s-1,93)^2}{2*0,43*0,43}}$$

The quality of the developed model was verified with the tests of Kolmogorov-Smirnov, Pearson and Shapiro-Wilk. The calculated value of statistics by Kolmogorov-Smirnov test is 0.07, it is less than the table value that is 0.152 at a significance level of 0.05. The calculated value of the Pearson's test is 3.10, which is less than the value in the table equal to 9.49. Statistics value of the Shapiro-Wilk test is 0.97, which exceed the tabular value of 0.93 at a significance level of 0.01. It can be concluded that by all the specified tests, the developed model has a high quality.

The density function of the normal distribution allows to determine the average value of the considered ratio (z). So, based on the formula the average value is 1.93. In addition, based on this function, we calculated the interval of change of this ratio, describing the majority (68%) regions of Russia. The limits of this interval was determined based on the values of standard deviation. Thus to calculate the limits of the interval to the average value of the indicator

respectively was added and deducted the indicated deviation. The interval of change ratio values of wage of SMEs employees and subsistence minimum for the majority of country regions on the basis of function is ranged from 1.50 to 2.36. The poverty level established in Russia is 1.5 of the subsistence minimum. Therefore, in those regions where average wage of SMEs employees smaller than the lower limit of the calculated interval, it is necessary to conduct measures for its increasing in the near future.

The analysis allowed to determine the regions of the country in which the values of the considered ratio (z) is less than 1.5. These include the Republics of Kalmykia, Altai, Kabardino-Balkaria, Tuva, Karachay-Cherkessia, Dagestan, Ingushetia, and Crimea, Pskov, Ivanovo regions, city of Sevastopol and the Jewish Autonomous region. For the increase of the wages in SMEs in these regions, should be used subsidies on employment and wages in SMEs, which as shows the experience of Sweden (Sjögren & Vikström, 2013) might provide a significant positive effect.

Experience of Russian regions shows that in some of them the values of the considered ratio is much above the average. These are regions in which the ratio of the values of wages of SMEs employees and subsistence minimum more than the value of the upper limit (2.36) of the interval. These include Chukotka Autonomous Okrug, Tatarstan Republic, Tyumen, Leningrad, Magadan, Belgorod, Novgorod, Moscow, Kaluga, Sakhalin regions and the city of St. Petersburg. The experience of these regions in the development of SMEs should be studied and disseminated using state and public organizations that are specialized in supporting entrepreneurship.

Conclusion

The author describes the new knowledge and tools to assess the existing level of average monthly wages in SMEs in the regions. This information can be used in research on entrepreneurship, as well as for justification of programs for the development of this sector of the economy at the Federal, regional and municipal levels. The study provide Government of Russia and authorities of regions with information on the directions of wage increases in accordance with the Federal strategy for the development of SMEs, which involves an increase of twice the wages of employees. In addition, the results of the work can be used in the current activities of state, municipal and public organizations related to the regulation and support of small and medium-sized businesses in solving the problems of monitoring, assessing the current

level and determining ways to improve the efficiency of small and medium business. Including help them to adjust their actions on the basis of scientific data.

Our paper has limitation, which is lack estimation data on values of wage SMEs specialize on various types of economic activity. Despite this, we believe that achieved allowed us to obtain a true picture of the situation in SMEs. That is why, prospects for further research are related to the assessment of the monthly wage of employees of SMEs, engaged in various types of economic activity.

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Contact

Iuliia Pinkovetskaia
Department of Economic Analysis and State Management
Ulyanovsk state university
2 per. Mira 27, 432011 Ulyanovsk, Russian Federation
pinkovetskaia@gmail.com

EVALUATION OF CLUSTER POLICY EFFICIENCY IN SLOVAKIA FROM THE VIEW OF INDUSTRIAL CLUSTER

Jana Plchová – Irina Bondareva

Abstract

Purpose: Clusters in Slovakia face both systemic and specific barriers of their development. The aim of the paper is to examine the effectiveness of cluster policy in Slovakia from the view of a particular industrial cluster (on the example of the Slovak plastic cluster − SPK) and to identify obstacles of its innovation activity growth.

Design / methodology / approach: The results of the primary qualitative research were obtained by the method of individual in-depth interviews with the management of the Slovak plastic cluster. Secondary data were obtained by analysing the information of the European Cluster Observatory, the results of the Clustrat project, the information of the Ministry of Economy of the SR (MH SR), the SPK management reports for the years 2012-2016 and other relevant institutions. When processing the publication, we used documentary analysis and other general methods of scientific work. The authors also used the method of individual in-depth interviews, which allowed them to meet the research goal.

Findings: Significant disproportionalities between the recommendations of the European Commission and the factual conditions for successful clusters development in Slovakia are identified. Government measures aimed at supporting cluster innovation activity are not sufficient. At the same time, the problems encountered by cluster can become fatal not only for its development but also for its existence

Research / practical implications: The paper critically evaluates the existing tools of cluster policy in Slovakia. On the basis of the above-mentioned facts are proposed measures, the implementation of which would significantly support the innovative activity of clusters in Slovakia.

Originality / value: The study contains feedback from industrial cluster that brings important information to government institutions to make cluster policy in Slovakia more efficient.

Keywords: Innovation activities, industrial cluster, support instruments

JEL Codes: O11, O47

Introduction

According to the World Economic Forum (2017), the ability of the state to achieve sustainable growth in the medium and long term depends on many factors, one of which is the ability of innovative development of companies. Innovations are not only a factor for survival and commercial success of company, but they are also an important factor in the overall economic development of the country. Objectives of the Slovak Republic's Innovation Policy to the year 2020 are listed in the Research and Innovation Strategy for Smart Specialization of the Slovak Republic (RIS3 SK), approved by SR Government Resolution no. 665/2013 on 13 November 2013 (Government Office of the Slovak Republic, 2013). This document also states that "innovation activity in the Slovak Republic is comparison to the economies of other European states is lower and innovations do not bring the expected positive result in the form of enhanced competitiveness of Slovak enterprises". In some papers is stated that "The Slovak government has started to pay attention to the support of innovations relatively late". (Klement, 2017).

Processes of the global impact of international competition, characterizing the current world economy, were an objective condition for changing the paradigm of managing the process of competitiveness, which consists in abandoning the principles of traditional industrial policy and in the transition to a new system of production organization based on the use of benefits of specialization and cooperation. As stated by Yström and Aspenberg (2017) "While it could be argued that globalization would diminish the importance of a company's location, research has shown that in an increasingly complex, knowledge-based and dynamic economy, regional collaboration has in fact become a critical aspect of enhancing competitiveness, locally as well as globally". As stated by Pavelkova et al. (2009) "Clusters are an important tool for promoting industrial development, innovations, competitiveness and growth". Markova (2014) has stated that "one of the concepts for improving economic efficiency in regions is the concept of clusters". Suchacek et al. (2018) note the important role of clusters in the sustainable development of companies in times of transformation.

Increasing the competitiveness of the national economy can no longer be ensured by traditional methods of diversification which no longer have the necessary effect. An adequate tool for modernizing the economy, which currently has no alternative, is becoming an introduction of a cluster model of the organization of business activities. Mutual conditionality and interrelationships between cluster processes of cluster creation, increasing competitiveness and accelerating innovative activities are the new economic phenomenon that allows to withstand

the pressure of global competition and to meet the needs of national and regional development in the needed way.

However, the potential of clusters in Slovakia "... has not been fulfilled yet and lags behind all neighbouring countries" (Elexa, 2017). The aim of increasing the innovation potential of a cluster can only be achieved by taking into account both systemic as well as specific conditions for the operation of a particular cluster. Monitoring and eliminating the obstacles encountered by the technology cluster in its development will allow to increase its innovation potential and make it more efficient.

1   Objectives of the Cluster Policy of the Slovak Republic

The intensive development of technologies, logistics, means of transport and other factors has made the transfer of information and the movement of financial flows virtually immediate and the transport of raw materials and goods a cheap operation. For this reason, the most important factor in achieving and maintaining the position of competition has become not only innovation and education, but also interrelationships between enterprises, which provides the conditions for creating the network structures - clusters.   .

According to Porter (1998) "Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. "When in the past the size of the enterprise was important, today the increasing importance has the size of the particular grouping, the size of its network and infrastructure. Clusters promote the competitiveness of enterprises in three ways (Porter, 1998):

- increasing enterprise productivity;
- growth of innovation activity that promotes future productivity growth;
- stimulating the creation of new businesses that expand and strengthen the cluster itself.

Currently, technological clusters are a crucial part of the competitive viability of economies around the world (Mudambi et al., 2017). As practice shows, companies are more innovative when locating them in regions where there is a high concentration of competing companies. The impact of the competitive environment thus stimulates innovative activities in all companies. Agglomeration of different scientific and technological areas is therefore an important factor in regional development and innovation in companies.

Petrin et al. (2014) define cluster politics as "a set of various activities (strategies, programmes, procedures, etc.) usually implemented throughout a period of several years according to a certain plan and assigned budget".

In this case "... co-location is not sufficient for knowledge exchange to occur. Consequently, there is also a need to assess the effectiveness of policy measures to promote knowledge exchange between co-located actors" (Calignano and Fitjar, 2017). According to Pavelkova et al. (2009) "Governments may be helpful in creating an innovative and institutional environment which will support the success of clusters.

The Slovak Republic commits itself to the development of cluster support The Partnership Agreement from the 20June 2014 with the European Commission on the use of the European Structural and Investment Funds in the years 2014-2020 (Government Office of the Slovak Republic, 2014). The document states that the disappearance of the company's development base had a negative impact on the competitiveness and innovation performance of the industry in the whole SR. In connection with that, it is necessary to ensure the creation of conditions for cooperation between the business sector and public research organizations, to encourage the emergence of innovative start-ups, spin-offs and clusters through administrative support for the transfer of technology from public institutions and the interconnection of research and development. Among the defined objectives, is also the objective "... to strengthen cooperation between education and research institutions and the business sector, to foster research, development and innovation capacities in enterprises and networks, including clusters and technology platforms".

Support of clusters and cluster initiatives is incorporated in RIS3 SK as well as in the Operational Program Research and Innovation for the years 2014-2020 where it is stated that "... it is necessary to systematically support the clusters and cluster organizations themselves as well as their activities leading to innovations ..."

Although many programs and projects point to the need to support clusters, in fact, as many authors have pointed out (Elexa et al., 2017), the role of clusters in Slovakia is for a long time underestimated or even underrated.

2   Conditions for the growth of the innovation potential of the cluster

Growth of the cluster's innovative potential depends on the appropriateness of conditions that can be divided into two groups:

- Systemic − based on business environment specifics and requiring state-level solutions.
- Specific − based on the specifics of the organizations and the conditions of the cluster itself.

Of course, the stated distribution is relative, as often the specific cluster problems arise as a consequence of the failure to solve the system conditions of their existence, and vice versa, specific cluster problems can outgrow to systemic problems.

There are several studies dealing with system requirements for the effective development of cluster initiatives. For example, the European Cluster Observatory states the following system recommendations for support of clusters (European Commission, 2011):

- Support of existing clusters and their innovative projects;
- International networking, participation in foreign events, conferences;
- Support of increasing cluster excellence: labelling, certification, benchmarking;
- Cluster management support;
- Support for participation in international projects;
- Micro-grant scheme to support innovative vouchers through clusters.

Based on the research findings of the "Regional Ecosystem Scoreboard" (European Commission, 2016), the following conditions for the successful functioning of clusters can be identified:

- Demand conditions.
- Access to finance.
- Knowledge base and skills.
- Collaboration and internationalization.
- Effectiveness of state support.

3   Objectives and Methodology

The aim of the presented research is to discover the systemic and also specific causes of the low innovation activity of the only one Slovak industrial cluster in Slovakia focused on the chemical

industry - the Slovak plastic cluster (SPK). The reason for such a relatively narrow focus of the research was the specific position of the chemical industry in Slovakia, which results from specific conditions for the development of this cluster. The Exploration of the specific factors which influence the low innovation activity of the SPK is to bring a unique insight into the subject matter under consideration and to determine the direction of further research.

The presented results are part of the broader conceived research work of authors focusing on cluster policy issues and exploring the impacts of different approaches to its implementation in Slovakia and in the Czech Republic. In the framework of the research, a comparative analysis of the performance and structural parameters of two geographically close and identically focused clusters - SPK (SR) and Platikářský klastr Zlín (Czech Republic) will be performed. These clusters show significant differences in the volume and also the quality of their innovation activities. The submitted article presents the results of partial research of the authors aimed at the system conditions quality evaluation of the Slovak plastic cluster development. As an evaluation criterion, has been chosen the fulfilling recommendations of "Regional Ecosystem Scoreboard" in the areas of Demand Conditions, Access to finance, Knowledge basis and skills, Collaboration and internationalisation and in the area of Effective cluster support by the state.

The presented primary research was preceded by detailed examination of secondary sources - literature, documents and programs aimed at supporting and developing cluster organizations in Slovakia, in the Czech Republic as well as in countries achieving significant successes in the area of innovativeness and cluster support. The findings have highlighted the significant lagging of industrial clusters in Slovakia behind similar activities in other countries, including the Czech Republic. The primary research is therefore aimed at detecting the causes of these differences based on the exploring the experience, attitudes and management opinion of the examined cluster. As the research method at this stage of the research, was chosen the method of face-to-face expert in-depth interviews which was conducted by the authors of the research with the SPK manager PhDr. K. Ikrényiová. Altogether, three in-depth interviews were conducted from 9/2017 to 12/2017, each with a duration of 60-90 minutes.

The individual interviews were thematically related and the content reflected the current issues, which were dealt with the SPK during this period and which were arising as a result of unsystematically setting of a cluster policy in the Slovak Republic. At the final interpretation of the results were also took into account the information obtained from the in-depth interview from October 2017 with the representative of the Ministry of Economy of the Slovak Republic,

which is responsible for the cluster policy in the SR. Based on the processing and interpretation of the obtained results, the authors came to the following findings.

4   Assessment of Cluster Development Conditions

The cluster policy of the Slovak Republic was assessed by us as the position of the SPK to fulfil the five conditions of successful functioning of the clusters, defined by the "Regional Ecosystem Scoreboard".

1. Demand conditions - characterizes the existing demand for innovations in a given market. According to Dr. Ikrényiová, companies active in the chemical industry in Slovakia can be divided into two groups in terms of their innovation potential. The first group includes automotive-related companies that focus their entire production capacity only on deliveries to big car makers. These companies are pushed by customers to ensure the required quality, required volumes, and timely delivery on the principles Just in Time and Just in sequence. According to Dr. Ikrényiová: "This stereotype literally kills any innovative idea, especially with smaller companies." As an exception there can be mentioned only a few big companies from the plastics industry with 100% foreign participation, which are devoted to production and development. An example of such a company is e.g. ZKW Slovakia, Ltd. which in addition to production has established a development centre in Slovakia, where new products for a particular automobile concern are being developed separately. However, the innovative activities of such big companies are determined by the decision of the company's owners abroad and they are not the initiative of domestic management. According to Dr. Ikrényiová: "In general, the lack of innovative ideas is one of the fundamental limiting factors of innovative activities of SPK."

According to Dr. Ikrényiová, to the second group of companies in terms of their interest in innovation may be included those, which are not at all or at least not 100% connected to automotive with their production. These companies are very aware of the need of innovativeness as a condition for their long-term success on the market and show an active interest in linking the results of basic research to practice. On a specific example of the development and production of biodegradable plastics Dr. Ikrényiová has documented that the innovative idea that arises in Slovakia often has the chance to survive only outside the territory of Slovakia, where it obtains system support and finds suitable conditions for its development and application in practice.

2. Access to finance. The cluster receives funds from multiple sources for its activities and development. According to Dr. Ikrényiová, the SPK uses about 20% of financial sources from own activity, 30% of which is membership, and about 50% represents the state support of industrial clusters.

According to the opinion of Dr. Ikrényiová, the whole system of financial support for clusters by the state is non-systemic and it represents a significant obstacle for clusters in their development. As an example of this non-systemic approach of the state she stated that in 2016 this aid was not approved and transferred to cluster accounts until December 2016 and in 2017 it was not even allocated to the cluster at all. In addition, in 2017, clusters were excluded from the database of eligible beneficiaries of innovation subsidies, which also left the theoretical possibility to apply for the financial resources allocated to this area. Support for science and research as well as financial support for innovation is under the authority of the Ministry of Education of the Slovak Republic and does not get where the innovative ideas are.

Dr. Ikrényiová has further stated that the activity of SPK is significantly complicated by the fact that during its existence it has received only a relatively small amount of funds in the form of grants or subsidies for projects in which it was involved as a submitter, partner or solver. These funds, the specific amount of which is published on the SPK website, could not cover even the usual operating costs associated with the existence of a cluster, which is further negatively reflected in its activities. The cluster was rejected by EU funding projects with a large amount of funding, the realization of which it would obtain a significant amount of funding for its development.

3. Knowledge basis and skills. Problems with financing are directly reflected in all cluster activities. SPK faces a basic problem in its staffing and in the growing qualifications of cluster members. According to Dr. Ikrényiová: "The problem is that the cluster's staff costs cannot be covered by cluster support projects, and the SPK does not have such a budget to cover the cost of necessary personal providing from its own resources." For successful development, the cluster needs to employ project managers able to prepare projects funded by EU funds. However, the SPK does not have the financial resources to pay its wages. This problem is therefore solved in the form of contracts with individuals who work for SPK based on orders with defined competencies and responsibility, while these collaborators must combine their activities for SPK with other activities and incomes from other sources.

4. Collaboration and internationalisation. According to Dr. Ikrényiová: "The result of ineffective cluster policy of the state is the fact that out of the original number of 10 clusters, only two are currently active in the Slovak Republic - IT Valley and SPK. The SPK considered leaving the Union of Clusters of Slovakia (UKS), whose activity is paralyzed due to the long-term unfavourable situation in support of clusters in the Slovak Republic. The attitude of cluster and the UKS chief executives, who for many years came up with proposals for system solutions to support cluster policies in Slovakia and those have never been put into practice, is at the stage of resignation."

From the point of view of international cooperation, the SR is involved in the international project ClusterFY, through the Slovak Innovation and Energy Agency (SIEA), which aim is to share the positive experience with the use of clusters to support the innovative potential of the state. However, according to Dr. Ikrényiová :" This shared knowledge has not found real political support in Slovakia and there is no one who would advocate enforcing them." Within the ClusterFY project, SPK has the opportunity to receive a silver cluster excellence certificate in 2018 that is recognized across the European Union and opens the way for clusters to international collaboration, networks and projects. When obtaining this certificate, SPK is expecting problems due to the low innovation activity of SPK, which the cluster cannot increase despite its efforts in the given conditions.

5. Effectiveness of cluster support by the state. According to the opinion of the SPK leadership, which is supported by their experience in Slovakia, despite several official declarations, there is no real long-term concept of effective cluster support by the state. The problem, according to Dr. Ikrényiová, is that the state's attitude towards cluster support changes with the exchange of specific ministers. This fact also results in a non-systemic setting of financial support for clusters. The only support mechanism is state aid, which the state implements once a year in advance unrecognized amount (from 17,000 to 40,000 euros) in unsuitable terms (at the end of the year, while the funds needed to be spent within 2-3 months) and under the 30% co-financing of the project. As was already mentioned, in 2017 these funds were not even released for clusters, which is another evidence of the state's non-systemic approach to cluster support. Clusters have to connect research and development with practice - but according to experience of leadership of SPK neither the state is clear on this and provides for applied research various unsystematic challenges for private institutions. According to Dr. Ikrényiová: "Activities which in other countries are solved in particular by clusters, are delegated to government institutions in Slovakia and clusters are totally excluded from a

number of decision-making processes and the redistribution of means to support industrial innovation."

Conclusion

The creation and development of clusters is one of the key directions for the growth of Slovakia's innovative potential. The analysis of the cluster policy of the Slovak Republic from the viewpoint of a real working cluster and its comparison with the EU best practice model confirmed the ineffectiveness of this policy.

Based on these findings, we propose to adopt the measures improving the conditions for the effective cluster functioning in SR: Based on the analysis of the effective approaches to the development of cluster initiatives in Europe it will be necessary to develop a systematic concept of cluster support in the Slovak Republic and, despite the political spectrum, advocate its consistent long-term application. Included in this conception must be setting up a systemic and transparent system of financial support for clusters from the state, including the possibility of applying for funding allocated for the support of science, research and innovation

In Slovakia it will be necessary to change the way of financing innovations from the concentration of funds in the hands of government agencies to bigger real support within individual regions and the support for cross-border cooperation. It is necessary to set up programs of real support for companies with excellent innovative ideas so that they can be developed and applied in conditions of Slovak Republic. This new conception must include the support of cluster quality improvement, consultation and assistance in preparing projects funded by EU funds

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Contact

Jana Plchová

Institute of Management

Slovak University of Technology in Bratislava

Vazovova 5, 812 43 Bratislava, Slovakia

jana.plchova@stuba.sk

Irina Bondareva

Institute of Management

Slovak University of Technology in Bratislava

Vazovova 5, 812 43 Bratislava, Slovakia

irina.bondareva@stuba.sk

IDENTIFYING HURDLES FOR INNOVATORS: THE CASE OF RUSSIAN RURAL AREAS

Sergei Polbitsyn

Abstract

Purpose: The paper presents the research results that specify current institutional and economic hurdles to rural innovative entrepreneurship development in Russia. To surmount the obstacles to rural business development, mandatory would be to consider the existing legal, economic, political, social standards, requirements and policies. The aim of this paper is to identify the social, economic and legislative factors that decelerate rural entrepreneurship development in Russia.

Design/methodology/approach: The research design is based on the survey that was conducted among business owners and top managers of entrepreneurial firms located in rural areas in Russia. The survey was designed as a combination of Likert Scale directing from "strongly disagree" - 1, to "strongly agree" - 5. A simple random sample of 30 respondents was generated each year of the survey. The survey was conducted for 10 years. The collected data was analyzed after employing special software Stata 11.

Findings: Results suggest that the lack of qualified personal, the lack of information on potential markets and technologies and the high risk of innovative activities are named as the most significant hurdles to rural innovative entrepreneurs in Russia.

Research/practical implications: The reported research relied on self-reports and on a sample from the one region of Russia. Future research should be multiregional and multinational to test the assumptions of the present study. The paper reveals that local authorities could play more significant role in fastening the territorial economic development supporting innovative entrepreneurs with market and technology information.

Originality/value: The present study provides evidence about the hurdles to innovative development of rural entrepreneurship in Russia. Results could be of value to policy makers focusing on the development of small businesses and entrepreneurship and the promotion of entrepreneurial and innovative capabilities in rural contexts.

Key words: Rural entrepreneurship, agriinovation system, rural development, Russia

JEL Code: R11, O38, Q18

Introduction

The rural areas' economic and social development requires specific approach to entrepreneurship, different from urban territories (EU Rural Review, 2017). This difference is distinguishable for post-soviet states, especially for Russia (Kalantaridis, Labrianidis, & Vassilev, 2007).

The significance of entrepreneurship as one of the main economic institutes for global economic system is increasing the last twenty years. Entrepreneurship is branded as the engine for rural social and economic development (Gladwin et al., 1989). The role of entrepreneurship in rural economy, low entrance costs make entrepreneurship attractive to rural inhabitants, and the preference to become an entrepreneur is more likely expressed by rural inhabitants than urban (Duricova, V., 2015). Especially this intention becomes more prominent in the times of recession when for rural inhabitants entrepreneurship could be the only way to provide any household income. (Figueroa-Armijos, Dabson, & Johnson, 2012). Innovative development of rural entrepreneurship is predicted as the most sustainable approach (Elena, Sorina, & Rus, 2015). The question on how to ignite the innovative development of rural entrepreneurs is among main questions for numerous researchers. This question is important not only as a problem of sustainable agricultural development but also the question of social sustainability of rural territories (Cimdiņa, A., 2013).

Rural entrepreneurs act in different from urban environment. Entrepreneurs in the rural areas "confront and deal with considerable uncertainties by developing a shared understanding of the barriers to small firm growth and rural economic regeneration" (Fuller-Love, N. et al, 2006).

Rural entrepreneurship is constrained by a number of factors that can not only reduce the innovation activity of enterprises, but also negatively affect the rural social and economic development as a whole (Harpa E., 2017). Our research provides a new factor scale, namely hurdles and barriers scale to provide further research on sustainable innovative development of rural entrepreneurship.

Theoretical background

Our research presents a framework for the influence of the rural entrepreneurship environment factors on entrepreneurs' efficiency and is based on socioeconomic and structural forces engaged in suppressing effectiveness of rural entrepreneurs (Muhammad, McElwee, & Dana, 2017). Typologically factors were divided into two groups: external and inner factors. The

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research adopted as the main reference the limiting factors, described by Claudino, T. B. et al (2017), who categorized nine fostering and twelve limiting factors in the innovation process. For our research, the following hurdle factors were chosen:

1. Lack of support from local administration. Local and regional administrations are required to clearly pronounce their position on support of innovative development of rural entrepreneurs;

2. Lack of marketing information. Rural entrepreneurs often do not have access to reliable market information. Imperfections of existing rural information infrastructure restrain the flow of information, extremely necessary for entrepreneurs;

3. Lack of technological information;

4. Limitation of financial resources;

5. High cost of innovation adoption;

6. High risk of innovation adoption;

7. Long payback period;

8. Limitation of qualified people;

9. Difficulties in organizational interaction.

The questionnaire for the survey was designed as a combination of Likert Scale directing from "strongly disagree" – 1, to "strongly agree" – 5, and one sample mean comparison test was found as the most useful method in this kind of research in literature. The questionnaires were distributed in different entrepreneurial companies working in rural areas of the Urals region in Russia among top managers and owners. Based on the complete list of agricultural enterprises of the Ural region[20], a simple random sample of 30 respondents was generated each year of the survey. Respondents were contacted by phone. The survey was conducted for 10 years. The total amount of interviewed entrepreneurs numbered 300 people. There about 340 agricultural entrepreneurs in the region according to the Goskomstat (National Census Agency) information. The study was conducted according to the principles of the Oslo Manual.

Individual ratings were treated as continuous data (Harpe, S. E., 2015). The observed data was analyzed by applying Stata 11 classical tests of hypotheses. One-sample mean comparison test for the 2017 data gave the following results (Table 1).

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[20] The complete list of agricultural enterprises of the Ural region of Russia is published on https://agroinfo.com/xozyajstva/ufo/

The confidence intervals are sufficiently narrow to take the sample means for the population means. It is observed that tests for previous years gave the similar sufficient evidence and statistical significance. These results are omitted for the sake of brevity.

Results and Discussion

Based on the conducted surveys, several conclusions were made, explaining the problems of innovative development of entrepreneurial entities in rural areas. The survey results are presented graphically on Figure 1.

Tab. 1: One-sample mean comparison test results for the 2017 data

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Difficulties in organizational interaction	30	3	.2197177	1.203443	2.550627	3.449373
Lack of technological information	30	2	.2144225	1.17444	1.561457	2.438543
Limitation of qualified people	30	4.6	.1134617	.6214555	4.364945	4.832055
Lack of marketing information	30	3.1	.1938716	1.061879	2.703488	3.496512
Long payback period	30	3.4	.2011461	1.101723	2.98861	3.81139
High risk of innovation adoption	30	4	.2197177	1.203443	3.550627	4.449373
High cost of innovation adoption	30	4.6	.1231764	.6746647	4.348076	4.851924
Lack of support from local administration	30	2.3	.118903	.651287	2.056816	2.543184
Limitation of financial resources	30	3	.2089932	.10144703	2.0572561	3.0427439

The dynamics of the factor "Difficulties in organizational interaction" is the most interesting. It was one of the main hurdles in 2007 but later it was reduced to inessential. In oral conversations, the respondents determined the reason for the downward dynamics of this factor by changing the position of business owners, who could clarify their message to employees to make it more understandable. If in 2007 owners and top managers were complaining on the lack of employees' enthusiasm to innovate, then by 2017, business owners gained managerial experience and turned to use mostly managerial methods to motivate employees to fulfill duties necessary to increase the innovation activity of companies, which had a positive impact on the receptiveness of innovations by employees.

The factor "Lack of information about new technologies" did not changed its value as a significant hurdle. However, its content has undergone significant changes from the statements "hard to find the right information in our backwoods" to the understanding of the necessity to

create an information service at an enterprise in the rank of its own unit or on the principles of outsourcing. The urgency of the lack of information about new technologies is determined by managers and owners of enterprises as the lack of an information system to request and search for the necessary information. As a result, a number of respondents identified the actual problem as the lack of accessible qualified specialists in the information databases, rather than in information technologies. Cooperation with research organizations having experience in information management was suggested as an alternative solution, but the majority of respondents rejected this possibility, appealing to the need to preserve the confidentiality of information.

Fig. 1: Factors restraining the innovation activity of rural entrepreneurs in Russia
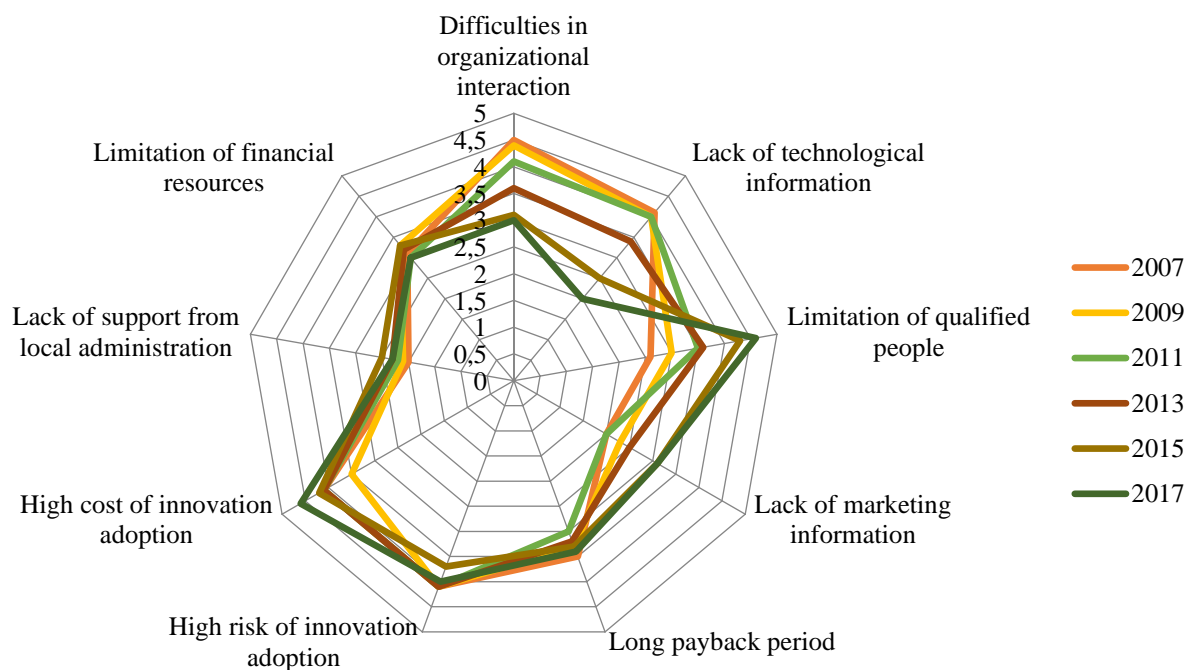
When respondents were questioned on having an "innovative team" at their enterprises, they demonstrated a lack of understanding of the need to hire new employees not only for their special knowledge, but also for their psychological compatibility, the ability to cooperate with the existing team.

The information provision factor, which should be seen as internal, intersects with the lack of marketing information about potential demand. The increase in significance of this factor throughout the years of the survey was supplemented with verbal comments from managers and owners of enterprises about the dissatisfaction with the capacity of the marketing

departments and quality of the available marketing information. Until now, the inability to conduct high-quality market research, to determine the clear picture of the existing demand for produced goods and also the demand trends on target markets, remains to be a weakness of Russian marketing specialists. This leads to their incompetence to accurately focus the target audience, and, consequently, this increases advertising costs for enterprises.

The respondents inclined to underestimate the negative impact of the lack of qualified innovative personnel. In 2007, respondents, being asked do they have workers of the required qualification at the enterprise, usually answered that even if there are no such workers, they could be easily trained. By 2017, the significance of this hurdle for entrepreneurs has grown. This can be interpreted as the emergence of better understanding by entrepreneurs of critical need of qualified employees and more meaningful assessment of their abilities and qualification.

The significance of the hurdle "long payback periods of innovations", voiced by respondents, requires explanation. The overwhelming majority of the respondents determined the payback period of innovative projects in their practice as unacceptably long, and their explanations varied from making a comparison with a payback period of simple commercial (trade) projects to the risk aversion associated with possible negative changes in the demand for products during the long time of innovations implementation. To the author's opinion, this kind of explanation indicates an incorrect assessment of innovation activity by rural entrepreneurs firstly, and it correlates with an explanation to the previous factors related to insufficient, low quality information support of innovation activity secondly.

The lack of financial resources for the implementation of innovations was indicated by managers and entrepreneurs that tempted to avoid financing their companies using external long-term borrowing; as a rule, these companies were small and family businesses, and respondents argued their position saying their business could be forced to disclose the essence of innovations to external investors, thereby increasing the risk of leakage of confidential information.

Almost all respondents pointed out the lack of support from local and regional administrations, but entrepreneurs were requesting this support mainly in the form of subsidies. Most of entrepreneurs had no information and were not seeking information on federal and regional programs for rural innovations and entrepreneurship support. This outcome correlates with the obtained results on information hurdles. It should also be noted that the factor of support from

regional and local administrations for innovative activities of enterprises was ranked by respondents last in importance throughout the years of survey. To our opinion, this reaction cannot be interpreted as ineffectiveness of government support for innovations, but should be treated as the ineffectiveness of the existing mechanism for promotion of government support for innovations.

The high costs of innovations' implementation and high economic risk are the most significant hurdles for rural entrepreneurship according to managers and business owners, and as it was stated by respondents, this is due to the uncertainty in the return of investments.

Conclusion and Recommendations

The research indicated that managers and owners of rural entrepreneurial companies in Russia view innovative activity mainly as one of many methods to rapidly increase profits, and therefore their attitude to innovations is based on the perception of innovation as one of conventional forms to quickly increase commercial effectiveness of their companies.

The long-established perception of innovations, as it was exposed in the research, is based on a rigid division of the internal and external environment of enterprises. Managers and business owners believe that innovative activities, based solely on internal resources, primarily intellectual, can occur within any enterprise. That is why in 2017 the interviewed managers noted that their employees adequately perceive innovations, but do not have the required qualifications for its implementation. On the basis of this assumption, it was concluded by respondents that it is necessary to attract qualified employees, meanwhile they do not raise question how the existing organizational model of enterprises is appropriate for innovative activities.

According to the position of rural entrepreneurs in Russia, disclosed in the survey, innovative activities at rural entrepreneurial companies are trusted to be based on the same principles as any other type of trade activities: the means of innovations are owned by economic entities and results of innovative activities are entirely owned by entrepreneurs. For any common, routine trade activity, the means of production are believed to be fixed assets, mostly material assets, and the right of disposition is possessed by business owners only. However, the main resource for innovative activities is the immaterial, creative power to generate innovations, knowledge and skills of researchers and developers, and entrepreneurs do not have the right to own it.

This attitude of owners and managers of rural enterprises to the main resource of innovation as to a resource that should be in their ownership or disposal completely was formed in the twentieth century, and now it suits no longer neither possessors of innovation knowledge and competences nor entrepreneurs willing to implement it. For entrepreneurs, long-term hiring of highly qualified innovators becomes financially burdensome, for qualified innovators a long-term contract with one enterprise, full of bans on professional activity outside the enterprise, is fraught with a loss of innovative skills and, as a consequence, a decrease in qualification as an innovator.

To result the conducted research, it is necessary to acknowledge that hurdles are appearing on all steps of innovative activities of rural entrepreneurs. Any single entrepreneur is not able to possess all necessary resources to progress in innovative activities to gain economic effectiveness. The main role in developing innovative activities of rural entrepreneurs to surmount obstacles and overcome difficulties must be played by regional and local authorities. Regional and local authorities must play their important role in supporting rural entrepreneurs by developing information infrastructure with open access to marketing and technological information. This information will be the most useful resource for rural entrepreneurs to overcome difficulties and barriers.

Acknowledgment

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Contact

Sergei Polbitsyn

Ural Federal University

ul. Mira, 19, Yekaterinburg, Russia, 620002

Institute of Economy, Urals Chapter, Russian Academy of Sciences, Yekaterinburg, Russia

ul. Moskovskaya, 29, Yekaterinburg, Russia, 620014

polbitsyn@urfu.ru

GREEN ENTREPRENEURSHIP IN THE FOOD INDUSTRY: EATING CONSCIOUSLY AND RAISING AWARENESS IN BARRANQUILLA, COLOMBIA

Christina Campo Santiago

Abstract

Purpose: Nutritional challenges and food waste are becoming a priority in the food industry around the world. Within the food industry, entrepreneurship opportunities exist due to changes in dietary patterns and a demand for a business model that takes environmental and social causes into consideration. Furthermore, Colombia is ranked at the forefront of entrepreneurial endeavors in South America. This presentation provides an exploration of entrepreneurial innovations in the food industry in Barranquilla, Colombia and examines the drivers of these entrepreneurs and their effect on the environmental and social impact of their business.

Design/methodology/approach: Case studies, from a qualitative standpoint, were built for various entrepreneurs in different areas of the food industry and at different stages of the entrepreneurial life cycle in Barranquilla, Colombia. The entrepreneurs were selected by way of a snowball effect. Through semi-structured interviews and visits to their place of business, it is determined how they created a business from a personal and societal need for healthier and more sustainable food choices. Their motives, challenges and views of the future, as well as their environmental and social awareness and impact are also analyzed.

Findings: The food entrepreneurs showed how they focus on social and environmental impact. Their initial motives and drivers define how they incorporated environmental and social aspects into their business. Some of the common constructs that emerged were environmental responsibility, a desire to educate consumers on environmentally-friendly practices and to further engage the community. This new type of food entrepreneur appears to affect society in positive ways, mostly by offering healthier and more sustainable food choices to people that predominantly ate processed/fast foods, and by stimulating a local interdependent economy through previously untapped opportunities.

Research/practical implications: This presentation helps to paint a clearer picture of the entrepreneurial ecosystem and the circumstances small and medium sized business owners deal with in a local community of Colombia. It shows similar patterns and themes as to that done in different regions in the world, which proves how certain trends in green entrepreneurship are becoming a worldwide phenomenon. It would be interesting to expand the analysis through a comparison with a local community in a different locale.

Originality/value: The realities of green entrepreneurship in South America have seldomly been covered in literature. Green entrepreneurship could be a way to tackle the challenges currently found in the food industry. This research sheds some light on the trends and innovations at the level of small and medium sized business owners in a local community in Colombia. Furthermore, the research aims to contribute to understanding the drivers and motivators of small and medium business sized owners, what inspired them to start their own business.

Keywords: Green entrepreneurship, sustainable development, local community development, small and medium sized enterprises

JEL Codes: L26, Q01

Introduction

There are traditional ways of viewing entrepreneurship. Schumpeter (1965) defines the entrepreneur as an innovator and the type of person who sees opportunities in macro-economic changes in the environment and translates said opportunities into the introduction of new methods of production, new markets, new ways of organizing business processes and new products (Schumpeter, 1934). Drucker (1985) emphasized in his definition the capacity to give existing resources new wealth-generating capabilities. Many scholars approached the definition of entrepreneur from the perspective of opportunity identification and creation (Schumpeter 1911, 1939; Kirzner 1973, 1979; Venkataraman 1997). Yet entrepreneurship under this traditional view, as it focuses solely on the income generating perspective, is often linked to unsustainability.

Research in entrepreneurship has often evolved towards the examination of the how and why entrepreneurs create and identify new opportunities. The value people give to resources once they've been transformed from inputs to outputs is what brings these opportunities to existence. Entrepreneurship is then about the process that leads to the generation of assorted output (Alvarez and Busenitz, 2001). Jackson (2009) highlighted in his book, 'Prosperity Without Growth', how business propositions should change to meet the true needs of people. This goes in line with a trend of businesses moving from the typical line of purely economic driven business models to those who seek to promote sustainable development through innovation and sustainable practices. What Jackson proposes then could be a new way of interpreting entrepreneurship beyond the scope of income generation. Sustainable business models do not focus solely on the generation of revenue but also seek to tackle environmental and social issues. Furthermore, Porter and Van der Linde (1995) highlighted the potential of green and environmental endeavors to be a source of competitiveness for businesses.

The increased awareness of society of current world challenges makes it so that it has become more open to the need for a business model that incorporates social and environmental concerns into their actions and projections. The concept of green or sustainable entrepreneurship encompasses the economic, environmental and social aspects that can be incorporated into the mission and vision of a business (Allen and Malin, 2008).

Efforts have been made to categorize green entrepreneurs, in terms of their internal motivations and external structural forces. Isaak (2002) differentiated green entrepreneurs between "green" and "green-green" entrepreneurs. The difference in the two types of entrepreneurs lies in the

manner environmental concerns are incorporated into the business model. A "green" entrepreneur includes environmental causes in its business due to ethical concerns or for the pursuit of a marketing advantage. On the other hand, the "green-green" entrepreneurs were green from the beginning. The "green-green" entrepreneur looks to become a changemaker in the market where it operates. (Isaak 2002)

In the past decades literature has focused more on large firms incorporating environmental thinking into their business model instead of the reality of small and medium sized enterprises (SMEs) (Allen and Malin, 2008). A need to consider ecopreneurship from the perspective of SMEs and how they diverge from the traditional entrepreneur has been brought forward (Schaper, 2002). An ecopreneur is the type of entrepreneur who combines principles of sustainability with a traditional business sense (Isaak, 2002; Allen and Malin, 2008)

Petrzelka et al. (2006) saw how green entrepreneurs could be the catalysts of increased awareness on natural resource consumption while fostering sustainable economic growth. Studies on the nature and motivators of green entrepreneurs have been done for example in Australia, China, Europe and the United States (Silajdžić et al, 2015; Ge et al., 2016; Sardianou et al., 2016 to name a few). But there are limited sources showing cases in a South American context.

This study builds on this field of research by discerning the emerging green entrepreneurial characteristics of small business owners in a coastal community in Colombia. Furthermore, recent changes happening in dietary patterns[21] combined with how practices in the food industry can have a significant impact in the environment (Garnett, 2013) make this study a relevant example to showcase the opportunities for sustainable innovation presented in the food industry. The research looks at data from qualitative interviews with small entrepreneurs in the food industry in the city of Barranquilla, Colombia. The analysis explores the perceptions of said entrepreneurs in terms of their awareness and impact in the environment and local community where they operate, as well as the underlying drivers and motivations for incorporating these types of causes into their business models.

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[21] Concerns over diet related diseases are driving the trends in consumption and dietary patterns and consumers worldwide are making the conscious decision to make changes in their diet so as to prevent health conditions (Williams, 2005; Swinburn et al., 2007).

1   Methodology

This paper reports on qualitative case-study research carried out in the city of Barranquilla, Colombia. This is one of the largest cities in Colombia, with a population of 1.218 million and located by the Caribbean Sea. There are more than six million entrepreneurs in Colombia in the process of launching their own business (Gomez and Mitchell, 2014), but Matiz and Naranjo (2013) emphasized how many of these projects are far from being innovative and sustainable over time. Entrepreneurial activities in Barranquilla are driven equally by opportunity and necessity according to Henriquez Fuentes et al. (2016). The research has descriptive and explanatory aspects as it looks to describe the setting and the situation of green entrepreneurs within their ecosystem. Furthermore, the explanatory aspect looks to link the motivations, drivers and values of the entrepreneurs with the future projections of their business. Thirteen case studies were used for this study. Each business represents a different area of the food industry: agricultural goods, organic waste management, packaged snacks, beverages, bakery and fast food. The age of the enterprises ranges between 1 to 7 years. The study was carried out in the second half of 2016 in the city of Barranquilla, Colombia. Convenience sampling method was used initially to identify entrepreneurs in the food industry. The sampling group was then chosen by way of snowball effect.

Semi-structured interviews, visits to participants' place of business and participatory observation were used to build case studies. The interviews typically lasted between 40 and 60 minutes. The questions delve into the history of the entrepreneurial endeavor: how the business idea started, what the motivation to start a business, their role in their community, environmental measures and future plans for their enterprise. The interviews were carried out at the entrepreneurs' place of business. All data have been anonymized for the purposes of confidentiality. The data discussed in this paper come mainly from the part of the interview which focused on the history of their business, the need they wanted to fulfill, and the future projections for their business. More specifically, the entrepreneurs were asked to discuss what events in their professional or private life inspired them to start their own business or where the idea came from, the resources required for the implementation of their offering, the impact they are having in the environment and community where the operate, their collaboration with other entrepreneurs in the ecosystem, and the plans they had for the future of their business. This allowed the investigation of motivation and drivers, the level of awareness and incorporation of social and environmental causes, and the entrepreneurs' awareness of locality and interaction within their community and the entrepreneurial ecosystem.

After the data were transcribed, data analysis relied on the examination of the interview transcripts and an interpretative hermeneutical exercise to analyze the data and pinpoint the main themes within green entrepreneurship in the area. This article is a preliminary analysis of the data focusing on green entrepreneurial traits of entrepreneurial endeavors of the chosen community. A qualitative analysis based on the theory of green entrepreneurship was carried out. Themes relevant to this theory, such as green marketing, the encouragement of green networking, locality and community development, and environmental impact and circularity, emerged during the assessment.

The businesses selected for the case studies come from different areas of the food industry. Table 1 provides more details on the types of businesses.

Table 1. Entrepreneurs Information Summary

Name	Year Founded	Activity	No. of Employees
Entrepreneur A	2013	Organic eggs, chicken and turkeys	2
Entrepreneur B	2012	Citrus fruit beverages, flavored lemonade, fruit pulps	5
Entrepreneur C	2014	Bakery	1
Entrepreneur D	2015	Production and delivery of breakfast and lunch foods and healthy snacks.	5
Entrepreneur E	2016	Provision of coffee beverage and snacks. Space for cultural exchange.	1
Entrepreneur F	2016	Organic baby food	1
Entrepreneur G	2016	Packaged pickled vegetables, sauerkraut, vegetable dips, fast food lunch	4
Entrepreneur H	-	Coffee beverages and snacks. Courses on coffee culture.	1
Entrepreneur I	2016	"Functional" fruit smoothies, fast food lunch	2

Entrepreneur J	2014	Edible "flower" arrangements, natural fruit juices, fruit salads, gift wrapped assorted fruits	4
Entrepreneur K	2015	Bakery	5
Entrepreneur L	2010	Organic waste collection and manufacture of organic fertilizer	12
Entrepreneur M	2016	Packaged dehydrated fruits and vegetables, vegan line of snacks and desserts	2

Source: Elaborated by author

2 Findings

Several themes stood out in the analysis of the case studies. Among the enterprises and according to the categorization of green entrepreneurship, most business owners exhibit characteristics of "green" entrepreneurship in the sense that it is a business that started out with an income generation purpose.

The entrepreneurs expressed how they have become aware of environmental and social causes in their local communities. The awareness extends also to the needs and gaps within the popular trends in the food industry, as more people are looking for healthier and more natural food options. Other themes that stood out were the commitment to the environment shown by the entrepreneurs that touches upon waste management and circularity and their engagement with the local community. There is a combination then, in terms of incorporation of causes into the core mission of their business.

2.1 Changing dietary patterns

Eleven out of thirteen of the interviewed entrepreneurs expressed in varying degrees, awareness of the needs and gaps in the food industry. It ranges from the casual mention of how there is an increased interest and awareness of people who want to know what's in their food and where it is coming from to the business mission focusing mainly on offering the community healthy eating choices. Seven entrepreneurs expressed this dimension both as a personal sense of awareness and an event in their life that served as a driver to start their businesses. Among those who expressed the need to provide a healthy food choice to the market, they also saw the

opportunity presented in this niche due to the rise of the "gourmet/healthy/fit food" era. On the other hand, six entrepreneurs are projecting the inclusion of a line of healthy food or incorporating organic or "healthy" ingredients into their production (for example, using honey, agave syrup or home-grown stevia, instead of the traditionally used refined sugars such as white or brown sugar)

2.2   Waste Management and Circularity

In an environmental dimension, several entrepreneurs expressed a clear awareness of the potential impacts their business has in the environment. Some entrepreneurs expressed their commitment to environmental causes through the use or transition of packaging methods. Six entrepreneurs look to make a positive impact using glass packaging, while providing recommendations for reutilization to their customers. Some clear examples of this trend are the reutilization of packaging for the fast food business, where they provide discount vouchers to customers who return their jars, and the use of biodegradable cake stands for the baking business. Four entrepreneurs see their contribution to the environment in their handling of waste. While there are some who due to the nature of their business produce little to no waste (as almost every part of the produce is used in the production), there are others who turn their waste into opportunity, achieving circularity. In terms of circularity, there is a strong commitment amongst the participants to optimize their operations to reduce or reutilize by-products of their business that could be considered waste. Here it is observed entrepreneurs using the fruit peels to produce essential oils, fruit "flower" arrangements that can be eaten by the consumer (with the leftover fruit used for other products in the product line), the use of plants for animal feed and manure for organic fertilizer, and a business collecting organic waste and turning it to organic fertilizer.

2.3   Locality and Community Engagement

The entrepreneurs showed great commitment to their local community in three ways: they are aware of their locality, they support other green entrepreneurs in the ecosystem and they want to bring greater awareness of social and environmental causes to the community. The awareness of locality is reflected in the use of local products and knowing where the items within their supply chain are coming from. For two business owners, the commitment to locality is part of their business mission, as the entrepreneur in the agricultural field works towards having a self-sustaining farm. Meanwhile, the entrepreneur in the beverage business works with local farmers to source the fruits for her final product. Additionally, the entrepreneurs in the study mentioned cooperation at different levels with other green entrepreneurs in the ecosystem. Every

entrepreneur is committed to raise awareness on different environmental and social causes. Some examples are: offering field trips to the farm to school children, offering baking lessons to single mothers, and introduce eco-friendly packaging campaigns.

3   Discussion

Tilley and Young (2009) present a model that suggests sustainability entrepreneurs could potentially be the true wealth generators of the future. In modern times, awareness of the current societal and environmental problems is on the rise. The theory of ecological modernization is then used to explain how entrepreneurs bridge the concepts of sustainable development and income generation.

In one of the few cases presenting green entrepreneurship in the Colombian context, Sanabria and Hurtado (2013) mentioned how in sectors such as renewable energies and waste disposal, the entrepreneurship rate is higher in projects within the Clean Development Mechanism. This study also reflects how entrepreneurs are gradually assuming green entrepreneurial characteristics in aspects such as waste disposal. Furthermore, the entrepreneurs with the more artisanal processes in food production show a stronger green identity within their business and long-term views.

It is interesting to highlight a commonality in the stories of these entrepreneurs in how, in many cases, part of their motivation to start a business came from a personal experience that expanded into how to create value and make a positive difference in the community. Additionally, it grants a glimpse into the transformation of the industry, as entrepreneurs take these steps towards a more sustainable way of doing business. Some of the themes observed in the cases also show not only a greater environmental awareness but a way to optimize operations and reduce costs by means that reduce resource use and thereby contribute to sustainability as Isaak (2002) mentioned in his studies of what makes an ecopreneur.

There are clear links that connect the theory and the characteristics that typify the profile of the emerging green entrepreneur in Colombia. The entrepreneurs show traits of green marketing through the educational campaigns looking to raise awareness of environmentally-friendly practices and the offering of suggestions for the future use of waste and/or packaging materials. Furthermore, the interactions between entrepreneurs for collaboration, sharing of knowledge (as is the case in the participation of citizen movements such as Slow Food) and the launching of food fairs could be considered as elements of green networking.

Some additional characteristic to consider are the strong commitment to their locality and their long-term projection. The focus on sourcing from local suppliers shows not only awareness of what is used in the transport of goods but also a desire to support the local economy. Likewise, the desire to incorporate more environmentally friendly or socially conscious practices in the future development of these businesses indicate a greater awareness and desire to make a significant contribution to the community these entrepreneurs interact with.

The study was carried out during the explorative phase of the research, the statements are not painting a global picture of the state of entrepreneurship in Colombia but aim to provide a snapshot of the situations and trends happening in the food industry. In this phase of the research these are the results. An expansion of the sample is needed for further verification of the research.

Conclusions

The case studies indicate that in Barranquilla, entrepreneurs are becoming more aware of social and environmental issues in their area of operations while also striving to further engage with the community. The entrepreneurs that were interviewed as part of this study are steadily incorporating social and environmental causes in their business mission, yet their commitment to sustainability is reflected in their long-term vision. It is therefore discerned that the trend towards truly green entrepreneurship is at a nascent stage, yet it is also on the rise.

The commitment to the community is a very strong aspect for food entrepreneurs in the city, which is also combined with the strong ties to the locality using local products and the productive linkages within the local entrepreneurial ecosystem. Environmental responsibility is also a strong theme found within the motivators of entrepreneurs as they are coming up with different strategies to reduce the negative impact of their business on the environment.

The results show many similarities with studies done on green entrepreneurs in different areas (Ahmad et al., 2015; Okuboyejo, 2014; Kristinsdottir, I. M., 2016; Kraus et al., 2017). It reflects how a more sustainable approach to entrepreneurial endeavor can be considered a worldwide trend. It would be interesting for future studies then, to create a comparative analysis with local communities in different locales. Likewise, further studies can delve into how more entrepreneurs can be encouraged to adopt a more sustainable perspective, and a deeper look can be given to networking as a tool to keep the discussions open for the incorporation of green practices

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Contact

Christina Campo Santiago
Department of Educational Sciences, Faculty of Psychology and Educational Sciences
Vrije Universiteit Brussel
Pleinlaan 2, 1050 Brussel, Belgium
ccamposa@vub.ac.be

POLICY OF BUSINESS SUPPORT ON A REGIONAL LEVEL: A UNIQUE CHANCE OR MISSED OPPORTUNITY FOR ENTREPRENEURS?

Jarmila Šebestová – Petr Šiška

Abstract

Purpose: Business policy on a national level reflects problematic entrepreneurial areas in a general way. Regional authorities implement these general aspects according to the current local requirements in their regional development strategy. Unfortunately, their effort to support entrepreneurial spirit and innovations is not as effective as it could be – their tools and institutions are not as well used as they intended. The question arises – where does the problem lie, is it in the means of communication or in the entrepreneurial requirements at the regional level? The main goal of this paper is to demonstrate some of the missing points or the weaknesses of institutional communication. These conclusions are based on a regional study in the Moravian-Silesian Region, Czechia.

Design/methodology/approach: The paper is based on a quantitative study using a questionnaire-based survey, comprising 164 respondents – owners of small and medium-sized companies in the Moravian-Silesian Region. The survey consists of 24 questions in three main areas – motivation to start up, identification of entrepreneurial barriers and an evaluation of the current state of business support in the region. Secondary information such as the results of earlier studies and regional government websites were used for data results comparison.

Findings: The paper provides empirical insights about the current state of the business environment in the Moravian-Silesian region and evaluates important areas of business support. It was ascertained that the most important tools for local entrepreneurs are subsidies for job creation and consultancy. A matrix of problems to be solved on the regional level was presented to open the discussion.

Research/practical implications: The paper includes implications for regional policy development, which could be transferable as a basic model to other regions in Czechia.

Originality/value: This paper supports an identified need to diversify the regional support policy according to regional differences. The main added value of the paper could be seen in practical recommendations.

Keywords: Business policy, Moravian-Silesian region, regional business support, SME

JEL Codes: L53, M13, R58

Introduction

The economic activity of business units in the regional context seems to be an important indicator for the evaluation of the effectiveness of the regional policy. The stability of regional growth attracts new investors and new start-ups, which could drive the chosen region toward value added growth and welfare growth in the regional society (Malikov et al., 2015). Business activity is closely connected with a suitable regional policy model and business models (Ács, Autio, & Szerb, 2014, Dvouletý, 2017). In contrast to this, Delfman and Koster (2012) stated that the economic impact of new start-ups on regional growth is impossible to quantify due to the diversity of the urban and rural areas of the region, so the importance of the municipal policy in promoting entrepreneurship therefore increases. They also commented that businesses operating in depopulating regions cause an indirect effect in terms of labour productivity and innovation growth at the point when they are between eight and ten years from start up.

Domestic studies (Zich, 2010; Syrovátková, Verl, 2011; Školudová, 2015; Zapletalová et al., 2015; Mandysová; 2016) have shown that regions across Czechia have much the same problems – small and medium-sized companies are getting older, are less connected with public governmental bodies, do not make much use of the publicly available business support and are linked with regional business support (Lukeš et al., 2013).

A research dilemma was solved in that paper in the form of research questions: (1) Is there any barrier preventing business owners from using public support for their business? (2) What supporting tools do entrepreneurs prefer most? (3) Which problematic areas must be solved on the regional level?

1   Methods and data sample description

The primary quantitative research between SMEs was used to obtain relevant data. The aim of the questionnaire survey is to identify important factors which cause barriers in doing business and actively using business support in the Moravian-Silesian Region. Data collection started in February 2017 in the form of an electronic questionnaire. This electronic questionnaire was distributed by e-mail to business entities located in the Moravian-Silesian Region after earlier phone contact.

The questionnaire comprised 24 questions, where questions 1, 2, 3 and 4 had multiple answers. In the first part of the questionnaire, the questions were designed to identify the reasons behind the start-up. The second part of the questionnaire focuses on mapping barriers to entrepreneurship development and evaluating the use of business support by entrepreneurs in

the Moravian-Silesian Region. The last part of the questionnaire focused on basic business information (business size, business age, number of employees, etc.).

1.1   Data Sample description

A questionnaire survey was distributed to all of the 3,300 SME owners in the selected region in February 2017. The survey had 164 valid responses. It obtained a representative sample at a confidence level of 95 % with a 5 % margin of error (within the total business population in the region). Most companies in the sample were carrying out business in the trade sector, namely 37.1%, 24.6% of companies worked in construction, 17.4% in industry, 6.6% in transport and 3% in agriculture. The remaining 11.4% of companies operated in other areas than those mentioned above (e.g. tourism and services).

The number of small businesses, namely enterprises employing up to 50 employees that took part amounted to 93.1%, where enterprises employing up to 10 employees amounted to 69.3% and enterprises employing 11 - 49 employees 23.8%. Medium-sized enterprises (between 50 and 250 employees) were represented in 6.9% of cases.

Tab. 1: Sample description

		Company size		
		Till 10 employees	10-49	50-249
		[percent]	[percent]	[percent]
Business age (years)	< 2	7	0	0
	3-5	11.5	5.1	9.1
	6- 9	14	7.7	0
	>10	67.5	87.2	90.9
	Total	**100**	**100**	**100**
Business cycle	Start up	5.3	0	0
	Growth	43.4	47.4	81.8
	Peak	9.7	13.2	9.1
	Stagnation	29.2	26.2	0
	Crisis	12.4	13.2	9.1
	Total	**100**	**100**	**100**
Export activities	Yes	32.5	55.3	90.9
Information about support	Yes (2007-2013)	44.2	77	72.7
	Yes (2014-2020)	31	61.5	72.7
Support use	Yes (2007-2013)	8.7	15.5	45.5
	Yes (2014-2020)	6.3	23.0	18.8

Source: own research

A general description of the sample demonstrates the main problems, which have to be answered by deeper analysis – when businesses are in a growth business cycle, why are they not tempted to actively use the business support offered by the regional authority? The share of knowledge (64.6%) of support possibilities is greater than its active use (23.2 % units in total).

2   Regional business policy support: Case of the Moravian Silesian Region

Regional bodies in the Moravian-Silesian region make use of many supporting activities, which help them to implement two main strategic documents, such as the Regional Strategy for Innovations (RIS3, 2010-2020) and the Strategy for Regional Development (2009-2020). Institutional support is connected with cooperation with the Agency for Regional Development (ARR), Business Centres and the Association for the Development of the Moravian-Silesian Region. Regional government supports small and medium-sized businesses by own grants for innovations, research and other key community areas. They provide a special website for entrepreneurs to acquire actual information on one site.[22]

To answer (1) Is there any barrier preventing business owners from using public support for their business? (2) What supporting tools do entrepreneurs prefer most? (3) Which problematic areas have to be solved on the regional level according to research findings?

The first step in the data analysis showed us, that internet sources (30%) are most used for data mining (Figure 1), which are mainly used by businesses employing 11 to 49 employees (70%), where micro companies prefer personal contact with specialists from business centres or members of financial institutions (80%). Both mix their informational sources and use on average three or four of them. In contrast to this, medium-sized companies stick to using internet and consultancy companies.

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[22] https://www.msk.cz/cz/dotace_eu/programove-obdobi-eu-2014_2020-53344/

Fig. 1: Sources of information
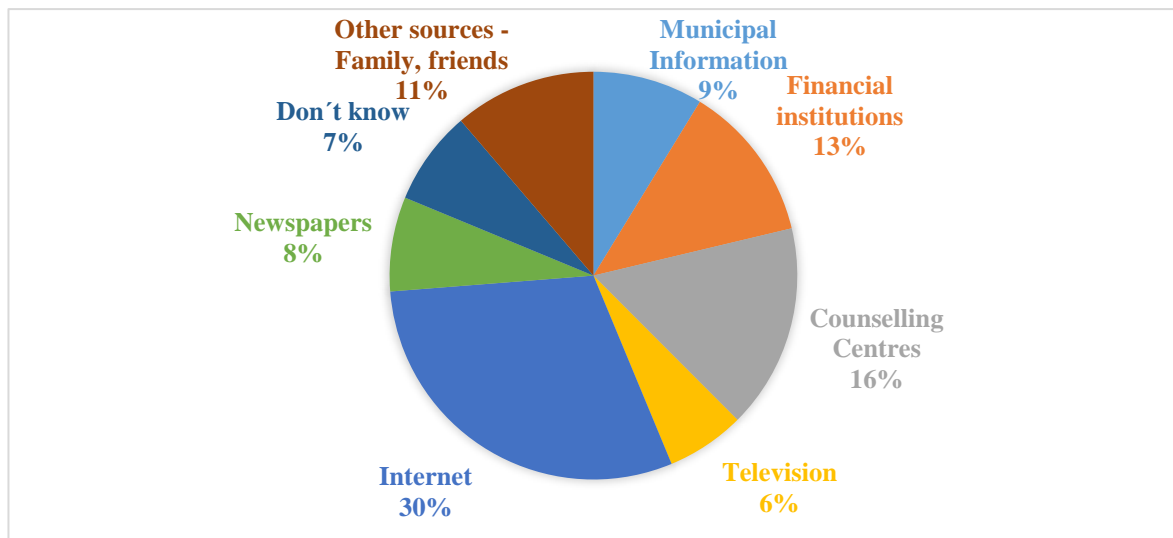
Source: own research

To be successful in business support, a proper informational channel must be used. It was confirmed by earlier results (tab.1 and Fig. 1).

Secondly, current barriers and a level of satisfaction with a regional business policy must be identified. At the present time, the most problematic areas in entrepreneurship activities were described as unstable legislative system (32.9%). The problem of business regulation, which is still changing, have a negative impact on the quality of the business environment. Other frequent problem, identified by entrepreneurs, was bureaucracy (26.2%), and finally a quarter of respondents (25.8 %) pointed out the problem of insufficient business support.

SME owners evaluated personally areas of business support. The Likert scale was used (where 1 is satisfied, 5 means dissatisfaction) to measure level of current satisfaction in key areas of business policy (Figure 2).

Fig. 2: Level of Satisfaction with Supporting Tools
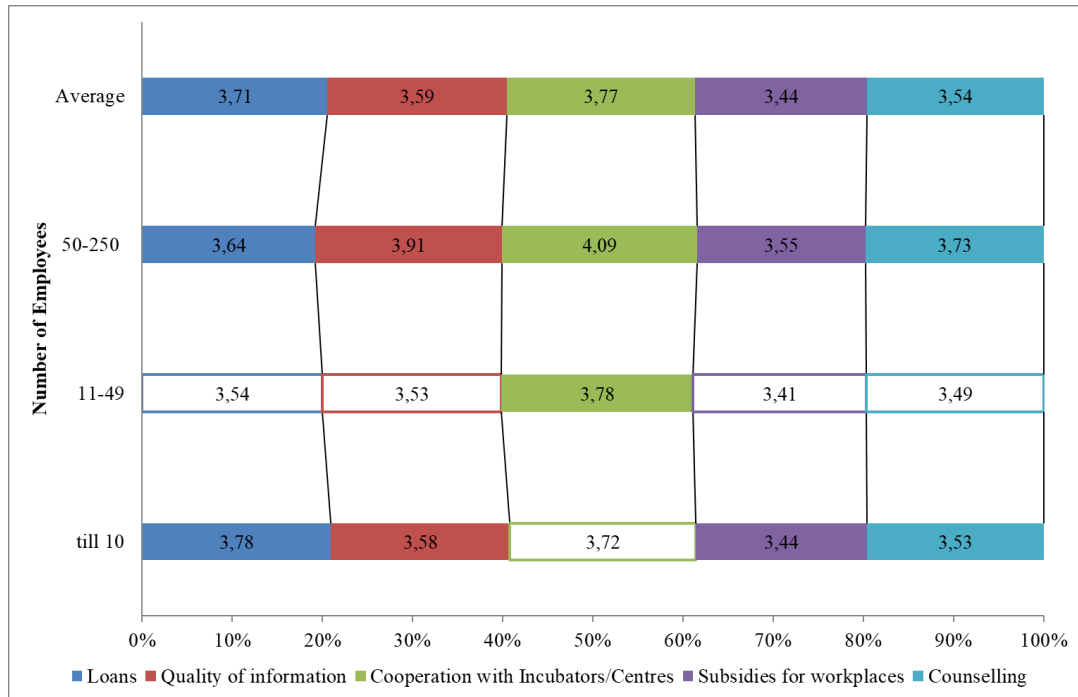
Source: own research

The result showed that each area of support is rated nearly mark four, that means that SMEs in the Moravian-Silesian Region are mostly disappointed by current approach to regional business support, especially in segment in size till 10 employees. The question is, what else could make an influence on business support? A Cramer´s V coefficient of Association was used to be able to evaluate the most statistically significant factors (Table 2).

Tab. 2: Relationship between business demography and business factors

Business Factors	Number of employees		Life cycle		Age	
	Cramer V	sig.	Cramer V	sig.	Cramer V	sig.
Loans	.178	.313	.281	.004	.165	.455
Cooperation with Incubators/Centres	.160	.567	.275	.015	.244	.008
Subsidies for workplaces	.158	.551	.186	.707	.144	.747
Counselling	.161	.514	.280	.006	.207	.079
Quality of information	.123	.879	.262	.020	.163	.487
Knowledge of web section for entrepreneurs	.355	.000	.366	.000	.713	.000
Use of information form websites	.167	.307	.188	.449	.188	.289
Company age	.295	.000	0.240	.000	-----	---
Branch	.593	.000	0.113	.000	.445	.003
Life cycle	.593	.000	.319	.000	---	---
International cooperation	.346	.000	.517	.000	.503	.000
Number of employees	---	---	.482	.000	.295	.000

Source: own research

Previous analysis indicated problematic areas, which could answer the last question about problematic areas – which are namely web pages for entrepreneurs (in relationship to the age of business), support of an international cooperation and financial support. In relationship to those results, survey showed some interesting information. The best benefit for entrepreneurs is subsidies for jobs (38.2%) in area of financial support, followed by collaboration with business centres and incubators (16.1% of respondents) and in 14 % of cases it was support of export activities. The offer of "quite new" forms of business support such as accelerators (4.3%) and coworking centres (1.6%) were hardly ignored by SME owners. According that, we summarized into matrix of problems, using Tague's (2009) method of main areas to be solved in the regional level (Table 3).

Tab. 3: A matrix of Problems According Survey

Problematic area	Importance		Difficulty	Expected Costs	Score Σ
	Regional level (RL)	National Level (NL)	RL/NL	RL/NL	RL/NL
Insufficient business support	5	4	5/3	4/4	14/11
Insufficient range of alternative financial resources	5	4	4/3	4/4	13/11
Insufficient information base for Entrepreneurs	5	5	2/2	2/2	9/9
Support of International Cooperation	5	5	3/3	4/3	12/11

Source: own research, scale: 1-low, 5-high

One of the biggest problem in the examined region is the inadequate or poorly targeted support of small and medium-sized enterprises that have been operated on the market for several years. Survey and data analysis has found that more supporting schemes are available for start-ups or larger enterprises employing nearly 250 employees. Small businesses with up to 10 employees reported that they often insufficient financial resources and information. A creation of an intelligent and continuously functioning business support system would help to unify all the information necessary to obtain business support. Within this system the region could support internationalization activities in one site to do not miss the opportunity to support business development on regional level.

Conclusion

As mentioned before, the biggest problem of the Moravian-Silesian Region is the insufficient support for business. Based on the research carried out, we can confirm that small and medium-sized enterprises in the Moravian-Silesian Region are slowly but surely aging. There are no new businesses because small and medium-sized businesses are under-supported and potential entrepreneurs do not have the necessary incentives to develop their activities. There is also a problem with the introduction of innovations, as older businesses are more conservative than younger ones in the region. Unfortunately, the situation has not changed, as it was seen in the survey published two years ago (Tvrdoň et al., 2015), which revealed that only 18.6% of enterprises, compared to 16% in current research, want to use EU regional aid or support programmes. Based on this information, it can be assumed that there will be no further development of innovative business in the Moravian-Silesian Region.

Acknowledgment

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Contact

Jarmila Šebestová

Silesian University in Opava, School of Business Administration in Karvina

Univerzitní nám.1934/3,733 40 Karviná, Czech Republic

sebestova@opf.slu.cz

Petr Šiška

Silesian University in Opava, School of Business Administration in Karvina

Univerzitní nám.1934/3,733 40 Karviná, Czech Republic

O150627@opf.slu.cz

MANAGEMENT QUALITY AND INNOVATION IN EMERGING COUNTRIES

Oleg Sidorkin

Abstract

Purpose: I study the impact of management quality on R&D propensity (innovation input), R&D spending (innovation intensity) and new product introduction (innovation output) of firms in ten emerging countries. I analyze whether the measures of innovation are associated with the quality of four different management practices.

Design/methodology/approach: I use data on about 1,400 firms from the Management, Organization and Innovation (MOI) Survey (2008 – 2010) by the European Bank for Reconstruction and Development (EBRD) and the World Bank. The effects are estimated using a two-part model, which combines logistic and generalized linear models.

Findings: I find that an improvement in management quality from the 25th to 50th percentile is associated with a 3.3 percentage point increase in the propensity to invest in R&D. Furthermore, there are positive but weak effects of management quality on product innovation. The empirical results for individual management practices show that the quality of incentive management is connected with innovation performance. The quality of monitoring and incentives management is related to higher inputs into innovation, but not to innovation output. All results hold after controlling for differences in management quality by industries.

Research/practical implications: In emerging countries, the quality of monitoring and incentive management practices is especially important for R&D propensity and R&D intensity. While the role of monitoring for new product introduction is weak, incentive management quality has sizable effects. As the study covers emerging countries, the findings may be of particular importance for emerging economies aiming to promote successful innovation.

Originality/value: This paper explicitly focuses on connections between the quality of aggregate management and individual management practices and innovation (input and output) in emerging countries. The empirical analysis presented in the paper helps to explain whether management quality, associated with firms' operations, affects R&D propensity, R&D intensity and introduction of new products.

Keywords: Management quality, R&D, product innovation, emerging countries

JEL Codes: L2, M2, O3

Introduction

Recent empirical studies have revealed a positive connection between management quality and innovation in a number of developed countries (Kremp and Mairesse 2004; Bloom et al. 2014a). However, the question of what types of individual management practices are especially important for innovation input and which types impact innovation output is still open. It is also not clear whether the effects of management quality hold for emerging countries. This paper helps to close this gap. I study how differences in overall management quality and the quality of management practices affect the decisions of firms to invest in innovation input, i.e. to start searching for new solutions (R&D propensity), to accelerate their efforts (R&D intensity) and, eventually, to generate innovation output, i.e. introduce innovative products.

There are two main mechanisms that connect management quality and innovation output on one hand and management quality and innovation input, on the other. First, there is a direct influence of management on innovation output through the individual components of organizational and management processes. These processes support new technologies, new ideas, learning, solving problems, achieving results, aligning corporate goals and others. I can proxy a number of these individual components with relevant management practices that provide incentives, monitor performance, support long-term goals through targeting and help to improve production with operation management.

Second, there is an indirect connection between management and innovation input, such as R&D propensity and e orts. In other words, firms with better management practices, which help them to produce and commercialize products, are more likely to start and boost innovation in the first place.

I confirm that management quality is positively connected both to innovation input and output. I also find that the quality of incentives and monitoring practices plays an important role in starting innovations and boosting innovation efforts, while only the quality of incentive practices is associated with better product innovations.

1   Literature review

Management literature has established a connection between management and firms' innovation. Scholars consider management one of the components of organizational capabilities that allow firms to achieve innovation successes. Teece (1986) points out the importance of complementary assets and capabilities as pre-requisites for successful product innovation and

subsequent new product commercialization. The author highlights the role of capabilities in the production of new products and in the extraction of rents from innovation. Teece also suggests that the availability of these complementary assets and capabilities is crucial for promoting innovation efforts. Hayes, Wheelwright, and Clark (1988) argue that innovation depends on understanding production and management processes specifically, as better understanding these processes is associated with innovation success. Teece and Pisano (1994) point out that if firms aim to support innovations, they need to re-structure their organizational and managerial processes to promote new technologies.

Researchers point out that individual management practices, such as inputs management, knowledge management, strategic management, organizational culture, and others are essential for innovative firms (see Adams, Bessant, and Phelps 2006 for an in-depth review of different management measures). Teece and Pisano (1994) suggest several components of organizational and managerial processes which are important for my analysis. The authors point out that learning helps firms to achieve tasks related to innovation. Learning practices can facilitate problem solving in product production and operations. These practices can be influential, supporting the introduction and production of new products, especially in cases of radical innovations. Teece and Pisano (1994) also argue that organizational processes provide incentives, connecting individual or team behavior to innovation and rewarding high performance. As a result, we should expect a strong empirical connection between incentive management and innovations.

In cases where a performance reward system is established, we should also find a connection between management practices that monitor individual and team performance and innovation output. Griffin and Hauser (1996) point out that innovation processes (R&D efforts) are optimal when focused on long-term goals and that different functional departments work well if they have similar objectives. As a result, management practices supporting long-term goals could be beneficial to a firm's innovation success.

The effects of different management practices may vary in firm, industry and country characteristics. For example, innovative industries focus more on people management, motivation and incentives, while capital-intensive industries pay attention to monitoring and targeting (Bloom et al. 2014b). Moreover, better managed firms tend to employ workers with higher human capital, including managerial ability Bender et al. (2018). Bloom, Schweiger, and Van Reenen (2012) found that the positive effects of management quality on firms'

performance hold for emerging countries. Broszeit at al. (2016) show that small and medium sized firms have lower management quality than large firms.

In this paper I would like to confirm that the quality of individual management practices is connected to innovation input and product innovation in emerging countries, once I control for other conditions traditionally considered in the empirical literature on this topic, such as technological capabilities, opportunities, trajectories and others (Trott, 2012).

2   Data

An empirical study of the relationship between management and innovations is a challenging task because large cross-country surveys covering both topics in detail are relatively scarce. Recently, there have been a number of attempts to improve data collection on innovation (Mairesse and Mohnen 2010). Community Innovation Surveys (CIS) have helped researchers to study the innovation activity of European rms and some non-member nations (Canada, USA, and others). Although CIS does not include questions related to management quality, they cover a number of questions about the introduction of new business practices (organizational innovation). There are a number of empirical studies based on CIS data (see, for example, Mol and Birkinshaw (2009) who analyzed drivers of management changes based on the UK Innovation Survey). There is a number of recent country-level surveys – US Management and Organizational Practices Survey (MOPS) conducted in 2010 and German Management and Organizational Practices (GMOP) Survey conducted in 2014-2015. In this study, I will focus on the first cross-country survey which contains data on management quality and innovation (input and output) in the context of emerging countries.

In October 2008 November 2009, the European Bank for Reconstruction and Development (EBRD) and the World Bank conducted a Management, Organization and Innovation (MOI) Survey, based on recommendations from works by Bloom and Reenen (2006). The managers of about 1,400 firms from 10 emerging countries in the Eastern Europe and CIS countries (Belarus, Bulgaria, Kazakhstan, Lithuania, Poland, Romania, Russia, Serbia, Ukraine and Uzbekistan) were interviewed face-to-face. The organizers conducted the survey in the Russian Far East between February and April 2010. The survey focused mainly on production and operation activities, which include four groups of management practices: operations, monitoring, targeting and incentives. MOI is one of few datasets that allow researchers to study the relationships between management quality and innovation in emerging countries.

The data consists of information from manufacturing firms with between 10 and 5,500 employees. All monetary values have been converted to constant 2005 international US dollars. EBRD provided an additional dataset, in which completed MOI survey interviews are matched to balance sheets and income and loss statements from the Bureau Van Dijk's Orbis.

Tab. 1: Descriptive statistics of variables, included into the analysis

Variables	Obs.	Min	Max	Mean	St.Dev.
Management z-score (aggregate)	834	-4.008	1.841	-0.023	1.032
Operations z-score	834	-4.497	0.814	-0.001	0.995
Monitoring z-score	834	-2.433	1.142	-0.028	0.676
Targeting z-score	834	-1.972	1.332	-0.018	1.005
Incentives z-score	834	-2.448	0.723	-0.025	0.680
Ln(R&D spending + 1)	699	0	1.795	0.065	0.214
R&D propensity	834	0	1	0.376	0.485
New products introduced	832	0	1	0.708	0.455
Ln(Labor)	834	3.401	7.937	4.944	0.844
Higher education (share)	834	0	1	0.275	0.223
Ln(Firm's age)	834	0	5.342	3.048	0.948
Shareholding company (traded)	834	0	1	0.259	0.438
Ln(Permanent full-time empl. weekly hours)	834	3.178	4.094	3.715	0.088
Capital city	834	0	1	0.291	0.455
Foreign (largest owner)	834	0	1	0.082	0.274
High-speed Internet connection	834	0	1	0.829	0.377
Pressure from imports	834	0	1	0.683	0.465
Ln(Fixed assets)	504	-9.390	5.522	1.536	1.768
Return on total assents (ROTA)	503	-79.48	75.91	3.614	16.52

Source: Author's calculations based on the EBRD and the World Bank MOI Survey

Following Bloom, Schweiger, and Van Reenen (2012) I group questions into four main categories: operations (one question), monitoring (seven questions), targets (one question) and incentives (three questions). The operations question aims to answer how firms deal with process problems. Monitoring questions reveal the use of production performance indicators. The target questions cover the setting of time targets. Incentives questions are related to employee reward, promotion and dealing with poor performance.

Following the suggestions of Bloom, Schweiger, and Van Reenen (2012) for the MOI survey, I assign scores to responses for each management question such that a higher score means higher quality of the management practice analyzed. Although this assignment might look somewhat subjective, survey organizers tried to formulate the questions so that the answers could be ranked, and I follow their recommendations. Further, I calculate z-scores by

normalizing scores for each question to mean zero and standard deviation one[23]. Normalization is a necessary step, because each question could have a different number of answers, and thus, I would need to normalize answers in order to make them comparable.

The descriptive statistics of z-scores (aggregate and by individual management practices) as well as main variables, included into the analysis, is presented in Table 1.

Fig. 1: The diffusion of management practices by firm size
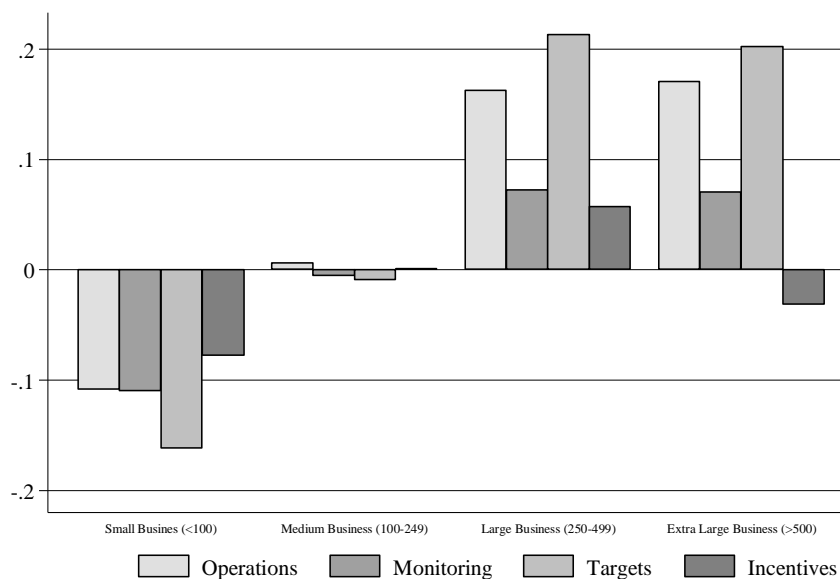
Source: Author's calculations based on the EBRD and the World Bank MOI survey

The diffusion of four management practices by firm size (small, medium, large, extra-large business) is depicted in Figure 1. We see that, in general, management practices are positively connected to firm size. For very small firms, formal management practices are of lesser importance. As the size increases, it becomes more di-cult for managers to have direct influence on day-to-day production processes, communication with external sources, innovation activities and other tasks. As a result, managers must rely on formal practices to manage the growing firm.

The diffusion of four management practices by R&D propensity (No – do not invest in R&D; Yes – invest in R&D) and by the introduction of new products (No – no new products are introduced, Yes – new products are introduced) are presented in Figure 2. The chart suggests a

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[23] This is a standard way to calculate aggregate measures of management quality, widely used in other surveys, such as Management and Organizational Practices Survey (MOPS) and World Management Survey (WMS). There could be other approaches.

positive connection between the quality of individual management practices and the decision of firms to invest in R&D as well as innovation output in terms of new products introduced, across all management practices. We see that firms which invest in R&D and introduce product innovations have higher quality management practices.

Fig. 2: The diffusion of management practices by R&D propensity and the introduction of new products
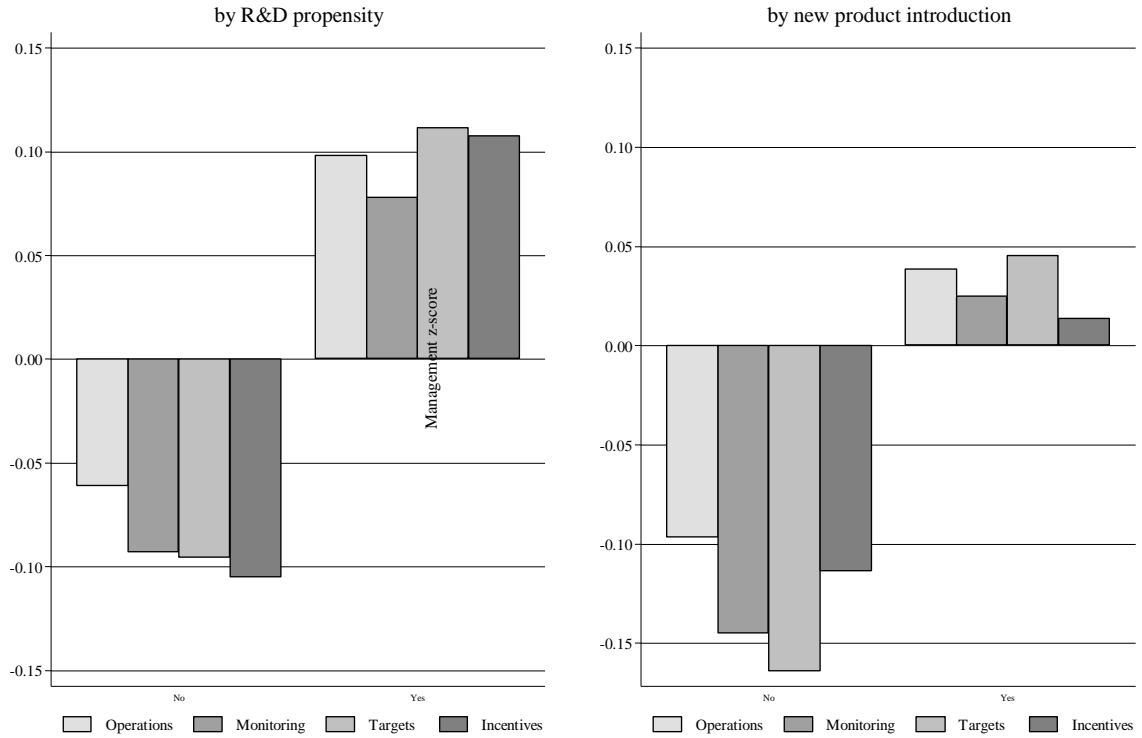
Source: Author's calculations based on the EBRD and the World Bank MOI survey

As a result, our data contains explicit patterns connecting management quality and innovation, which we would like to study in detail using an empirical model, described in the following section.

3   Model

The empirical model to be estimated is as follows:

$$R\&D_{ic} = \alpha_1 l_{ic} + \beta_1 k_{ic} + \gamma_1 M_i + \delta_1 Z_{ic} + u_{1ic} \tag{1}$$

$$y_{ic} = \alpha_2 l_{ic} + \beta_2 k_{ic} + \gamma_2 M_i + \delta_2 Z_{ic} + \theta_2 R\&D_{ic} + u_{2ic} \tag{2}$$

where $R\&D_{ic}$ is a measure of innovation input (R&D spending per employee) and y_{ic} output (new products introduced) of firm i in country c, l_{ic} the logarithm of labor, k_{ic} the logarithm of capital; M_i the measure of management quality (aggregate quality of management and four different management practices); Z_{ic} - other control variables which affect innovation, such as workforce characteristics (share of employees with university degrees and the average weekly hours worked), firm characteristics (firm age and whether it is listed on a national or international market), a set of two-digit industry, country and year dummies in which interviews were conducted (2008, 2009, 2010). u_{1ic}, u_{2ic} - error terms.

I use two model specifications:

1. I include only an aggregate measure of the management quality to test whether this variable is connected to different measures of innovation input and output.
2. I include quality measures for four individual management practices (operations, monitoring, targeting, incentives) to test their association with innovation measures.

According to the design, model (1) is nested in model (2). It is important to note that the analysis can reveal only conditional correlations. The effect in the model (1) are estimated with a two-part model. It combines the effects on R&D propensity and intensity using different underlying processes: logit for propensity equation, and a generalized linear model (GLM) with logarithm of dependent variable for values greater than zero for the intensity equation. Model (2) is estimated with a logistic regression.

I use a dummy variable for the Eastern Europe to separate the fixed effects of European vs CIS (the Commonwealth of Independent States) countries on innovation input and output variables. Although a causal relationship between management quality and innovation indicators is likely to exist, it is not possible to control for possible endogeneity and to measure precise causal effects.

4   Results

In this section, I present the findings of how management quality is correlated with innovation for two basic specifications: aggregate management quality and quality of individual management practices. Table 2 presents raw effects for R&D propensity (1.1, 2.1), R&D intensity (1.2, 2.2), combined in a two-part model with R&D spending as a dependent variable, and the introduction of new products (3, 4).

Tab. 2: Regression: R&D propensity, R&D intensity, New products introduced

Models	TPM (R&D spen.)		TPM (R&D spen.)		Logit (New prod.)	
	(1.1)	**(1.2)**	**(2.1)**	**(2.2)**	**(3)**	**(4)**
Management z-score	0.249**	0.075			0.203	
	(0.097)	(0.058)			(0.128)	
Operations z-score			-0.033	-0.001		0.110
			(0.111)	(0.076)		(0.140)
Incentives z-score			0.376**	-0.059		0.029
			(0.159)	(0.089)		(0.213)
Targeting z-score			-0.019	0.122**		-0.043
			(0.097)	(0.061)		(0.142)
Monitoring z-score			0.464***	0.036		0.453**
			(0.171)	(0.113)		(0.209)
Eastern Europe	0.905**	0.363	0.944**	0.289	0.652	0.785
	(0.442)	(0.258)	(0.447)	(0.256)	(0.966)	(0.990)
Ln(Labour)	0.268**	-0.082	0.289**	-0.091*	0.312*	0.318*
	(0.129)	(0.057)	(0.132)	(0.055)	(0.173)	(0.175)
Ln(R&D spending)					5.987	5.905
					(3.880)	(3.844)
Country fixed effects	Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes	Yes
Pseudo R^2	0.113		0.126		0.165	0.173
Prob $> \chi^2$	0.001		<0.001		0.036	0.052
Observations	699	177	699	177	387	387

Standard errors in parentheses. $* < 0.10$, $** < 0.05$, $*** < 0.001$

Source: Author's calculations based on the EBRD and World Bank MOI survey

I find that R&D propensity strongly increases with the aggregate measure of management quality (model 1.1), although the effect of R&D intensity (model 1.2) is not statistically significant. That is, if the management z-score grows from the 25 percentile to the median value (which is equivalent to an increase in z-score from -0.67 to 0.12), the probability of positive R&D spending increases by 3.3 percentage points (see Table 3, Model 1.1). At the same time, the combined expected value of positive R&D spending increases by 2.3 percentage points. A pairwise comparison of the estimated marginal z-scores at 25th and 50th percentiles is statistically significant at a 5% significance level for R&D spending. If we keep in mind that the normalized z-scores of aggregate management quality range from roughly -4.0 to 2.0 for all firms in the data sample, the relationship is quite strong.

Tab. 3: Pairwise comparison at 25th and 50th percentile

	beta	st. error	z-stat.	p-value
Model (1.1) R&D propensity				
1. Management z-score (25th pctile)	0.195	0.019	10.24	< 0.001
2. Management z-score (50th pctile)	0.228	0.018	12.84	< 0.001
Pairwise comparison of 1. and 2.	0.033	0.012	2.65	0.008
Model (1.1-1.2 combined) R&D spending				
1. Management z-score (25th pctile)	0.057	0.013	4.32	< 0.001
2. Management z-score (50th pctile)	0.061	0.014	5.65	< 0.001
Pairwise comparison of 1. and 2.	0.023	0.011	2.21	0.027
Model (3). New product				
1. Management z-score (25th pctile)	0.728	0.057	12.87	< 0.001
2. Management z-score (50th pctile)	0.759	0.051	14.94	< 0.001
Pairwise comparison of 1. and 2.	0.031	0.020	1.53	0.126

Source: Author's calculations based on the EBRD and World Bank MOI survey

Among individual practices (model 2.1 of Table 2) the quality of monitoring and incentives have strong positive effects, as expected. At the same time, the quality of operations and targeting practices have no statistically significant effects on R&D propensity. In my dataset, operations and targeting have the least variation among all management practices, as each of them has only one underlying question, and, as a result, they depend heavily on exact wording. As discussed above, I expect that firms which effectively work on solutions to production problems are more likely to become innovators. The operation question in the MOI survey focuses on the general handling of a wide range of problems in production processes (i.e. machinery breakdown, human error, etc.). The actual variation in answers might not be sufficient to reveal the quality of operation practices and their connection to innovation. It is likely that the incentive component plays an important role, as the complexity of innovation process requires a different set of incentives than in the production.

The model shows that target practices have no statistically significant effects on R&D propensity, but it is the only group of practices, which matters for R&D intensity. Although the survey question relates to the "production targets for its main product", it could be a good approximation of a corporate goal-setting strategy. Further studies are necessary to confirm whether this result persists.

Although I expected that the quality of all management practices would play an important role for new product introduction in emerging countries, I did not find support for this hypothesis in the empirical results. This result calls for further empirical research.

It is possible to argue that measures of management quality might differ across manufacturing sectors. For example, the management quality achieved by top firms in certain sectors might be considered mediocre in others. The differences in management z-scores by industries on average are not substantial at maximum values (i.e. 'best' management quality), but are striking in terms of minimum values (i.e. 'worst' management quality). Some sectors, such as electronics, have relatively higher values. I account for these differences and normalize scores by firms in each sector (2-digit code) separately. The overall results hold after controlling for differences in management quality by industries.

Conclusion

This paper explicitly focuses on connections between the quality of aggregate management, individual management practices and innovation (input and output) in emerging countries of the Eastern European and CIS. The empirical analysis presented in the paper helps to explain whether management quality, associated with firms' operations, affects R&D propensity, R&D intensity and the introduction of new products. This study provides evidence that better aggregate management quality is associated with a higher propensity of firms to invest in R&D and while the effect on intensity of their R&D spending is not statistically significant. The effects of management quality on the introduction of new products are positive, but this relationship is weak and the improvement of management quality is not directly related to a significant increase in the probability of new product introduction. As a result, although management quality does not guarantee the successful introduction of new products, it may have an indirect positive result through higher R&D propensity and intensity. The results hold after controlling for differences in management quality by industries. The MOI survey has certain limitations, as it includes a limited set of questions for each management practice and does not provide a large coverage of developed economies for comparative analysis. Therefore, further studies analyzing quality management practices using wider definitions of management are needed. These would help to establish the direct and indirect links between management practices and the innovation output of different firms.

Acknowledgement

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Contact

Oleg Sidorkin

Leibniz-Institute for East and Southeast European Studies

Landshuter Str. 4, 93047 Regensburg, Germany and CERGE-EI, a joint workplace of Charles University and the Economics Institute of the Czech Academy of Sciences

Politickych veznu 7, 111 21 Prague, Czech Republic

sidorkin@ios-regensburg.de

BUSINESS-IT ALIGNMENT WITH CASH-FLOW BASED PRICE-GENERATING MODEL FOR IT SERVICES

František Simetinger

Abstract

Purpose: This paper is focused on the actual perception of strategic alignment of IT and business. The goal of this research is a summarization of understanding the IT-related assets and identification of actual situation and gaps in the business-IT alignment. The main output of this paper is a proposal of the alternate conceptual method (model) which can change the understanding of business-IT alignment options.

Design/methodology/approach: The literature research was conducted with the goal of identification actual situation and issues in the Business-IT alignment area from IT Governance, IT-related assets, and Strategic Management perspectives. Considering identified issues, new research results based on previously presented conceptual ideas and models are introduced. There are described developed metrics which address identified issues.

Findings: Regardless of developments in the subject areas, the financial and economic perspectives of strategic IT management stay underdeveloped. This fact contributes to the disproportion of business and IT activities. For better alignment of business and IT is needed to find a more suitable way how to synchronize goals on short, mid, and long-term basis and how to improve their interconnection.

Research/practical implications: The proposed conceptual method is relevant for strategists from business and IT. It provides new perspective how to understand relationships between business and IT and it shows new direction how to design future business models.

Originality/value: The proposed conceptual method is unique and provides an alternate viewpoint to business-IT alignment topic. It provides options for harmonization of activities of business and IT.

Keywords: Business-IT alignment via IT services, business model, IT strategy, pyramidal decomposition of EVA, cash-flow in IT

JEL Codes: G12, M15, M21

Introduction

Business-IT alignment is discussed and recognized as one of the most critical areas of modern management. Companies and organizations understand the importance of this discipline for their success. Based on the conclusion of another study (Dahlberg, Kivijarvi, & Saarinen, 2015), the main advantage of well-managed business-IT alignment is a positive influence on IT management and consistency of investments into IT. These authors also elaborated and analyzed other sources related to business-IT alignment topic in their study. According to (Henderson & Venkatraman, 1993), they divide the business-IT alignment into the strategic and operational level and accept concentration of decision-making power to IT governance level. Other benefits are cited from (Petter, deLone, & McLean, 2013), especially good impact on business operations in the case of high quality of business-IT alignment, or in other direction, the recognition of IT importance on the side of the business.

The relation between business-IT alignment and IT governance is also described in other research (Wu, Straub, & Liang, 2015), where the combination of IT governance, business-IT alignment and pursuing of business goals is called "IS strategy" (Wu et al., 2015). They identified the positive impact of business-IT alignment on organizational performance as well as in the previously referenced study. They describe the relation between IT resources and IT-based value creation (also called as organizational performance) via IS strategic alignment (in other words business-IT alignment) in the conceptual model of their research. Regarding value creation for business, they reference another article (Van Grembergen & De Haes, 2012) where effects of right IS strategic alignment are described "enabled both business and IT people to execute their responsibilities in support of business/IT alignment and creation of business value from IT enabled investments" (Van Grembergen & De Haes, 2012).

Researchers (Wu et al., 2015) also elaborate the connection of IS strategy alignment to the strategic perspective of management. They carried out the comprehensive analysis of varied articles and identified factors and important areas. Especially, they discussed planned and realized strategies (both IS and business), the importance of engaging of top management members, and the importance of resources management of the organization. Their conclusions are in consonance with strategic literature (Wit & Meyer, 2014). In this publication, modern approaches to solving strategic problems are summarized and it includes valuable references. Basically, it describes the importance of business model, related value chain, supporting resources, and organizational structure and issues related to these areas which strategic

management faces. Publication references article (Dierickx & Cool, 1989) with the explanation, that resources used within the business model are assets.

The additional perspective of business-IT alignment is financial perspective, planning and investing. This topic grows on the importance. The used methods are discussed in the studies (Festa, Cuomo, & Metallo, 2015; Wu et al., 2015) and there are as the most common methods mentioned ROI (Return on Investment), ROE (Return on Equity), and NPV (Net Present Value). In addition (or in the specific cases), there are mentioned also methods like BSC (Balanced Scorecard) or EVA (Economic Value Added). It is important to add that every method is suitable for different situation within financial management, but they are sharing a similar trait - this kind of financial activities are performed as part of the planning phase of IT implementation project.

This paper elaborates and discusses the deeper integration between the business model of organization and IT related activities. Research results of studies mentioned above provide inputs for assumptions for the introduced approach to business-IT alignment. The specific findings from studies cited above which support and refine conditions for introduced principles and conclusions are used and cited within the text accordingly.

This paper has following structure: the first part is focused on IT services and their perception as intangible assets. The second part is focused on financial and business perspective. How business models are related to IT services and which financial methods are commonly used in this context. The third part introduces the recent results of research-based alternative price-generating conceptual ideas and models. There are described new principles based on these ideas and models which may improve the alignment between business and IT via correctly priced IT services. In the end, the conclusion part summarizes the result of discussion and provide the outlook for the future.

1   IT Services as Intangible Assets

Detailed elaboration of intangible assets in IT environment is available in (Saunders & Brynjolfsson, 2016). This article provides a general definition of intangible assets and comparison of IT-related intangible assets with other created intangible assets.

According to the article, as one of the major issue is identified insufficient capturing of IT-related intangible assets on corporate balance sheet. It raises the important question, how to determine a value of such created intangible assets. Authors use a comparison of IT-related

intangible assets to IT capabilities. Authors also state that IT capabilities is not possible to simply replicate or copy due to involvement a "system of practices" (Saunders & Brynjolfsson, 2016). In other words, IT capabilities are based not only technological pieces which can be purchased. Authors stated: "broadest measure of IT includes all hardware and software, internal IT services, IT consulting, and IT-related training" (Saunders & Brynjolfsson, 2016). So, it could be possible to understand IT services as the subset of IT capabilities and they take the properties of IT-related intangible assets.

Regarding the properties of IT-related intangible assets, (Saunders & Brynjolfsson, 2016) introduce several groups of IT-related assets. By (Saunders & Brynjolfsson, 2016), the following IT assets are introduced: Hardware, Prepackaged Software, Custom and Own-Account Software, Other Internal IT Assets, IT Consulting, IT-Related Training, IT Capabilities, and R&D Assets. As an example, internal IT services are assigned to Custom and Own-Account Software and Other Internal IT Assets groups within the text.

But, if we consider a different scenario of externally provided IT service when this IT service is developed, operated and supported (in the mean of IT service's user support) by some service provider. In this case, there are bound additional different groups of IT assets. Such externally provided IT service can be perceived as a more complex composite entity than as it is described by Saunders (2016). To already involved groups of IT-related assets can be added groups: hardware (underlying technical resources for the operation of IT service) and IT capabilities (involvement of user/customer support means involvement of human resources). On the other hand, it is important to keep in mind that the mix of involved types of IT-related assets is dependent on the phase of IT service lifecycle. During development, hardware and IT capabilities are not involved in such high rate as during the phase when IT service is productive and provided to the customers.

2   Financial Perspective of Business-IT Alignment

The scenario of externally provided IT service can be also assessed from revenue/cost perspective. In the case of simple scenario, such externally provided IT service is provided with the goal of achieving profit.

In the more complex scenario, IT service is part or key supporting resource of a business model of organization. In such case, IT service is an integral part of wider business activities.

2.1   Business Models and IT Services

In the introduction of this paper was mentioned strategic literature (Wit & Meyer, 2014). This publication detailly described the strategizing process which leads an organization to the sizing of new opportunities and strengthening the market position.

The goal of the strategizing process is reorganization and creation of resources. The result of the strategizing process is a strategic plan with actions, business model, value chain and corresponding organization structure (Wit & Meyer, 2014). As it was mentioned in the introduction, the resources bound in the business model can be perceived as assets (Dierickx & Cool, 1989).

Ideas and principles about business models are detailly elaborated in (Osterwalder, Pigneur, Smith, Blaheta, & Movement, 2015). The steps described in this publication are following the principles described in (Wit & Meyer, 2014), but it is focused on activities related to designing and developing of business models. According to (Osterwalder et al., 2015), the business model consists following components: Key Partners, Key Activities, Key Resources, Value Proposition, Customer Relationships, Channels, Customer Segments, Cost Structure, and Revenue Streams.

According to conclusions from the part "IT Services as Intangible Assets" of this paper, components Key Activities, Key Resources, and Value Propositions are important from asset perspective to IT services.

Value Proposition is the subject (with value) of delivery to the customer/consumer with all its traits (price, quality, quantity, brand, and other products). Key Activities are activities needed for delivering of Value Proposition (it includes support, production or technological functions, and capabilities). Key Resources are all types of assets needed for delivering and producing of Value Proposition (tangible, intangible, human resources and financial resources) (Osterwalder et al., 2015; Wit & Meyer, 2014).

Business models have own lifecycle phases or process of development: Preparation, Cognition, Options Identification, Implementation and Improvement (Osterwalder et al., 2015). The similar approach and even additional perspectives about the lifecycle of business model, especially continuity/discontinuity, are introduced in (Wit & Meyer, 2014). Important is the fact that creation of the business model is not single action at the beginning, but it is a continually developed campaign with growing trend of revenues.

In the case that IT service is part of value proposition or key resources of business model, it is needed to perceive IT service and its economical traits in the same manner - as an element which must reflect and adapt to changes in the environment of the business model. The strategic development of business model can be solved via a combination of revolutionary and evolutionary changes. It is called "The Paradox of Revolution and Evolution" (Wit & Meyer, 2014).

2.2   Used Financial Methods

There is also another perspective on the strategic planning - profitability. The profitability is a very important topic in modern business because high profitability provides important advantages (including simple access to additional capital). But, at the same time, pressure on high profitability brings negative side effects. In the context of business models, the significant negative side effect is a reluctance to accepting long-term and resource demanding projects and investments. It is simpler to focus on short or mid-term targeted goals and investments without or with limited negative effect on the profitability (Wit & Meyer, 2014).

Focus on short-term thinking is even more obvious in the IT area and IT investments. Authors (Festa et al., 2015; Wu et al., 2015) listed in their studies some commonly used methods for evaluation of financial perspective to IT: ROE, ROI, ROA (Return on Assets), NPV. These methods are reliable, but they have a shortage - focus on the initial phase of planning (as it was mentioned in the previous text). In other words, they assess the feasibility of the investment. At the same time, they do not take into account possibility of variability in the future. They are static. The phases of IT service development and operation are decoupled. This deepens the mismatch between (dynamic) business and (static) IT. In result, this state is against business-IT alignment improvement. The possible solution is using of valuation or price-generating models which consider dynamic nature of the business and which can define economical parameters as other business model components.

An alternative approach, the concept of integration via cash-flow based methods was presented in a seminar (Simetinger, 2015). In this presentation, the methods of economic analysis were discussed as possible tools for measurement and description of IT services economic properties. As a basis, there are used cash-flow models FCFF (Free Cash Flow for the Firm) and FCFE (Free Cash Flow to Equity). As a hypothetical vision of this approach and the subject of the ongoing research, the "Composite EVA Model" was introduced.

3 Price-Generating Model Based on Cash-Flow

The more detailed and deeper description of "Composite EVA Model" is the result of recent progress in the subject area. With the focus on the gaps in Business-IT Alignment mentioned in the previous text, the functions of this model were developed and described in the following text.

3.1 Description of "Composite EVA Model" Prototype

The model does not use commonly known EVA indicator based on NOPAT and capital costs (capital and WACC). It is used the extended (derivate of common construction) variant of the formula in the form of pyramidal decomposition. For the better fit with IT services requirements, there are replaced NOPAT and capital costs components by specific ones. There are defined components "Service CF" and capital costs are based on CROGA instead of WACC. The whole model is visible in Figure 1. For better understanding, the simplified scenario (for instance internal IT provider of IT services within holding company) is considered.

Fig. 2: Pyramidal decomposition of "Composite EVA Model" (simplified scenario)
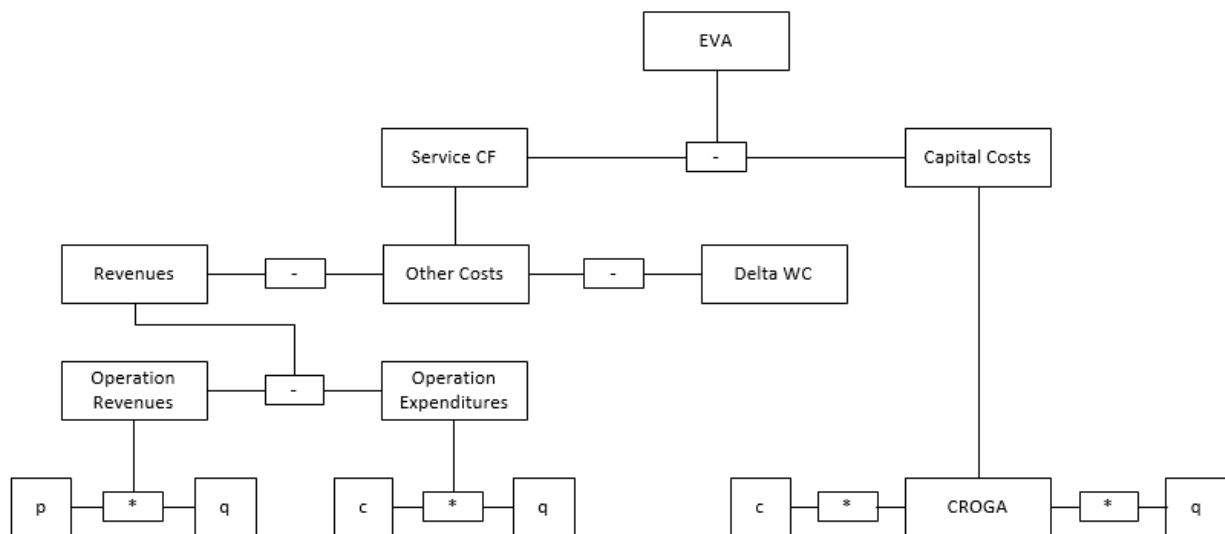
Source: Author

The basic inputs of this model are "c", "p", and "q". These variables are determined by unit costs, unit price, and quantity. Real representation of these variables depends on the type of IT service (it can be one transaction, one user per month, one PC, and etc.). They are inputs for synthetic components Service CF and Capital Costs. Service CF represents cash-flow generated by IT service. In fact, it is modified FCFF or FCFE (it depends if the taxes are considered – hidden in the component "Other Costs"). Indicator CROGA represents assets performance and it is based on operations assets, working capital, and amortization. The composition of CROGA

and Delta WC are the actual weak points of this model because they reflect the costs of human capital. These areas are the subject of additional planned research.

There are two main functions of this composite model. First is the determination of such p when EVA = 0 (fair price). In such case, there are covered costs and the used assets are not debased. Such p is usable for internal IT services providers (for instance within holding company). Second is the determination if the particular p is cost effective. It means that EVA >= 0. This is the evaluation of p if it is viable and economically reasonable.

3.2 Connection between IT service and Business Model

The connection between IT service and business model is shown in Figure 2 and it continues with the description of the simplified scenario. Purpose of this example is the introduction of payments for IT service as integral part of costs of the business model which uses this IT service.

Fig. 2: Connection between IT Service and Business Model
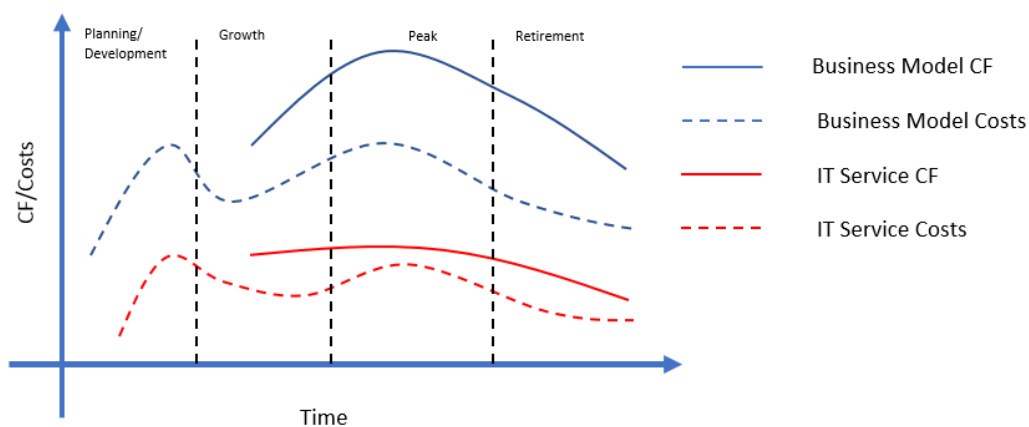
Source: Author

The figure introduces a simple variant of the ideal relation between IT Service CF and total cash-flow of a business model. In this case, IT Service CF represents payments received from business for using the IT service without any deductions. Business Model CF is the cash-flow generated by the business model. In this simple example, alignment of costs is visible during life-cycle phases of the business model (especially in planning/development and growth phases of IT service and business model).

IT service provider acts as a real partner of business in this scenario. Both sides are connected via payments for IT services and they are equal participants of the business model. The risk is shared by both sides but at the same time, the profits are distributed according to defined prices

with targeted rentability. IT service provider (or IT department) is not only entity involved at the beginning of the business project.

Conclusion

This paper is focused on IT strategy development and business-IT alignment improvement. There are summarized results from researchers of IT investments, IT-related assets and IT governance areas. Additional relevant facts are gathered from the respected professional literature. The interconnection between IT-related assets, IT governance, IT strategy and business-IT are discussed. The discussion confirms the importance of well-aligned strategies and resources for the success of the organization or company. At the same time, the harmonization between business activities and activities of IT is still not achieved. According to financial perspective, there is still supported the model where IT services provider acts as the secondary entity involved only in the limited period in the planning of large business projects.

This paper introduces results of currently ongoing research which has the goal not only fill the gap in the harmonization of IT and business but the change of the whole paradigm of cooperation between these two sides. As main output is described the prototype of the new model for definition of internal and external prices for IT services. This model is still under development and intensive research but provides promising results in the area of communication between IT and business. It provides the opportunities for the economic reasoning of costs for IT services and involvement of IT within the whole lifecycle of the business model.

Acknowledgment

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Contact

František Simetinger

Department of Information Technologies, Faculty of Informatics and Statistics

University of Economics in Prague

W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic

simetinger@outlook.com

REGULATION OF ENVIRONMENTAL ASPECTS IN SPECIAL ECONOMIC ZONES

Olga Sinenko – Igor Mayburov

Abstract

Purpose: The aim of this study is to identify contemporary trends in environmental management in special economic zones. Transformations sustained by special economic zones in terms of the use of fiscal instruments in the past few years could become a real tool for combating environmental issues.

Design/methodology/approach: The main source of research is the data of official sites of territories with special economic and ecological status. External secondary data research is based on publications of World Bank, UNIDO, GGGI, PEDL. Our own research is complementary and allows us to compare it with the secondary sources that underlie these considerations. Depending on the level of ecological development, a system of types of special territories is proposed. After summarizing the publications devoted to the practice of functioning of special territories with ecological orientation, the authors singled out the main components of the successful work of the "green" SEZs.

Findings: A classification of "green" special economic zones has been created. The authors have analyzed and validated fiscal incentives encouraging the adoption of environmentally friendly practices in special economic zones. The key components of the successful operation of "green" SEZs have been distinguished and classified

Research/practical implications: The proof of the efficiency of fiscal means of encouraging environmentally friendly practices in special economic zones and of the key components of green performance of special economic zones could be useful for SEZ planners in Russia, enabling them to take appropriate preventive measures. The results of this study could serve as a starting point for hypotheses in further research aimed, for example, at the development of a universal approach to evaluating the efficiency of fiscal mechanisms of environmental regulation in special economic zones in Russia.

Originality/value: The article presents a comprehensive overview of applicable environmental regulation mechanisms in special economic zones. The study validates the key components, including fiscal instruments that pertain to successful eco-friendly green performance of special economic zones.

Keywords: environment compliance zone, pollution control zone, green zone, ecotown, eco-industrial zone, low-carbon zone, environmental tax

JEL Codes: G280, H23

Introduction

For the past 30 years, special economic zones (SEZs) have been playing an important role in industrial development, attracting investment and creating jobs in developing countries. At the same time, industrial zones are the biggest sources of greenhouse gas emissions in many countries. In South Korea, about 650 industrial parks account for 63% of industrial emissions in the nation, according to the Korea Industrial Complex Corporation. Over 3,000 SEZs across the globe could become a real tool of mitigating environmental problems and reducing greenhouse gas emissions. Contemporary trends in environmental management in special economic zones are finding wider acceptance in developing countries under the growing pressure of governments, regulators and civil society.

1 Methodology

Authors took a systematic approach to search the relevant information regarding special territories with an environmental focus. As the data source for the research, pointed out as the most important, is official sites of special territories: eco-industrial parks, eco-cities, low-carbon zones and other. The authors present a classification of special economic zones based on their level of sustainability. The objectives of environmental development and mechanisms of environmental regulation are described for each type of zone. After summarizing and researching more than 50 the significant publications regarding special territories with an environmental focus, the bibliometric analysis was performed. The search included articles (WoS, Scopus) published until 2018, combining the terms "Eco-Town", "Eco-Industrial Park", "Green zone", "Circular economy zones", "Low-carbon Zone", "Pollution Control Zone", "Environment Compliance Zone". In research the authors distinguished the main components of the successful operation of "green" SEZs".

External secondary data research is based on publications of World Bank, UNIDO, GGGI, PEDL. A study by the World Bank (Kechichian, E., Mi, Hoon Jeong, 2016) observes that special economic zones are heading toward a more comprehensive and integrated eco-system approach to economic development, but the types of zones are not defined. Zones 1.0 were dominated by industrial zones as export-processing zones that attract FDI. Zones 2.0 enforced adherence to environmental standards. One of the main attributes of the Zone 3.0 is the implementation of energy efficiency measures. Depending on their national or local priorities, countries develop different types of "green" SEZs focusing, for example, on greenhouse gas

emissions reduction or waste management. Own research is complementary and allows its comparison with the secondary sources that underpin the considerations.

2   Special economic zones: emphasis on ecology

Summarizing the experience of previous models of industrial zones, we highlighted the growing influence of environmental factors on the policy and institutional framework of special economic zones. There is a wide range of approaches to identifying "green" zones, but there is no approved classification of green zones. Figure 1 presents the authors' classification of special economic zones based on their levels of sustainability.

Fig.1: Sustainability spectrum of green industrial zones

Circular economy zones
Ecocity, Ecotown

Eco-industrial Zone (Eco-industrial Park)
Low-carbon Zone
Green Zone, Cleantech Clusters

Pollution Control Zone
Environment Compliance Zone
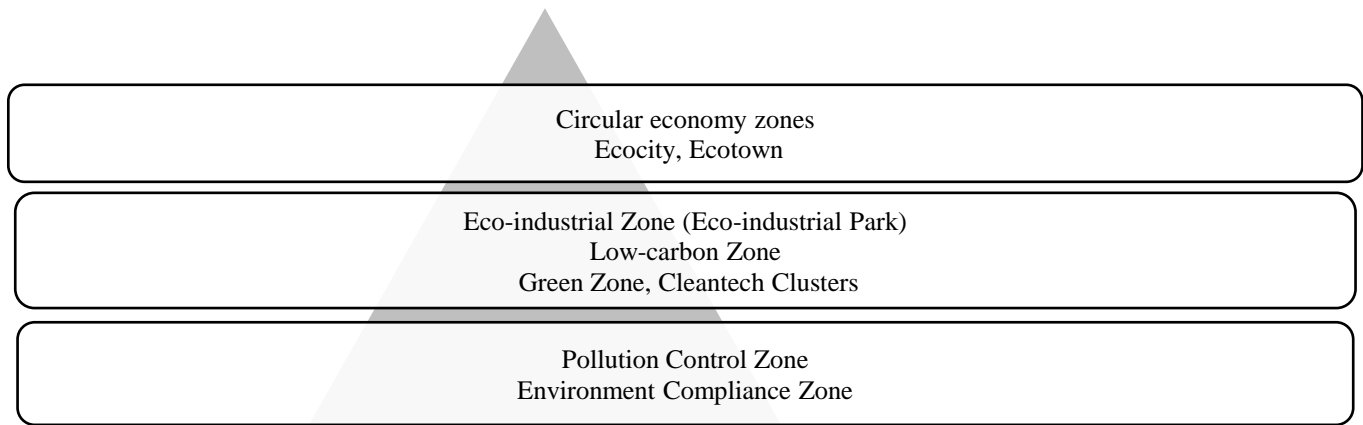
Source: compiled by the authors

Pollution control zones or environment compliance zones could be considered an early form in this spectrum. Its main emphasis is on the implementation of effective measures for pollution control and environmental compliance, such as air pollution control, centralized services for wastewater treatment, hazardous waste collection and disposal, and environmental training programs for tenants. The main environmental management tool that is utilized in such zones is the International Organization for Standardization (ISO) 14001:2015 Environmental Management System.

Eco-industrial zones (parks) go beyond simple environmental management, presenting a more advanced sustainability tool. Its purpose is to holistically manage resources, energy, and the environmental impact. Eco-industrial zones (parks) employ the concepts of "industrial symbiosis" and "green technology" to reduce pollution through waste reduction and better environmental performance (Zeng, D. Z., 2017). "Industrial symbiosis" means that companies establish networks in the zone to exchange waste and by-products from one company to another

to be reused in another production process and collectively consume water, energy and other resources. (Wen, Z., et al., 2018). A study of over 250 eco-industrial parks conducted by the World Bank in 2016 found that all of them had used various mixes of environmental management tools. For example, 50% of them take measures on waste management and energy efficiency; 45% run the system of "industrial symbiosis" (IS), and 35% use renewable energy and waste management measures (Table 1).

In 2003, the Korea National Cleaner Production Center (KNCPC) launched a project spanning 15 years to transform five industrial parks into eco-industrial zones. Thanks to the adoption of greener technologies and construction of "industrial symbiosis" facilities, carbon dioxide (CO_2) emissions decreased by 6.48m tons and other toxic gases by 1.09m tons between 2005 and 2014. Private investments in R&D and "industrial symbiosis" facilities and infrastructure totaled 623.7 million US dollars, enabling the creation of 848 jobs and spurring technology development (56 new patents and 100 pending patents). Participating companies made around 1,680 million US dollars in revenue from saved resources or selling waste and by-products through IS systems (GGGI, 2017).

Tab. 1: Sustainable measures in eco-industrial parks (EIP)

Environmental management tool	Number and percentage of EIPs taking the measure	
	number	%
Waste management	109	51
Energy efficiency	106	50
Industrial symbiosis	95	45
Resource efficiency	75	35
Renewable energy	74	35
Water management	70	33

Sources: Kechichian, E., Mi Hoon Jeong (2016), Bellantuono, N., et al. (2017).

The *low-carbon (green) SEZ* is the most advanced concept in terms of environmental sustainability. Apart from pollution control, energy efficiency and renewable energy measures and construction of buildings and factories using "green" building codes, low-carbon SEZs seek to reduce their carbon footprint and mitigate climate change in the process of their activities (Saavedra, Y. M., et al., 2018). Similarly, to eco-industrial parks, green zones encourage tenants to utilize less resources and adopt "industrial symbiosis" systems inside and outside the zone. Green zones provide incentives for research and development in the field of eco-friendly technologies.

CleanTech clusters are gaining recognition as a new trend in economic and industrial growth. CleanTech clusters differ from traditional eco-industrial parks, but still play an important role

in spurring the adoption of sustainability approaches. Fifty-three Cleantech clusters have been established so far, with 21 of them based in Europe (Ecoworld Styria, Copenhagen Cleantech, French Cleantech, South Poland Cleantech Cluster etc.). The projects are aimed at rendering support to green industries, promoting the transition to green economies and mobilizing investments in the sustainable development of eco-systems.

According to the authors in the spectrum of eco-friendly SEZs, *circular economy zones* are at the apex of sustainable development. The circular economy model implies the circular use of raw materials in production and consumption, that is, a closed loop production cycle that does not deplete natural resources and does not contribute to environmental pollution. (Saavedra, Y. M., et al., 2018). In China, the model of "circular economy system" has been adopted in iron-steel-making, resulting in a 97.09% water reuse rate, 100% gas recovery rate, 100% iron dust utilization rate, 100% slag utilization rate, 100% steel slag utilization rate, and 100% boiler fly ash (slag) utilization rate (Kechichian, E., Mi Hoon Jeong, 2016). The transformation of eco-industrial parks into circular economy zones require more efficient utilization of resources, waste management and emission control, as well as the implementation of the "zero waste" policy in production and consumption.

Eco-cities refer to an urban planning and environmental management approach that is based on principles of harmony with the environment. Eco-cities pursue land use efficiency, zero carbon waste, household waste recycling, energy efficiency and a complete shift to renewable energy, adoption of closed-loop production systems by industrial companies, green transport solutions and higher living standards while fostering industrial and economic development. Japan leads the field in eco-city projects – the country has been implementing its Eco Town Program since 1997. Currently, 26 Eco Town Programs have been created with support from the Ministry of the Environment (Fukahori T., 2014). Kawasaki Eco-Town was the pilot project of the program launched in 1997 on the premises of the Keihin Industrial Zone. The Eco-Town Program was aimed at tackling serious environmental problems brought about by rapid economic growth driven by the industrialization of Kawasaki in the 1960-1970s. The development mix of Kawasaki Eco-Town includes a network of eco-friendly businesses that recycle and dispose of waste, and the Kawasaki Zero-Emission Industrial Complex. Annual economic benefit from the implemented measures of industrial overhaul and eco-project integration in Kawasaki amounts to 130 million US dollars. There has also been a drastic reduction in air and water pollution levels. Kawasaki boasts renewable energy systems and sewage treatment installations; 0.5 million tons of waste, including 69,000 tons of office waste and 130,000 tons of plastics are

recycled annually; 315,000 tpa of blast furnace slag is reused as an alternative raw material for cement etc. (Berkel, Van R., 2014)

3 Environmental performance of SEZs

3.1 Criteria of environmental success at SEZs

Special economic zones that give priority to sustainability take different shapes in different countries. The authors of this research have identified the key components of environmental performance of "green" SEZs (Fig. 2).

Fig. 2: Sustainability performance criteria of SEZs
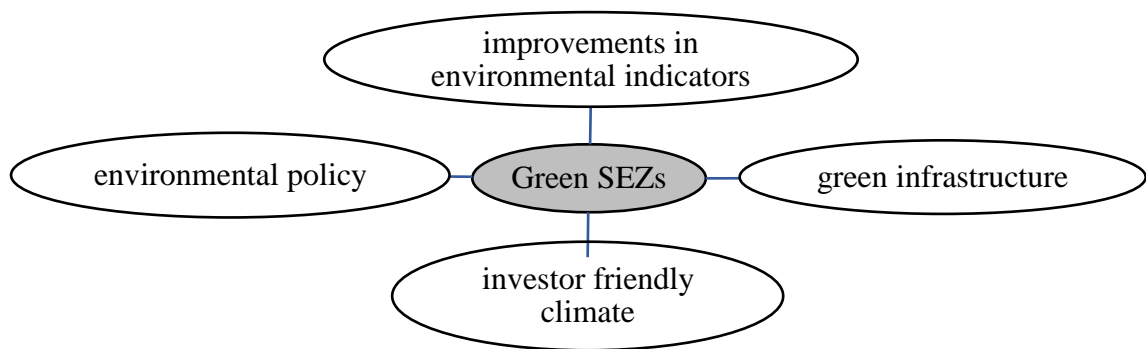
Source: authors' own

Environmental policy. The key success factor for "green" SEZs is a comprehensive policy of the state that stipulates energy indicators, sustainability indicators, and pricing issues. The regulatory policy for energy indicators comprises: legal framework and regulations for electricity and other energy sources; energy efficiency laws; energy audit; standards and labelling. The regulation of environmental indicators is based on national environmental legislation and is linked to the greenhouse gas emissions targets undertaken by the country. Pricing regulation is executed through the regulation of prices of energy and resources, fiscal incentives and government subsidies and grants that give a competitive edge to recipients and bridge market gaps. (Geroe, S.,2017).

"Green infrastructure". The planning, design and creation of infrastructure in SEZs that utilizes energy saving and resource efficient technologies, the creation of waste recycling systems and renewable energy sources improve environmental performance indicators.

Investor-friendly climate. It is impossible to create "green infrastructure" without facilitating investment in green technologies. For their successful operation, SEZs need to have customized tools for stimulating climate-friendly or "green" investments.

Environmental indicators. In order to assess the environmental impact of production in "green" SEZs it is necessary to devise a system of environmental indicators and make arrangements for regular environmental monitoring. For example, the Incheon Free Economic Zone in South Korea has committed itself to reducing its greenhouse gas emissions by 30% from 2005 to 2020. (GGGI, 2017)

The symbiosis of industrial production and clean technology brings direct business benefits to enterprises: savings of utility cost, higher capital efficiency, cleaner and leaner production, and greater demand for products in the global market. (Yu, F., et al., 2015). A proactive sustainable development policy including the promotion of renewable resources, improvements in energy efficiency and the adoption of environmental targets and fiscal incentives should be implemented at a national level and at a zone level.

3.2   Financial instruments of environmental performances of SEZs

A growing interest of financial institutions and international organizations in participation in environmental projects and industrial clusters drives the development of market mechanisms of financing such projects. In the course of this study, the main financial instruments of the environmental performance of special economic zones have been determined:

- debt financing, including on preferential terms of environmental projects;
- acquisition of stakes in companies engaged in energy efficiency or alternative energy projects; the involvement of private investment in the sector;
- effective incentive programs that grant access to financing on the basis of the achieved values of environmental indicators;
- establishment of a consortium of investors (financial organizations, government agencies etc.) for implementing environmental projects;
- utilization of the Clean Development Mechanism (CDM) of the Kyoto Protocol that is aimed at assisting developing countries in achieving sustainable development by supporting eco-friendly investments by governments and businesses in industrialized countries.

3.3   Fiscal mechanisms of environmental regulation in special economic zones

Fiscal incentives are widely used as an auxiliary tool when implementing energy efficiency and alternative energy projects. Such mechanisms power the transition to the low-carbon future by attracting investors who are appealed with lower operational costs. Countries often use a combination of various fiscal incentives in order to channel investments into a specific industry,

special economic zone or region in line with their national development strategies. (Mohiuddin, M., et al., 2014). Industrial zones (parks) always offer preferential fiscal treatment that attracts investors. The efficiency of preferential treatment policies in SEZs and their role in drawing investment in eco-industrial parks has been subject to doubt recently. Three major trends have been identified in approaches to fiscal incentives for implementing environmental policies:

- tax incentives might be given to companies that embrace renewables;
- government subsidies on equipment/goods related to energy efficiency and renewable energy;
- creation of government funds to promote energy conservation investments and environmental impact mitigation.

Offering performance-based incentives has been a trend of the past few years in special economic zones. For example, incentives might depend on the actual power generated by a solar installation (US dollars per kWh) during a certain period. Such fiscal instruments do not only encourage renewable energy production, but also compel companies to start to use equipment and vehicles with better energy efficiency characteristics. It is a standard practice for SEZs to exempt investors from VAT and import duties in order to encourage the renewal of equipment. For example, Turkey has exempted investors operating in its industrial parks from paying VAT on land acquisitions, the municipality tax on solid waste; and real estate duty for five years starting after the construction of the plant. South Africa has been widely using fiscal incentives to promote energy efficiency following a 170-per-cent growth in electricity prices over the past decade. In other BRICS nations (Brazil, Russia, India, and China) the increase was 36%. Moreover, electricity production from coal exceeds 90% in South Africa. To foster investments in energy efficient projects, a number of amendments were made in the Income Tax Act. Tax payers are allowed to claim deductions of 95 cents per kilowatt hour of energy efficiency savings over a certain period. The tax allowance is available to both new and already operational industrial projects that employ energy efficient and energy saving technologies. The Department of Trade and Industry assigns a specific status to projects, with their efficiency being assessed and controlled by designated agencies. As part of the program, 80% of total investments went to chemical companies (21 projects), manufacturers of cement and ceramics (seven projects) and to agriculture (three projects) (Meier, P., et al., 2015). For "green" investment tax incentive systems to bear fruit, they should be transparent and accessible. Tax incentives must not discriminate against non-eligible companies. It is also necessary to have a system for regular efficiency monitoring of the fiscal incentives in place.

Conclusion

Guided by their national or local priorities, countries across the globe have been developing a wide spectrum of eco-industrial parks. "Industrial symbiosis" programs, energy efficiency policies, green infrastructure, the use of renewable energy sources, "green" building codes and waste reuse and recycling systems are the characteristci features of such zones. The key success factor for "green SEZs" is a comprehensive sustainability policy of the government that comprises laws on renewables and energy efficiency, preferential treatment of alternative energy, the introduction of energy efficiency standards, "green" building codes and tax concessions for investments in eco-friendly technologies and R&D. Environmentally friendly technologies also bring benefits to zone tenants by making them less dependent on conventional fuels, reducing their utility costs etc.

Acknowledgment

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Contact

Olga Sinenko

Far Eastern Federal University

690950, Vladivostok, Suhanova St. 8, Russian Federation

sinenko.olga@gmail.com

Igor Mayburov

Far Eastern Federal University

690950, Vladivostok, Suhanova St. 8. , Russian Federation

Ural Federal University named after the first President of Russia B.N.Yeltsin,

620002, Ekaterinburg, Mira st. 19, Russian Federation

mayburov.home@gmail.com

PROBABILITY OF SUCCESS OF CROWDFUNDING PROJECTS DURING CAMPAIGNS IN THE CZECH REPUBLIC, SLOVAKIA AND IN THE USA

Aleš Slúka – Ivana Svobodová

Abstract

Purpose: The objective of this research was to discover how successful crowdfunding projects are likely to be to have reached the desired amount at the beginning, the middle and towards the end of the campaign, and compare regression results on regional level.

Design/methodology/approach: The sample is 116 crowdfunding projects, 50 located in the USA region and 66 in the Czech Republic or Slovakia. Data were collected on a daily basis over a period of 84 days directly from chosen live crowdfunding projects published on Kickstarter, Indiegogo, HitHit and Startovac. The main outcomes of the research are determined by a logistic regression model of tracked crowdfunding markets and categories. The share of project´s monetary goal was tracked for t0,25, t0,5, t0,75, where t represents time and number represents percentage of project´s total duration.

Findings: The average crowdfunding project established in Czechia or Slovakia has a higher probability of success with lower investment raised, higher log odds of success, odds ratio and average marginal effect at all investigated stages than an average US-located project.

Research/practical implications: The logistic regression results for every established category and region are presented separately here. Readers can, therefore, determine the success probability of a project by substituting the necessary variables. Forthcoming research analysing more crowdfunding projects in more regions should ensure a more accurate and reliable outcome per category over the longer period.

Originality/value: It has been found that the relationship between the crowdfunding project success and its raised investment/goal ratio in time has never been analysed at either the regional or the categorical level.

Keywords: Crowdfunding, reward-based, success factor, duration

JEL Codes: M13, G2

Introduction

Crowdfunding is a method for funding a variety of new ventures, allowing individual founders of for-profit, cultural, or social projects to request funding from many individuals, often in return for future products or equity (Mollick, 2014). The most prevalent crowdfunding model is the reward-based model. In this approach, funders receive a reward for backing a project (Mollick, 2014); (Steigenberger, 2017); (Roma, Petruzzelli, & Perrone, 2017). The reward-based (non-equity) crowdfunding has been very successful in raising money from individuals who have not been motivated by financial return incentives (Collins & Pierrakis, 2012).

So far, research has focused on the success factor of crowdfunding projects. When preparing a project, its type has been found to have an impact on its likelihood for and rate of success. In fact, projects that are part of non-profit organizations are more successful than other organizational forms (Belleflamme, Lambert, & Schwienbacher, 2014); (Kraus, Richter, Brem, Cheng, & Chang, 2016); (Hobbs, Grigore, & Molesworth, 2016). Social network size, the project's quality and geography also influence project success (Mollick, 2014). During the crowdfunding project, success factors are web presence, the amount of supporters/backers, updates and blog entries, rewards/incentives, the number of comments, videos and pictures in the project presentation, a personal picture of the project owner and the existence of a separate Facebook page or websites. Finally, consideration of the high degree of relevance of the communication (the message) between the project owner and the crowd is critical (Kraus et al., 2016); (Josefy, Dean, Albert, & Fitza, 2017).

This paper focuses on the probability of success of a crowdfunding project over time. It shows the probability of a project succeeding at 25%, 50% and 75% of the campaign duration.

1 Data

Data were collected on daily basis directly from chosen live crowdfunding projects published on US crowdfunding websites Kickstarter, Indiegogo and on Czech websites HitHit and Startovac. The Czech and Slovak reward-based crowdfunding markets are highly connected, and data from afore-mentioned Czech websites contains projects from both regions. The data collected represents a range of US, Czech and Slovak crowdfunding projects over a period of 84 days (18.1.2017- 10.4.2017). To ensure data comparability across regions at the start of each tracked crowdfunding project the origin country, category, start date, duration, goal and currency were all recorded. Based on these details, similar projects with same category, start date (+/- 1 day) and project stewardship level were identified. Tracking and cross-referencing

for all projects released on the HitHit and Startovac portals took place. In total, data from 116 projects were collected and tracked in their full duration, with no restrictions for cancelled or poorly-managed projects. At the end of each project, the total amount raised, number of contributors and success or failure was recorded.

From 116 tracked crowdfunding projects, 50 were located in US regions and 66 in the Czech or Slovak regions. Accurate crowdfunding project comparability is seen as a non-excludable variable.

The average number of contributors per project was the next variable evaluated. On average, up to 70 contributors were involved in fundraising of Czech projects. The same variable applied to US-located projects reached on average 51 contributors per project and, for Slovak-located projects, only 26 contributors raised project's goal. This result is affected by the relative split of contributors on each market. In the Slovak and Czech regions, all research-related projects were tracked. Whereas, the US contributors were split from a more numerous crowdfunding market; as a result, only a small number of all US projects were tracked. This is partly compensated for by the size of the US market and, in absolute terms, a greater number of participating contributors.

For increased accuracy of statistical outcome and owing to the significant connection in the Slovak and Czech crowdfunding market, the Slovak and Czech region was merged into a CZSK region variable. The US-CZSK comparison was chosen to illustrate differences between more developed crowdfunding market (US) and developing EU crowdfunding markets (CZSK), and because of data availability.

Projects and their funded value in different currencies were, based on the official exchange rate of the European Central Bank on 27th April 2017, converted to CZK. The average amount raised in the CZSK region was 766 CZK, while in the US region the average contribution was 3170 CZK.

The final evaluated and crucial variable of this research is the success rate, that is, where the project achieved equal to or more investment than the amount targeted. From a regional perspective, 56% of projects established on Czech and Slovak market were successful. Using the same variable for the US market there is a significantly lower success rate, reaching only 32%. The low US success rate may be affected by a higher percentage of poorly-managed projects where 0% of goal was reached.

2   Methods

This section provides a brief background on the statistical technique employed to predict the probabilities of crowdfunding projects success. The main outcomes of the research are derived from a logistic regression of tracked crowdfunding markets. Logistic regression is an example of qualitative response/discrete choice model. Since the underlying dependent variable (DV), namely Success, is categorical (binary) and has values 1 (project success) or 0 (project failure), ordinary least squares regression cannot be used as assumptions of normality of the responses and homoscedasticity of the residuals will be violated. The underlying distribution of the binary DV is binomial and the mean of the distribution, which is the probability of success (π), is to be modeled as a function of the investment/goal ratio tracked at t0,25, t0,50, t0,75, where t represents time, the number represents the percentage of a project′s total duration (25%, 50%, 75%), and R stands for region. Models are established for regions CZSK, USA and all regions separately to meet logistic regression requirement of independence. This function cannot be linear since, theoretically, the predictions can range from -∞ to +∞ but probabilities lie between 0 and 1. (Sampath, Flagel, & Figueroa, 2009)

Hence a nonlinear transformation, log odds (Logit), is applied to the DV which is then expressed as a linear function in the following manner (Agresti, 1996):

$$Log\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_0 + \beta_{tR}$$

The corresponding probabilities of success can be obtained by transforming back the estimated Logit equation to the probability form below (Agresti, 1996):

$$\pi = \frac{e^{\alpha+\beta_0+\beta_{tR}}}{1-e^{\alpha+\beta_0+\beta_{tR}}}$$

3   Odds of project success per region

As the p-values of all variables are less than 0.001, neither of them are insignificant in the logistic regression model. By variability comparison of researched logistic regression models and null model, the confidence level over 0,99 was found. Regression model fit was tested via Likelihood ratio test on α level of 0,001.

Figure 1 below shows regression models for all regions, CZSK region and USA region estimated in t0,25. Estimate coefficient means log(p/(1-p)), where p is the overall probability of success (1) (Moore, 2013). The coefficient (β_{tR}) is the log of odds ratio between the success group and failure group. For every percentage point of investment/goal ratio, the log odds

(log(p/(1-p))) of success (versus failure) increases by 0,13648 for $\beta_{t0,25CZSK}$, and by 0,10501 for $\beta_{t0,25USA}$. We can get the odds ratio (EXP(β)) by exponentiating the log odds coefficient (β_{tR}) (Moore, 2013). Interpretation for odds ratio of t0,25CZSK is: The CZSK (USA) located crowdfunding project in t0,25 is 1,15 (1,11) times more likely to be successful (1) than unsuccessful (0) (Moore, 2013). By comparison of CZSK and USA region in t0,25 we can see, that in CZSK region, the log odds of success rise quicker than in the USA region (0,13648> 0,10501). To ensure this statement, the average marginal effect (AME) was established using logitmfx function in R. The AME shows average impact of a 1 percentage point increase in investment/goal ratio on project success (Williams, 2011). In other words, CZSK project, that in t0,25 increase its investment/goal ratio by 1%, the odds of success would on average be by 1,58% higher. The comparison of CZSK AME (0,0157665) and USA AME (0,0136436) confirmed that on average, the success odds of CZSK project increase more rapidly than the odds of USA located project in t0,25.

Fig. 5: Logistic and probit regression models in t0.25 per region

t25, all regions model								
	Estimate	**Std. Error**	**z value**	**Pr(>|z|)**	**EXP(β)**	**95% C.I for EXP(β)**		**McFadden R^2**
(Intercept)	-2,45930	0,45250	-5,435	5,49E-08	0.08549836	0.03219237	0.1931996	0,4352587
t25	0,12095	0,02339	5,17	2,34E-07	1.12857293	1.08375678	1.1889488	
t25, CZSK region model								
	Estimate	**Std. Error**	**z value**	**Pr(>|z|)**	**EXP(β)**	**95% C.I for EXP(β)**		**McFadden R^2**
(Intercept)	-2,45600	0,66750	-3,679	2,34E-04	0.08577487	0.01894812	0.274321	0.4772393
t25CZSK	0,13648	0,03695	3,693	2,21E-04	1.14622979	1.07967397	1.251279	
t25, USA region model								
	Estimate	**Std, Error**	**z value**	**Pr(>|z|)**	**EXP(β)**	**95% C.I for EXP(β)**		**McFadden R^2**
(Intercept)	-2,51460	0,64020	-3,928	8,57E-05	0.08089545	0.01902444	0.2466815	0.3380268
t25USA	0,10501	0,03105	3,382	7,19E-04	1.11072161	1.05333939	1.1929125	

Source: authors

Regression models for all regions, CZSK region and USA region in t0,50, can be seen in Figure 2 below. For every percentage point of investment/goal ratio of CZSK (USA) project in t0,5, the log odds of success (versus failure) increases by 0,16443 (0,11014). The CZSK (USA) crowdfunding project in t0,50 is 1,179 (1,116) times more likely to be successful (1) than unsuccessful (0). In t0,50, CZSK odds of success rise quicker than in the USA region. This statement is once again confirmed by AME analysis in t0,50 (AME CZSK 0,0110712 > AME USA 0,0088995). If the project increases its investment/goal ratio by 1% in t0,50, the odds of success increase by 1,11% (CZSK) or 0,89% (USA).

Fig. 6: Logistic and probit regression models in t0.50 per region

t50, all regions model	Estimate	Std, Error	z value	Pr(>|z|)	EXP(β)	95% C.I for EXP(β)		McFadden R^2
(Intercept)	-4,00330	0,75250	-5,32	1,04E-07	0.01825484	0.003275263	0.06590526	0.6300829
t50	0,13277	0,02459	5,399	6,71E-08	1.14199203	1.094971547	1.20753654	

t50, CZSK region model	Estimate	Std, Error	z value	Pr(>|z|)	EXP(β)	95% C.I for EXP(β)		McFadden R^2
(Intercept)	-4,48400	1,20800	-3,712	2,06E-04	0.01128745	0.0005971949	0.07956768	0.6744847
t50CZSK	0,16433	0,04324	3,8	1,45E-04	1.17860155	1.1001745360	1.31132874	

t50, USA region model	Estimate	Std, Error	z value	Pr(>|z|)	EXP(β)	95% C.I for EXP(β)		McFadden R^2
(Intercept)	-3,85000	1,03500	-3,719	2,00E-04	0.021290	0.00159371	0.1111025	0.5684368
t50USA	0,11014	0,03067	3,591	3,29E-04	1.116438	1.06192173	1.2026504	

Source: authors

Figure 3 below shows regression models for all regions, CZSK region and USA region in t0,75. The CZSK (USA) log odds of success (versus failure) increases by 0,12264 (0,08746) for every investment/goal ratio unit increase in t0,75. The CZSK (USA) crowdfunding project in t0,75 is 1,130(1,093) times more likely to be successful (1) than unsuccessful (0). This effect is presented by odds ratio values. CZSK odds of success in t0,75 rise more rapidly than in the USA region. This effect was confirmed by AME analysis in t0,75 (AME CZSK 0,0069939 > AME USA 0,0062362). If the CZSK (USA) project in t0,75 increases its investment/goal ratio by 1%, the odds of success increase by 0,70% (0,62%).

Fig. 7: Logistic and probit regression models in t0.75 per region

t75, all regions model	Estimate	Std, Error	z value	Pr(>|z|)	EXP(β)	95% C.I for EXP(β)		McFadden R^2
(Intercept)	-4,26280	0,80870	-5,271	1,35E-07	0.01408327	0.002158474	0.05498496	0.6771429
t75	0,10360	0,01952	5,308	1,11E-07	1.10915410	1.073438670	1.16031831	

t75, CZSK region model	Estimate	Std, Error	z value	Pr(>|z|)	EXP(β)	95% C.I for EXP(β)		McFadden R^2
(Intercept)	-4,65600	1,26100	-3,692	2,23E-04	0.009502302	0.0004244316	0.07090679	0.7174005
t75CZSK	0,12264	0,03253	3,77	1,63E-04	1.130476573	1.0742409072	1.2252284	

t75, USA region model	Estimate	Std, Error	z value	Pr(>|z|)	EXP(β)	95% C.I for EXP(β)		McFadden R^2
(Intercept)	-4,04600	1,08500	-3,729	1,92E-04	0.01748763	0.001137256	0.09766816	0.6107919
t75USA	0,08746	0,02433	3,594	3,26E-04	1.09139325	1.049743606	1.15920776	

Source: authors

Models above shows, that the highest average marginal increase of success odds are present in the first half of project´s duration. We can assume, that this is the most important time to increase investment/goal ratio of crowdfunding project to be successful, but the further

expertise and correlation analyze is needed to validate this statement. All models also show the positive impact of investment/goal ratio increase on odds of success.

The success probability of all tracked crowdfunding projects by region at t0,25, t0,5, t0,75 can be seen in Figure 4 below.

Fig. 4: Logistic regression analysis all analyzed crowdfunding projects per region in t0,25, t0,5 and t0,75
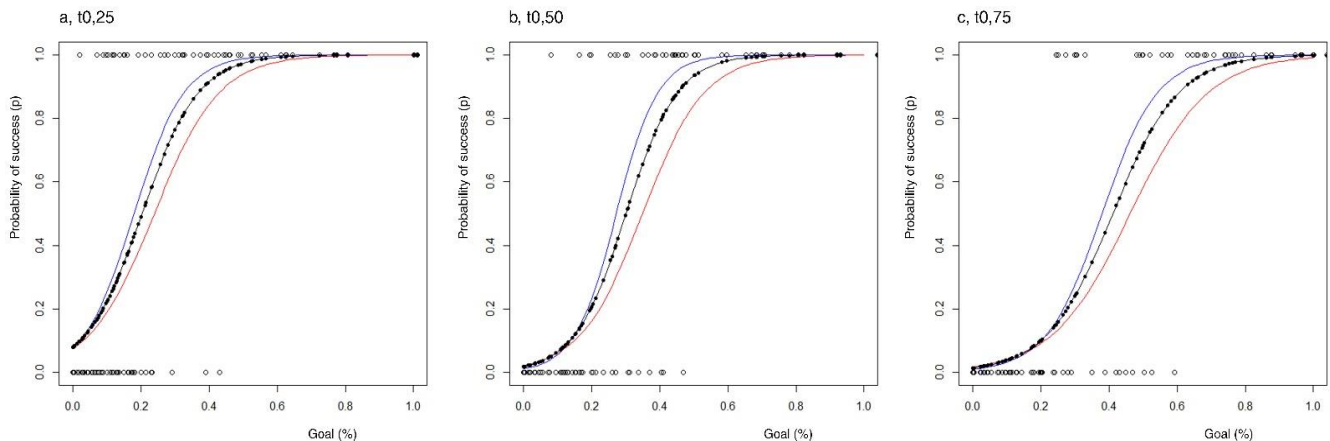
Source: authors

Blue represents CZSK, red curve the US region, while the black curve shows a trend for all tracked regions. The X-axis reflects the share of project´s monetary goal and the Y-axis expresses the probability of success <0,1>.

Figure 4a presents the probability of project success at one quarter (25%) of the way through the project. The curve representing the CZSK region (blue) shows a higher success probability because of the superior average success rate of this region.

Figure 4b shows the shift of all logistics regression curves to right, which reflects a lower probability of success than for same X-axis variable when substituted to Figure 4a. This effect expresses the higher demand of raised investments to successfully finish a given project as time increases. The slope of the blue curve remained unchanged, but the red curve´s slope decreased, with investment/goal ratio growth indicating a slower increase of success probability. This effect is reflected by the gap difference between the blue and the red curve on Figure 4b. The effect of the right curve shift is present on Figure 4c when compared to Figure 4b. Moreover, slopes of all curves on Figure 4c decreased by the same relative amount.

A noticeable difference can be seen at the bottom of the curve, where the vertex of the curve is flatter and longer. It presents a lower increase in success probability with a low investment/goal ratio as a project reaches the final part of its duration.

A point of intersection is present only at t0,5 and t0,75 (Figure 4a, b). At time t0,5 (Figure 4b), it equals the 12% X-axis level, which refers to higher return probability of US-located projects that are under 12% of goal ratio, than on CZSK-located projects. At t0,75 (Figure 4c) the intersection of curves is visible at 18% X-axis level. For the majority of time and the investment/goal ratio, the CZSK-located crowdfunding projects report higher probability of success than the US located project, for the given X-axis variable.

Conclusion

It has been found that the relationship between the crowdfunding project success and its raised investment/goal ratio in time, has never been analyzed either at regional or categorical level. Based on this omission of research, project data from popular US, Czech and Slovakian crowdfunding platforms, covering 84 consecutive days in 2017 were collected. To quantify the relationship, the logistic regression was established for three different points of projects' duration. The outcome shows the predicted success probability of crowdfunding projects by chosen region, if at 25%, 50% or 75% of its campaign duration a certain investment/goal ratio was reached.

The evidence above shows that, at all investigated stages, the average crowdfunding project established in Czechia or Slovakia has higher log odds of success and odds ratio than an average US located project. The research presents that the average marginal effect of CZSK projects is higher than the average marginal effect of USA located projects in all tracked points of projects´ duration. As the p-values of all variables are less than 0.001, neither of them are insignificant in the logistic regression model. Models also show the positive impact of investment/goal ratio increase on odds of success.

The highest average marginal increase of success odds is present in the first half of project´s duration. We can assume, that (t0, t0,50) is the most important interval to increase investment/goal ratio of crowdfunding project to be successful, but the further expertise and research are needed to validate this statement.

The study presented here analyzed only a limited number of regions and projects per region. Forthcoming research should analyze more regions and more crowdfunding projects per region over a longer period to ensure more accurate and reliable results.

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Contact

Aleš Slúka

University of Economics Prague

W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic

slua00@vse.cz

Ivana Svobodová

University of Economics Prague

Faculty of Business Administration, Department of Entrepreneurship

W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic

ivana.svobodova@vse.cz

ORGANIZATIONAL INNOVATION AS A DRIVING FORCE OF CORPORATE PROSPERITY

Miroslav Špaček

Abstract

Purpose: The purpose of this paper was to examine the effects of organization innovation on company performance characteristic. In addition, the main benefits of service outsourcing as well as key obstacles to smooth adoption of service outsourcing were also identified. The reason for drafting this paper was to elucidate on main benefits and shortcomings of service outsourcing and to propose normative decision model which would facilitate decision-making process.

Design/methodology/approach: The research was specifically based on questionnaire survey which was performed among company maintenance managers and shift masters in the Czech and Slovak Republic. Research sample was subject to random selection. Questionnaires were filled in and collected during regular professional trainings. In total 89 companies were subjected to survey. The survey took place within 2016-2017. This survey was complemented by contextual interviews with selected maintenance managers.

Findings: The paper proved that service outsourcing may be economically beneficial in cases if it brings higher shareholders value than service insourcing. This criterion can be expressed by Net Present Value (NPV) which is smoothly measurable by means of cardinal scale. Furthermore, non-financial criteria were added to measure entire utility of decision on outsourcing. Normative decision-making model which was then proposed was validated on the patter of mid-sized pharmaceutical company.

Research/practical implications: The main outcome of the paper is a normative model of decision-making on outsourcing. This model combines both financial and non-financial criteria. The model was practically verified on the pattern of mid-sized company. The model also helps managers better understand the value engineering nature of outsourcing and offers clear and understandable normative decision-making model.

Originality/value: The paper offers normative decision-making model which is based on several financial and non-financial criteria. This model was also tested in company practice. Literature search confirmed that such a model had not been presented before.

Keywords: Organizational innovation, service outsourcing, maintenance, normative model, multicriteria decision-making

JEL codes: G11, L24

Introduction

Over past decade innovation was put into spotlight because of its potential to provide companies with various economic benefits. Tidd, Bessant & Pavitt (2005) discovered that companies which implemented innovation to improve their processes and differentiated their products were significantly ahead of their competition in terms of market share, profitability, companies´ growth and net income. Lukes & Stephan (2017) found out that innovation was a key driver that could guarantee competitive advantage for organizations. They also confirmed that process of innovation related to generating and implementing new ideas, processes and procedures performed tasks in the best, most effective manner and offered the best products and services. Mihič, Umihanič & Fazlovič (2015) proved that there was strong correlation between company innovativeness and business excellence (measured by purposefully developed indexes) in large manufacturing companies. It is worth mentioning that innovation is not restricted to the development of new products and production processes. It is also mirrored in firm´s organizational structures, administrative processes, and managerial practices (Ganter & Hecker, 2014).

The concept of organizational innovation is well defined in Oslo Manual (2005, p. 51): *"An organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations. Organizational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies".* In general, organizational innovation is perceived as the adoption of an idea or behaviour that is new to the organization (Hage, 1999). Organizational innovation means creation or change in current business practices, structure and models. Therefore, it can involve innovations in production processes, marketing and model produced. Organizational innovations are also instances of organizational change that (i) result from a shift in underlying organizational assumptions, (ii) are discontinuous from previous practice, and (iii) provide new pathways to creating public value (Evans, 2013; Viederyte, 2016).

Organizational innovation is not restricted to organizational structures, administrative processes, and managerial practices *"ad intra"* but opens to the environment in which the organization develops, and it is influenced by the effect of building innovation communities in practice. Organizational innovations comprise changes in the structure and processes of an organization due to the implementation of new managerial and working concepts and practices,

such as the implementation of teamwork in production, supply chain management or quality management systems (Bujidos-Casado, Navío-Marco, & Rodrigo-Moya, 2017).

There were attempts to offer illustrative classification of organizational innovation. Armbruster, Bikfalví, Kinkel & Lay (2008) highlighted two significant aspects when grouping organizational innovation:

1. Do innovations take place inside the organization or in the inter-organizational field?
2. Do innovations in question affect the organizational structure itself or do they only change the process taking place inside a given structure?

Bearing in mind above-mentioned aspects they were able to classify organizational innovation as per two dimensions which stand for (i) type of organizational innovation and (ii) focus of organizational innovation. The outcome of this consideration is a matrix shown in fig. 1.

Fig. 1: Types and focus of organizational innovations
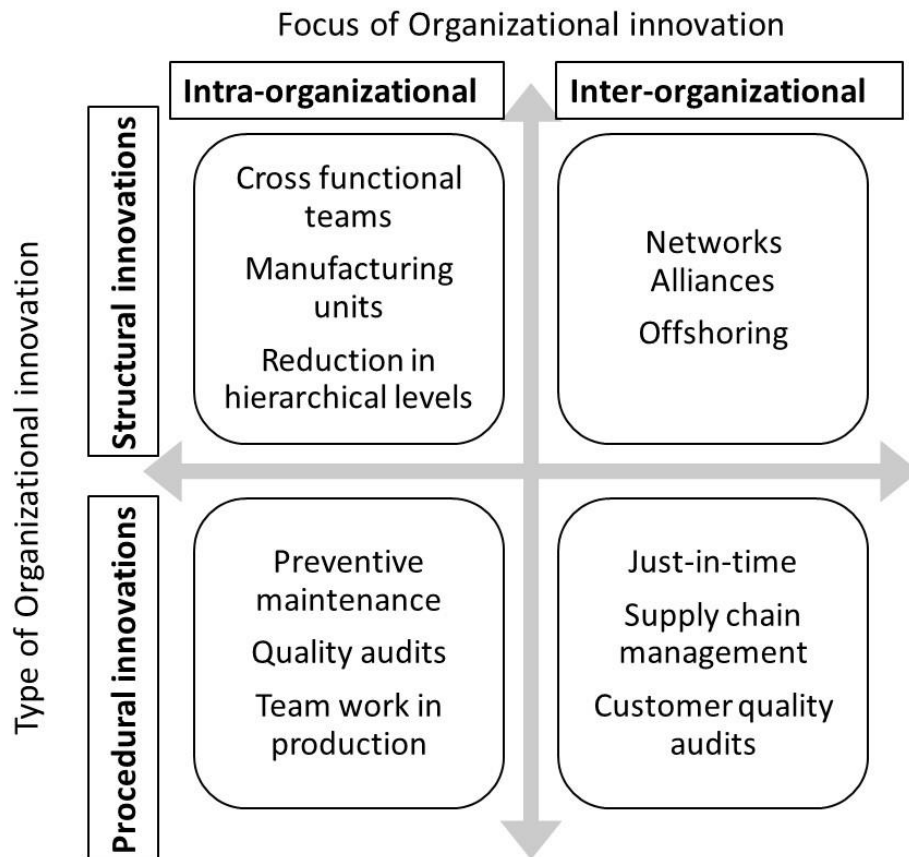
Source: Armbruster *et al.* (2008)

The effectiveness of various organizational innovation is supported by the strong leadership and organizational culture (Wenjing, Tahseen, Ali, Hamid & Fayaz, 2018) on one hand and

intellectual capital (Ghorbani, Mofaredi & Bashiriyan, 2012) and effective utilization of company knowledge management base on the other hand. Unfortunately, the impact of leadership on organizational innovation is quite ambiguous: transformational leadership enhances, while transactional leadership reduces organizational innovation performance (Xiao, Jin, Liang & Qian, 2018).

When assessing the impact of organizational innovation on the company, recent studies revealed that large companies operated more effectively as compared to smaller ones (Bujidos-Casado *et al*., 2017). This conclusion was also supported by the findings of Sapprasert & Clausen (2012) that the size of the company is somehow related to the propensity and effects of organizational innovation. On the other hand, this conclusion was partly questioned by Bujidos-Casado *et al*., (2017) who pointed out that there were no significant differences concerning the types of organizational innovation among big and small companies.

Company innovation performance may be also intensified by the combined effect of organizational and technological innovation (Sapprasert & Clausen, 2012). Nevertheless, the effects of product, process and organizational innovation must be considered separately. Recent studies disclosed that there was a complementarity in product, process and organizational innovation which are considered jointly by applying multivariate probity specification. Three innovation decisions to be made are thus independent. To benefit from these types of innovation, managers need to jointly exploit these different types of innovation activities and their potential synergies (Papalia, Bertarelli & Mancinelli, 2018; Carboni & Russu, 2018).

In this context following research questions were raised: (1) What is the main motivation to specific organizational innovation adoption? (2) In what extent can specific organizational innovation influence company performance?

Since the research was performed in parallel in three industrial sectors (production, service and trading sector), H_0 hypothesis can be set up as follows: There are statistically significant differences in the perception of outsourcing benefits among these three sectors.

1   Research methods used

In principle qualitative research was given a priority. The research was performed under the umbrella of the Czech Maintenance Union. To get the most reliable results, the combined approach comprising three research methods was used. The sample was subject to random selection. Questionnaires comprising 13 questions were distributed among maintenance

managers and shift masters during purposefully organized professional trainings. The research covered period of 2016-2017 when 6 training sessions took place. Consequently 89 questionnaires were filled in and collected. Almost all the applicants who were subjected to the survey were willing to respond the questions posted in questionnaire. The response rate was thus almost quantitative.

The aim of the survey was to examine attitude of companies towards maintenance outsourcing, no matter what phase of outsourcing implementation they were involved in. In addition, it was necessary to find out which aspects out outsourcing are key underlying assumptions for making decision about outsourcing adoption. The responders came from three different business areas: industrial production, trading and services. To examine the differences in perception of outsourcing benefits within three groups of companies (production, service and trading sector), χ-squared test was conducted.

The factors with highest frequency of responses were then included into normative model. The survey was evaluated by means of simple statistics focused on frequency of responses. Questionnaire survey was complemented on by semi-structured interviews conducted with selected managers and specialists. In addition, a participant-observation approach, which comes under ethnography concept umbrella, was chosen as a method of choice (Kawulich, 2005). According to DeWalt and DeWalt (2002, p. 259) *"Participant observation is the process enabling researches to learn about the activities of the people under study in the natural settings through observing and participating in those activities"*.

In total 17 managers who provenly possessed experience in maintenance outsourcing were interviewed. Each interview lasted roughly 50-60 minutes. The aim of these interviews was to both to confirm and deepen conclusions which were obtained from questionnaire surveys and identify barriers to smooth implementation of outsourcing. For data processing, appropriate coding was used. The codes referred to key areas which were covered by interviews (the role of organizational innovation in company development, motivation to outsourcing, critical point to outsourcing, outsourcing performance measurement, risks of outsourcing, etc.). One of the main reasons for the execution of questionnaire survey and conducting interviews was to obtain underlying assumptions for the determination of decision-making criteria.

Outsourcing as a specific element of organizational innovation

In business, outsourcing is an agreement in which one company contracts-out a part of existing internal activity to another company (McCarthy & Anagnostou, 2004).

It is reported that outsourcing brings great many of benefits like cost savings, transformation of investment costs into operational costs, application of economy of scale, activities performed by purposefully trained employees, higher transparency in cost management, flexibility in the scope of services purchased, drop in workforce etc (Greaver, 1999).

Companies usually have resort to outsourcing when having troubles in cost management and workforce productivity. They are often coerced into making hasty conclusions and adopt outsourcing without prior analyses of all benefits, potential losses and risks which are tied with organizational change. Normative decision-making model which is proposed in the next chapter helps the company facilitate decision processes and supports shareholders value creation.

Normative decision-making model development

The main goal of the paper was to develop normative decision-making model which would be generally applicable in service sector outsourcing. In general, the development of the model reacted to the problems which consisted in both technical and economic suboptimum support service activities performance. The reason for lagging behind optimum service effectiveness was company orientation on its core business, non-core business being dropped. Very often the company missed both qualified employees and technical platform. Moreover, some activities were performed very rarely, and employees came to continuously lose knack and skills. From economic point of view, it often dealt with inefficiently performed activities where economy of scale was not utilizable.

Based on questionnaire survey evaluation and contextual interviews to be conducted with maintenance specialist and managers following five decision criteria were determined:

1. **Economic criterion** (expressed in terms of NPV of respective variant). Simple cost/benefit analysis is not applicable because it doesn´t consider variability of cash flow during maintenance life cycle. One of the most important factors of cash flow variability is the conversion of investment costs into operation costs. It is inevitable to assess cash flows in a longer time since some cash flow have one-off character (investment procurement or severance pay) while other proceed continuously. Finally, the variant with highest NPV takes precedence over others. Because NPV is a cardinal variable it illustratively shows differences between shareholders´ values added by individual variants.

2. **Service delivery flexibility** reflects the ability of the provider to adjust the scope of the services to be provided on actual customer´s demand.

3. **Service quality and reproducibility** refers to meeting ´voice of the customer´ which rests in maintenance of high quality services over long time (unexpected increase/decrease in customer demand etc.).

4. **Contingencies solution** responds to provider´s capability to solve various emergency which may occur during production process (production or facility crashes, natural disasters etc.).

5. **Risks** (tied with the variant) are inherent part in any decision-making process. A lot of attention should be therefore paid to risk assessment. Decision-makers must be explicit about the involvement of the risk into normative decision-making model. If the variants significantly differ in their risk profiles, then it is worth recommending to involve risk as one of decision criteria. If this is the case the risk is properly assessed by means of any risk analysis approaches (with advantage by risk matrix) and it shouldn't be incorporated as a risk increment to NPV. The risk tied with individual variant preferably refer to non-systematic risk (this risk is particular to one variant)

These criteria are recommended to be properly weighed so that the relevance of each criterion may be exactly determined. Any method of weights determination is applicable. Simple and user-friendly methods are worth recommending (typically 100 point's allocation, pair comparison, Fuller method etc.). Each criterion was assessed on the scale which ranked from 1 to 5 where 5 represented maximum value.

As a financial criterion Net Present Value (NPV) of the variant was chosen. Opting for NPV which represents the sum of discounted future cash flows obviates problems with time inconsistency between double-entry accounting and cash flow expressions of both cost and benefit items. NPV is then calculated by means of the formula posted in commonplace managerial literature (Brealey, Myers & Allen, 2013). Cardinal financial criterion NPV was then transformed to point scale according to formula (1).

$$Scoring_{NPV} = \frac{NPV_{max}}{NPV_{varianta}} \times 5$$

(1)

The first prerequisite for NPV calculation was choosing maintenance life cycle. It was derived from the assumption that average top management tenure is roughly five years and during this period prevalent part of strategic decisions should prove their viability. That is why five-year maintenance life cycle is recommended as time-frame standard.

Another parameter which attracts attention in discounted cash flow models (DCF) is a discount rate. It is worth recommending to use company discount rate to be calculated as a weighted average of capital costs (WACC) or to use rate of return requested by shareholders. To facilitate calculation various approaches to the determination of equity costs were published in a scientific literature (modular models, CAPM[24]) (Brealey *et al.,* 2013). Since the calculations of NPV for individual variants are intended for comparison purposes only this parameter is not as sensitive as in the calculation of usual investment project effectiveness. Qualitative like quantitative criteria are necessary to be transformed into measurable scale.

Typically, behavioural scale was used for the evaluation of non-financial criteria. Each *"behavioural formula"* which describes typical behaviour is assigned certain point score. Tab. 1 shows the example of scoring calculation for the parameter defined as service contingency solution. Scoring for the rest of parameters was obtained by the same way.

Tab. 1: Behavioural scale for scoring calculation of contingency solution

Point score 1	Point score 2	Point score 3	Point score 4	Point score 5
Neither does service provider solve contingencies nor is willing to assume any obligation to solve contingencies.	Service provider solves problem only at his discretion. He is not willing to assume any obligation in this respect.	Service provider solves or is willing to assume obligation to solve problems at clearly defined extent, but in time which is set by himself.	Service provider solves or is willing to assume obligation to solve any contingency but in time which is set by himself.	Service provider solves or is willing to assume obligation to solve any contingency in mutually accepted and agreed time.

Source: own

Needles to stress that all unacceptable options should be excluded from the evaluation. Even if decision-maker himself must be explicit about the definition of unacceptable option, this model recommends excluding any option which is rated by the lowest point score in any decision-making criterion.

Finally, the utility of each variant is calculated as expected value E(V) (weighted arithmetic mean) according to formula (2).

$$E(V) = \sum_{n=1}^{N} w_n . PCR_n \tag{2}$$

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[24] Capital Assets Pricing Model

Where: w_n = weight of criterion n

PCR_n = point score of criterion n

Eventually the variant with the highest utility shall be intended for implementation. The selection of the most suitable variant is thus substantiated from several points of view. Such a model offers wide range of flexibility which qualifies it for the adoption in various industrial branches.

2   Validation of the model

The model was validated on the pattern of mid-sized Czech pharmaceutical company PharmaComm s.r.o. (further referred as the Company). The Company is focused on the development, production and distribution of active pharmaceutical substances intended for both human and veterinary use. The company had to challenge continuous increase of maintenance costs which were closely tied with the ineffectiveness of maintenance services performance. These costs prevalently originated in permanently increasing complexity of operation processes and stricter regulatory impositions. Basically, some of activities were performed irregularly or randomly which prevented Company from benefiting from economy of scale. Company assets dedicated to maintenance performance were partly unutilized. Until recently the Company has arranged for maintenance activities on its own (maintenance insourcing). The Company established internal maintenance department which took charge of both preventive and regular maintenance. Company management decided to make use of purposefully developed normative decision-making model to decide about the most appropriate redesign of maintenance processes. Three options were considered for implementation:

Maintenance insourcing (de facto retaining *status quo*) where the maintenance from organizational and authority point of view remains the part of the Company. The activities are executed by internal company employees who take care of the procurement of investments, material or spare parts. Notwithstanding maintenance insourcing the Company adhered in minimum extent to outsourcing of highly specialized activities. E.g. regular yearly functional control of analytical devices by authorised firms.

Complete maintenance outsourcing where all the maintenance service delivery is transferred to external subject (general contractor). The company made 9 out of 10 maintenance workers redundant while maintenance manager was retained to manage outsourcing relationship. The

company doesn´t purchase investments any longer and transfer this activity to a general contractor.

Maintenance outsourcing with reverse leasing of assets represented variant when the Company sold fixed assets which were operationally tied with maintenance to a contractor and made some earnings out of this deal. The outsourcer then proportionally incorporated these assets value to the maintenance service price. In general, the outsourcer provided the Company with requested maintenance service in the same way as in complete maintenance service outsourcing.

It is worth stressing, that variant development was fully at discretion of management team. Other possible variants might be outsourcing to more than one subject, partial outsourcing, outsourcing to company subsidiary etc.

The weights of individual criteria were determined by the 100-points allocation method. Point score for each criterion was normalized to fit within 100% scale. Furthermore, each variant was subjected to critical evaluation based on criteria selected. Based on expert team discussion each variant was assigned point score ranking from 1 to 5. Decision-makers were maintenance manager, shift masters, ISO company specialist, operation manager and technician. The results of utility calculation for three considered variants of maintenance organizational arrangement are shown in tab. 2.

Tab. 2: Calculation of utility of insourcing/outsourcing variants

Criterion	Economic criterion (NPV)	Service delivery flexibility	Service quality and reproducibility	Contingency solution	Risk of variant	Weighted average of assessment
Weights	62,0%	5,2%	19,8%	3,0%	10,0%	
Insourcing	4,7	3,8	4,2	3,9	4,9	4,55
Outsourcing	5,0	4,3	4,5	4,2	3,9	4,73
Outsourcing with reverse leasing of assets	4,9	4,3	4,5	4,2	3,9	4,66

Source: own

Results discussions and research limitation

The survey revealed that services outsourcing penetration was in progress. Among the responders almost 60% companies operated in production sector, the rest was engaged in service or trading sector). 76% companies were ranked among big companies (more than 250 employees). 79% of responders considered outsourcing an important managerial technique which might be beneficial if implemented rationally. Companies are well familiarized with the concept of outsourcing and some of them either implemented outsourcing or contemplate outsourcing implementation. From this point of view 16% and 65% companies implemented partial and full and partial outsourcing respectively. The companies perceive the main benefits of maintenance outsourcing in cost savings (39%), higher quality of services (30%) and headcount decrease (31%). Company staff is quite knowledgeable about the factors which are contingent for smooth and successful outsourcing implementation. The most decisive factor which should be taken into consideration upon the decision on outsourcing should be risk of outsourcing (65%), price to be paid for outsourcing (60%), quality of delivered services (79%), flexibility of service delivery (62%) and contingency solving (51%). Other unspecified factors accounted for 1%. The factors with the highest frequency of responses were then chosen as key decision-making criteria. The main obstacle to smooth adoption of outsourcing rests in risks tied with outsourcing (65%) and difficulties with the management of outsourcing relationship (35%).

On the other hand, managers who oversee making decision about outsourcing lack proper decision-making tool which would consider all relevant parameters. Parameters like economic effectiveness, quality of services, flexibility of service delivery, contingencies solution or risk exposure were of superior importance for the responders. In addition, a bit less, important parameters like demandingness of outsourcing management or tight dependence on the outsourcer were also addressed.

The model was validated on the pattern of mid-sized pharmaceutical company which successfully decided about the adoption of maintenance outsourcing by means of the model in question. Decision-making process was executed by top management team which contributed to the verification of key standpoint which were crucial to the final decision.

Conclusions of the research enabled to formulate responses to research questions:

It was examined that the main motivation to the execution of specific organizational innovation (outsourcing) was cost savings, drop in headcount and enhancing flexibility of services

delivered. (2) There was little notion that organizational innovation can directly influence company performance, even if head count slashing might bring some financial benefits. Transformation of investment costs into operation costs implying better cash flow management surprisingly didn´t attract much attention and was addressed in minority responses. Organizational innovation (outsourcing) was believed to have an indirect effect on company performance. It enables the company to focus on core business and thus prevent from any side activities which might consume time, effort and resources. χ-squared test was used to determine if there were significant differences among response frequencies to question "Where do you see the main benefits of outsourcing?" which were provided by three main group of responders (production, service and trading sector). The chi-square statistic is 19.9819. The p-value is 0.010405. The result is significant at $p < 0.05$. The results are summarized in tab. 3.

Tab. 3: Summary of χ-squared test calculation

	Cost savings	Head count drop	Performance quality	Service flexibility	Core business focus	Row Totals
Trading sector	60 (51.84) [1.28]	40 (37.34) [0.19]	60 (65.26) [0.42]	30 (33.72) [0.41]	50 (51.84) [0.07]	240
Service sector	47 (50.55) [0.25]	27 (36.41) [2.43]	60 (63.63) [0.21]	33 (32.87)[0.00]	67 (50.55) [5.36]	234
Production sector	36 (40.61) [0.52]	36 (29.25) [1.56]	60 (51.12) [1.54]	30 (26.41)[0.49]	26 (40.61) [5.26]	188
Column Totals	143	103	180	93	143	662 (Grand Total)

Source: own calculation

Conclusion

Organizational innovations play decisive role in company development. If implemented successfully they may significantly contribute both to competitive advantage generation and company survival. This paper deals with service outsourcing which represents specific type of organizational innovation. The paper examined the penetration of service maintenance outsourcing in the Czech and Slovak Republic. The examination of maintenance outsourcing principles was conducted in production, service and trading sector. The calculation of χ squared test proved that there were statistically significant differences in the perception of outsourcing benefits among these three sectors. The results also showed that maintenance outsourcing was in some extent adopted by most of companies which were subjected to research. The paper also

offers normative model to be applicable for making-decision on possible outsourcing of maintenance services in industrial companies. The model is based on several criteria including quantitative value creation criterion (NPV). The rest of the set of criteria are qualitative criteria, mostly of behavioural character. From the logic point of view the model is quite transparent and easy to be implemented. The model was validated on the pattern of mid-sized pharmaceutical company. The company in question pursued this model upon making decision on maintenance service outsourcing. Even if the model was elaborated for the sake of maintenance outsourcing the author assumes that the model is expandable to other areas of service outsourcing (facility management, fleet management, payroll accounting etc.). The model can be easily adapted to fit in with any services by the replacement of decision-making criteria and elaboration of behavioural scale for each newly established criterion. Future research should be aimed at the extension of the model to other outsourcing sectors as R & D or production outsourcing.

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Contact

Miroslav Špaček

Department of Entrepreneurship, Faculty of Business Administration

University of Economics in Prague

W. Churchill Sq. 4, 130 67 Prague

miroslav.spacek@vse.cz

DETERMINING CRITICAL ISSUES IN SOCIAL ENTREPRENEURSHIP EDUCATION

Marzena Starnawska

Abstract

Purpose: The social entrepreneurship education (SEE) research has so far, been not sufficiently studied in the literature. This is surprising, considering the dynamic interest of academia in social entrepreneurship (SE) phenomenon. The aim of this paper is to identify critical issues in designing and providing social entrepreneurship education.

Design/methodology/approach: The paper is a conceptual work. As academic effort on SEE is rare the literature review analyses a limited number of key texts. Here, the author employs critical review of the literature on social entrepreneurship education. Papers in this area, from education, management and entrepreneurship literatures are identified and relevant issues for education discussed.

Findings: The work brings several findings and suggestions for SEE. The curriculum needs efforts in merging "social" and "entrepreneurship" elements. Issues of scalability, sustainability for SE need to be carefully delivered and reflect the impact requirements and challenges social enterprises face. The discussion on SEE asks for stakeholder approach in the design and delivery thanks to the process of interaction between university and environment where the university is a member of a local ecosystem. The emergence of interactions, requires social constructionist approach in researching and teaching SE. Therefore, there is a key role, where it does not provide SEE but acts as socially responsible organization inside and within own value chain.

Research/practical implications: The findings are related with complexity and contextuality of social entrepreneurship phenomenon. SEE curriculum cannot be designed in the same way as an EE curriculum. This brings implications for the teaching methods and content like textbooks, case studies, best practices. Also, educators and teaching programme design need to include interactive discussion with different actors and organizations from local community, to respond to their institutional context. Diverse group of stakeholders should be involved in the construction of SEE agenda. The future research could cover research among educators and programme designers and their own experiences, in particular educational settings or countries.

Originality/value: The contribution of this work is that it comprehensively overviews important issues highlighted in the scarce literature in entrepreneurship and management area that need to be considered when designing and providing SEE. The paper addresses the key call for engagement of educational environment stakeholders in providing and designing SEE.

Keywords: Social entrepreneurship, entrepreneurship education, social enterprise, university education, social constructionism, social capital

JEL Codes: A20, I23, L31, L26, M14

Introduction

With growing social problems all over the world, it is recognized that technological solutions, and relevant policy and legislation frameworks are not sufficient for tackling them (Wals, 2012). Therefore, educational effort in changing mind-sets, values and individual capacities to generate social change is required, which can be partly achieved through social entrepreneurship education (SEE). Entrepreneurship and entrepreneurship education (EE) have predominantly used business and economic growth as a reference point in academic community. This approach has responded to the economic crisis, treating entrepreneurship as a panacea for economic problems, which resulted in thriving and supporting entrepreneurship culture and education across universities, and society in general. These institutions made efforts to encourage start-ups by graduates to combat the risk of unemployment. Whereas SEE as a phenomenon and field of research has been studied and practiced to a limited extent (Wyness et al. 2015).

The emergence of SE as sub-discipline, and its pre-paradigmatic stage (Nicholls 2010), but still a distinct one, has precluded EE from the need of focusing on societal issues (Wyness et al 2015)[25]. Therefore, an emerging trend in sustainable entrepreneurship research and education emerges as well (Nabi et al., 2017; Dvouletý and Lukeš, 2017). Wal and authors (2012) explain that this is why sustainability and social issues have become a topic that has become excluded from the mainstream entrepreneurship education. In academia, there are special centres, courses and programmes, modules, on different university levels where SE is tackled separately[26]. Therefore, it has become a natural course of action for EE, to exclude social issues. The inclusion of SEE in the curriculum can be done in two ways. It may be included as part of entrepreneurship classes as some particular/discrete tutorials or lectures SE, as a separate class on social entrepreneurship, or as a whole programme. But also, SE can also be included in other than management related education, in engineering, for example in: sustainable housing, social policy, pedagogical methods, or even software development for the marginalized groups. Therefore, it seems, SEE should not be limited to business school context only.

The aim of this paper is to identify critical issues that need to be considered in SEE, in design and delivery process in university context. The author provides reflective notes about these and

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[25] The authors refer to sustainability issues, and covere here a spectrum of societal problems like environmental ones, social exclusion, poverty.
[26] Although these are not high in numbers compared to entrepreneurship related courses, centres, journals, books, the educational task of SE is handed over to these.

suggests solutions. Here, the author's focus is on the university level provided education, however, it needs to be emphasized that SEE is neither limited to a classroom nor to a corporate board room, local authority, each in isolation (Wals, 2012), but crosses organizational and individual boundaries.

1   Critical issues and proposed solutions for SEE

The background for the discussion on challenges of SEE lies in the research debate on whether social entrepreneurship as a field of research and as a phenomenon can be done as a separate field with its own paradigm, own epistemology (Nicholls, 2010) as social entrepreneurs are a special breed (Pache and Chowdhury, 2012), or whether it should be included in the main entrepreneurship field. Also, there is an ongoing definitional debate (Dacin et al., 2010), rooted in the complexity of the phenomena, referring to the scope and spread of social enterprise models, their location between state, civil society and private sector following different institutional logics. Although the literature indicates that the unifying element of SE is the social aim (Dacin et al., 2010), it is still not agreed what is meant by "social" is arguable (Nicholls, 2006). The latter resonates with the discussion on entrepreneurship as a societal phenomena (societal vs social)[27] suggesting that social entrepreneurship needs to be included in the general stream of entrepreneurship research, as entrepreneurship itself is a social phenomenon, embedded in the context (Nicholls, 2010).

One of the common attempts of SEE, especially in the business school context, has been to use existing curricula of education models and label them with „social elements" (Westley and Weber, 2012). F. Westley makes a cautionary note about „not lacquering" business or entrepreneurship education with „social coat". Similar attempts are made in scholarly efforts, where theoretical frameworks are artificially and unthoughtfully adapted from other fields or disciplines. It is arguable how adequate it is and requires revision and reflection on how business concepts like competitive advantage, business perfromance and other ones, with regards to a social enterprise can be applied.

Within SEE framework four important aspects are relevant: **sustainability** and **scalability**, **social capital and networks**, as well as **shared value** approach leading to achievement of blended value**. Some evident critical issues stem from these and are discussed beneath.

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[27] This resonates by the discussions revived by R.Swedberg, who studied original texts and claimed that Schumpeter emphasized social impact and outcomes of entrepreneruship (Swedberg 2006).

The concept of **sustainability** addresses the need of social enterprise to move away from "grant dependency" towards self-sufficiency in economic activity. However, sustainability should be understood wider sense. It should include ability to sustain financially viable position, so that a social enterprise could maintain its position on the market. Also, sustainability needs the consideration of institutional legitimacy of a social enterprise as a phenomenon. Young (2012) refers to this while discussing long-term stability, where social enterprise, as a form is able to survive between the valleys of commercial world and non-profit world, reflecting struggles to operate between commercial logics and social welfare logics. So it is clear that SE field implies different approach, where sustainability results from strong, financially profitable business model, due to innovative solution responding to social problems. There are no universal recipes, as social enterprise landscape is very heterogeneous, and learners need to be educated, that sustainability is a more complex matter.

Another challenge is on what best practice and what **scope of impact** of SE should be communicated to students. On the one hand, there is a call for radical breakthrough approaches in social entrepreneurship practice and education, on the other hand there are many examples of small social enterprises acting on a local scale, with limited impact social in terms of scope and scale (Starnawska, 2016). More and more examples of SE practice and research keep finding new ways of solving social problems and providing social value. The scaling processcan refer not only to the replication of certain solutions to combat the scope of social problem. Scaling also refers to inclusion of other stakeholders for social enterprise, who recognize the role and impact it generates, and make efforts to support the social enterprise, reflecting the redefinition of capitalism (Driver and Porter, 2012) demanded by M.Porter. There is a lot of pressure in EE, especially in start-up communities, regarding the scaling vehicles for new ventures. The same questions are asked regarding social enterprise purpose and function. It seems that franchise models, for reaching broader impact and larger social value, are a solution to scaling problems. But preliminary research shows (Starnawska, 2017), that not all social enterprise models can be scaled, especially in work and social integration context, when the nature of human resources is considered.

As SE involves **multiple stakeholder**s, SEE requires blurring boundaries between universities, communities and private sector. SEE needs to be pluralistic (Wyness et al., 2015). This does not only refer to stakeholder theory framework borrowed from strategic management arguments. Networks where social enterprise is connected should be developed with stakeholders (top-down approach) and, at the same time, consider embeddedness of social

enterprise in a local community and related social capital, with ensuing development of social capital (bottom-up approach). It also needs to be emphasized that SEE is neither limited to the classroom, to the corporate board room, local authority, each in isolation (Wals, 20012). This requires including cross-boundary learning, across sectors and disciplinary boundaries, working in the context of different institutions and their logics, cultures, generations (Wals, 2012). One example is cross-disciplinary SEE approaches are seminars by Said Business School at Skoll Centre for Social Entrepreneurship, organized by Department of Social Policy Intervention[28] where academics from different fields covering topics such as social impact bonds, social care, gender equality and other are invited. On the practical side, there are already many different initiatives combining partnerships between the three sectors, where for example big corporate business collaborates with third sector organizations creating multiple partnership. One of the examples can be BMW and Ashoka Foundation working on research project aimed at recognizing and developing change-makers in local communities. Various cross-sectoral approaches could be implemented in educational programmes as well.

Also, there is a dilemma, on whether attempts should be made to shift the EE paradigm from profit maximisation towards emphasis on solutions to social problems, beyond recognized CSR actions and education. Not only business schools have been saturated with neo-classical microeconomic approaches of profit maximization, actor rationality. The changes towards integrative thinking of socially responsible actions, where both business and society create a shared value (Porter and Driver, 2012), are slowly emerging in practitioners' and academic circles which reflects integrated blended value (including social and economic value). What M. Porter calls for, is the redefinition of capitalism, where SE is a transitional mechanism, not an end state (Porter and Driver, 2012). This change is not only reflected in the change of curriculum on how responsibility is taught, but also in additional dimensions: how universities operate on their own in terms of own value chain and how universities can generate significant positive impact on the local community (Porter and Driver, 2012). For SEE to be authentic, academia needs to shift its own agenda and actions, towards creating social value, not solely teaching about it. Here, new models combining integrated economic and social value i.e. **blended value** - should develop (Wyness et al, 2015: 841). These authors claim, in similar manner, that students should be given opportunity to freely recognize their own needs, value

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[28] Department of Social Policy Intervention (2018). *Events*. Oxford University, Said Business School, Retrieved https://www.spi.ox.ac.uk/events?selected_tab_205291=upcoming&138421_filter10205291=9996).

reflecting what they care about, and thus, future SEE will not face the mind-set of caring for money in society, and becomes transformative process itself.

Another critical issue is related to attempts at analysing SE phenomenon. As mentioned earlier, a social enterprise is grounded in **social capital**. This implies a wider perspective, looking far beyond pure organizational or individual level. Social enterprise is embedded in local community, it responds to the social needs and social problems of this community. Resources gathered and leveraged come from this particular local community, with some being involved on voluntary or free basis. It seems natural, that trust building, mutuality and reciprocity, as well as common and shared construction of values, behaviours, aims, emerge from the network of individuals, groups and organizations around a social enterprise. Therefore, it is natural, that the values and mission of social enterprise are constructed through shared meanings, between the social entrepreneur and their environment, be it local community, governments, other NGOs, private business or individual volunteers, policy makers, social investors, in interactions between one another. The social problem or social need is constructed in the local community. As such it means that research and teaching of SE can be informed through **social constructionist** approach (Lindgren and Packendorff, 2009) called for entrepreneurship studies as well.

Only been recently SE field has began to recognize the dark side of Se in both: teaching and research (Dey, 2006; Zietsma and Tuck, 2012). SE has been overly **portrayed as a positive** phenomenon, bringing about extremely positive outcomes. This is rooted in the „desire" of SE to resolve world's most painful problems and brings about ethusiasm of variety of actors and organizations from different sectors. Thus, the educational content mainly presents best examples and positive results of SE phenomenon. However, SE educators should be sensitized and should sensitize others about unintended, harmful effects of SE for social structures (Zietsma and Tick, 2012). Therefore, the driving directive for SE and educators should follow Hippocratic oath „do no harm" approach and revise SEE about avoiding excessive postitive attitude to SE. Existence of institutional voids provides opportunities for SE but the same institutional contexts mean strong informal institutions, with their actors. The short-term, ad-hoc solutions to related social problems may easily evaporate, and other, more in-depth, fine-grained, long-term solutions are required, to change the institutional set-up for sustainable solutions to social problems. Here, the interdisciplinary approach to SEE returns, where anthropological and sociologicals skills are required for designing appropriate solutions, to foresee any negative impact of SE on social structures. Not always, big, ground breaking

solutions from large actors are not always fit for big problems (Pache and Chowdury, 2012; Zietsma and Tuck 2012). SEE curriculum needs to include sensitizing discussion, about the outcomes SE brings about to social and economic structures.

Contrary to EE focused mainly on developing new populations of entrepreneur, SEE to be a more widespread phenomenon, requires more diverse groups in the field **social innovation** (Westley and Weber, 2012). F.Westley returns to the obious difference between SE and social innovation, where the latter is about changing existing systems and structures and reconfiguring institutional set-up. This can be started by different individuals or organizations, and requires aforementioned multi-stakeholder approach to SE, involving continuous interactions beween social enterprise embedded in the community, or wider environment. It may bring more impact to teach wider, more diverse groups of students to be social innovators, change makers acting as institutional agents, acting as dedicated volunteers, customers, managers, employees and social entrepreneurs themselves.

A common dillema in entrepreneurship education, asking whether academia should teach for entrepreneurship or about it has critical relevance for SEE. Against the context of social entrepreneurship as a young field of research, with underdeveloped own theory (Dacin et al., 2010) and pre-paradigmatic stage (Nicholls, 2012), it appears crucial that not only students but a greater variety of actors are included in education about SE. The knowledge about SE as a still novel phenomenon is still complex, highly contextual, and requires insights from different disciplines. If the definitional debate is still omnipresent in SE research, how challenging it may seem for learners, to understand what SE is. At the same time, consideration of new, or even novel skills, attitudes (values and mindset) is needed in breeding more individuals intro the SE activity. New social enterprise models are created, new logics and rationalities on the crossing of market, third sector, state are being institutionalized (Starnawska, 2016). Therefore, **„for"** and **„about" SEE cannot be treated as mutually exclusive**. There is no dilemma, strond educational efforts need to be done in both approaches. Żur (2016) suggest these two approaches to be undertaken and provides a comprehensive set of skills and elements of the social entrepreneurship curricula programme, involving compassion and business zeal at the same time, ability to combine market and social welfare logics, acknoledgment and recognition of local networks among stakeholders, among many more. Chell and authors (2007) talk about SEE requiring „new resource skills" involving where ability to build and capitalize on social capital.

Conclusions

Social entrepreneurship education has not received sufficient attention in the current research in management, entrepreneurship and education fields. The SE is acknowlegded to be a complex phenomenon. As SE research is strongly practice driven, it comes as no surprise that there are no models and tools for SEE yet. Also, against the background of sub-discipline of SE, and its pre-paradigmatic stage in research, it comes as no surprise that SEE has been significantly excluded from EE agenda. As there is no universal defition, it seems impossible to design a universal curriculum for SEE, as opposed to entrepreneurship and EE studies

Indeed, there are a number of challenges faced by academia. So in designing and providing SEE curriculum, a number of considerations should be made. SE as a phenomenon varies in contexts, localities, and so academia should be sensitized to social problems of local communities. Educational models should reflect instutional (informal and formal) and legacy framework in each country, region. A process of natural interaction between university and local actors should emerge, and diverse stakeholders should be included in the design as well as provision of SEE. That is why, recognition of social capital in the process is crucial. This has implications for the multi-stakeholder model of SEE. More, a university itself, should act towards social benefit of the local community, through responsible practices and behaviours inside and across ow value chain. Here, academia is important actor in the entrepreneurship ecosystem of the region, which also responds to local social problems. Following that, it is natural that in both: research and teaching, social constructionist approach is a useful approach in designing and delivering SEE.

It is also proposed that SEE could have more impact, if it followed more inclusive approach, by teaching individuals „about" and „for" social innovation. Social innovators are nurtured and work and act in different sectors, for different organizations, and in different disciplinary settings. SEE goes beyond the university classroom. Not everyone needs to be a founder of a social enterprise, but society or community can be involved in SEE when variety of actors and organizations are involved in the process performing different roles for a social enterprise. If community problems are well recognized, then issues of sustainability and scalability are naturally solved. Not each social enterprise needs to be big, deliver wide impact to the society, not always social enterprise can deliver significant financial output. The overethusiasm about SE phenomenon should be balanced with more careful and critical actions of those involved as well, recognizing SE impact on social structures.

It is also desired, that SEE should teach for and about SE and academia needs to make significant efforts to integrate „social" and „entrepreneurship" dimensions in considerate manner, not just by labeling exiting business education with „social" coat.

The contribution of this work is that it comprehensively comprises important elements that need to be considered when designing and providing SEE. This brings implications for the content of teaching methods and content delivery. Also, educators and teaching programme design need to include interactive discussion with different actors and organizations from local community, to respond to their social problems, existing institutional context. Diverse group of stakeholders could be involved in the construction of social entrepreneurship education agenda. Future research could cover the research among different educators and programme designers and their own experiences, in reference to particular educational settings, countries.

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Contact

Marzena Starnawska

University of Warsaw, Faculty of Management

Szturmowa 1/3, 02-678 Warszawa, Poland

mstarnaw@w.pl

TENDENCIES IN ONLINE COMMUNICATION OF CSR – A LONGITUDINAL STUDY

Richard Szántó

Abstract

Purpose: Although quite a few studies dealt with online communication of CSR principles and practices of companies, longitudinal studies are rare, therefore knowledge on the tendencies in this field is very limited. This paper tries to fulfil this void by analyzing changes in online CSR communication over time on the same sample of companies.

Design/methodology/approach: In this study, the 200 largest Hungarian companies' online CSR communication was analyzed, and the findings were compared to the ones of the research carried out 8 years earlier. 40% of the firms disappeared from the 2009 list, consequently the author ended up with a sample of 120 firms that were present on both lists (2009 and 2017). In this research, a content analysis methodology was used: pre-given categories and themes were sought on corporate websites looking for patterns and regularities.

Findings: Large Hungarian companies use the web more actively for CSR communication than they did almost a decade earlier. More companies have their dedicated CSR sections on their corporate website than 8 years ago, and they generally talk more about their CSR principles and practices. Some key issues are major topics of CSR communication such as CSR principles, values, philanthropy initiatives, and environmental management systems, while others are in the bottom like green office programs, responsible governance or responsible marketing.

Research/practical implications: Based on the findings of this paper, practitioners can develop their online communication, and can identify the weaknesses of their current practices. Future research should reveal what the motivations of the more active firms are, and why companies lagging do not perceive the value of this activity. It is also important to explore other ways of online communication like the use of online media, since for many organizations it can be (or it is already) the next step to develop their CSR communication, and enable a two-way-dialogue with their stakeholders.

Originality/value: Longitudinal studies in this field are rare, therefore this research focusing on how online CSR communication has evolved over time is unique. By exploring the changes in CSR disclosure, the determinants of this type of communication can be identified.

Keywords: Corporate social responsibility, online communication, corporate web pages, content analysis

JEL Codes: A13, M14, M30

Introduction

Online presence and the communication of corporate social responsibility principles and practices seem to be evident for major corporations. Nearly half of the population of the world have internet access now, moreover, in North America the internet penetration reached 88%, and it reached 77% in Europe (Pandita, 2017). As Ramesh Pandita puts it: "(i)nternet has become the order of the day and no country in the world can afford to remain elusive of the internet access." (Pandita, 2017: 90). In the same time, the last two decades have seen a dramatic increase in CSR disclosure of companies throughout the world (Malik, 2015).

Yet, because of the complexity of the issue, it is not obvious what, to whom, and how companies ought to communicate about their CSR activities and policies. Public perception about CSR communication is divided, while some people prefer companies talking loudly about their CSR practices, others prefer companies doing good silently, and not disclosing information at all about CSR issues (Morsing & Schultz, 2006). Although quite a few studies dealt with online communication of CSR principles and practices of companies, longitudinal studies are rare, hence knowledge on the tendencies in this field is very limited. This paper tries to fulfil this void by analyzing changes in online CSR communication over time on the same sample of companies.

1   Literature review

Research on online communication of corporate social responsibility started around two decades ago. Amongst the first empirical studies, Esrock and Leichty (1998) published their findings about the most important CSR related messages communicated on corporate web sites at that time. Their findings revealed that most large corporations used the web to communicate at least about some CSR issues even in 1998, and the size of the company positively correlated with the number of social responsibility items that were disclosed online. Since then a great amount of studies have explored online communication practices, many of them using similar content analysis methodology: researchers seek for pre-given categories and themes on corporate websites looking for patterns and regularities. Moreno and Capriotti's (2009) work is an excellent example for this research strategy, they identified 10 basic issues with CSR reporting relevance (corporate profile, products and services, employment and human resources, economic action, social action, environmental action, corporate governance, corporate ethics, relationships with publics, and external criteria), and analyzed web pages by using this list. Maignan and Ralston (2002) identified national differences when they compared

the CSR principles, processes, and stakeholder issues discussed in French, Dutch, British, and US corporate web pages.

In a Hungarian study a similar research was carried out between 2009 and 2013. First, the 200 largest Hungarian firms' websites were investigated (Szanto, 2010), later a critical discourse analysis was conducted on a smaller pool of websites (Pataki et al., 2015). Firm size and industry played a significant role in the intensity of the communication: the larger the firm, the more it communicates about corporate responsibility. Telecommunication companies were the most active on the internet in this regard, nevertheless petrol firms, and representatives of the chemical industry, and the tobacco and alcohol producers also talked about their CSR activities quite a lot.

Although communication on corporate web pages is still in the forefront of online CSR communication, other forms like use of Facebook pages and sending Twitter messages are also getting more and more importance. Although the latter ones enable two-way communication (in contrast to the primary one-way communication in the corporate websites), it seems that most corporations still use social media for one-way communication, and very few of them use it in an interactive way (Etter, 2014).

2   Methodology

In this study, the 200 largest Hungarian companies' online CSR communication was analyzed, and the findings were compared to the ones of the research carried out 8 years earlier. The weekly newspaper Figyelo (Observer) publishes the list of the top 200 Hungarian companies every year (in a similar fashion as Fortune 500). The list is based on the net revenues of the companies in the given year. It turned out that 40% of the firms disappeared from the 2009 list (due to several reasons such as bankruptcy, merger or acquisition, economic downturn, etc.), therefore the author ended up with a sample of 120 firms that were present on both lists (2009 and 2017). The largest firm of the sample had a revenue of 11.46 billion EUR, while the smallest firm had a revenue of 130 million EUR in 2017 (M=731.17 million, SD=1335.64 million). Table 1 shows the industries represented in the sample.

Tab. 1: Industries represented in the sample

Industry	number of companies	%
Wholesale & Retail	27	22.5%
Automotive	13	10.8%
Coal, Petrol & Chemical	12	10.0%
Food, Beverages & Tobacco	12	10.0%
Electronics, Machinery & Tools	11	9.2%
Energy	11	9.2%
Vehicle & Gas Commerce	9	7.5%
Transportation & Logistics	7	5.8%
Construction	4	3.3%
Metal processing	4	3.3%
Telecommunication	4	3.3%
Other	6	5.0%
Total	120	100.0%

Source: own elaboration

The author was looking for the websites of the companies in the following way. First, www.thecompanyofthename.hu was typed into an internet browser, and if it did not succeed, google search engine was used to find the corporate website. It turned out that 87% of the visited companies had corporate websites, which is the same figure that was seen 8 years ago. Only Hungarian texts were analyzed during the study, if visitors were redirected to a non-Hungarian subpage or a separate site (for example to global headquarters' web page, or a partner's website) further analysis was not carried out on the related web pages. CSR related documents uploaded to the corporate web pages were not scrutinized either (e.g. content of CSR reports, regulations, corporate policies, etc.), but it was registered if such document was available on the website. Press releases, news were not investigated and corporate Facebook, Twitter, and other social media sites were not considered in this study. The web pages of the 120 companies were visited in January 2018.

The sincerity of the communicated data, information was never checked, and only the presence of CSR issues on the web page was registered, the volume of the text, the depth of the communicated information, etc. was not considered. The author is certainly aware that lack of communication about CSR issues does not mean that a company is not engaged in social responsibility or does not implement CSR actions. Contrary, intense CSR communication sometimes hides unethical practices, irresponsible actions of companies (Pataki et al., 2015). However, communication about CSR practices and principles seem to be pivotal in CSR

management, since socially responsible firms should maintain intensive relations with different stakeholder groups and must be committed to information transparency and ethical behavior (Capriotti & Moreno, 2007). Nevertheless, one should have to remember that this study focused on the online representation of CSR principles and practices of the companies, and not on the CSR principles and practices themselves.

3   Empirical results

First, it was analyzed how many companies had dedicated CSR subpages in their corporate websites. More than half of the companies investigated (62 firms) have dedicated CSR sections within their corporate websites, but they label them differently. The term 'Corporate social responsibility' is the most widely used, yet some smaller fraction of companies use keywords like 'Sustainability' (SD) or 'Corporate citizenships' (CS). This is a significant increase compared to 2010, when only 41 companies (34%) had a section with similar labels.

Those companies who have dedicated subpages for CSR issues communicate more intensively in this domain. While those who did not create separate pages for corporate social responsibility actions and principles mention 2-3 issues on their websites on average, those who have dedicated CSR/SD/CS sections talk about 13-14 topics. Surprisingly, this gap was a bit smaller 8 years ago. It should be noted that in these dedicated sections various CSR issues may appear: some firms disclose information only about its philanthropy and sponsorship activities, while others talk about other broader issues such as environmentalism or volunteerism. Responsibility towards employees is rarely discussed in these sections, it is usually included in a section labelled 'Career'.

A list of CSR issues discussed was elaborated for both years that is presented in Figure 1. More companies discussed the most CSR issues in 2017 than in 2009; however, there are some notable exceptions. On the top of both lists, one can find CSR philosophy and/or principles: more than half of the companies communicated these on their corporate web pages. It is followed by philanthropy which shows that philanthropy still equals to corporate social responsibility for some companies, and they disregard some other important aspects of the concept. Environmental management systems such as ISO 14001 or EMAS became third in the ranking in 2017 that may show the importance of ensuring the regulatory compliance, and the documentation in this regard. Although environmental management systems were originally designed to improve environmental practices and performance, some social influences such as

the positive impact on corporate image, stakeholder relations, and reputational benefits cannot be neglected (Boiral et al., 2017).

Fig. 1: Frequency of CSR issues discussed on corporate websites
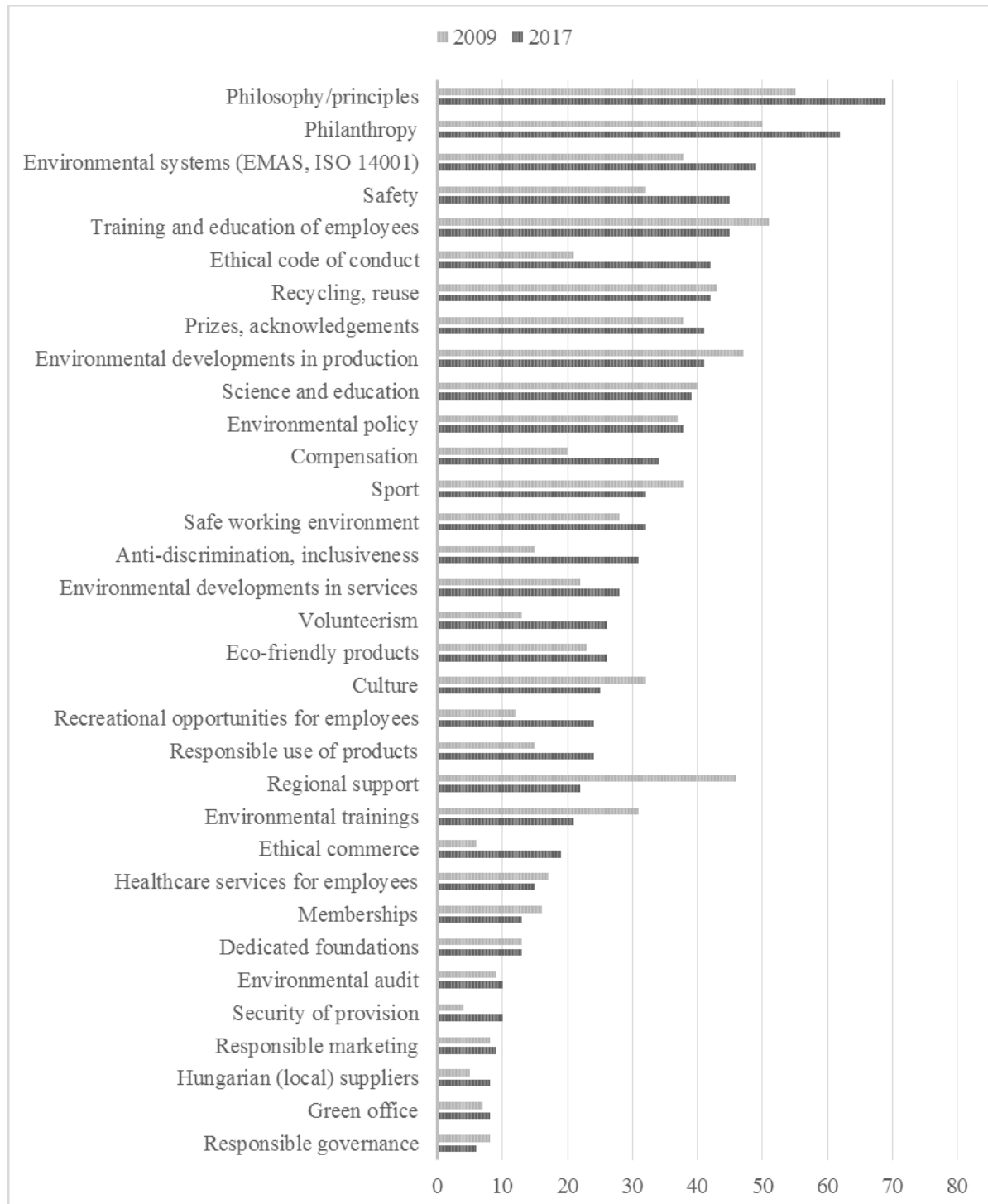
Source: own elaboration

Some issues are communicated much more loudly on the websites today than in the past. Twice as much companies place their ethical code of conduct on the website than 8 years ago (42 vs.

21 companies) which seems to be similar to the tendency that were discussed at the environmental management systems above. The topic of anti-discrimination and equal opportunities have become also significantly more common on the corporate web pages in the last years (31 vs. 15 mentions), which resonates with the fact that gender equality has been among UN's sustainable development goals since 2015. Communication about certain issues like training and education of employees, or sport, culture, and other regional sponsorships have slightly dropped in the past years, which may not be surprising. Training and education and sponsorships are not specific CSR issues, rather traditional management practices. Even firms entirely neglecting CSR may invest into human resources and sponsor cultural, sports or other regional events for business reasons. Having less companies communicating about these issues may be a sign that the interpretation of the concept of CSR have become clearer, and there has been a little bit greater consensus amongst companies what can be considered as a CSR activity and what cannot.

In the bottom of this list one can find topics that may be relevant for only a group of companies such as security of provision (principally important for energy and petrol companies), having Hungarian suppliers (essential for some retailers), and responsible governance (key for companies listed on the Hungarian Stock Exchange). These topics are constantly in the lower region of the ranking, and it is not expected that they will be seen as fundamental issues by other firms. Nonetheless, ethical commerce has turned out to be much more salient CSR issue today than it used to be in the past. It was an insignificant topic in 2009, yet today it is already an issue with a medium importance.

There is a significant weak-medium correlation (0,353) between company size (in terms of turnover) and the intensity of online CSR communication (measured with the number of CSR issues presented on the web pages). Nonetheless, this correlation is stronger than it used to be 8 years ago. Some differences across industries were identified too. Telecommunication sector is the most active communicator regarding their social responsibility, as it used to be. Petrol & chemical, and energy companies are also traditionally in the top three (they were there 8 years ago already), which can be explained with the significant environmental impact of these companies, and the heavy state regulations imposed on these firms.

Metal procession, construction, and electronics, machinery & tools are industries lagging in online CSR communication. It is important to note that these are mainly B2B companies, and they usually do not have direct contact with end-users, therefore they probably do not see the necessity to communicate their CSR activities to the general public. Interestingly some

controversial industries like food, beverages, and tobacco communicate less about their CSR practices on the web then they used to, contrary to the energy sector that have become one of the leading sectors in online CSR communication.

Conclusion

The results presented above generally show that large Hungarian companies use the web more actively for CSR communication than they did almost a decade earlier. More companies have their dedicated CSR sections on their corporate websites than 8 years ago, and they generally talk more about their CSR principles and practices (an average company discusses eight issues compared to seven issues 8 years earlier). Some key issues are major topics of CSR communication such as CSR principles, values, philanthropy initiatives, and environmental management systems, while others are neglected like green office programs, responsible governance, and responsible marketing. Disclosing information only on CSR values or philanthropy actions represent a relatively narrow approach to corporate social responsibility, however, research shows that some other issues like volunteerism, business ethics, and anti-discrimination have become more and more important to the firms recently.

Findings of this research generally met the expectations since growing internet penetration and the increasing public interest in social issues are supposed to generate a more active corporate presence on the World Wide Web, and a more comprehensive communication about socially responsible actions and principles. Yet, there are still some companies who do not use this form of communication at all, whereas some companies see it as a required task without much benefit. Future research applying some qualitative methodologies should reveal what the motivations of the more active firms are, and why companies lagging do not perceive the value of this activity. It is also important to explore other ways of online communication applied like the use of online media (Facebook, Twitter, or YouTube), since for many organizations it can be (or it is already) the next step to develop their CSR communication, and enable a two-way-dialogue with their stakeholders.

One may not forget the limitations of this study. This research focused on large companies; therefore, generalization of the findings to smaller companies may be limited. As the literature review discovered country of origin played an important role in online CSR communication, one should also remember about the Hungarian context of this study.

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Contact

Richard Szanto

Corvinus University of Budapest

H-1093 Budapest, Fővám tér 8., Hungary

richard.szanto@uni-corvinus.hu

THE MULTIFACETED ENTREPRENEURIAL OVERCONFIDENCE: VARIATIONS IN ITS EXTENT, FORM AND EFFECT ON GROWTH EXPECTATIONS

László Szerb – Zsófia Vörös

Abstract

Purpose: In this article, we seek to answer why many attempts to empirically link entrepreneurial self-efficacy to growth expectations have failed. While doing so, we reconcile the literature on entrepreneurial self-efficacy and overconfidence. By analyzing GEM data, first, we show that early-stage entrepreneurs' self-efficacy statements are systematically inflated. Our results also indicate that entrepreneurial overconfidence is fading and its form changes as business owners learn and gather experience. In addition, by using Ajzen's Theory of Planned Behavior as a modeling framework, we illustrate that overconfidence results in exaggerated firm growth expectations. However, the changes in the form of overconfidence and the adjustments of expectations on market conditions as a venture ages alter the relationship between overconfidence and growth expectations across the business life-cycle stages. In this article, we seek to answer why many attempts to empirically link entrepreneurial self-efficacy to growth expectations have failed.

Design/methodology/approach: The pooled 2010-2014 GEM APS (Adult Population Survey) individual data set of the innovation driven countries was used to empirically test our hypotheses.

Findings: Our results show that the variations in the form of overconfidence (relative or absolute), the subsequent changes in the mode its influence operates (direct or indirect) and the update of other business expectations alter the relationship between self-efficacy and growth expectations as business owners gets more experienced.

Research/practical implications: Overconfidence and its effect on growth expectations vary as business owners are learning by doing. Merging nascent and baby businesses in a combined start-up "entrepreneurship" measure is problematic.

Originality/value: Our research contributes to the "black box" of interactions between entrepreneurial attitudes, activity and aspirations. We theoretically and empirically corroborated the variations in in the relationship between self-efficacy and expected firm growth across the business life-cycle stages.

Keywords: Self-efficacy, overconfidence, growth expectations, entrepreneurship, theory of planned behavior

JEL Codes: D91, J26, M13

Introduction

Based on Bandura's social learning theory (1977), entrepreneurship researchers proposed the notion of entrepreneurial self-efficacy to label someone's self-perceived abilities to fulfill entrepreneurial tasks. In general, outcome expectations depend largely on how people evaluate their skills. By analogy, it would be reasonable to suppose that higher entrepreneurial self-efficacy is coupled with higher firm growth expectations and intentions as well. Yet, only a handful of studies have examined this relationship (Levie & Autio, 2013). Moreover, the majority of them could not confirm it (e.g.: Stenholm et al., 2013). The link between the expected growth and self-efficacy is especially interesting as in turn, the expected growth was found to be positively linked to the actual growth both on firm and macroeconomic levels

Why were these studies not able to ascertain this seemingly so apparent relationship? We think that the first issue we need to examine is how distorted the pictures depicted by self-efficacy statements are. Cognitive researchers have been suggesting for a while that entrepreneurs are overconfident (Baron, 1998; Costa et al., 2017). However, despite the relatively large body of research on overconfidence, entrepreneurship research rarely differentiates or systematically confuse the distinct forms of overconfidence (Moore & Schatz, 2017) and estimates it with diverse, often misconstrued methodologies (see for details: Zhang & Cueto, 2017). Moreover, to the best of our knowledge, researchers did not examine the evolution of the form of overconfidence with learning by doing, the subsequent variations in the relationship between overconfidence and growth expectations and the moderation effect of entrepreneurial experience. We think that these are the other factors that we have to consider in this study to theoretically and empirically corroborate this relationship.

1   Theory and hypotheses

1.1   Entrepreneurial overconfidence and its forms

The fist type of overconfidence is overestimation, believing that one is better than reality justifies. The second and the most common form of overconfidence is overplacement. Overplacement is the distorted belief that one is better than others. And finally, the third and the most persistent form of overconfidence is overprecision. This manifests itself in a too narrow confidence interval on the truth; i.e. too high certainty in one's own beliefs (Moore & Schatz, 2017). Here, we define entrepreneurial overconfidence as someone's miscalibrated and inflated trust in his entrepreneurial abilities which boost the belief of the positive outcome of

his business decisions. Thus, we are especially interested in entrepreneurial overestimation and overplacement that are more closely related to self-efficacy than overprecision.

First, we need to establish that early-stage entrepreneurs' self-efficacy statements are inflated. There is a debate on the relative or absolute nature of overconfidence at market entry (see Bolger et al., 2008; Cain et al., 2015), but based on Cain et al. (2015) and the psychological theories of overconfidence (Moore & Schatz, 2017), nascent entrepreneurs' overconfidence is more likely to be relative to others. According to our knowledge, research failed to directly examine the type of overconfidence at later stages of entrepreneurship. By extension, we propose that all early-stage entrepreneurs overplace themselves.

H1: Early-stage entrepreneurs are overconfident.

H2: Early-stage entrepreneurs overplace themselves. Thus, their overconfidence is relative to others.

1.2   Effect of overconfidence on high growth expectations

Self-efficacy, or overconfidence, if it is inflated, must be differentiated from outcome expectations. The perceived skill designates a judgement on capacities to execute tasks. Expectations are projections on the outcome of those tasks. In general, higher self-efficacy is associated largely with higher outcome expectations of actions (Bandura, 2006). Along with the perceived skill level, Ajzens' Theory of Planned Behavior (TPB; Ajzen, 1991; 2005; Fishbein & Ajzen, 2010) enumerates the other drivers of behavioral intentions and realized actions (Figure 1). It states that behaviors and behavioral intentions are guided by three kinds of beliefs: (1) beliefs on the likely outcomes of the behavior (behavioral beliefs); (2) beliefs on descriptive and injunctive norms and motivation to comply with them (normative beliefs); (3) beliefs on factors and their power that may support or hamper the performance of the behavior (control beliefs). The perceived behavioral control is equal to the aggregated value of the strength of each control belief multiplied by its perceived power. Thus, in this framework, self-efficacy or, if it is systematically inflated, self-reported overconfidence functions as a control belief. The TPB suggests that an entrepreneur's growth expectations should rise if he develops a more favorable attitude toward running his venture, thinks that the social norms and acquaintances would be supportive toward the behavior, and feels that he can control the behavior. Nevertheless, general overconfidence in entrepreneurial skills (Hermans et al., 2015), such as entrepreneurial self-efficacy (Bosma & Schutjens, 2009; Levie & Autio, 2013; Tominc & Rebernik, 2007; Stenholm et al., 2013) was proposed, but not found, to be associated with

high growth expectations.framework of Ajzens' Theory of Planned Behavior (2005) self-efficacy functions as a control belief. Thus, self-efficacy or, if it is systematically inflated, self-reported overconfidence positively influences the behavioural intention.

H3: Overconfidence positively influences high growth expectations.

As mentioned earlier, the form of overconfidence determines how entrepreneurs relate to their competitors. If entrepreneurs overplace themselves (H2), their judgments on the quality of their product or service will be relative to others. In this case, overconfidence is positively linked to the expectations on the relative qualities of the offered product or service. In turn, based on the TPB, product quality judgements also function as control beliefs.

H4: Contingent upon H2, overconfidence has a substituting or an additional indirect effect on growth expectations via the underestimation of the competitors' services or products.

1.2   Effect of experience on overconfidence and entrepreneurial expectations

How experience relates to overconfidence is not empirically evidenced though (see for summary Zhang & Cueto, 2017). Some researchers argued that nascent entrepreneurs are unsure about their entrepreneurial abilities and will gradually learn about them over time by considering the feedbacks on their actions. Consequently, they gradually converge to an unbiased self-perception (e.g.: Jovanovic, 1982).

H5: By gathering experience, entrepreneurs become less overconfident.

Indeed, the promise of experience is that by reflecting on the feedback of our actions we can learn not only about our skills but about external factors as well (see Kolb's experiential learning model, 2014). By gathering experience, entrepreneurs are supposed to learn about, among other factors, market changes, their competitors and the expectations of their consumers as well. As a result, the influence of overconfidence on the growth expectations may vary as a business ages. Expectations may become considerably more realistic even if overconfidence persists or weakens slightly. Thus, experience may moderate the effect of overconfidence on the growth expectations. In this way, it makes the TPB dynamic and becomes one of the drivers of perceived behavioral control.

H6: Entrepreneurial expectations on firm growth weaken with experience.
H7: The effect of overconfidence on growth expectations declines with experience.

In sum, overconfidence influences growth expectations. The effect of overconfidence on growth expectations materializes directly or indirectly via the relative expectations on product qualities. Alternatively, the direct and indirect effects of overconfidence may both exist and

complement each other. Besides, the relationship between overconfidence on growth expectations is moderated by experience.

2   Research design

We think that the stages of the business life-cycle may be used as proxy for experience (see Kolb, 2014). Thus, the comparison of business ventures at their different stages of life-cycle makes it possible to study the evolution of overall confidence level and the interaction of experience and skill beliefs on entrepreneurial expectations. Alternatively, it makes possible to filter out the effect of experience and other life-cycle related changes on growth expectations when studying the impact of overconfidence.

Ajzen's TPB (2005) is frequently drawn on to explain the link between growth intentions and the realized growth. Here, we propose the extension of the usage of the TPB to examine the role of entrepreneurial overconfidence in growth intentions and realized growth.

3   Analyses

3.1   Data

To test our firm-level hypotheses, the pooled 2010-2014 GEM APS (Adult Population Survey) individual data set was used. GEM APS is a representative, national survey to measure and examine entrepreneurial activity and their influential factors (Bosma et al., 2012). For the purpose of this study, only the population of the 31 innovation driven GEM countries aged between 18 and 64 was considered. Habitual (both portfolio and sequential[29]) business owners were left out from the analyses.

In Table 1, we list the variables used to test our hypothesis. Besides the name, the type and the description of variables, the table contains a short description of how these variables are linked to TPB.

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[29] GEM record only those serial entrepreneurs who sold, shut down, discontinued or quit a business in the past 12 months.

Tab. 1: GEM variables directly linked to our hypothesis.

Role in the TPB	Type of the variable	Variable name	Variable description	Possible values
Background information				
Control Belief; represent and proxy for entrepreneurial experience, makes the model dynamic	IV	LICY	The stage of the business life-cycle (see definitions under the table)	(1)Nascent, (5)Baby, (10)Established
Entrepreneurial Attitudes				
Control belief	DV or IV	SKILL	Startup skills: Respondent claiming to possess the required knowledge/skills to start a business.	(0)No, (1)Yes
Entrepreneurial Ability				
Control belief	DV or IV	NEWP	New product: The number of (potential) customers that will consider product new/unfamiliar.	(0)Nobody, (1)Few or all customers
Entrepreneurial Aspirations				
Behavioral intention	DV	GREXP[30]	Growth aspiration: Businesses having high job growth expectation over 10 more employees and 50% in 5 years.	(0)Lower than 50% and 10 employee, (1)Over 50% and 10 employee

In all models, we filtered out the socioeconomic -i.e.: our models always included the education level, income, work status, gender and age variables- and other effects that can influence the market conditions and entrepreneurial expectations (country, year, market rivalry expectations, opportunity beliefs, knowing other entrepreneurs and risk propensity).

3.2 Methodology

At first, we would like to prove that early-stage entrepreneurs are overconfident. To do so, we compare entrepreneurs' self-efficacy statements across the stages of business lifecycle to see how the self-evaluation of the actual entrepreneurial skills varies as entrepreneurs gather experience. In a second step, we check if self-efficacy statements are related to the relative product quality expectations or not, i.e.: entrepreneurial overconfidence is relative or absolute. We also examine if the form of overconfidence changes with experience. Thus, additional analyses by life-cycle groups will be performed as well. In a third step, growth expectations (GREXP) will be regressed on SKILLS, LICY and NEWP –if entrepreneurs overplace

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[30] We have to mention here that our measure of growth combines a relative and an absolute growth value, so well-established large and small start-up business ventures have about the same chance to reach the applied threshold value.

themselves. Interaction effects and analyses by life-cycle groups will be run. Finally, growth expectations will be linked to actual growth.

3.3 Results

According to a binary logistic model, both baby and startup owners, even if they have much less entrepreneurial experience than the owners of established businesses, are as confident in their entrepreneurial skills as their more experienced peers (Table 2). Based on Kolb's experiential learning theory, this is a clear cut signs of early-stage entrepreneurs' overconfidence. Thus, H1 is approved. At the same time, it also denotes that parallelly with becoming more skilled, entrepreneurs become less and less overconfident. Hence, H5 is approved.

Tab. 2: Models including all ventures.

DV		SKILL			NEWP			GREXP		
IV with rc	Category	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
LICY (established)	Nascent	-.065	.041	0.937	0.671***	.033	1.955	1.800***	.057	6.052
	Baby	.067	.044	1.069	0.386***	.034	1.471	0.861***	.064	2.365
SKILL (yes)	No				-0.15***	.036	.861	-0.252***	.059	.777
NEWP (few or all)	None							-0.503***	.043	.605
Model	Chi-square	3617.666***			5145.084***			4042.019***		
	Nagelkerke R Square	.171			.199			.242		
	N	33905			33905			33905		
	Predicted %	83.3			71.4			90.1		

p<0.05*, p<0.01**, p<0.001***

As Table 2 shows, early-stage business owners are more likely to think that their product will be new for some or all consumers. In general, the expected novelty of their product depends on the self-reported confidence in own-skills of the business owners as well. However, more detailed analyses revealed that believing in own skills is coupled with higher likeliness of assuming that the offered product will be new for at least some consumers only at the baby and established life-cycle stages (Table 3). Consequently, contrary to our expectations, nascent owners' overconfidence is absolute. They overestimate themselves. Meanwhile, at the baby and established life-cycle stages, entrepreneurs evaluate their self-efficacy relative to others; they overplace themselves. Therefore, H2 is partially approved.

Tab. 3: Effect of overconfidence on the product novelty expectations.

DV		NEWP								
LICY		Nascent			Baby			Established		
IV with rc	Category	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
SKILL (yes)	no	-.102	.061	.903	-0.188*	.079	.829	-0.165**	.055	.848
Model	Chi-square	1298.460***			1030.962***			1753.793***		
	Nagelkerke R Square	.170			.184			0.149		
	N	9334.000			7018.000			17553		
	Predicted %	65.9			68.6			76.9		

p<0.05*, p<0.01**, p<0.001***

The business lifecycle stage has an enormous impact on the expected growth of the business ventures (Table 2). Compared to established entrepreneurs, both nascent and baby businesses are highly likely to overestimate their growth potential. The 5 year-long expectation of high growth lessens from 20% to 9% in about 1-2 years, moving from the nascent to the baby stage. Shortly after, it declines again to 3% during the life-cycle. According to our model, those entrepreneurs who think that they do not possess the required skills to start a business are less likely to expect high growth than their counterparts. Besides, those entrepreneurs who think their product will be new at least for some consumers are more likely to expect higher growth than their peers. Consequently, H3, H4 and H6 are approved.

The analyses by life-cycle groups show that, unlike at the two other life-cycle stages, baby business owners' skill beliefs do not have a direct effect on growth expectations. Still, as baby entrepreneurs overplace themselves, their overconfidence influences their growth aspirations via their product novelty expectations (Table 4). Moreover, adding the NEWP*LICY interaction effect to the model indicted that those nascent entrepreneurs who do not think that their product will be new at least for some consumers expect more growth that the original model would predict (B=0.456 (0.106), p<0.000). It means that the indirect effect of overconfidence is stronger for baby and established entrepreneurs. In sum, H7 cannot be approved. It should not be rejected either, however. Additional data would need to decide if the balance of all the changes in the relationship between overconfidence and growth expectations is negative or positive.

Tab. 3: Effect of overconfidence on growth expectations by life-cycle stages.

DV		GREXP								
LICY		Nascent			Baby			Established		
IV with rc	Category	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
SKILL (yes)	no	-0.25**	.075	.782	-0.156	.131	.856	-0.316*	.152	.729
NEWP (few or all)	none	-0.329***	.055	.720	-0.725**	.090	.485	-0.737***	.101	.479
Model	Chi-square	787.976***			604.229***			615.550***		
	Nagelkerke R Square	.122			.172			0.153		
	N	9334.000			7018.000			17553		
	Predicted %	78.6			90			97		

p<0.05*, p<0.01**, p<0.001***

Conclusion

Overall, our study empirically linked young entrepreneurs' overconfidence to their growth expectations. By examining the effect of overconfidence in the framework of TPB, we showed that overconfidence, depending on its form, has a direct or indirect effect on growth expectations. We have also provided a potential answer to why many studies failed to link entrepreneurial self-efficacy to growth expectations. Based on our results, it seems that this is because its changing form across the business life-cycle stages and the general learning effect of experience on entrepreneurial expectations.

The outcomes of our analyses also reveal that entrepreneurs' product novelty expectations decline progressively. Moreover, at the baby and established stages, these expectations are influenced by the self-reported skill beliefs. Consequently -contradicting our hypothesis H2 and Cain et al. (2015) - nascent entrepreneurs' overconfidence is absolute (see also Bolger et al., 2008) while baby entrepreneurs overplace themselves. Based on the results of previous studies, we did not hypothesize that overconfidence affects the expected number of competitors. Therefore, market rivalry expectations were used as a control variable in this study. However, we have tested the relationship between the projections on the number of competitors and overconfidence. We found that the expectations on market rivalry grow intensively as a venture ages but overconfidence is not a driver of this change. Overall, it seems that even if market entrants self-select themselves into easy-to-enter fields (see Cain et al., 2015), our results suggest that nascent entrepreneurs still find the task of starting a venture hard (see the hard-easy effect). Nevertheless, after surviving the first few months or years in the business – meanwhile realizing that the market became more competitive and the product is less novel to the consumers than it was expected and in all probability, seeing other companies fail- baby entrepreneurs believe themselves to be relatively successful and the task itself less difficult. As

a consequence, they overplace themselves. This theory is in harmony with the results on the psychology of overconfidence; the hard-easy effect and the forms of overconfidence across task difficulties. Further experimental studies should verify the reasons behind the changes of the form of overconfidence along the aging of businesses.

In line with Kolb's experiential learning theory (2014), we have found a gradually decreasing link between experience and the unreliability of expectations on its potential growth. Our data indicate that about twenty percent of nascent entrepreneurs aspire for high growth within the next five year. Yet, when the same question is asked from a one-two year older ventures, only a third the amount would hope for such fast progress. Finally, high growth expectations decline to 3 percent by the established life-cycle stage. Statistical data shows that, whereas it is true that young firms may grow faster than their more established counterparts, a very small number of ventures grow more than 10 employees and 50% in 5 years.

Additionally, nascent entrepreneurs' overconfidence was revealed to directly influence the expected firm growth while baby entrepreneurs' overconfidence was confirmed to be indirectly linked to it. This indirect link is carried out by means of product novelty expectations. However, against our expectations, we could not prove that the effect of overconfidence is decreasing along the business life-cycle. At the same time, this hypothesis should not be rejected either. A study estimating the exact degree of overconfidence at the different stages of the business life-cycle would shed more light on this matter as well. Overall, our results show, that the huge decline in growth expectations is a result of several factors. Growing market rivalry, declining product novelty projections and other factors related to the aging of businesses all contribute to the decreasing growth expectations.

Furthermore, our analyses also show how important it is to consider the experience gathered by the owners in running their venture when analyzing the effect of entrepreneurial traits. There are considerable differences even between baby and nascent entrepreneurs. Therefore, it seems that the widely used total early-phased (TEA) rate (see Bosma et al., 2012) as an entrepreneurship activity measure would better fit the data and reflect real entrepreneurial activities if it were cut into two parts, into nascent and baby businesses, and reported accordingly.

In sum, our research contribute to the "black box" (see Bosma et al., 2012) of interactions between entrepreneurial attitudes, activity and aspirations.

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Contact

Laszlo Szerb
Faculty of Business and Economics
University of Pecs
H-7622, Pecs, Rakoczi ut 80, Hungary
szerb@ktk.pte.hu

Zsofia Voros
Faculty of Business and Economics
University of Pecs
H-7622, Pecs, Rakoczi ut 80, Hungary
voros.zsofia@ktk.pte.hu

THE IMPACT OF THE BIG FIVE PERSONALITY TRAITS ON ENTERPRISE POTENTIAL AND INDIVIDUAL ENTREPRENEURIAL ORIENTATION OF STUDENTS IN SERBIA

Edit Terek – Milan Nikolić – Dragan Ćoćkalo – Sanja Božić – Jelena Rajković

Abstract

Purpose: The paper presents the results of the study of the influence of the Big Five personality traits on enterprise potential and individual entrepreneurial orientation of students in Serbia.

Design/methodology/approach: The data were obtained by using questionnaires completed by students from Serbia. The students are studying at seven faculties in Serbia (technical and economic professions). 488 valid questionnaires were collected.

Findings: From the Big Five dimensions, the strongest positive impact on the dimensions of enterprise potential and individual entrepreneurial orientation have the dimensions E - extroversion and O - openness to experience. The impact of the C - conscientousness dimension is positive but is considerably weaker. The dimension N - neuroticism generally has a negative statistically significant impact on the observed dimensions of entrepreneurship. The impact of the dimension A - agreeableness varies: this dimension positively affects CRE - creativity and PR - proactiveness, and negatively LEA - leadership, while on other dimension it does not have a statistically significant impact. On the other hand, under the strongest influence of Big Five dimensions are the following dimensions of enterprise potential and individual entrepreneurial orientation: ACH - achievement, CRE - creativity and PR - proactiveness.

Research/practical implications: The results of the research can be applied in the education of future entrepreneurs, as well as in the early identification of persons with entrepreneurial predispositions.

Originality/value: Determining the impact of the Big Five personality traits on enterprise potential and individual entrepreneurial orientation of students in Serbia.

Keywords: Big Five, enterprise potential, individual entrepreneurial orientation, students, Serbia

JEL Codes: L26, I23

Introduction

Individual characteristics of an individual have a great influence on entrepreneurial intentions and entrepreneurial behaviour. Special attention in the research is focused on the influence of Big Five personality traits on entrepreneurial intentions, behaviour and performance. According to (Antoncic, Bratkovic Kregar, Singh, & DeNoble, 2015), Big Five personality traits can be used to anticipate entrepreneurial intentions (extraversion, agreeableness) and starting an entrepreneurial business (openness). Brandstätter (2011) shows that to predict entrepreneurial intentions and entrepreneurial performances, the Big Five characteristics influence the following: C +, O +, E +, N- (conscientiousness, openness and extraversion positive, and neuroticism negatively). In the reference (Zhao, Seibert, & Lumpkin, 2010), a similar conclusion arise: the four Big Five dimensions have an impact on entrepreneurial intentions (all but agreeableness).

Big Five personality traits directly affect entrepreneurial intentions and entrepreneurial success, but they also have indirect influence over others, so-called narrow personality traits. Thus, in the reference (Obschonka & Stuetzer, 2017) it has been found that wide personalities, such as the Big Five, have corresponding effects on specific, easier variables, such as risk taking, self-efficacy and internal locus control. It is precisely the aim of this paper to explore the influence of Big Five personality traits on some other, narrow personality traits, that have a connection with entrepreneurship. Therefore, for these other personality traits, the dimensions of enterprise potential and individual entrepreneurial orientation were chosen. The survey was conducted by students in Serbia completing questionnaires. In this sense, this research has a theoretical, but also practical significance.

1   Theory and research queastions

According to (Goldberg, 1981; Goldberg, 1990), the Big Five Factors Model defines five types of personality: extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. Practically, the Big Five Factors Model indicates that a person can be described over these five dimensions. The influence of personality traits on entrepreneurial intentions and entrepreneurship in general, is the subject of numerous researches (Rauch & Frese, 2007; Zhao et al., 2010). In the reference (Antoncic et al., 2015), a significe to approach based on big five personality traits is pointed out. The authors point out that Big Five can help in understanding the characteristics of entrepreneurs and predicting entrepreneurial intentions of individuals.

Similar observations exist in some other references, for example (Brandstätter, 2011; Zhao & Seibert, 2006).

Enterprise potential represents a potential tendency of a person to develop entrepreneurial intentions and become an entrepreneur. The word potentially indicates that it is still not certain that this person will truly become an entrepreneur, but only indicates that such a person possesses the qualities which are desired for a future entrepreneur. According to (Athayde, 2009), enterprise potential measurement is one of the most important topics in the field of enterpreneurship. For these measurements, access to properties was first used. One of the representatives of this approach was the General Enterprise Tendency Test (Caird, 1991). This test measured five entrepreneurial traits: risk talking, creativity, need for achievement, need for autonomy and internal locus of control. Measurement of enterprise potential is still done through the concept of attitudes. This approach was developed somewhat later and is much more dynamic than access to traits (Athayde, 2009). The concept of attitudes does not take into account only personality traits (which are usually static and difficult to change), but also takes into account external factors and their changes.

Individual entrepreneurial orientation is a concept, which consists of three dimensions: risk taking, innovativeness and proactiveness (Miller, 1983). Every entrepreneurial venture presents a certain risk. Entrepreneurs are launching new jobs, creating new approaches, and innovation is also important for entrepreneurship. Finally, entrepreneurship involves thinking ahead, planning, using chances, and adapting to the environment. All this points to the need of thniking proactively. Thus, the concept of individual entrepreneurial orientation includes three characteristics that are significant for entrepreneurs and entrepreneurship. Also, the dimensions of individual entrepreneurial orientation are important because they have a positive impact on entrepreneurial intentions. A significant number of studies indicate the existence of such a connection (Koe, 2016; Bolton & Lane, 2012).

In this paper, two research questions are posed:

RQ1: Is there a statistically significant influence of Big Five dimensions on enterprise potential and individual entrepreneurial orientation, among students in Serbia?
RQ2: Is there a statistically significant predictive effect of Big Five dimensions on enterprise potential and individual entrepreneurial orientation, among students in Serbia?

2 Method

2.1 Survey instruments (measures)

The personality type (Big Five) is measured using the Ten Item Personality Inventory, developed by Gosling, Rentfrow, and Swann (2003). The respondents rank their responses on a seven point Likert scale. The questionnaire has 10 items, which make up 5 dimensions: 1. extroversion, 2. agreeableness (conspiracy, sensuality, pleasantness), 3. conscientousness, 4. neuroticism, 5. openness to experience.

The Attitude Toward Enterprise (ATE) Test (Athayde, 2009) was used to measure entrepreneurial potentials. The respondents evaluate each item with scores ranging from 1 to 7. The questionnaire consists of 18 items arranged in 4 dimensions. The dimensions are as follows: 1. leadership, 2. creativity, 3. the need for achievement, 4. personal control.

Individual entrepreneurial orientation is measured using the Individual Entrepreneurial Orientation (IEO) questionnaire, developed by Bolton and Lane (2012). The respondents evaluate each item with scores ranging from 1 to 7. The questionnaire has 10 items arranged in 3 dimensions. The dimensions are as follows: 1. risk-taking, 2. innovativeness, 3. proactiveness.

2.2 Participants and data collection

The survey was carried out by interviewing the respondents, student in Serbia. The students are studying at seven faculties in Serbia (technical and economic professions). The research was anonymous and was conducted during their studies. A total of 488 valid questionnaires were collected.

3 Results

Table 1 presents the descriptive statistics for the dimensions of Big Five, enterprise potential and individual entrepreneurial orientation. The table gives the names, abbreviations for each dimension, mean value, standard deviation, and Cronbach's alpha for each dimension. The values of Cronbach's alpha range from $\alpha = 0.702$ to $\alpha = 0.837$.

Tab. 1: Descriptive statistics for all dimensions

Name of the dimension	Abbr.	N	Min	Max	Mean	Std. Deviation	α
Extroversion	E	488	1	7	4.95	1.425	.721
Agreeableness	A	488	1	7	5.01	1.189	.703
Conscientousness	C	488	1	7	5.55	1.260	.755
Neuroticism	N	488	1	7	3.44	1.359	.712
Openness to experience	O	488	2	7	5.76	1.180	.777
Leadership	LEA	488	1	7	3.88	1.265	.837
Creativity	CRE	488	1	7	5.54	1.158	.792
Achievement	ACH	488	1	7	4.25	1.259	.809
Personal control	PC	488	1	7	4.11	1.205	.702
Risk taking	RT	488	1	7	4.16	1.335	.777
Innovativeness	IN	488	1	7	4.86	1.142	.799
Proactiveness	PR	488	1	7	4.98	1.217	.786

Coefficients of the correlation between the Big Five dimensions and the dimensions of enterprise potential and individual entrepreneurial orientation are given in Table 2. The Pirson correlation is used, and statistically significant correlations are indicated: * p <0.05; ** p <0.01.

Tab. 2: Coefficients of correlation between the Big Five dimensions and the dimensions of enterprise potential and individual entrepreneurial orientation

	LEA	CRE	ACH	PC	RT	IN	PR
E	.305**	.313**	.376**	.116*	.269**	.303**	.262**
A	-.166**	.239**	-.077	-.080	-.044	.057	.117**
C	.120**	.322**	.237**	.110*	.085	.216**	.400**
N	-.177**	-.139**	-.217**	-.102*	-.055	-.161**	-.226**
O	.154**	.405**	.293**	.160**	.231**	.375**	.331**

*p<0.05; **p<0.01.

The predictive effect of the Big Five dimensions (independent variables) on the dimensions of the enterprise potential and individual entrepreneurial orientation (dependent variables) was examined using the Multuple Regression Analysis. The results of regression analysis are given in Table 3.

Tab. 3: Regression analysis (Predictors: Big Five dimensions; Dependent variable: the dimensions of enterprise potential and individual entrepreneurial orientation)

Dependent	Independent					R^2	F	Sig.
	E	A	C	N	O			
			β					
LEA	.279**	-.298**	.005	-.149**	.105	.177	20.081	.000
CRE	.145*	.093*	.124*	.021	.265**	.213	26.016	.000
ACH	.281**	-.257**	.025	-.139**	.204**	.321	28.290	.000
PC	.045	.176**	.041	-.092	.164*	.059	6.044	.000
RT	.238**	-.142**	-.056	-.004	.204**	.113	12.286	.000
IN	.168**	-.101*	.009	-.077	.321**	.180	21.167	.000
PR	.069	-.064	.279**	-.090*	.180*	.202	24.450	.000

*$p<0.05$; **$p<0.01$.

4   Discussion

The results of the correlation analysis, given in Table 2, show that from the Big Five dimensions, the most powerful positive correlations with the dimensions of enterprise potential and individual entrepreneurial orientation are realized by E - extroversion and O - openness to experience, and then by C - conscientousness. On the other hand, the dimension N - neuroticism has negative correlations with the observed dimensions, while the dimension A - agreeableness is variable. Such results are consistent with the existing researches, for example (Brandstätter, 2011; Zhao et al., 2010). This provides the answer to the research question RQ1.

Individually, E - extroversion has the strongest effect on ACH - achievement, CRE - creativity and LEA - leadership. The need for achievement and leadership characteristics are logically related to personal qualities such as: adventurous, assertive, dominant, sociable. The dimension O - openness to experience achieves the strongest correlation with CRE - creativity and IN - innovativeness. Indeed, it is hard to imagine a creative and innovative person, who is not open to new experiences, is not original or open-minded. The dimension C - conscientousness has the strongest positive correlation with PR - proactiveness. Persons who are deliberate, efficient and precise will definitely plan and think in advance. The dimension N - neuroticism has the strongest negative correlation with PR - proactiveness and ACH - achievement. It is quite understandable that persons who are anxious, self-pitying and unstable can hardly rationally plan the future, think ahead, and have the desires and needs for achievement. Te dimension A - agreeableness has a statistically significant positive effect on CRE - creativity and PR - proactiveness, and has a negative and statistically significant effect on LEA - leadership, while

on other dimensions it has no statistically significant impact. Therefore, persons who are cooperative, generous, sympathetic, friendly, can be creative and proactive, but they rarley have a desire for leadership.

The results of the regression analysis, given in Table 3, show that from the Big Five dimensions (independent variables), the strongest predictive effect has E - extroversion and O - openness to experience. At the dimension C - conscientousness, the predictive effect is significantly less pronounced, while at the dimension N - neuroticism and A - agreeableness it is predominantly negative. These results are in line with the results of the correlation analysis, by which the effects of dimensions E - extroversion and O - openness to experience additionally come to the fore. As a difference in relation to the results of the correlation analysis, the increased negative effect of A-agreeableness on ACH - achievement and RT - risk taking should also be noticed. This provides the answer to the research question RQ2.

Table 3 shows that the corrected determination indexes R^2 have statistically significant values, ranging from 0.059 to 0.321. Observed by individual dependent variables (the dimension of enterprise potential and individual entrepreneurial orientation), under the strongest predictive effect of the dimension Big Five, are the following dimensions: ACH - achievement, CRE - creativity and PR - proactiveness. Obviously these entrepreneurial dimensions are under the greatest influence of personality traits. In contrast, under the smallest impact of the Big Five dimensions, there are the entrepreneurial dimensions PC - personal control, and then RT - risk taking.

Conclusion

On the basis of the obtained results, it can be concluded that from the Big Five dimensions the most powerful positive influence on the dimensions of enterprise potential and individual entrepreneurial orientation have the dimensions E - extroversion and O - openness to experience. The impact of the dimension C - conscientousness is positive, but is considerably weaker. The dimension N - neuroticism generally has a negative statistically significant impact on the observed dimensions of entrepreneurship. The impact of dimension A - agreeableness varies: this dimension positively affects CRE - creativity and PR - proactiveness, and negatively affects LEA - leadership, while on other dimensions it has no statistically significant effect (regression analysis shows a negative effect on ACH - achievement and RT - risk taking).

On the other hand, under the strongest influence of the dimensions Big Five, ie personality traits, the following dimensions of enterprise potential and individual entrepreneurial orientation are: ACH - achievement, CRE - creativity and PR - proactiveness.

These results are valid, first of all, for students in Serbia, so this is also the main limitation of the research. However, the results are consistent with most of the existing researches in this area, and they certainly have a universal component. On the practical side, the results of this research may have the relevance for the early identification of persons who have predispositions for beeing an entrepreneur. Also, the results can be used in the education of future entrepreneurs, especially among students in Serbia.

Acknowledgement

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Contact

Edit Terek

University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin, Serbia

Djure Djakovića bb, 23000 Zrenjanin, Serbia

edit@tfzr.uns.ac.rs, terekedita@gmail.com

Milan Nikolić

University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin, Serbia

Djure Djakovića bb, 23000 Zrenjanin, Serbia

mikaczr@sbb.rs

Dragan Ćoćkalo

University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin, Serbia

Djure Djakovića bb, 23000 Zrenjanin, Serbia

cole@tfzr.uns.ac.rs

Sanja Božić

University of Novi Sad, Faculty of Science, Novi Sad, Serbia

Trg Dositeja Obradovića 6, 21000 Novi Sad, Serbia

sanja.bozic@dgt.uns.ac.rs

Jelena Rajković

University "Union Nikola Tesla", Faculty of Engineering management, Belgrade, Serbia

Bulevar vojvode Misica 43, 11000 Belgrade, Serbia

j.rajkovic24@gmail.com

RESEARCH OF BULGARIAN CONSUMERS' REACTIONS TO ORGANIC FOODS AS A NEW PRODUCT

Milena Todorova – Svilena Ruskova – Svilen Kunev

Abstract

Purpose: The present research aims to study factors influencing Bulgarians consumer behavior (by the example of Ruse region) towards organic foods and to describe their reactions to this innovative for the Bulgarian market product. In result, consumer profiles are derived in two directions – of adopters of organic foods and of non-adopters performing a reaction of resistance to this type of innovation.

Design/methodology/approach: Empirical data have been collected through an inquiry conducted among final consumers who live on the area of Republic Bulgaria, in Ruse and Ruse region (level NUTS 2). The questionnaire consists of introducing, essential and closing questions. According to data from the Bulgarian National Statistical Institute the population size formed by consumers living in this area at 15 and above is 195 447. The sample size is 384. The method used for selection of the sample units is "complex random sample". The received data have been processed by descriptive statistical methods in order to form consumer profiles.

Findings: The following consumer profiles are described: 1. adopters of bio foods – well-informed buyers, willing to ensure healthy living of themselves and their families; 2. non-adopters - resistant to bio foods at the time of the research. They are divided in three groups: the first one includes those who postpone the adoption of bio foods because of low incomes or/ and insufficient information; the second group – those who reject bio foods because of distrust in their quality; the third group – reject bio foods because they do not feel necessity of such type of products, not interested in learning more about them.

Research/practical implications: The present paper studies the real and possible reactions of Bulgarian consumers to organic foods as a new product. In result of the data analysis it can be concluded that although there is a center of firm and regular consumers, who have already adopted bio foods, the bigger part of Bulgarians performs one of the forms of resistance – postponement, rejection or opposition. The research results would be useful to producers or distributors of bio foods as they reveal the expected barriers to the adoption of this new product and suggest some actions for overcoming them.

Originality/value: The paper aims to be useful for producers and distributors of organic foods through applying certain actions for increasing the awareness and decreasing the level of perceived risk connected with them by real or potential buyers. At the same time stimulating adoption and diffusion of organic foods will have positive impact on societal health and environment as well.

Keywords: Consumer behavior, organic foods, new product, adoption of innovation, resistance to innovations
JEL Codes: M31, M39

Introduction

The desire to have a healthy lifestyle goes stronger in the last decades both in the world and in Bulgaria. An expression of this trend is the growing number of consumers who demand products that ensure them a full, healthy and environmentally friendly way of eating.

A reason for the growing ever more demand for bio[31] foods is the fact that they are produced in accordance with internationally validated standards which expressly prohibit the usage of synthetic fertilizers, genetically modified organisms, hormones, pesticides and antibiotics.

The objective of the present elaboration is to study factors influencing Bulgarians' consumer behavior towards organic foods and describe their reactions to this innovative for the Bulgarian market product. In result, consumer profiles are derived in two directions – a profile of adopters of organic foods and of those who perform a reaction of resistance to this type of innovation called "non-adopters" For the realization of this purpose the following tasks are to be fulfilled:

- Brief theoretical presentation of consumer behavior characteristics and factors influencing it as well as the reactions of consumers towards innovations – adoption or resistance.

- Clarifying the bio foods specifics and some trends in their diffusion on the Bulgarian market.

- Describing the methodology of the empirical research of consumer behavior and reactions to bio foods as new product on the Bulgarian market.

- Analysis of the research results and deriving profile of Bulgarian consumers according to their reactions to bio foods and the reasons for them.

- Suggesting some actions leading to the increase of the adopters' number on Bulgarian market that could be applied by organizations dealing with bio foods production or distribution.

The object of the research are end users who live in Bulgaria, on the area of Ruse and Ruse region (level NUTS 2). *The subject of the research* include consumer behavior and factors influencing it in regard with new products like bio foods for the Bulgarian market.

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[31] In the article "organic" foods and "bio" foods are taken as equivalents.

1 Consumer behaviour as a driving economic power

The American marketing association defines consumer behavior as that part of human behavior which is directed towards the consumption field, vital for survival. It is a process in which individuals get involved by searching, knowing, buying, using and estimating goods and services that satisfy their needs and wants. The final product choice of consumers is influenced by internal for the personality factors as well as by external ones. These could be: consumer's purpose, type of the product, extend of involvement, effect upon the consumer, level of complexity, time and effort cost for collecting information and etc. (Dibb, 2016).

1.1 Factors influencing consumer behavior

In the purchase decision making process the consumer behavior is influenced by a combination of factors that can be differentiated in several main groups: cultural, social, personal and psychological.

The group of cultural and subcultural factors have a significant impact on the consumer behavior – on consumer's choice and usage of the product as well as on the satisfaction of its consumption or exploitation. These factors vary on the different markets (Pride, 1995).

Specific and unique personal characteristics also influence the individual consumer behavior. They depend on their demographic characteristics like sex, age, life cycle stage, education degree, family status, working/ job status, professional field, economic circumstances, lifestyle, personality and self-esteem (Pride, 1995).

The most complex influence on consumer behavior have the psychological factors – motivation, perception, learning, believes, attitudes, values and expectations (de Barcellos, 2015). Their importance increases in the situation of more and more intensive supply of products with similar quality, functionality and prices.

1.2 Consumer reactions towards adoption and diffusion of new products

In the constantly changing unpredictable and dynamic environment consumers' demands also change and it is vital for companies to develop new or improved products that meet them. Depending on the compliance of the new product with consumers' needs and wants, they react in one of the two contrary ways: adopt the innovation or to get resistant to it.

Adoption of innovation is a micro process that happens inside the mind of the consumer and it comprises some stages from the very first information about a new product to the decision to include it in regular usage. Only one purchase does not mean that the innovation is adopted.

Regarding the reaction of resistance it could appear in one of the following three degrees: postponement, rejection or opposition (Cornescu, 2013). All of them are conscious decisions but while rejection and opposition mean ceasing the adoption process or not even try the innovation, the postponement as the weakest form of resistance, means that the process can start or continue after some time and end with adoption of the innovation (Kleijnen, 2009).

According to the Roger's theory of diffusion of innovations, adoption and diffusion of new products depend on the personal innovativeness level of the consumer. Rogers differentiates the following types of consumers according to their reaction to innovations (Rogers, 2003): „innovators"(2.5%) - take the risk to buy first the new product because they want to be the first who use or own it; „early adopters"(13,5%) – at first try the innovation, estimate the utility and the risk, have very strong influence in their referent groups; „early majority"(34%) - cautious consumers who ignore mass media information and prefer to trust their friends' experience; „late majority" (34%) - consumer whose decisions are determined by their referent group and who need much more time than the early majority to change their habits; „laggards"(16%) - the last who adopt the innovation or often do not adopt it because of low income and status.

2   Specific features of organic foods and trends in their consumption on the Bulgarian market

The benefits of bio foods over conventional foods include: better taste, more nutrients, more vitamins, minerals and antioxidants, no content of preservatives, pesticides, GMOs, hormones, antibiotics, toxins, reduce the risk of cancer and heart diseases, create higher value added per unit of product and better for the environment (Shishkov, 2011).

Organic food production excludes the use of any artificial enhancers, genetically modified organisms and ingredients not only in the processing of the products but also in the cultivation of the raw materials, where special environmental requirements, specified in the relevant legislation, must be observed (Euopean Council, 2007). Control over production is carried out by public and/or private certification bodies (Sertova, 2014; Vitosha research, 2009). Organically grown foods should state this fact on their label and have to contain also the organic label ("European leaf"), along with a certification organization code that tracks the production of the product and approves it (Euopean Council , 2010). The eco standard compliance sign is one of the driving forces behind the consumer's purchase decision (Anastasiou , 2017).

A key factor in the process of development and growth of the bio food market is consumer's motivation which ranges from concerns about the ecological balance of the earth to the concerns about own health (Krešić , 2010).

Demand for bio foods, especially in Western Europe and the US, is steadily rising and even at certain times in some countries there is a shortage of such products (Grebenicharski, 2016). The growth of the organic market varies between EU Member States. Indeed, while retail sales in 2014 increased by double digits in Sweden (45%) and France (10%), in countries such as Belgium (3.8%) and the UK (4%) organic retail growth rates were below average. Similarly, there are huge differences in per capita consumption of organic food between Member States, with Luxembourg and Denmark leading and Slovakia and Bulgaria at the lower end. Despite these differences, EU consumers have been increasing their average spend on organic food considerably (Meredith, 2016).

Bulgarian consumers perceive bio foods as high quality foods. Buyers in this new market for Bulgaria are educated and curious consumers with higher incomes. They are mainly young people, students, teachers, medics, intellectuals who are educated and eager to learn more about the world around. Some of them go to bio foods due to a health problem, others because of their children or even in the quest for true taste.

Two groups of organic food consumers are distinguished in Bulgaria (Ivanova, 2012):

- "casual" consumers - those who buy accidentally, driven by their curiosity and the opportunity to try something new and different;
- "firm" consumers - those who have a strong interest in organic products. These users in Bulgaria account for 13% of the population over 18 years of age. They are in active age (60% between the ages of 18 and 40), with a higher level of education (30% higher education and 63% secondary education) and over-average earnings, well informed about the origin of food and concerned about the environment. They live in Sofia and the regional cities (57% of respondents). More than half (52%) pertaining to this group are women.

Suppliers of organic foods that comply with all requirements and offer quality products for end consumers perform high level of corporate social responsibility (Antonova, 2017). In the same time they meet some barriers connected with the consumer behavior regarding this new product for the Bulgarian market.

The awareness of actual and potential users is crucial for the level of bio food consumption. A large part of Bulgarians do not know or have difficulty in answering what bio foods are. However, among those who think they are familiar with this type of product, there are some information misconceptions about the characteristics that distinguish organic products from their conventional equivalents (Kubelakova, 2016).

3   Empirical study of consumer reactions towards organic foods as a new product on the Bulgarian market

Bulgarian consumers tend to choose different types of foods but with high quality and rich in nutrients. The response of this new need and demand of Bulgarian consumers is organic food. It can be considered as a consumer innovation pulled by the growing needs of society.

Empirical research objective is to study the way Bulgarian consumers perceive organic foods and the factors with real or potential influence on their reactions to this new product for the Bulgarian market as well as to find some possible solutions for overcoming resistance as an unwanted consumer reaction.

For the realization of this objective it is needed to gather information describing consumer behavior and to define consumer profiles including the main stimuli or barriers to purchase organic food, their attitudes and expectations in the process of purchase.

3.1   Research methodology

The main research questions are:

First, what is the consumers' behavior regarding organic foods?

Second, what are the reasons for the behavior of adoption or resistance towards organic foods?

Third, what are the consumer profiles of adopters and non-adopters of organic foods?

The research method is through conducting an inquiry. The questionnaire includes 22 questions divided in 3 parts as each part corresponds to one of the main research questions above. For the formulation of the first two groups Likert five-level scales are used. They allow the researchers to make a quantitative analysis of the collected data.

The answer of the first main research question is connected with the following aspects: consumers' level of acquaintance with organic foods characteristics, preferred information sources, frequency of purchase, preferred types of organic foods and purchase places.

The second main research question is studied in the following directions: reasons for the different consumer reactions and decisions – to adopt or to stay resistant towards organic foods as an innovation, in one of the three degrees - postponement, rejection or opposition.

Regarding the third main research question the inquiry aims to gather information about consumers' demographic and socio-economic characteristics. They give an opportunity to connect the answers of the other two main research questions and derive consumer profiles depending on the reactions of adoption or resistance and the reasons for them.

The inquiry is conducted in the period from 01.05.2017 to 15.07.2017 by students of the faculty of Business and Management at the University of Ruse "Angel Kanchev" who study for specialists in the field of Marketing. They have been instructed how to inquire the respondents in order to escape influencing their answers and the objective results of the research.

Prior to the inquiry of all sample members a pilot research has been conducted among 40 people living on the area of Ruse and administrative district Ruse in Bulgaria. They have been selected in a lottery fashion. Due to it some issues in the questionnaire have been clarified and some shortcomings have been corrected.

The population size is 195 447 and it includes people at the age of 15 and above who live on the territory of Ruse and administrative district Ruse, Bulgaria (National Statistical Institute, 2017). Young people between 15 and 18 years old are not authorized by Bulgarian laws - they are not responsible for their actions before the law but hey have the right to work with the allowance of their parents. From consumer behavior point of view they also purchase goods and services and take some decisions in this regard. Most of them are mobile and informed and for these reasons they are included in the population size of the research.

The minimum sample size needed for a representative research based on this population size is 384 people. The sample size is calculated with the help of the statistical electronic calculator (Raosoft, 2004) with margin of error 5% and confidence level 95%.

A necessary and sufficient condition for representativeness of a sample is that it must be big enough in size and all its units must be selected in a random fashion. The sample model used for the research is a complex random sample called a systematic sample. The entire population list is available and a sample step is calculated. Sample step size = N/n, where N is the population size and n is the sample size (Pallant, 2005). In the present research the sample step size is 509 people.

For the purpose of the concrete study the research team decided to use in the analysis descriptive statistics – relative shares and cross tables. For data processing SPSS software is used (Pallant, 2005).

The results from the descriptive analysis of the collected data will be used in the next stage of the research – formulation of hypothesis and their confirmation or rejection by regression factor analysis. This will be the focus of next elaboration of the research team.

3.2   Research results regarding Bulgarian consumers behavior towards organic foods

The research found out that the main part of the respondents (67%) had a faint idea of bio foods or just had heard about their existence. Only 7% of the inquired people claim to have deeper knowledge about them and other 7% confess they know nothing about this new product. 53% of the respondents think that organic foods are produced without additional chemical substances or processing and 50% are convinced that bio foods do not contain GMOs. A big part of the inquired people however (42%) think that bio foods are equal as qualities to home-made foods or even do not reach their taste and quality. 22% express distrust in the label "bio" or "organic" and answer that foods offered on the Bulgarian market as bio foods are not really bio. A very important aspect of customers' awareness of organic foods is their ability to distinguish them from conventional foods and especially from imitations. The insufficient information on this issue leads to creating a wrong consumers' idea about organic foods.

The information sources preferred by consumers are producers themselves (35%), specialists in healthy nutrition (35%) and consultants in specialized retail shops (29%). These are direct channels trusted by the consumers regarding the bio foods and should be used for educating and influencing them in regard to this specific innovation.

40% of the respondents define healthy life style as an important or extremely significant issue. This almost completely coincides with the result about the consumption frequency - 41% buy bio foods every week or several times per month. At the same time it is in contradiction with the result that only 7% have deeper knowledge about this innovation. This can be explained by the fact that most of organic food consumers in Bulgaria buy just certain products labeled "bio" because of the higher prices compared to the conventional foods and do not look for information about others.

Most preferred bio foods by consumers include fruits and vegetables (46%), followed by meat and milk products. 17% of the inquired ones have never bought bio foods and 13% have bought just once. It can be concluded that these 30% of the respondents have a reaction of resistance

to this innovation at the time of the research. Further, the reasons for adoption and resistance to bio foods will be examined and explained.

3.2 Research results regarding Bulgarian consumer reactions to organic foods and reasons for them

Main reasons for adoption of organic foods by Bulgarian consumers are: belief that their nutrition characteristics are better than those of conventional foods (38%), presence of a health problem (37%), better taste (32%) and certificate for the organic origin (31%). Less are those who are willing to buy because of the social effects of organic food production as animals welfare (20%), avoiding environment pollution (25%), harmless to producers' health (18%).

10% of the inquired who consume bio foods say that nothing can make them give up and stop buying them in future. These are actually the "firm" consumers who have adopted permanently the innovation bio foods. According to Roger's innovations diffusion theory these consumers are the innovators and a prat of the early adopters who accept innovations before others because of their benefits.

Among the *reasons for resistance* to bio foods, the inquired consumers most often point their suspicion and distrust in the bio origin of those foods (32%), the discrepancy between price and taste qualities (22%) as well as between price and their health effects (22%). These answers correspond to the functional and economic risk connected with the innovation. A very significant factor is the limited financial ability of Bulgarian consumers in spite of the willingness to purchase organic foods and the trust in their health benefits (22%). This leads to the weakest form of resistance – *postponement* of the innovation.

For those who already consume bio foods main possible reason to cease buying them is again economic – the possible reduction of their disposable income or the increase the price of these foods. Another important factor are imitations of bio foods. More than 70% of the inquired people estimate the possibility to buy a false product of this type as very high.

41% believe that a purchase of imitations could lead to health problems. This corresponds to the physical risk and usually causes the strongest form of resistance – *opposition*. More than a quarter of the respondents share that they would react exactly in this way if they buy a false "bio" product and have health problems as a result and that they would agitate other people through social networks not to buy or at least would warn their referent groups.

26% consider that in case of buying imitations of bio foods the most probable negative consequence would be that they will not have the expected positive health effect. 27% say that the most negative result in such situation would be the big amount of wasted money not corresponding to the real quality. Therefore the significance of functional and economic risk is almost equal in the decision making process regarding bio foods purchase. The high level of perceived risk of these two kinds can cause the resistance form "rejection". Only 9% consider that they will cease buying bio foods completely in case of a purchase of imitations. More of the respondents would just change the supplier or would look for more information how to distinguish spurious from certificated bio foods.

Conclusion

In result of the conducted research a ***profile of Bulgarian adopters of organic foods*** (by the example of Ruse region) can be derived. In general, they are women between 20 and 45, working and mainly with higher education and higher income. This group of consumers prefer to receive information directly from the producer or from a specialist in healthy eating. Main stimuli for buying bio foods for adopters are the importance of healthy life style, care for their own health and this of their families, the food taste and composition.

It is also important to derive a profile of those inquired consumers whose reaction is resistance to bio foods in some of the three forms or are inclined to react in this way. These are the Bulgarian non-adopters of bio foods. Their behavior and reasons for it should be known in order to help the development of more appropriate marketing decisions aimed at this part of the market.

Three groups of non-adopters of bio foods can be distinguished. The *first group* includes those who are willing to buy and consume but have not the financial ability to purchase bio foods and usually buy them randomly. They are partially informed and hope the prices of these foods to get lower in time. This is the postponement of the innovation adoption. Unfortunately their expectations for a decrease of bio foods price close to those of conventional foods show that these consumers are not well-informed about the bio production specifics and the high expenditures that are connected with it. *The second group* enhances mainly men between 18 and 30 years old who are mostly single with income about the average for Bulgaria, with secondary education or studying at the moment of the research. Healthy life style is not their priority in this stage of life. They approach with distrust to bio products as a whole including bio foods and reject them. The *third group* enhances elderly above 55 years old who grow fruits,

vegetables and/ or farm animals. These people are not informed about bio foods and are not interested in them as they believe that their own production has the best quality and taste. They do not feel any necessity of such type of foods and they reject them. Actually they are not in the target segment of bio foods producers. According to Roger's innovation diffusion theory the first two groups are a big part of the "late majority" and the third one represent the "laggards".

In most cases the level and type of perceived risk are in the ground of resistance to the bio foods. The higher level of perceived risk, the more efforts suppliers should put into its overcoming. They should be connected with the following actions that could decrease the distrust to organic foods and increase the number of their adopters:

- Informing consumers through direct communication channels like healthy eating specialists, specialized shops consultants and producers;
- Educating people how to distinguish certificated bio foods from imitations. Educating them also about the difference between bio foods and home-made (own production) foods by emphasizing the pure composition of bio foods and more convenient and easy way to acquire them;
- Using the existing adopters of bio foods as a communication channel for influencing the bigger part of the consumers who still wait and postpone the adoption of this innovation;
- Focus on the value for the consumers by proving organic foods' benefits and justifying their higher prices.
- For overcoming consumers' distrust in bio foods and decreasing the perceived risk a software product could be offered to them that will help to distinguish the credibility of the label information as well as the validity of the certificates of different suppliers.

These actions can be applied in markets where organic foods demand is low due to the same or analogical reasons and consumers perform similar reactions this type of new product.

Acknowledgement

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Contact

Milena Todorova

University of Ruse "Angel Kanchev"

7017 Ruse, 8 Studentska str., Bulgaria

mtodorova@uni-ruse.bg

Svilena Ruskova

University of Ruse "Angel Kanchev"

7017 Ruse, 8 Studentska str., Bulgaria

svilena_ruskova@abv.bg

Svilen Kunev

University of Ruse "Angel Kanchev"

7017 Ruse, 8 Studentska str., Bulgaria

snkunev@uni-ruse.bg

DETERMINING FACTORS AFFECTING THE EFFECTIVENESS OF RISK-BASED INTERNAL CONTROL SYSTEM IN IMPORT-EXPORT ENTERPRISES IN HO CHI MINH CITY, VIETNAM

Hung Tang Tri

Abstract

Purpose: Many enterprises in Viet Nam have been implementing COSO's Enterprise Risk Management-Integrated Framework (ERM Framework) to improve operations and pursue their goals. Thus, this study examined what factors affecting on the effectiveness of risk-based internal control system of import-export enterprises in Ho Chi Minh City, Viet Nam.

Design/methodology/approach: This is a quantitative and qualitative research conducted base on COSO 2004 ERM Framework. An administrated survey was sent to 330 import-export in Ho Chi Minh City to satisfy the sample formula of Tabachnick and Fidell (2007) and Hair et al. (1998). And the collected data were tested by Cronbachs' Alpha, explore factor analysis (EFA), and multiple regression test to find out what factor (of eight factors) has the relationship to the effectiveness of risk-based internal control system of enterprises.

Findings: The research revealed that there was a positive relationship between the effectiveness of risk-based internal control system and eight factors comprising internal control; objective setting; event identification; risk assessment; risk response; control activities; information and communication; monitoring. In which, the monitoring had the strongest impact and the event identification had the least impact.

Research/practical implications: The result contributed in internal control system of private sector in Viet Nam. Furthermore, it donated to convince what factor urgently necessitate to enhance in import-export enterprises. In addition, the research also granted recommendations to boost these enterprises' operations. And, this study will be continued to conduct with full of population to achieve a highest solidity.

Originality/value: The paper is a vital reference for other researchers in Viet Nam. Moreover, enterprises' leaders are able to manage their organization more effectiveness, whereas policy makers in Ho Chi Minh can create a better environment for import-export enterprises.

Keywords: COSO, effectiveness of internal control system, ERM, internal control

JEL Codes: M10, M41

Introduction

According to the data of the Vietnam International Arbitration Center and the Viet Nam Chamber of Commerce and Industry, there were 131 petitions in 2015, in which Viet Nam was plaintiff in 76 cases and defendant in 55 cases. Almost of lawsuits was about disputing from international trade contracts and some of them enterprises came from Ho Chi Minh City.

Ho Chi Minh City locates in the south of Vietnam is the most dynamic and proactive economic center of the country. There are many cargo transshipment ports of the completely southern and Asian logistic system. Hence, there are 1116 import and export enterprises are doing business here currently. In contrast, their consciousness about the crucial necessity and advantages of the risk-based internal control system is not thoroughness and comprehensibility. Therefore, the identification and assessment of factors affecting the effectiveness of this system will support to enterprises control and solving their business risks.

Enterprise Risk Management (ERM) is a crucial method make less negative impacts of various types of financial, operational and strategic risks (Al-Amri and Davydov, 2016) to the planned business results and value created to shareholders and other enterpirse's stakeholders. Moreover, there are over 80 risk management frameworks (Olson & Wu, 2008) in which the Committee of Sponsoring Organizations of the Treadway Commission's (COSO) "Enterprise Risk Management Integrated Framework – 2004" is accepted and used on over the world. Furthermore, although there are some slightly differences in the used terms and explicit identified key processes, these frameworks have the same similarities (Sodhi, et al., 2012).

Thus, this study aim to discover what factors affecting to the effectiveness of risk-based internal control system in import-export enterprises based on the foundation of COSO 2004 to help handling their business risks and enhance of the performance and advanced competency.

1   Literature Review

1.1   Definition of risk, internal control system and enterprise risk management

Risk could be viewed as the combination of the probability of an event and the impact of its consequences. Events with a negative impact represent risks that can prevent value creation or erode existing value (Bromiley, P. et al., 2015).

COSO 2004 defined internal control system as "a dynamic integral process that is continuously adapting to the changes an organization is facing. Management and personnel at all levels have to be involved in this process to address risks and to provide reasonable assurance of the achievement of the entity's mission". In addition, COSO formally defined ERM as "a process,

effected by an entity's board of directors, management and other personnel, applied in a strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risks to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives."

1.2 Components of internal control system

According to the Enterprise Risk Management Integrated Framework – 2004 (COSO ERM framework – 2004), there are 8 components of risk-based internal control system including: Control environment; Objective setting; Event identification; Risk assessment; Risk response; Control activities; Information and communications and Monitoring. In which:

Control environment: illustrates the philosophy of the firm's risk comprising types of risk, the risk management, ethical culture, human resource policies, assignment of responsibility and the organizational structure to manage risks.

Objective setting: integrates the firm's competitive strategy or positioning in four perspectives including strategy, operations, compliance, finance and reporting which in turn motivate objectives to create the value chain

Event *identification*: identifies all possible internal and external potential events that impact on realization enterprise's strategies and objectives. The positive impacting events are "opportunities" to revise strategic plans, whereas negative impacting events should be managed through an integrated risk management process.

Risk Assessment: tests the likelihood, frequency and the impacting level of events through a range of possible outcomes to support enterprises attain objectives based on identifying and analyzing relevant risks and determining the appropriate responses.

Risk response: determines, assesses and selects risk response options according to the organization's risk tolerances and acceptable levels. Options include risk avoidance, risk reduction, risk sharing and risk acceptance.

Control Activities: constitutes risk policies and procedures and applies in operation properly to manage effectively the risk. Control activities comprise authorizations, supervision, and segregation of duties, reconciliation and verification. Furthermore, they should be cost-effective, comprehensive and reasonable.

Information and Communications: postulates that internal and external sources should be used to provide appropriate and timely risk related information that enables people to execute their responsibilities. This factor require to be integrated throughout the value chain and influenced organizations in embedding all control objectives.

Monitoring: secures that an ERM is present and determines how well it is working and it could be revised and/or expanded to assess the quality of the internal control system's performance over time. Monitoring includes routine or separate activities or a combination.

1.3 The effectiveness of internal control system

According to the Internal Control Framework of COSO 2004, the effectiveness of internal control system in an entity is obtained if the entity's mission, the following general objectives are being achieved. These objectives are divided into four categories comprise strategic risk objectives, reporting risk objectives concerning the reliability of financial and non-financial reports, compliance risks implying an organization's ability to comply with a range of governmental or industry regulations and operations-level risks representing a wide variety and high number of risks that may impact on enterprises' operation.

From above theory framework, author appraised the effectiveness of risk-based internal control system in the import and export enterprises in Ho Chi Minh City including three observations:

- The trustworthy and reliability of the report;
- Compliance with relevant legal requirements, international regularities and standards;
- The effectiveness and efficiency in using resources.

2 Research Method

2.1 Research model

Adopting a series of previous researches based on COSO ERM Framework 2004 comprising Gjerdrum, D. and Peter, M. (2011) in import and export enterprises with the research illustrated that the quality of risk management was evaluated on three variables as the complying legal requirements, international standards, trustworthy and reliability of reports as well as using resources efficiently and effectively; Zhao, X. et al. (2013) with the study in construction organizations impelled 16 citerias have the positive affection on the effectiveness of risk management system, whereas commitment of theboard and senior management; riskidentification,analysis, and response; and objectivesetting were the most important; Curkovic, S. et al. (2013) conducted a research about the effectiveness of supply chain risk management in 46 enterprises with the result indicated that the effectiveness helps enterprises enhancing in identification and management of risk as well as eight components have affection on the effectiveness of the system; and Ittner, C. D., and Keusch, T. (2015) investigated the

relationship between ERM and control system to obtain the enterprise-value with the consequence showed a posisitve relationship of eight factors on the enterprise-value.

And interviewing the director board of five import and export enterprises in Ho Chi Minh City, author proposed a research model (with eight independent variables comprising Control Environment; Objective Setting; Event Identification; Risk Assessment; Risk Response; Control Activities; Information and Communications and Monitoring) to investigate the effectiveness of risk-based internal control system of those enterprises as follows:

Fig. 1: Proposed model of factors affecting to the effectiveness of risk-based internal control system in import and export enterprises in Ho Chi Minh City
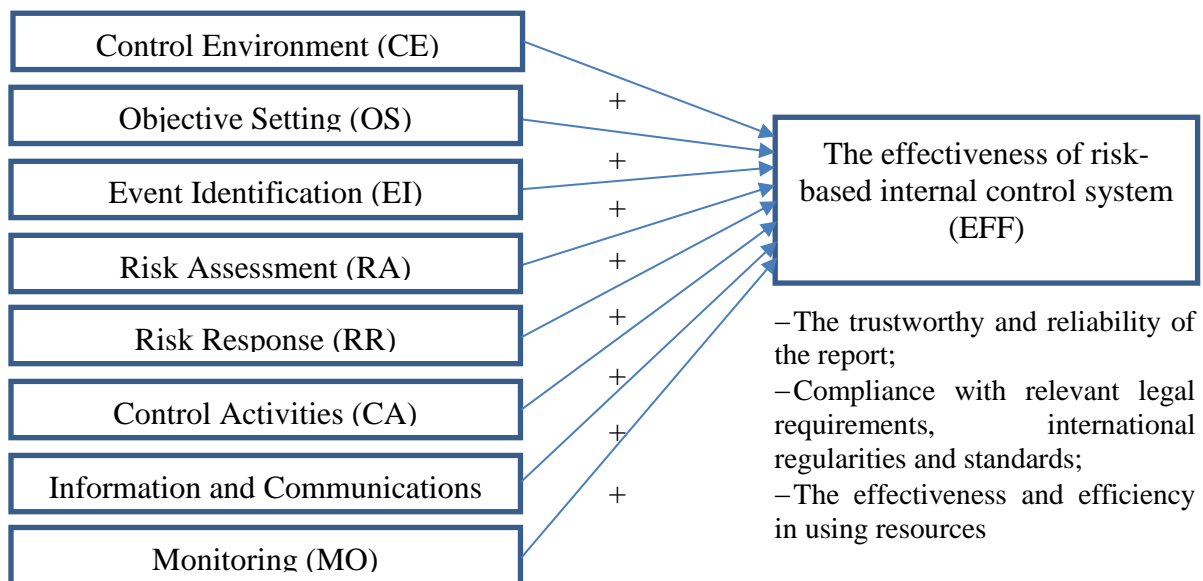
Source: Authors' proposed model

2.2 Research hypotheses

From above proposed model of author, eight hypotheses from *Hypothesis 1* to *Hypothesis 8* would be tested the positive affection on the effectiveness of risk-based internal control system in import-export enterpises (EFF) of The Control Environment (CE); The Objective Setting (OS); The Event Identification (EI); The Risk Assessment (RA); The Risk Response (RR); The Control Activities (CA); The Information and Communications (IC); and The Monitoring(MO). In the other hand, author would conduct multiple regression analysis to identify the equation assessing factors' effect on the effectiveness of risk-based internal control system in the import and export enterprise in Ho Chi Minh City. The specific equation is:

$$EFF = \beta_1 CE + \beta_2 OS + \beta_3 EI + \beta_4 RA + \beta_5 RR + \beta_6 CA + \beta_7 IC + \beta_8 MO$$

2.3   Data collection

First, based on the COSO ERM framework 2004 and other before researches, a qualitative survey was designed as following Alreck & Settle (2004). Then, it was used to interview directly director board members of 5 import and export enterprises to confirm the dependent variable and independent variables as well as observations of variables by using interview technique of Seidman (1998). After that, author used the new edited survey in which observations were measured with a typical five-level Likert scale to interview 10 directors of other enterprises in the same field in order to find out the clarity and comprehensibility of questions and run pre-test to decide the reliability of questions. Finally, an completed administrated survey was sent to respondents of import and export enterprises in Ho Chi Minh City (excluding15 before respondents), who have professional knowledge enough to understand and answers questions conducted the survey. In addition, to fulfill the validity and reliability of the research result, the sample in Multiple Regression Analysis (Green, 1979) (Tabachnick and Fidell, 2007) is at least as:

$$N = 50 + (8 \ x \ m) \tag{1}$$

Where: N- The select sample; 50 – The constant; m – independent variables

And, the sample size in EFA minimize as (Hair et al., 1998; Sapsford and Jupp, 2006):

$$N = 5 \ x \ p \tag{2}$$

Where: N- The select sample; p – Total of observations

In this study, the sample size was satisfied of both formula (1) and formula (2) as well as the least sample demand to suffice this study should be at 220 samples. Thus, to conduct the research, author sent the survey to directors, vice directors, chief accountants and deputy managers of 330/1116 (nearly 30%) import and export enterprises in Ho Chi Minh City.

In addition, the software Statistical Package for Social Sciences (SPSS) analyzed and presented data in the form of mean and standard deviation for each question and factor. Cronbach's Alpha tested dependent variable and independent variables. Likewise, a Cronbach's alpha generally accepted at 0.7. Furthermore, author conducted Exploratory Factor Analysis (EFA) before Multiple Regression Analysis (MRA). Moreover, author also performed One-way Anova Test to evaluate above hypothesizes.

3   Results and Discussions

There were total of 330 questionnaires sent to respondents in 330 enterprises directly. In addition, 315 returned accounting for 95.45%. After testing the appropriate answers, there were

18 eliminated surveys and total usable responses accounted 297 higher than the minimum sample requirement of this study. Therefore, the collected data was validity and reliability to conduct EFA and MRA method.

Tab. 1: Respondents' profiles

Iterms		Frequency	Percent
Position	Director	37	12.46%
	Vice director	81	27.27%
	Deputy manager	112	37.71%
	Chief accountant	67	22.56%
Firm type	Private	6	2.02%
	Limited	215	72.39%
	Stock	70	23.57%
	Group	6	2.02%
Equity (Billion)	Under 10	129	43.43%
	Between 10 and 50	158	53.20%
	Upper 50	10	3.37%
Labor number (Person)	Between 10 and 50	104	35.02%
	Between 50 and 100	133	44.78%
	Upper 100	60	20.20%
Revenue (Billion)	Under 10	116	39.05%
	Between 10 and 50	171	57.58%
	Upper 50	10	3.37%

Source: SPSS analysis result of own

In next step, authors used descriptive statistics to show mean and standard deviation values of observations and appraised the effectiveness of eight independent variables (including CE; OS; EI; RA; RR; CA; IC and MO) and dependent factor (EFF). Figures display as below.

Tab. 2: Descriptive Statistic of variables

Factors	CE	OS	EI	RA	RR	CA	IC	MO	EFF
Mean	3.15	3.53	3.50	3.37	3.35	3.77	3.71	3.80	3.26
Median	3.17	3.75	3.57	3.50	3.50	3.80	3.83	4.00	3.0
SD	0.82	0.87	0.80	0.96	0.97	0.74	0.75	0.92	0.50

Source: SPSS analysis result of own

According to the figures of tab. 2, all the average value of factors were above the 3.0 of scale. In which, there were three factors nearly equal to 4.0 of scale embracing Monitoring; Control Activities and Information and Communications with the value of 3.80; 3.77 and 3.71, respectively. In addition, the value of the effectiveness risk-based internal control system in import and export enterprises was just above average with 3.26 of scale.

Tab. 3: Result of Cronbach' Alpha analysis

Factors	CE	OS	EI	RA	RR	CA	IC	MO	EFF
Cronbach' Alpha	0.816	0.805	0.848	0.872	0.773	0.784	0.811	0.783	0.846
Accept	CE1-5	All	EI1-6	All	All	All	All	All	All
Dimiss	CE6	No	EI7	No	No	No	No	No	No

Source: SPSS analysis result of own

Then, author tested Cronbach' Alpha to demonstrate reliability of observations. Moreover, the result in table 3 showed the reliability of observation with Cronbach' Alpha from 0.773 to 0.872. Thus, the data of table 3 illustrated the reliability of observations what was very good. In addition, with the CE factor and EI, author had analyzed Cronbach' Alpha two-time and deleted observations CE6 and EI7. Because, they have the Corrected Item-Total Correlation value under 0.3. Hence, two these observations should be eliminated when testing hypothesizes and conducting EFA and Multiple regression analysis.

In the next step, author conducted EFA analysis. The result demonstrated a good consequence with the value of the KMO and Bartlett's Test was 0.747 (value of Sig. $\approx$ 0.000) for eight independent variables and 0.721 (value of Sig. $\approx$ 0.000) for dependent variable. Furthermore, the result of Rotated Component Matrix interpreted in Table 4 after deleting observations CA5 and IC6 because of their dispersion.

Furthermore, before conducting Multiple regression analysis, author tested eight mentioned hypothesizes in above part 3.2 to discover the relationship between the effectiveness of factors and the effectiveness of risk-based internal control system. By using One-way Anova test, the result displayed as follows.

Tab. 4: The correlation of variables

Hypothesis	F	Sig.
H_1 – CE --->EFF	2.557	.001
H_2 – OS --->EFF	6.427	.000
H_3 – EI --->EFF	3.445	.000
H_4 – RA --->EFF	6.672	.000
H_5 – RR --->EFF	4.597	.000
H_6 – CA --->EFF	5.449	.000
H_7 - IC --->EFF	12.463	.000
H_8 - MO --->EFF	11.679	.000

Source: SPSS analysis result of own

According to the figures in table 4, all the value at Sig. column were $\approx$ 0.000 < 0,05 . Hence, all of eight hypothesizes were accepted. It mean that eight factors of risk-based internal control system positively affected on the effectiveness of risk-based internal control system. In next step, author checked the relationship between eight factors and the effectiveness.

Tab. 5: The correlations between variables

		CE	OS	EI	RA	RR	CA	IC	MO
EFF	Pearson Correlation	.193**	.414**	.352**	.492**	.338**	.366**	.562**	.494**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.000	.000
	N	297	297	297	297	297	297	297	297

Source: SPSS analysis result of own

Based on the number in table 7, the correlation between dependent variable EFF and independent variables CE; OS; EI; RA; RR; CA; IC and MO was significant at the 0.01 level, as well as the validity at 99%. In addition, the correlation between dependent variable EFF and independent variables was the positive correlation.

From above result, author conducted Multiple regression analysis to consider the affected level of factors on the effectiveness of risk-based internal control system and what factor have the strongest effect and the least effect. The result expressed in table as below.

Tab. 6: The result of multiple regression analysis

Model Summary[b]

Model	R	R Square	Adjusted R	Std. Error of the Estimate
1	.853[a]	.728	.721	.26275

ANOVA[a]

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	53.251	8	6.656	96.415	.000[b]
1	Residual	19.883	288	.069		
	Total	73.134	296			

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.225	.132		-1.702	.090		
CE	.105	.017	.194	6.251	.000	.980	1.020
OS	.099	.019	.174	5.250	.000	.861	1.162
EI	.090	.020	.157	4.566	.000	.796	1.256
1 RA	.145	.017	.279	8.487	.000	.873	1.146
RR	.112	.016	.219	6.880	.000	.933	1.071
CA	.132	.020	.218	6.567	.000	.859	1.164
IC	.144	.022	.229	6.470	.000	.756	1.323
MO	.157	.018	.291	8.736	.000	.851	1.176

Source: SPSS analysis result of own

The figure of the table Model Summary[b] demonstrated of the R Square = 0.728. It mean that eight factors CE; OS; EI; RA; RR; CA; IC and MO of risk-based internal control system explained 72.80% the effectiveness (EFF) of import and export enterprises' risk-based internal control system. Moreover, other factors affected 27.20% of the effectiveness (EFF) remaining. Furthermore, we have the value of Sig. $\approx 0.000^b < 0.05$ in table ANOVA[a]. Consequently, regression model was an absolutely appropriate and acceptable model.

In addition, with the table Coefficients[a], all the Sig. value of eight factors were $\approx 0.000 < 0.05$. Hence, these factors CE; OS; EI; RA; RR; CA; IC and MO expound the change of the effectiveness' value. Moreover, based on the value of Standardized Coefficients column in Coefficients[b] table, we had the standardized regression model as below:

$$EFF = 0{,}194CE + 0{,}174OS + 0{,}157EI + 0{,}279RA + 0{,}219RR + 0{,}218CA + 0{,}229IC + 0{,}291MO$$

With the ANOVA[a] table, we had the value of F = 96.415 which is significant and the value of Sig. ≈ 0,000[b] < 0.05. Thus, the research model conducted by author was appropriate with meaning level of 5.00%. On the other hand, with the value of VIF column in Coefficients[b] table, we also had the figures of eight factors less than 2. Thus, author could conclude that there was no multicollinearity phenomenon. And there was no infringe in linear relationship assumption of research model as well as the residual distribution was almost standard.

Conclusion

This study aimed to discover the affection of factors as eight components of risk-based internal control system embracing Control Environment; Objective Setting; Event Identification; Risk Assessment; Risk Response; Control Activities; Information and communication; Monitoring on the effectiveness risk-based internal control system in import and export enterprises in Ho Chi Minh City, Viet Nam. The result expatiated that the effectiveness of above factors incorporate the effectiveness of risk-based internal control system. In addition, they had the positive relationship.

Furthermore, according to the regression model, all eight factors of the risk-based internal control system could elucidate the alteration of the effectiveness this system. Simultaneously, the Monitoring factor (with β = 0.291) had the strongest affection and the Objective Setting factor (with β = 0.174) had the least affection on the effectiveness of the risk-based internal control system in import and export enterprises.

Thenceforward, I advocate some suggestions to import and export enterprises in Ho Chi Minh City from the result of research as follow:

− Proceeding enhancing the effectiveness of eight factors encompassing Control Environment; Objective Setting; Event Identification; Risk Assessment; Risk Response; Control Activities; Information and communication; Monitoring sponsoring to the effectiveness of risk-based internal control system. In which, the main factor what necessitate to focus on is Control Environment;

− Enhancing the ERM knowledge basing on the foundation of COSO ERM framework for the leaders as well as staffs in enterprises to ensure these factors more and more effective and efficient.

To sum up, this paper's consequence enrich the knowledge in research of risk-based internal control system in Viet Nam's private sector, especially import and export enterprises in Ho Chi Minh City by adopting COSO theory. Notwithstanding, to encounter new characteristic factors

affecting to the effectiveness of risk-based internal control system, author will carry on research in future of this field to figure out the result.

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Contact

Hung Tang Tri

Faculty of Accounting

Ton Duc Thang University, Ho Chi Minh City

19, Nguyen Huu Tho Street, Tan Phong Ward, District 7, Ho Chi Minh City, Vietnam

tangtrihung@tdt.edu.vn

AN INNOVATIVE SOCIO-TECHNICAL NETWORK APPROACH SUPPORTING THE BUSINESS PROCESS MANAGEMENT

Anna Ujwary-Gil – Natalia Potoczek

Abstract

Purpose: The aim of this article is to combine innovatively two research areas: the network approach and the business process management. Moreover, the article indicates the possibilities of indicating business processes in an organization; identifying and analyzing socio-technical networks comprising information networks, knowledge networks, task networks and resource networks; determining the socio-technical potential for process management from the network approach perspective. The paper proffers an innovative methodological application of including processes in a network analysis. The case is an illustration of this application.

Design/methodology/approach: The study involved a total of 30 employees of a medical organization operating in the health sector (N = 30) out of 30 provided for testing, which accounts for a total of 100% of respondents. According to the research network, the sample covered the entire population. We used an interview and a survey research composed of four questions. Also, the Organizational Risk Analyzer (ORA LITE) software was used.

Findings: The article presents business processes of a medical company divided into knowledge and skills, tasks and resources necessary to perform them. It identifies socio-technical networks, calculates the density of relations in business processes and the degree of their centrality. It allows us to look at business processes from the relation network point of view.

Research/practical implications: Tying the network approach with the business process management is a promising direction in searching for new solutions, both for researchers and managers, which can be applied to managing an organization. This interdisciplinary combination points at the possibilities of understanding the network of relations existing in an organization from the perspective of business processes. It allows indicating the degree of interactions occurring between particular nods within business processes.

Originality/value: The article uses the visualizations from ORA LITE software to group nods within business processes. We used various indicators: density, centrality, E/I index or Cheeger value.

Keywords: Socio-technical networks, business process management, network approach, visualization

JEL Codes: D85, L21, L86

Introduction

The network approach has dominated the discourse in both scientific and business communities in the past decade. A great number of books have been published on the analysis of (mostly) social networks (e.g., Davel, Du Toit & Mearns, 2017; Leon, Rodríguez-Rodríguez, Gómez-Gasquet & Mula, 2017; Monaghan, Lavelle & Gunnigle, 2017; Wasserman & Faust, 1994) and business process management (AlShathry, 2016; Nadarajah & Kadir, 2016; Potoczek, 2016; Pradabwong, Braziotis, Tannock & Pawar, 2017; Szelągowski, 2014). However, the combination of network research and research on business process management in an organization constitutes an innovative approach to understanding business processes from the perspective of the network of relations between elements existing within business processes and relations between these processes as well. Typically the network analysis in an organizational context refers to the analysis of social networks and relations between people. We rarely see analyses of the network of relations between elements constituting the socio-technical system in an organization. This approach covers both human and technical factors. Therefore it is impossible to understand the complexity of the socio-technical system, perceived as a whole consisting of a set of elements working together as parts of a mechanism or connected networks, without a deeper investigation of the network of relations and ties which constitute a particular system (see Barabási, 2016). Social elements entail people and their attitudes, behaviors, as well as organization's norms, rules, and corporate culture. Technical elements cover, inter alia, processes, tasks, techniques, knowledge, and resources used in creating and proposing values.

The network approach to the analysis of the socio-technical system, here referred to as a socio-technical network, usually appears in the context of the applied technology and information systems (e.g., Elzen, Enserink & Smit, 1996; Schweber & Harty, 2010). In this article, the socio-technical network, as in Mumford (2000), means that all technical and social issues related to business processes and equally important in an organization. This approach is consistent with the assumptions of the actor-network theory (Czarniawska, 2017; Czarniawska & Hernes, 2005) in which human and non-human elements are treated equally and allow us to understand the dynamics of interactions taking place in processes and in an organization. The socio-technical network in the business process management context has not attracted researchers' attention yet. Business processes reflect the mutual influence of people, tasks, resources, knowledge, and information, thus becoming an adequate area of analyses in the socio-technical network context. Business processes are characterized by their dynamic nature,

understood as continuous permeation of the above elements constituting the network of relations. Employees gain better access to information, knowledge, and resources and are given better opportunities for using them in organizational business processes. It is essential to base the implementation of these processes on updated information and knowledge. Therefore the analysis of information and knowledge flows in an organization would *de facto* allow us to identify the supply of intangible resources and their use in business processes.

Business processes in every organization are based on the knowledge available in the whole organization, its particular units or possessed by its employees. However, if managers do not know what knowledge is vital to perform business processes, they will not be able to ensure it and minimize knowledge deficits. The organization itself may have many different kinds of knowledge. However, if its employees do not know that a particular type of knowledge is available and where it can be found, they are unable to use it. The unused knowledge cannot constitute the added value created when performing business processes. It is worth analyzing particular networks of relations and understanding how they support business processes. Connecting key business processes to employees, knowledge, tasks, and resources contributes to accomplishing strategic goals and creating values, avoiding duplicating the same tasks and using resources better (see Ujwary-Gil, 2017). Within socio-technical network, it is possible to identify the knowledge available in the organization and connected with a particular employee and to analyze the flow of information, knowledge, tasks, and resources between employees within business processes.

Taking the above into account, the main goal of the article is to: 1) identify business processes in an organization; 2) determine the socio-technical potential for process management from the point of view of the network approach. The paper proffers an innovative methodological application of including processes in a network analysis. The case is an illustration of this application.

The above-defined goals are accompanied by the following research questions: 1) How to identify business processes and the corresponding elements in the organization selected for the analysis? 2) What socio-technical networks are present in the organization and in business processes and how to identify and analyze them?

1 Research approach and methods

The research uses qualitative methods, including the case study. The choice of the case study was determined by the complex topic, which in network studies usually covers one case, thus defining the network, limiting it to the whole organization (see Tsai & Ghoshal, 1998). The main reason behind choosing the particular case for our analysis was the degree of intensity of information, knowledge, tasks, and resources in the organization's operation, which was subjected to the analysis within business processes. Such an organization is undoubtedly a medical company operating in the healthcare sector. The research covered a total of 30 employees (N=30) out of 30 employees selected for the analysis, which accounts for 100% of the surveyed ones. The sample selection, in accordance with the assumptions for network research, developed by Borgatti, Everett, & Johnson (2013) was non-random and covered the whole organization. We used an interview and a survey questionnaire. The questions we developed had a four and five-grade scale, which was then dichotomized. We took into consideration strong relations (for the following answers: once a week, at least every day, rather yes and definitely yes), assigning to them the value of 1. The replies below the above values were assigned the value of 0.

We invited the chairman of the board for an interview. The respondent learned the goals of the interview so that he could prepare appropriately. We chose a partly structured interview which concentrated on:

- identifying of the core business processes for the accomplishment of the company's strategic goals;
- determining the required knowledge, tasks, and resources necessary to accomplish particular business processes.

The interview gave us a better understanding of business processes, the knowledge required and created by those processes, the resources needed and used in the processes and the tasks which were needed and performed. Using the interview results, we developed the categories of typical knowledge and skills, resources, and tasks used in business processes, which we used as reply options in the survey questionnaire. The information collected in the interviews constituted the core element in building the survey questionnaire.

In quantitative research, we measured the results using the measures included in Tables 1, 4 and 5. To measure them we used the ORA LITE (Organizational Risk Analyzer) software, version ORA-NetScenes 3.0.9.9.38 (Carley et al., 2013).

Tab. 1: The determinants and measures of the socio-technical network

Socio-technical networks	
Infomation network = actor (A) x actor (A) = (AA)	
Knowledge network = actor (A) x knowledge (K) = (AK)	
Task network = actor (A) x task (T) = (AT)	
Resource network = actor (A) x resource (R) = (AR)	
Metrics	
Density	$Du = \dfrac{sum(M)}{n(n-1)/2}$ $Db = \dfrac{sum(M)}{m \cdot n}$
Centrality degree	$CD^n = node\ i = \dfrac{1}{2(n-1)} \sum_{i=1}^{n} \sum_{\substack{j=1 \\ i \neq 1}}^{n} X(i,j)$

Source: Based on Altman, Carley & Reminga (2017).

In order to take advantage of the ORA LITE software we created four matrixes which covered all replies obtained in the research (Table 2):

Tab. 2: The questions/replies used in the socio-technical network

Information network (AA)	
1.	How often do you provide this person with information directly related to the work performed in the organization?
Knowledge network (AK)	
2.	I use this knowledge or skills in my work.
Task network (AT)	
3.	I perform this task in my work.
Resource network (AR)	
4.	I use this resource in my work.

Source: Own elaboration.

2 Results and discussion

On the basis of the interview with the chairman of the board in the medical company, we identified the core business processes to which we assigned the following categories: knowledge and skills, tasks (activities) and resources (tools). Table 3 below contains the elements of business processes based on the glossary of terms developed by the researched company. The core business processes of the medical company include service sale (SS); service provision (SP); customer service (CS); as well as accounting, personnel, and finance (APF). Within the above-mentioned business processes were determined 38 items of knowledge and skills (K); 38 tasks (T) and 23 resources/tools (R).

Tab. 3: Business processes of the medical company and their key elements

Business processes	K	Knowledge/skills - K	T	Tasks/activities - T	R	Tools/resources - R
Service sale	K01	Cardiotele	T01	Internal trainings	R01	Equipped sale post
	K02	ECG with description	T02	Staff recruitment	R02	Computer
	K03	Holter 24h	T03	Service sale	R03	Company database
	K04	Cardiotest	T04	Internal meetings	R04	Stethoscope
	K05	Sales techniques	T05	Setting goals (everyday)	R05	Call center application
	K06	Cardiotele apparatus	T06	Motivating staff	R06	Microphone
	K07	Sale script	T07	External trainings	R07	Own databases
	K08	Team management	T08	Reporting/Sale statistics	R08	Internet
	K09	Solving conflicts	T09	Meetings with partners	R09	VOIP phone
	K10	Motivating staff	T10	Partner trainings	R10	Sales report
	K11	Recruitment skills	T11	Cooperation with partners	R11	Car (mobility)
	K12	Managing medical representatives	T12	Business relations with external partners	R12	Presentation sets (service presenter)
	K13	Building the structure	T13	Sale service support	R13	Contract forms
	K14	Servicing doctors			R14	Identification card (identifying the person with the company)
	K15	Knowledge of medical environment			R15	Company bag
Service provision	K16	Medical (doctor) knowledge	T14	Patient service by phone	R16	Computer system (tele-medical application)
	K17	Service organization (continuous duty)	T15	Entering ECG tests into the system	R17	Power generator
	K18	IT knowledge	T16	Consulting the test records with the doctor	R18	Optical fiber of high capacity
	K19	Tele-information systems	T17	Knowledge of medical procedures		
	K20	Human resource management	T18	Informing patients		
			T19	Writing descriptions of ECG tests		
			T20	Ensuring continuous operation of tele-information system		
			T21	Equipment checks		

Customer service	K21	Individual Customer of the Company	T22	Talking with customers	K19	Office equipment (fax, printers, materials)
	K22	Medical center cooperating with the Company	T23	Activating customers	K20	Office software
	K23	Customer service knowledge	T24	Training customers	K21	CRM
	K24	Correspondence with customers	T25	Initiating contacts with customers		
	K25	Knowledge of the law	T26	Monitoring customers		
	K26	Writing contracts	T27	Preparing orders		
	K27	Sale skills	T28	Dealing with claims		
	K28	Negotiation skills	T29	Sending cases for legal procedure		
	K29	Logistics (warehouse, dispatch)	T30	Debt recovery activities		
	K30	Using computers				
	K31	Using office equipment				
	K32	Debt recovery				
Accounting, personnel, and finance	K33	Accounting	T31	Preparing tax return forms	K22	Data files
	K34	Finance	T32	Paying taxes	K23	Specialist accounting and staff software (for example Symfonia)
	K35	Taxes	T33	Bookkeeping and paying invoices		
	K36	Account books	T34	Paying remuneration		
	K37	Financial analysis	T35	Accounting payments from customers		
	K38	Employment regulations	T36	Preparing Company reports, statements		
			T37	Preparing financial analyses		
			T38	Discussing financial analyses		

Source: Own elaboration on the basis of the conducted interview.

Table 3 presents the group elements for each business process which are composed of nodes from these nodesets: agent, knowledge, resource, task. The group size statistics are as follow: a number of business processes 4; smallest business process 21; largest business process 53; average business process size 32.250 and std.dev of business process size 12.676.

Tab. 3: Business process elements

Business process	Size	Agent elements	Knowledge elements	Resource elements	Task elements
SS	53	A01, A03, A06, A07, A09, A17, A19, A21, A23, A27 (10 elements)	K01, K02, K03, K04, K05, K06, K07, K08, K09, K10, K11, K12, K13, K14, K15 (15 elements)	R01, R02, R03, R04, R05, R06, R07, R08, R09, R10, R11, R12, R13, R14, R15 (15 elements)	T01, T02, T03, T04, T05, T06, T07, T08, T09, T10, T11, T12, T13 (13 elements)
CS	32	A05, A08, A13, A18, A20, A22, A28, A30 (8 elements)	K21, K22, K23, K24, K25, K26, K27, K28, K29, K30, K31, K32 (12 elements)	R19, R20, R21 (3 elements)	T22, T23, T24, T25, T26, T27, T28, T29, T30 (9 elements)
SP	23	A04, A10, A11, A12, A24, A25, A26 (7 elements)	K16, K17, K18, K19, K20 (5 elements)	R16, R17, R18 (3 elements)	T14, T15, T16, T17, T18, T19, T20, T21 (8 elements)
APF	21	A02, A14, A15, A16, A29 (5 elements)	K33, K34, K35, K36, K37, K38 (6 elements)	R22, R23 (2 elements)	T31, T32, T33, T34, T35, T36, T37, T38 (8 elements)

Source: Own elaboration based on ORA LITE.

On the basis of the survey questionnaire (Table 2), the socio-technical networks were created in the research organization, demonstrated in Figure 1. These networks include relations between actors and actors – AA (sharing information); actors and knowledge – AK (using knowledge and skills by actors); actors and tasks – AT (performing tasks by actors) and actors and resources – AR (using resources by actors).

The next Tables 4 and 5 computes and displays information about each business process. Measure calculations are performed on the sub-network defined by the business process, e.g., the business process element nodes and the links between them. The internal link count is the number of links that connect one business process node to another business process node. The external link count is the number of links that connect a business process node to a non-group node. The External/Internal index ranges between -1 (all links are internal, and the business process is perfectly silo'd) to +1 (all links are external); a score of 0 means an equal number of internal and external links. The Cheeger value is ratio of the business process's external link count to its size. The approximate Cheeger value for the graph is the minimum value across all business processes.

Fig. 1: Socio-technical networks of a medical organization within the defined business processes

Notes: orange – service provision; green – service sale; blue – customer service; dark blue – accounting, personnel, and finance.

Source: Own elaboration based on ORA LITE.

The centrality of nodes shows that there are not any particularly dominant nodes within the defined business processes.
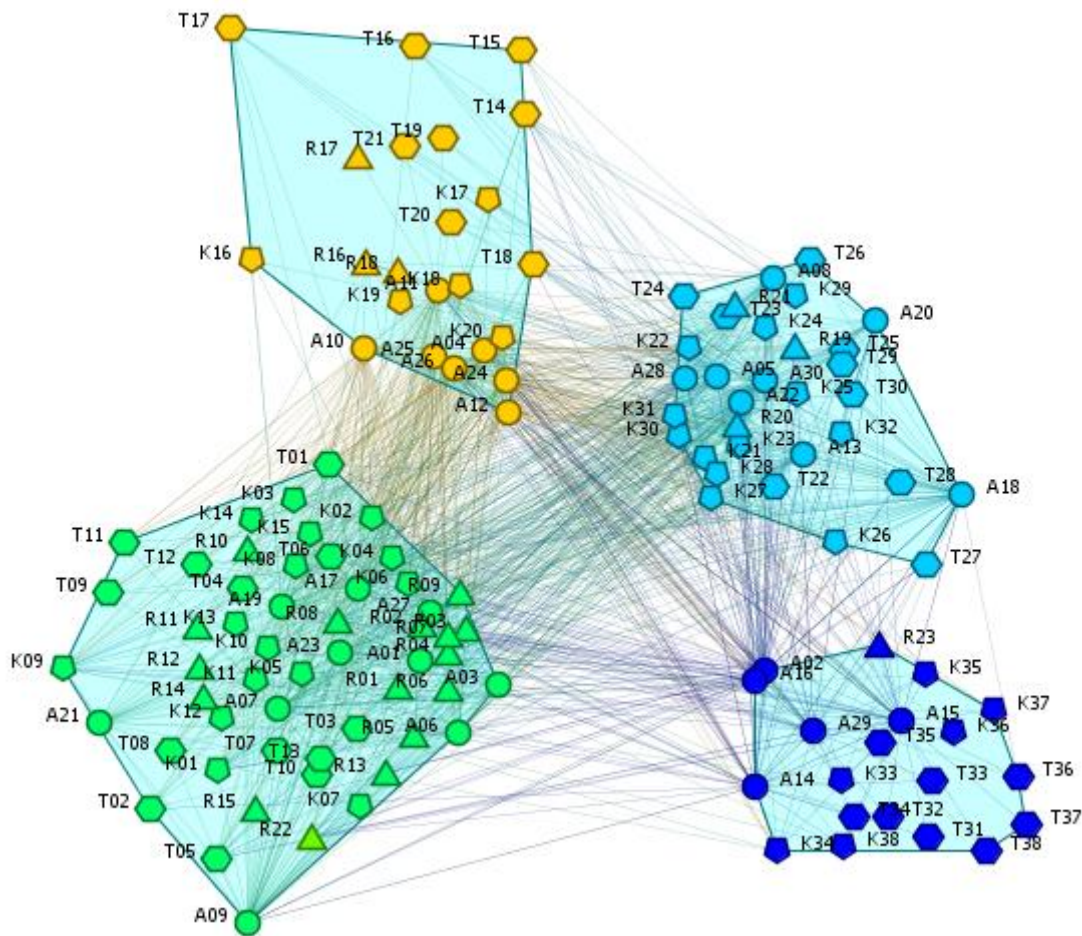
Tab. 4: Calculations performed on the sub-network defined by the business process

Business process	Agent	Knowledge	Resource	Task	Density	Internal links	External links	Percent inner links	E/I index	Cheeger value
SS	10	15	15	13	0.331	172	531	24.47%	0.511	10.019
CS	8	12	3	9	0.484	120	506	19.17%	0.617	15.813
SP	7	5	3	8	0.377	58	467	11.05%	0.779	20.304
APF	5	6	2	8	0.510	51	324	13.60%	0.728	15.429

Source: Own elaboration based on ORA LITE.

Tab. 5: Centrality degree of business processes

Business process	Min	Mean	Max	Std.dev
SS	0.008	0.064	0.285	0.066
CS	0.008	0.091	0.266	0.076
SP	0.004	0.099	0.281	0.092
APF	0.004	0.079	0.227	0.078
All nodes	0.004	0.080	0.285	0.077

Source: Own elaboration based on ORA LITE.

Conclusion

This article attempted at combining two research approaches: process and network ones in the management context. The starting point was, on the basis of a partly structured interview, to identify the core business processes which mostly contribute to the accomplishment of organizational goals and creating value. The elements of every business process include knowledge and skills, tasks and resources, which, combined with actors, create the basic socio-technical networks in the organization. Each network is created by two-dimensional relations determined by means of the questionnaire (Table 2), consisting of actors, knowledge and skills, tasks and resources. The elements mentioned above form the core areas of each business process, regardless of its type and nature. Looking at business processes from the network perspective allows us to diagnose the potential of relations existing within these processes between the above-mentioned elements concerning the density of relations (business process network), centrality of nodes and their potential validity (influence on other nodes in the network), or internal relations to external relations and ties between business processes.

The presented measures and assumptions of network research in this version of the article constitute a basis for more advanced research in this area, especially concerning the effectiveness of using resources (understood as actors, knowledge and skills, tasks and resources/tools) both in the organization and in business processes. The network approach offers managers unique tools which allow them to analyze business processes from the perspective of operational risk (for example the loss of a key resource/network node; isolated resources/nodes) and take action where necessary (for example by creating additional relations, introducing intermediary resources/nodes which bind groups of resources).

Acknowledgment

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Contact

Anna Ujwary-Gil

Faculty of Social Sciences and Information Technology

Wyższa Szkoła Biznesu – National Louis University

Ul. Zielona 27. 33-300 Nowy Sącz, Poland

ujwary@gmail.com

Natalia Potoczek

Faculty of Social Sciences and Information Technology

Wyższa Szkoła Biznesu – National Louis University

Ul. Zielona 27. 33-300 Nowy Sącz, Poland

npotoczek@gmail.com

CURRENT SUCCESS CRITERIA OF SOCIALLY-ORIENTED START-UPS IN INCUBATION STAGE

Lucie Vnoučková – Hana Urbancová

Abstract

Purpose: The paper focus on important area of current entrepreneurship oriented on social impact and improvement of life with use of modern technologies. The aim of the paper is to identify current criteria of socially-oriented start-ups leading towards successful development of innovative entrepreneurship with use of new technologies based on qualitative research of start-up projects.

Design/methodology/approach: The data were collected by means of a qualitative research of 17 start-up projects by means of content analysis carried out among project applications of organisations applying for start-up incubator. The projects were focused on social innovations with planned impact in the Czech Republic. For the analysis key words and short phrases were selected based on aim of the study to find approaches of socially oriented start-ups and their main areas of planned impact.

Findings: The results of study have shown that key success criteria of successful start-up projects and entrepreneurship are: use of education and training, development, partners, theoretical mapping, use of expert help, use of concrete technologies, knowledge of project management, project functionality, personal interest in project delivery, efficiency of solution and use of psychological approaches.

Research/practical implications: The results may be used in practice to identify current main focus areas of social impact and approaches of their achievement. The limits of the article can be deemed to consist in a relatively small sample; however, with respect to the relatively low number of social start-ups in the Czech Republic the sample can be described as sufficient. The research will continue further in order to deepen the knowledge about this phenomenon, i.e. methodology of adoption of innovations by target group and efficient approaches to scaling of the solution.

Originality/value: The contribution of the article lies in general identification and evaluation of the areas of the sustainable development of social start-ups. Furthermore, practical contribution of this article lies in presenting the concrete results from real start-up projects in incubation stage. The results are important for development of new start-up ideas and project while their main efficient approaches are presented.

Keywords: Start-up, innovation, evaluation, social, incubation

JEL Codes: O32, O35, O43

Introduction

Based on Wang and Wang (2012), Linhartová and Urbancová (2012) we may say that increasing competitiveness while simultaneously decreasing costs is currently considered the most burning issue. The only thing that remains truly crucial in the effort to upgrade the organisations' and economy level are sustainable enterprises with social impact and their development (McDonnell et al., 2014; Gururajan and Fink, 2010; Manning, 2010). Hiam (2003) adds that just start-ups can, thanks to their pioneering orientation, take potential initial advantages, which can create and maintain a competitive advantage of a company. In all sectors of economy, there is necessary to support creation of new companies (start-ups) that have something to offer on the market, have a potential to gain a hold onto the market and achieve success. Nowadays, commercial companies also endeavour to create opportunities for start-ups, primarily in the sphere of socially-oriented start-ups with the support of new technologies. While Mueller et al. (2012) adds that it is always necessary to realize that behaviour of start-up entrepreneurs, not only in the sphere of socially-oriented start-ups, differs significantly compared to behaviour in already established companies, because starting entrepreneurs spend 11.8 hours a day at work on the average and fulfil 94.8 various tasks during just one day.

In the case of the mentioned socially-oriented start-ups, there has been very often placed emphasis on the focus on the sphere of education (especially digital), they extend access to resources for people at risk on the labour market and for people at risk of social exclusion, on access to information and data that enable to realize social innovations, accessible and quality social and health services, supporting and developing social businesses, community development, creation of job opportunities and, last but not least, equality and diversity. Socially-oriented start-ups are intended to bring new solutions for a specific social problem that would be more effective than the existing alternative (so called social innovation), while the project should have a demonstrable positive impact on the lives of not only inhabitants, but also organizations living in the given territory, which is in compliance with Hiam (2003).

Although we can say that a social enterprise does not differ from the traditional one at first glance, the only difference is that it fulfils socially beneficial intention besides economic objectives, but it faces same questions on the part of the entrepreneur and investor as any other company. According to Cabral, Mata (2003) or Kessleer (2007), the barrier on the part of an entrepreneur is the lack of resources, especially financial resources, which subsequently affects the further progress of business and Shepherd et al. (2000) highlight the importance of the human capital. On the part of investors, the most common criteria, according which the

potential investors make their decisions, are team, the product itself and used strategy (Agha, 2014) or the urgency for information (Hartmann et al., 2016).

The aim of the paper is to identify current criteria of socially-oriented start-ups leading towards successful development of innovative entrepreneurship with use of new technologies based on qualitative research of start-up projects. The article structure is as follows: the theoretical part of this paper, which briefly summarizes the given issue from the perspective of the authors, is followed with methodology. The results are reviewed in the chapter "Results" and these are subsequently discussed.

1 Materials and Methods

The primary research was carried out using the method of evaluation of written materials; there was used a quantitative content analysis of the project applications, which engage in the incubator of technological start-ups with a social impact. The applications had been sent to the incubator during November 2017 from all over the Czech Republic. The total number of applications that met the conditions of the project assignment and had been evaluated was 17. Teams had 1 to 13 members, the modus and the median of the number of members was 4 and the standard deviation was 3.02. For the progression into the acceleration phase, 5 projects out of 17 proposals / projects have been selected. The results of the projects will be compared also according to their progress to the next phase to identify spheres that are determining for the project progress.

The applications included both identification data of applicants and also 18 open questions focused on a project description, description of a solved social problem, description of a project team, previous experience of the team, description of a planned impact, knowledge of the target group, description of the solution, actual state of the market with substitutes, description of the innovative solution, competitiveness of the project, planned impacts, technical solution, conditions of the project development, sustainability, financing, scalability, co-operation with partners and contribution towards goals of the sustainable development.

The use of the quantitative analysis has been decided because this method makes it possible to reveal those aspects of the text that are not apparent at first sight in a given amount of information. According to Disman (2008), the procedure of the quantitative content analysis reflected steps with partial modifications in accordance with the context of the research. At first, all team applications were read through and these were defined statistically suitable to be

surveyed, i.e. words, phrases or other parts of text with a similar meaning, which were categorized into categories and there were defined units to be analysed – individual concepts repeatedly mentioned in most or all of the documents concerning a focus of a project, supporting documents for its processing and justification of its viability and its positive impact on the target group become units for analysis. The concepts were observed as a whole (in a certain context) but also the attention was focused on their individual components (words), phrases.

The categories were created while reading the applications and there were observed selected qualitative variables, while primary nouns (the synonyms were merged under the same category) or their logical groups were recorded. There were evaluated 39 criteria. In particular, there were used concepts and their synonyms: the resulting solution (platform, portal, web, application, mobile, on-line, telephone, internet), use of education training (mentor, coach, lecturer, consultant), development, partner, acquisition, project creation (idea), potential / opportunity, impact outside the Czech Republic (international, foreign), market (offer, demand), application for commercial sphere (practice, companies, institutions), team skills or their development (experience, knowledge, skills, talent, capabilities, qualifications, competencies), region, theoretical mapping (model, system), solution for the target group (benefit, advantage), focus on the social sphere (society, environment, social public), focus on the sphere of education (education, school, workshop, course), description of the target group (youth, senior, student, pupil, child, woman, family, parent), the process of making solution (co-operation, interconnection, innovation), awareness of resource use (utilization, implementation), conception of newness and results (impact, use, innovation), project as a business plan (entrepreneur, business), use of professional assistance (specialist, expert), conception of output (service, product), use of technologies (technologies, digital, robot, interactivity, software), performed analysis of a solution (analysis, analytics, measurement, evaluation, research), conception of project communication (marketing, advertising, promotion, PR), conception of project management (manager, management, managing, self-management, leadership), conception of job opportunities (job, employment, employee, workforce, position), identification of co-workers (team, group, community), solution functionality (function, functioning), solution description (process, solution, design, tool, prevention, measure, automation), description of project financing (finance, support, grants, resources, investments, investor), data base (data, information, database), targeting (goal, target group), problem identification (limit, problem, barrier, handicap, indisposition, loss, dispute), interest in a

solution (motivation, engagement), effectiveness of solutions (effectiveness, efficiency), use of psychological approaches (psychology, psyche).

As mentioned, in some cases when appropriate, there have been created also categories of the second and third level that ramify the main categories even more. So the whole research problem has been covered and further the big amount of data has been reduced and the less important data has been eliminated which made their interpretation easier. For the creation of the qualification system, there was chosen nominal quantification monitoring the frequency of occurrence of particular units in each category. The subcategories were subsequently merged under the main categories and the number of occurrences for each category was recorded. The results obtained using the mentioned method were subsequently evaluated and processed. All the primary data was first summarized, processed into tables and subsequently evaluated using tools of descriptive statistics.

The occurrences of the qualitative criteria were subsequently described using descriptive statistics (average, minimum, maximum, standard deviation, and use of $\chi 2$test to find the differences between the use of criteria for progressing and non-progressing projects). If the p–value calculated by means of the $\chi 2$ test (Pearson Chi-Square) was lower than the selected level of significance $\alpha = 0.05$, the null hypothesis was rejected.

It is not possible to ignore the limits of the submitted study. The first one is the subjectivity when choosing particular used definitions and categories for the content analysis. Secondly, the procedure during the creation of categories of the analysed content and the inclusion of individual words or phrases into these categories. The limit of the article is also the fact that it focuses only on projects involved in one of the incubation / acceleration programs and not all start-up projects in the Czech Republic.

2 Results

The objective of this chapter is to evaluate the results obtained in the primary survey. The results of the qualitative research have been evaluated and outputs have been formulated.

Firstly, there are mentioned occurrences of the quantitative criteria for the evaluated projects. The Table 1 shows a summary of results. There is mentioned the total percentage of occurrences (SUM), the proportion of the occurrence of the criterion for the projects progressing to the next stage of the start-up project accelerator (PP), proportion of the occurrence in non-progressive projects (NP) and further the average number of occurrences, the modus, the median, the

minimum number of occurrences, the maximum number of occurrences and the standard deviation.

Tab. 1: Occurrence of evaluated criteria

	SUM	PP	NP	AVG	MOD	MED	MIN	MAX	STD
number of team members	-	-	-	4,47	4	4	1	13	3,02
platform, portal, web, application, mobile	100	100	100	31,05	13	13	4	57	14,71
mentor, coach, lecturer, consultant	76,47	100	63,64	4,06	1	2	0	24	6,27
development	82,35	100	72,73	4,29	1	2	0	21	5,38
partner	70,59	100	63,64	2,76	0	1	0	13	3,67
acquisition	76,47	80	72,73	2,82	1	1	0	12	3,75
idea	82,35	80	81,82	1,76	1	1	0	6	1,75
potential, opportunity	82,35	80	81,82	2,76	4	2	0	10	2,54
international / foreign	70,59	80	63,64	2,47	0	2	0	9	2,72
the market, offer, demand	88,24	80	90,91	5,76	1	4	0	24	6,27
practices, companies, institutions	82,35	80	81,82	8,00	1	2	0	54	13,99
experience, knowledge, skill, talent, etc.	94,12	100	90,91	10,00	1	7	0	33	10,30
region	47,06	40	45,45	1,12	0	0	0	7	1,83
model, system	82,35	100	72,73	2,24	2	2	0	8	2,08
benefit, advantage	82,35	80	81,82	2,12	2	2	0	8	1,83
society, environment, social, public	94,12	100	90,91	11,65	17	12	0	43	9,94
education, school, workshop, course	76,47	80	72,73	10,71	0	6	0	28	10,47
youth, senior, student, child, woman, family	88,24	100	81,82	19,59	0	16	0	55	18,86
co-operation, interconnection, help	100	100	100	9,00	14	9	2	17	5,47
use, implementation	94,12	80	100	4,06	3	4	0	9	2,56
impact, use, innovation	70,59	80	63,64	2,59	0	2	0	10	2,98
entrepreneur, business,	64,71	60	63,64	2,94	0	2	0	20	4,84
specialist, expert	76,47	100	63,64	3,24	0	2	0	13	3,49
service, product	88,24	80	90,91	3,94	1	2	0	15	4,29
technologies, digital, interactivity, software	76,47	100	63,64	6,35	4	4	0	22	6,73
analysis, measurement, evaluation, research	70,59	60	72,73	3,82	0	2	0	19	5,83
marketing, advertising, promotion, PR	94,12	80	100	4,59	1	3	0	23	5,56
manager, management, leadership	64,71	80	54,55	3,82	0	2	0	16	5,66
communication	70,59	100	54,55	2,53	1	1	0	14	3,76
job, employment / employee, position	94,12	100	90,91	6,12	2	4	0	20	5,54
team, group, community	94,12	100	90,91	5,41	6	5	0	18	4,96
function, functioning	64,71	100	45,45	2,24	0	1	0	8	2,63
process, solution, tool, prevention, etc.	94,12	100	90,91	10,71	10	6	0	68	15,96
finance, support, grants, investments, etc.	94,12	100	90,91	9,47	6	9	0	31	7,24
data, information, database	94,12	100	90,91	5,76	6	6	0	16	4,16
goal, target group	94,12	100	90,91	5,41	1	5	0	11	3,73
limit, problem, barrier, handicap, etc.	76,47	80	72,73	8,12	0	4	0	75	17,78
motivation, engagement	52,94	80	36,36	1,12	0	1	0	4	1,36
efficiency, effectiveness	64,71	80	54,55	2,06	0	1	0	9	2,68
psychology, psyche	29,41	60	18,18	1	0	0	0	6	1,80

Note: SUM – the total percentage of occurrences (%); PP – the proportion of the occurrence of the criterion for the projects progressing to the next stage of the start-up project accelerator; NP – proportion of the occurrence in non-progressive projects

Source: Authors´ processing

As it is possible to see in the Table 1, there are observable partial differences between the criteria occurrence for progressive projects and non-progressive projects. The progressive projects were using some of criteria in all cases, while non-progressive projects neglected them. This has resulted in the insufficient sophistication and readiness of the project or its insufficient impact on the target group, or it has resulted in the unrealizable nature of the project. When

testing whether there were statistically significant differences between the projects progressing into an acceleration and non-progressive projects in the utilization of the observed qualitative criteria the Chi-squared test was used. The test confirmed that statistically significant differences between the two groups (p=0.000). The projects that have progressed to the acceleration have used more often all the observed criteria when preparing a project. Its use was more frequent and, on the other hand, all these criteria were used. The project, which did not progress, did not have some criteria processed or did not pay any attention to them. As the numbers of occurrences have significantly varied for some criteria, the criteria were further tested. In particular, statistically significant differences were found in the case of the following criteria (for all of them p=0.000): use of education training (mentor, coach, lecturer, consultant), development, partner, theoretical mapping (model, system), use of technical assistance (specialist, expert), use of technologies (technologies, digital, robot, interactivity, software), conception of project management (manager, management, managing, self-management, leadership), solution functionality (function, functioning), interest in a solution (motivation, engagement), solution efficiency (effectiveness, efficiency), use of psychological approaches (psychology, psyche).

In consideration of the above mentioned, we can summarize that the education and consultant services, innovation support, co-operation, social benefits in the context of efficient management and use of technologies, all companies (especially start-ups) should have a priority to strengthen monitoring and develop information systems, which is evidenced also by the research of socially-oriented start-ups. Just the education is important within the socially-oriented start-ups as evidenced by the researches by Hiam (2003, Hartmann et al. (2016) or Shepherd et al. (2000).

Conclusion

The article expands the understanding of innovative potential of socially-oriented start-ups and areas and attitudes which are related to it. In order to ensure sustainable development of social start-ups, it is necessary to pay attention to deeper investigation of identified success criteria leading to project acceleration.

The results of the presented study supported with quantitative content analysis showed that projects can be assessed according to the 39 identified criteria. From these criteria, 11 criteria were identified as crucial for further development and realization of the project. These were: use of education training, development, partner, theoretical mapping, use of technical

assistance, use of technologies, conception of project management, solution functionality, interest in a solution, solution efficiency, and use of psychological approaches.

The results may be used in practice to identify current main focus areas of social impact and approaches of their achievement. The limits of the article can be deemed to consist in a relatively small sample; however, with respect to the relatively low number of social start-ups in the Czech Republic the sample can be described as sufficient. The research will continue further in order to deepen the knowledge about this phenomenon, i.e. methodology of adoption of innovations by target group and efficient approaches to scaling of the solution. The contribution of the article lies in general identification and evaluation of the sustainable development criteria of social start-ups. Furthermore, practical contribution of this article lies in presenting the concrete results from real start-up projects in incubation stage. The results are important for development of new start-up ideas and project while their main efficient approaches are presented.

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Contact

Lucie Vnoučková

University of Economics and Management (VŠEM)

Nárožní 2600/9a, 158 00, Praha 5, Czech Republic

lucie.vnouckova@vsem.cz

Hana Urbancová

University of Economics and Management (VŠEM)

Nárožní 2600/9a, 158 00, Praha 5, Czech Republic

hana.urbancova@vsem.cz

WHAT ARE THE EXPERIENCES OF THE AMBIDEXTROUS FORM OF STRATEGIC CHANGE MANAGEMENT WITHIN THE LIFE INSURANCE INDUSTRY?

Martin Vogl

Abstract

Purpose: Since January 2017 the writer is the chairman of a Swiss insurance group which faces strategic challenges which are economic driven (cost and margin pressure) and at the same time require organisational development (lack of innovation to adjust core client offer to changing client needs). For this kind of business challenges the ambidextrous form of strategic change management has been developed. The objective of the study is to empirically observe, whether companies in general and specifically in life insurance industry have applied this change management approach and what were the results.

Design/methodology/approach: The methodology applied is a Systematic Literature Review (SLR). It is focused on the following Research Question (RQ): what the experiences of companies in are applying ambidextrous strategic change a.) overall and b.) within the insurance industry. The search was restricted to peer-viewed, English language, scholary journal articles. All published and accessible journal publications, working papers and conference papers that matched the selection criteria were considered.

Findings: Based on this research it became clear that mostly technology intensive or manufacturing oriented companies have applied the ambidextrous path of strategic change with a positive financial performance. With respect to the life insurance industry the SLR showed that much evidence could be found that the challenges of the life insurance industry normally require the application of this concept, but however no specific empirical study could be found which describes the application of it.

Research/practical implications: The SLR suggests (1) further academic work on application of the concept in service industries, e.g. banking to better understand if the life insurance industry can learn from them. On top the writer recommends to (2) specify more clearly how (steps, components, tools) the ambidextrous change management approach has been applied incl. results achieved. Furthermore, the writer suggests to (3) develop a more customized conceptual ambidextrous change management approach for the life insurance industry and (4) validates it by a scientific research on the application within a case study.

Originality/value: The life insurance industry overall and not only the writer's company face new, huge and complex challenges. For these challenges the ambidextrous change management has been developed by Tushman and O'Reilly. The research showed that this concept has been widely applied in technology intensive industries with positive results. Therefore, managers and researches in the life insurance can now learn from these experiences and help to solve toady's challenges of their companies and the industry.

Keywords: Ambidexterity, ambidextrous path of change management, management of paradoxon, life insurance
JEL Codes: L84, M14, O31

Introduction

The insurance industry experienced turbulent times in the last twenty years, which have been challenging the companies with respect to their business model and the organizational design (Bartlett and Ghoshal 1995). The deregulation until 2000 as well as new regulatory regimes like Solvency II, the financial crisis after the dotcom bubble until 2003 and in 2007 as well as the increasing demand for shareholder value required insurance companies to focus on core offerings, much more efficient / standardized processes (operational excellence) and higher client value. So far these challenges have been mastered relatively well by the insurance companies. Only the latest driver of change, the digitalisation, where a new technology changes client behavior and requirements for advice, sale, service seem to bring enormous problems for senior managers within insurance. Why is this? While the former drivers of change needed mostly content driven changes with respect to cost efficiency, product development or risk management only the later touches really the core traditional business model of insurance companies and the organizational design behind it (Bühler and Maas 2017).

These changes in the insurance industry environment require strategic innovation which on the one hand exploits the traditional business model, i.e. its products, processes and technology and on the other hand explores new business models to satisfy these changing customer needs. O'Reilly and Tushman developed for such a management challenge the "ambidextrous" path of strategic change management. But to which extent has it been applied in the insurance industry? This is the key question for this research paper.

1   Theoretcial background

1.1   Strategic change management

The process theory of change management is the theoretical background for this SLR (Miles and Snow 1984). The process perspective attends to the "how" of change and focuses on the way a transformation occurs. More specifically, the SLR is about strategic changes which are directed to align the firm with the environment - a new fit between the basic set-up of the firm and the characteristics of the environment. This kind of change has an impact on the way a firm does its business, i.e. its business model and on the way the organisations has been configured, i.e. its organisational system which includes organisational structure, processes, culture and members. (Bartlett and Ghoshal 1995)

Although the process of strategic change has been widely discussed and analysed for decades (Lewin 1947) research on the general approach, its success in the 1990s and 2000s (Kotter 1995) examined what kind of errors led to failure rates of 70% (Beer and Nohria 2009). The main reason for these low success rates was determined as a lack of systematic approach of the change management process. This includes that successful change management programs require top management commitment, coordination and competency (Beer and Eisenstat and Spector 1990).

Next to this general approach substantial academic work has been done to differentiate change processes with respect to (1) the magnitude of change, i.e. scope and amplitude as well as (2) pace of change, i.e. timing and speed (de Witt 2017). In selecting a change process top managers struggle with the question of magnitude and pace. They usually realise that to fundamentally transform the organisation a break with the past is needed which means to turn away from a firm's heritage and to start from scratch. On the other side managers recognise the value of continuity, building on past experiences, investments and loyalties. And to achieve such lasting strategic alignment people within the firm will need time to learn, adapt and grow. Such a distinction between disruptive change and gradual change has been long recognised in the strategic management and organisational behaviour literature. (Tushman and O'Reilly 1996).

1.2   Strategic change management - the ambidextrous path

Next to the more general strategic change management models, more specific paths to strategic change have been developed especially with the dimensions of revolutionary / radical vs evolutionary / gradual. In this SLR the writer wants to elaborate on this ambidextrous path of strategic change. Michael L. Tushman and Charles A. O'Reilly form Harvard Business School wrote in 1996 their first article "Ambidextrous organizations: Managing evolutionary and revolutionary change" about this topic. They concluded that technology, competitors, regulatory events or significant changes in economic and political changes drive organizations which experience relatively long periods of incremental change punctuated by environmental shifts and revolutionary change. In order to succeed in these periods it is according to the authors required that different sets of competencies, strategies, structures, cultures and leadership skills are developed. That is why it is crucial to apply evolutionary and revolutionary change in a balanced way at the same time, i.e. ambidextrous path of change management. Only achieving congruence between market feedback and a company's strategy, structure and culture / people and processes is the key for success in these challenging times. If the congruence cannot be established in the short or / and long term performance problems will arise.

In later work of O'Reilly and Tushman (2008) they specified that research on strategy suggests that dynamic capabilities, i.e. explorative and exploitative capabilities, are the source of long term competitive advantage. Further ambidexterity with respect to organizational design enables a firm to develop these capabilities and survive in the end. In the 2008 article the authors concluded that if ambidexterity is applied in this form efficiency and innovation do not have to be strategic trade-offs, but it is the key role of the senior managers to enable ambidexterity. While Tushman and O'Reilly emphasized to use structural ambidexterity, i.e. use different divisions or business units to apply explorative and exploitative innovation, Birkinshaw and Gibson (2014) highlighted that this structural ambidexterity led to isolation. They developed a concept where individual managers and employees should have to make choices between alignment-oriented and adaptation-oriented activities in the context of their daily work. Birkinshaw and Gibson called this concept contextual ambidexterity.

2 Methods

The review is based on an adopted procedure for systematic literature review (Fink 2010). It consists of four stages: (1) selecting the research question: what are the experiences of companies in applying ambidextrous strategic change a.) overall and b.) within the insurance industry. (2) selecting articles in databases, (3) choosing search terms, applying practical and methodical screening criteria (4) doing the review and synthesising results. Having selected the research question, the writer searched two databases, ProQuest and EBSCO by employing the search term shown in table 1. To ensure the use of validated knowledge base, the search was restricted to peer-viewed, English language, scholary journal articles. Instead of limiting the search approach to journals with a particular impact factor, all published and accessible journal publications that matched the selection criteria were considered for review without time restrictions. On top working papers, conference papers and book chapters were also included.

Upon applying these restrictions, the first broad article search resulted in 1142 hits. In the next steps, the writer eliminated 1034 articles that either were duplicates or proved to be substantially irrelevant given the focal topic. Afterwards the results were examined more closely to guarantee a certain level of relevance. Due to non-compliance with the following selection criteria 65 were excluded: (1) thematic focus on strategic change or change management (2) thematic focus either ambidextrous, dilemma, paradox (4) methodical transparency and clarity in the presentation of results. Additionally the writer screened the reference list of the remaining 43 articles and identified further 13 articles. The final database comprises 56 articles. This includes (1) 17 articles about the concept of (ambidextrous) strategic change management (2) 15 articles

about application of ambidexterity overall and (3) 14 articles which are related to ambidexterity in insurance. The findings of the later 15 and 14 articles are illustrated in table 2 and 3.

Tab. 1: Results of SLR on ambidextrous strategic change management

		Step 1	Step 2	Step 3	Σ	Step 4	Total
ProQuest Central							
AB(Change Management) and AB(ambidextrous)		46	-19	-10	17		
AB(Strategic Change) and AB(ambidextrous)		16	-10	-3	3		
AB(Strategic Change) and AB(dilemma)		197	-188	-5	4		
AB(Change Management) and AB(dilemma)		599	-584	-10	5		
AB(Change Management) and AB(ambidextrous) and AB(insurance)		0			0		
AB(Change Management) and AB(ambidextrous) and ALL(insurance)		3	-2	-1	0		
AB(Strategic Change) and AB(ambidextrous) and AB(insurance)		0			0		
AB(Strategic Change) and AB(dilemma) and AB(insurance)		3	-3		0		
AB(Strategic Change) and AB(dilemma) and ALL(insurance)		8	-7	0	1		
AB(Strategic Change) and AB(life insurance industry)		24	-17	-3	4		
AB(Strategic Change) and AB(life insurance business)		10	-6	-3	1		
AB(Change Management) and AB(life insurance industry)		127	-114	-9	4		
AB(Change Management) and AB(life insurance business)		45	-28	-16	1		
EBSCO Business Source							
AB(Change Management OR Strategic Change) and AB(paradox*)		33	-32	-1	0		
AB(Change Management OR Strategic Change) and AB(ambidext*)		3	-2	-1	0		
AB(Change Management OR Strategic Change) and AB(ambidext*) and AB(insurance)		0			0		
AB(Change Management OR Strategic Change) and AB(paradox*) and AB(insurance)		0			0		
AB(Change Management OR Strategic Change) and AB(insurance)		28	-22	-3	3		
TOTAL		1142	-1034	-65	43	13	56

Step 1: Broad paper search in two databases (criteria: peer-reviewdarticles from scholarly journals, English)
Step 2: Elimination of duplication and thematically substantially irrelevant articles by reading titles and abstracts
Step 3: Elimination of articles which fail to address the thematic focus and/or have no nexus to ambidextrous change path in life insurance business
Step 4: Identifying further relevant articles bc screening reference lists of articles remaining after steps 3
Source: author's elaboration

3 Application of ambidextrous strategic change

Raisch and Birkinshaw (2008) concluded that the results of empirical tests are scarce. Nevertheless, some empirical test can be presented and even extended by the work done since 2008.

3.1 Application overall in the industry

Table 2 shows the list of articles which illustrate the application of ambidexterity in the industry overall.

He and Wong (2004) were the first to formally test the ambidexterity hypothesis in the context of technological innovation strategies. Based on the sample of 206 manufacturing firms, they found evidence that the interaction of explorative and exploitative innovation strategies is positively related to sales growth and that the relative imbalance between these innovation strategies is negatively related to sales growth rates. Similar positive performance correlation

was found by Gibson and Birkinshaw (2004), but on a business unit level. They concluded that a business unit's capacity to simultaneously achieve alignment was significantly related to its performance. This study was done based on data collected from 4195 individuals in 41 business units.Similar results with respect to performance impact were found by Lubatkin (2006) in a study which used 139 small and medium sized enterprises. Grover and Purvis and Segars (2007) explored ambidextrous innovation tendencies in the adoption of telecommunications technologies. They concluded based on 154 organizations that the firms in this industry indeed use a balanced approach to overall innovation by using paradoxical, dual models of innovation. On top they came to the conclusion that the use of semi-structures and utilizing both configurations, i.e. incrementally and radically, is an effective form of innovation.

Cheng-Yu and Yen-Chih Huang (2012) analyzed the relationship among knowledge stock, ambidextrous learning and firm performance while considering the moderating effect of firm size. The authors used a 312 firm sample in technology intensive industries. They found also that (1) ambidextrous learning has a positive performance implication (2) knowledge stock is an antecedent of ambidextrous learning which has a moderating role in the company and (3) that the firm's size is an contingency factor that strengthens the influence of ambidextrous learning on firm's performance.

In the aerospace industry Fiset and Dostaler (2013) examined how design and integration teams are able to leverage capabilities and develop new ones when faced with the necessity to adapt to changes. Here five design teams were analyzed using qualitative material and performance data. Teams acted in ambidextrous roles, i.e. developed ambidextrous solutions when faced with crisis. As a result, teams were able to produce a greater diversity of solutions, which was found to relate to both overall ambidexterity and schedule adherence performance. The last study the writer wants to name here is a cross country study in ambidextrous learning by Lee and Wu and Liu (2013). Based on a sample of 1740 firms in manufacturing industries during the authors analyzed the concept's impact on performance. These scholars concluded that (1) an environmental change requires ambidextrous learning and it has a consequent performance impact. On top (2) large firms perform better than small firms applying ambidexterity.

Tab. 2: Application of ambidextrous change management in the industry overall

Author(s) year	Journal	Topic	Methods
Beer and Nohria (2009)	Harvard Business Review	Cracking the code of change	Qualitative study incl. Case study of UK grocery strore ASDA
Birkinshaw and Gibson (2014)	Sloan Management Review	Building ambidexterity into an organization	4195 Individuals in 41 Business Units
Cheng-Yu and Yen-Chih Huang (2012)	Management Decision	Knowledge stock, ambidextrous learning and firm performance	Quantitative study (312 firm sample in technologically intesive industries)
Fiset and Dostaler (2013)	Team Performance Managemet	Combining old and new tricks: ambidexterity in aerospace design and integration teams	Qualitative study in the aerospace industry
Graetz and Smith (2005)	Journal of Change Management	Case study on Williams Angliss Institute of Technical and Further Education (TAFE)	Case Study applying the INFORM Study
Grover and Purvis and Segars (2007)	The Institute of Electrical and Electronics Engineers, Inc (IEEE): Transactions on Engineering Mgt	Exploring ambidextrous innovation tendencies in the adoption of telecommunications technologies	Quantitative study (sample of 154 organizations)
He and Wong (2004)	Organization Science	Exploration vs exploitation: an empirical test of the ambidexterity hypothesis	Quantitative study (206 manufacturing firms)
Hodgkinson and Ravishankar and Fischer (2017)	The Journal of Business Strategy	The ambidextrous manager: what role does culture play?	Qualitative study (international airline)
Kauppila (2010)	Strategic Organization; London	Creating ambidexterity by integrating and balancing structurally separate interorganizational partnerships	Qualitative study (external partnerships)
Lee and Wu and Liu (2013)	IEEE Transactions on Engineering Management	Contextual Determinants of ambidextrous learning: evidence from industrial firms in four industrialized countries	Quantitative study (1740 firms in manufacturing industries)
Lubatkin and Simek and Lin and Veiga (2006)	Journal of Management	Ambidexterity and performance in small to medium sized firms: the pivotal role of top management behavioral integration	Quantitative study (sample of 139 small and medium sized firms)
Luu (2017)	The Journal of Business & Industrial Marketing	Market responsiveness: antecedents and the moderating role of external supply chain integration	Quantitative study (327 mid-level managers and 517 subordiantes from chemical manufacturing companies)
O'Reilly and Tushman (2011)	California Management Review	Organizational ambidexterity in action: how managers explore and exploit	Qualitative study (13 organizations)
Schreuders and Alem (2012)	Technology Innovation Management Review	Organizational ambidexterity: how small technology firms balance innovation and support	Qualitative study (smal technology firms)
Zelong and Yaqun and Yuan (2011)	Journal of Organizational Change Management	Bottom-up learning, organizational formalization and ambidextrous innovation	Quantitative study (sample of 213 firms)

Source: SLR on general application of ambidextrous strategic change path, author's elaboration

3.2 Application in the (life) insurance industry

So overall, the writer found evidence of application of ambidexterity in many industries, mostly technology intensive or manufacturing oriented. However, there were no specific studies with respect to the application of this change management concept within the insurance industry. Therefore, it should be crucial to find out if the challenges in the industry may not need such a change management concept. As indicated in table 1 the systematic literature review did not find to many articles with the search criteria "Strategic change" or "Change Management" and "life insurance industry". In ProQuest only 206 articles were found. After screening and reading only 14 remained, but with very interesting results. See table 3.

3.2.1 Challenges in the life insurance industry

As a starting point for research on the life insurance industry an article from in the Journal of Financial Service Professionals has been selected. (Anonymus 2000). Here the author defined key determinants of performance in the industry: efficiency, technology and risk management. As result the author presents the findings of strategic choices made by the insurance sample with respect to strategies, i.e. cost efficiency, customer focus and product differentiation. A second article in the Journal of Risk and Insurance (Bernier 2005) has a similar scope. Here the Wharton Financial Institutions Centre (WFIC) coordinated projects to analyze the changes in the industry. Also here the results are grouped around efficiency, technology and risk management. Interesting to note that both articles present in early stages, i.e. 2000 and 2005, findings, which show that there was a clear understanding about the challenges ahead.

In the next two chapters the writer will summarize the results of the SLR with respect to strategic change management in the life insurance industry. Most of the answers can be categorized as more tactical than strategic including actions that address adjustments to the business model but doesn't question it overall.

3.2.2 Cost Efficiency and Operational excellence

In this chapter the writer wants to give further evidence about empirical studies with respect to operational processes, Total Quality Management (TQM) and cost efficiency in the industry.

The SLR found articles (Anonymus 2005) which analyze the process perspective within the life insurance industry, i.e. what determinants drive the performance. A comparative study of public and private life insurance companies are evaluated with respect to challenges to increase cost efficiency (Uddin 2014) or how the industry could improve the approaches to implement TQM successfully. Interesting to note is that already within the 2005 article on TQM the result was

that successful implementations focus on strong leadership that emphasize strategic and tactical planning.

Crable and Brodzinski and Folick (2008) analyzed how new technologies are applied in one insurance company, Western-Southern Life Insurance company. They concluded that this company approaches the main challenges, i.e. to maintain profitability and market share due to increased competition by a new electronic application in order to have faster and cheaper underwriting as well as application processes.

3.2.3 Consumer focus and customer orientation

Several selected articles underline how increased customer focus is a systematic approach for the key challenges of the life insurance industry. Marshall (1985) asked the fundamental question if the industry "can be consumer- oriented in a changing financial service world" because the strategic forces driving the change wouldn't be consumer driven. He named new technologies, cost reduction pressures, regulatory changes and competitive actions as main forces of change. In this study he found out that the interviewed CEOs want to be more consumer centric and experts' opinion is that a consumer driven approach requires discipline and system. Another publication about the Norwich Union, UK's largest insurance provider, (Anonymus 2006) further described ways to increase consumer orientation. The CARE AT THE HEART program, which this company implemented, wanted to achieve positive customers' feedback in surveys on the question if they would recommend this insurance provider to a friend. The study concluded that the implementation of this initiative led to higher sales results.

Tab. 3: Application of ambidextrous change management in the insurance industry

Author(s) year	Journal	Topic	Methods
Anonymus (2000)	Journal of Financial Service Professionals	Changes in the Life Insurance Industry: Efficiency, Technology and Risk Management	Qualitative study in the life insurance industry
Anonymus (2005)	Managing Service Quality	Managing Change: a barrier to TQM implementation in service industries	Qualitative study in the service industry (20 companies in banking, health care, insurance, consulting, financial services)
Anonymus (2006)	Strategic Direction	Would you recommend this organization to a friend?	Case study of Norwich Union, UK's largest insurance provider
Bernier (2005)	Journal of Risk and Insurance	Changes in the Life Insurance Industry: Efficiency, Technology and Risk Management	Quantitative study in the American life insurance industry
Bühler and Maas	Forum Dienstleistungs-management	Service Industry 4.0	Qualitative study in the service industry
Crable and Brodzinski and Folick (2008)	Information Systems Management	The intelligent new business electronic application and automated underwriting solution at the Western-Southern Life Insurance Company	Case study of Western-Southern Life Insurance Company
Gentle (2007)	The Journal of Risk Finance	The distribution dilemma	Qualitative study in UK life insurance industry
Klumpes and Schuermann (2011)	Geneva Papers on Risk & Insurance	Corporate, Product and Distribution strategies in the European Life Insurance Industry	Qualitative study (european life insurance)
Knodel (2004)	Journal of Change Management	Preparing the organizational "soil" for measurable and sutainable change: business value management and project governance	Case study of Insureco insurance company
Long (2001)	Management Research News	A differentiation focus strategy provoked by changing environments: The American life insurance industry approaching asian americans	Qualitative study (American life insurance industry)
Rudschuck and Basse and Kapeller and Windels (2010)	Interdisciplinary Studies Journal	Solvency II and the investment policy of life insurers: Some homework to do for the sales and marketing departments	Qualitative study (european life insurance)
Uddin (2014)	Management Accountant	Strategic Cost Management in the Life insurance industry: a comparative study	Qualitative study (publich and private life insurance companies)
Walter (2009)	Long Range Planning	Economic Drivers of Structural Change in The Global Financial Servcie Industry	Qualitative study (financial service industry)
Weese (2005)	Journal of Financial Service Professionals	When Leadership Matters: The Leadership gap in financial services	Qualitative study (financial service industry)

Source: SLR on application of ambidextrous strategic change path in insurance, author's elaboration

Another study which also evaluated how insurance companies react to the challenges has been published in the Management Research News (Long 2001). The author names a more differentiated customer segmentation, i.e. American life insurance industry targets Asian Americans, as one way to respond to the changing environment. Further Long concluded that the industry developed a higher differentiation strategy, i.e. the marketing strategy had multiple target segments and marketing campaigns reflect this differentiation. A different focus on how the changes in the life insurance environment impact the industry was put by Rudschuk and Basse and Kapeller and Windels (2010). They conclude that the Solvency II regulation will lead to different investment products for clients. Consequently, sales departments of insurance companies have to adjust the advice and sales process and better target clients for these new investment products. The authors conclude that the changes require investments in individual client relationships, increase counselling efforts and need the generation and provision of individual data.

3.2.4 The Distribution dilemma by Gentle (2007)

One of the few articles that clearly addresses the core question is "The Distribution Dilemma". Here the author examined the UK life and pension industry and concluded also that the main challenges are product persistency, top-line growth and pricing pressure. Nevertheless, Gentle goes further when he concludes that the real industry problem is the structure of the business model: "costly face-to-face distribution which identifies, sell and service potential buyers. This is a significant misalignment in value, which is built between sellers, product providers and retail clients. The distribution model is broken". He derives in this article the dilemma that the insurance companies are still dependent on this distribution model, but due to new entrants and alternative distribution formats like banks, retailers, direct sales, etc. the traditional model is under heavy pressure and needs strategic answers to upgrade the old distribution model. Gentle concludes that such a "radical action today is required to survive and prosper tomorrow" which indicates the dilemma of exploitative usage of traditional business models while exploring new value propositions.

3.2.5 When Leadership Matters: The leadership gap (Weese 2005)

Next to the article presented above this publication give an additional input to the discussion on change management within the life insurance industry. The author claims that the changes in the financial service industry since the 1970 require less management skills, i.e. getting things

done as required by excellent managers, but more leadership skills, i.e. lead organizations through changes in structure, strategy and culture. Weese states that the financial service industry experiences a gap in effective leadership. This is due to a lack of understanding what leadership really is, especially misconceptions about the role of a leader and how it can be learned by financial service organizations. He claims that there will be a dramatic improvement of the level of effective leadership when this gap would be closed.

3.2.6 Service Industry 4.0 by Bühler and Maas (2017)

Maas concluded that regulatory changes, increasing competition, financial crisis and the low interest rate environment had significant impact on insurance companies but could be answered by process efficiency, restructuring, new product development and adjusted asset management. Only the changes through the digitalisation leave senior management of established insurance companies without orientation. This is the case because the industry is according to Maas used to have a stable environment and even rely on continuity in its business model. But as digitalisation has an impact on the validity of clients' value proposition, the organizational model of companies and its culture has to be adjusted. This means that the classic business model where value chain is highly integrated, "command and control" oriented culture dominates and a holistic offer works seem to be outdated. The authors conclude that insurance companies must find ways for a strategic change, which is more exploratory and not only exploitative.

Conclusion

The SLR on ambidextrous change management in the insurance industry gives a clear picture about the status of implementation. In technology intensive or manufacturing oriented companies this management approach has been applied with positive results over the last decade. But the SLR also shows that no empirical studies on the application within the insurance industry could be found.

Furthermore the articles indicate that this kind of management is required to address the challenges in the industry, especially to drive further efficiency of the traditional model while a new „digital" business model, which is fully centered around the arising clients needs, is developed.

As a recommendation, the author concludes that further academic work on the development of a customized concept of ambidextrous change management for the insurance industry would

be very beneficial. This qualitative research should show how (steps, tools) the management approach could be implemented. The author plans to dedicate his research work on this development and implementation within the Swiss insurance group. So in the end the insurance industry would finally have a scientifically validated case study for an insurance specific customized ambidextrous change management approach.

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Contact

Martin Vogl

Skandia Leben AG

Birmensdorferstrasse 108, 8036 Zurich, Switzerland

martin.vogl@skandia.ch

FORMATION OF COMPLEX COMPANY EVALUATION METHOD THROUGH NEURAL NETWORKS BASED ON THE EXAMPLE OF CONSTRUCTION COMPANIES´ COLLECTION

Marek Vochozka

Abstract

Purpose: The main goal of this contribution is to create a model through the use of neural networks, which will be able to predict the company´s ability to survive a prospective financial crisis.

Design/methodology/approach: The contribution examines the basic data on companies coming from the Albertina database. The collection includes both financial and non-financial indicators of all construction companies in the Czech Republic within the period of 2008 to 2014. The object is to find an artificial neural network which can classify each company based on the input data into one of the following four groups: the company is not on the verge of bankruptcy, collapse in the given year, collapse in the following two years and collapse in future.

Findings: Three neural networks are given and described, proving positive results. With regard to the usefulness of the model and minimal deviations from the spare two models which were going to be taken into account, the MLP 15:15-54-66-4:1 model proves the best results. Through this network the Czech construction companies´ ability to survive a possible distress is consequently evaluated.

Research/practical implications: The evaluation of financial and non-financial indicators is a necessary part of modern companies. Artificial neural networks are able to conduct non-linear statistical modelling and offer a completely suitable alternative to individual financial indicators within complex methods of this evaluation.

Originality/value: Using artificial intelligence, the contribution creates a bright new methodology for comprehensive business evaluation, which includes both financial and non-financial indicators. The result could be used for practical comprehensive evaluation of construction companies in the Czech Republic.

Key words: Complex company evaluation, artificial neural networks, construction company, company bankruptcy, predictive model

JEL Codes: C45, G33, M21

Introduction

The process of complex enterprise evaluation represents an objective, fair and accurate evaluation of the company's operation using mathematical statistics and operative research principles (Zhang and Zhang, 2002). Correct evaluation of the company can only be provided by relevant methods. Modern enterprises produce a large amount of data and traditional analytical tools and methods are no longer able to process such information collectively (Yan, Wang and Liu, 2012). A specific set of tools for proper business appraisal are nowadays the methods of complex business evaluation Methods that are able to predict the financial health of the enterprise include bankruptcy, creditworthiness, bankruptcy models. For example, if we mention Altman indexes, Grünwald index, Taffler test, etc., we are talking about indicators that, unlike financial analysis, have a relatively unambiguous result that is compared to a certain interval. It is assessed whether an enterprise tends to bankruptcy or, on the contrary, is highly creditworthy, or whether it can not fully predict its future (Vochozka, 2010).

In connection with the evaluation of the company, the issue of artificial neural networks, which belong to relatively young branches, has recently been associated (Kumar and Ravi, 2007). Their development and especially the great application boom has been observed since the eighties of the 20th century (Du Jardin, 2010). Nowadays, new types of networks are still emerging, but massive development of information technologies and computer technology for their realization (Tkáč and Verner, 2016). Neural Networks, together with fuzzy sets, expert systems, gnostic theory of indefinite data or genetic algorithms, etc., are among the non-static higher methods of financial analysis (Zhang and Zhang, 2002).

Only a few authors address the issue of application of neural networks for the purpose of comprehensive evaluation of business. This is probably due to quite significant disadvantages of artificial neural networks and the existence of many complex, and often much simpler, models for business evaluation. Zhang and Zhang (2002) have designed a model based on artificial neural networks with high prediction accuracy and the results achieved are objective and precise. A similar model was introduced by Makeeva and Bakurova (2012). The base for its creation is the indicators of return, liquidity, indebtedness and turnover. Next, a model was created for predicting insolvency based on less commonly used types of neural networks – GMDH[32], Counter Propagation networks and fuzzy ARTMAP[33]. Mohamad, Ibrahim and Massoud (2014) have created a hybrid model (artificial neural network + genetic algorithm) in

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[32] Group Method of Data Handling – networks with inductive modelling.
[33] Adaptive Resonance Theory MAP – theory of adaptive resonance, hybrid architecture of neural network.

order to predict the three main financial performance indicators of construction companies. The methods of comprehensive evaluation of business created by means of artificial neural networks are often used also by banks when evaluating loan applications – evaluating credit risk for a given company (Mansouri and Dastoori, 2013). An example could be a model based on the GRNN[34] neural network designed by Zhu et al. (2015). Using this model, credit risk can be effectively evaluated.

Methods for comprehensive evaluation of business are created by modern analytical models using computers and sophisticated mathematical models (Gholizadeh et al., 2011). However, the imperfections of neural networks point to the fact that this technology is still being developed and improved. Still, they can be used as an indicator of comprehensive evaluation of business, while they are often completed and combined with other models.

The objective of the contribution is to create a model by means of neural networks that will be able to predict the capability of a company to survive potential financial distress.

1   Data and methods

The basic data on companies to be analyzed and investigated come from the Albertina database. These are the companies which according to the methodology of the Czech statistical office are construction companies. These companies fall under section F classification CZ-NACE (classification of economic activities). The resulting set includes the data on all construction companies in the Czech Republic between 2008 and 2014. The data will be listed in a table, where each row contains the parameters of the company development for one year and one company. The resulting set contains exactly 65,536 rows with data. Each row consists of 100 characteristics. Specifically, these are financial parameters and non-financial indicators. Financial parameters include all statements of the accounts, i.e. balance sheet, profit and loss account, cash flow statement. Moreover, there are also earnings before interest and tax (EBIT). Non-financial indicators include: identification of the company (name and identification number), the district of the company business activities, number of employees and the opinion of the auditor.

For selection of the data set, MS Excel will be used. The data set will be imported into DELL´s Statistica software, Version 12 and 7 (the results visualization). It will be subsequently processed using the "Automated neural networks" tool. We are looking for artificial neural

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[34] Generalized Regression Neural Network.

structure which on the basis of the input data will be able to classify into one of the following four groups: Business does not go bankrupt, Failure expected in the current year, Failure expected in two years, Failure expected in the future (in more than two years).

First, the features of the individual company characteristics will be determined. It is necessary to define the output categorical variable. In this case it is obviously the value in the MS Excel workbook in the "resulting state" column. At the same time, we have to know at least the result for the years 2008-2014. Next, categorical input variables will be determined. These are non-financial indicators (e.g. the business location or the district). All reported items of the accounts statements and the number of employees are included among continuous variables. Subsequently, the set will be randomly divided (sampled) into three groups of companies – training sample (in this set, the neural networks are trained to achieve the best results possible), testing sample (this serves to measure the success of the classification of trained artificial neural structures) and validation sample (which is used for the second verification of the result achieved). The data will be divided into the training, testing and validation sample in the ratio 70:15:15. Also subsampling will be random. There will be no more than two subsamples.

Next, 10,000 random artificial neural structures[35], will be generated, from which 10 best ones will be retained. For creation of the model, multilayer perceptron network (MLP) and linear neural networks (Linear), probabilistic neural networks (PNN) and generalized regression neural networks (GRNN), radial basis function (RBF), triple layer perceptron (TLP) and four-layer perceptron (FLP) neural networks will be used. The perceptron networks will classify the individual companies on the basis of entropy. The threshold in classification will be assigned on the basis of the highest confidence. As activation function, for hidden layer neurons as well as output layer neurons, functions described in Table 1 will be used.

Tab. 5: Activation function for hidden layer and output layer neurons

Function	Definition	Range	Function	Definition	Range
Identical	x	(-inf, +inf)	Exponential	e^{-x}	(0, +inf)
Logistic	$\dfrac{1}{1 - e^{-1}}$	(0, +1)	Sinus	$\sin x$	[0, +1]
Hyperbolic	$\dfrac{e^x - e^{-x}}{e^x + e^{-x}}$	(-1, +1)			

Source: Author

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[35] If the improvement of the individual trained networks is not significant, the training of the neural networks can be shorted.

Weight decomposition will be carried out at the 0.01 level for both hidden and output layer. Initialization will not be used. The result of the calculation will be:

1. Overview of 10 generated and retained networks (including the complete description of the result in xml).

2. Confusion matrices that will be used to determine the success of classification (prediction) of a possible business failure, or the accuracy and inaccuracy of estimates in individual cases.

3. Sensitivity analysis that confirms the essential input variables for a given neural structure as well as the weight of the specific input variable for each generated neural network.

4. Scheme of the retained neural structures.

2   Results

The overview of the individual generated and retained networks is showed in Table 2.

Tab. 6: Retained neural networks

|	Profile	Train Perf.	Select Perf.	Test Perf.	Train Error	Select Error	Test Error	Training/Members	Inputs	Hidden (1)	Hidden (2)
1	MLP 1:4-33-61-4:1	0.943588	0.945240	0.944865	1.430218	1.541917	1.453480	BP10, CG20, CG0b	1	33	61
2	MLP 2:7-88-63-4:1	0.038504	0.037695	0.038320	1.02620	1.04046	1.014261	BP10, CG20, CG0b	2	88	63
3	MLP 15:15-54-66-4:1	0.943182	0.945052	0.944427	0.586112	0.59107	0.58350	BP10, CG20, CG0b	15	54	66
4	Linear 84:86-4:1	0.944432	0.945490	0.944865	0.160929	0.163963	0.160875	PI	84	0	0
5	Linear 90:98-4:1	0.944307	0.945490	0.944615	0.160849	0.162028	0.160743	PI	90	0	0
6	PNN 88:93-31997-4:1	0.944245	0.946052	0.945427	0.162359	0.160338	0.160657		88	31997	0
7	PNN 87:92-31997-4:1	0.944245	0.946052	0.945427	0.162360	0.160335	0.160657		87	31997	0
8	RBF 61:69-328-4:1	0.943870	0.945490	0.944802	0.159620	0.158623	0.159088	SS,KN,PI	61	328	0
9	RBF 61:69-359-4:1	0.943713	0.945115	0.944802	0.159637	0.158612	0.159930	SS,KN,PI	61	359	0
10	RBF 61:69-360-4:1	0.943870	0.945427	0.945052	0.159324	0.158588	0.159093	SS,KN,PI	61	360	0

Source: Author

The BP in the table indicates the used of the Back propagation algorithm. The CG abbreviation refers to the Conjugate gradient descent algorithm. The PI (Pseudo-Inverse) algorithm represents the optimization techniques using the least squares method. SS means (sub)sample. KN refers to K – nearest neighbor deviation assignment.

The most valuable networks are the ones that display the highest reliability values for training, testing, and validation data set. At the same time, in all three sets there must be identical or at least similar value. As for the results obtained, it can be seen that this condition was in nine out of ten retained networks. The only exception is the network 2, i.e. MLP 2:7-88-4:1, which

shows minimal values. At the same time, we are looking for a network displaying the minimum error, again identical for the training, testing and validation data set. In our case, the lowest error is displayed by the RBF networks. All of them reach the value lower than 0.16. Optically, we will try to find the result in the form of one of the RBF networks.

However, in order to reliably determine whether the specific neural network can be applied in practice, that is, whether its results can be economically interpreted and whether they display acceptable accuracy, a confusion matrix must be created. It is necessary to find such a network that would be able to predict all assumed results, that is, the company does not go bankrupt, the failure of the company in the current year, the failure of the company in two years and a future failure of the company. In addition, it is important that the neural structure prediction is not erroneous. Relatively interesting results are presented by the neural networks 3, 4 and 5 (that is, MLP 15:15-54-66-4:1, Linear 84:86-4:1 and Linear 90:98-4:1). Neural network 3 is a multilayer perceptron network with two hidden layers. It works with 15 input variables that are processed by 54 neurons in the first hidden layer and 66 neurons in the second hidden layer. The output layer is represented by four neurons (i.e. four possible results), from which we choose the only correct option. Since 15 input variables are used and at the same time, the network contains 15 neurons in the input layer, the network uses only continuous variables as input variables. The model of the network is showed in Figure 1.
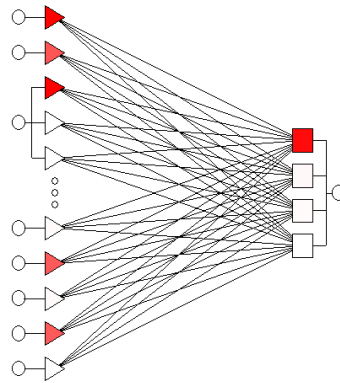
Fig. 1: Model of MLP 15:15-54-66-4:1 neural network
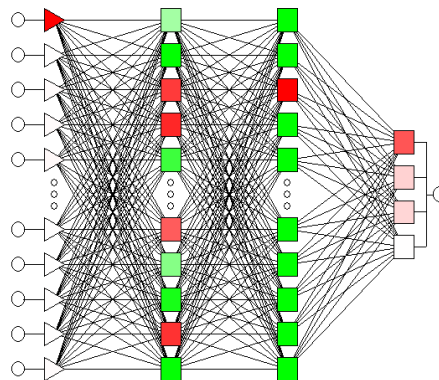
Source: Author

The obtained linear networks work both with continuous and discrete variables. The first of them, Linear 84:86-4:1 assumes 84 input variables. The model of the network is showed in Figure 2.

Fig. 2: Model of Linear 84:86-4:1 neural network

Source: Author

The second linear neural network Linear 90:98-4:1 works with 90 input variables. The model of neural network is showed in Figure 3.

Fig. 3: Model of neural network Linear 90:98-4:1
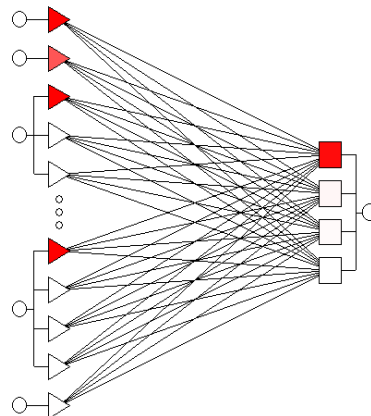
Source: Author

The performed sensitivity analysis evaluates the importance of the individual input variables for the retained neural networks. However, the limited extent of the contribution does not enable to interpret the whole analysis performed. Still, it is possible to identify the most important variables for creating a prediction model. These are: the year of the foundation of the company, trade receivables, short-term financial assets in thousands of CZK, other current assets, other short-term obligations, sales of goods in thousands of CZK, interest incomes in thousands of CZK.

Conclusion

Three neural networks (MLP 15:15-54-66-4:1, Linear 84:86-4:1 and Linear 90:98-4:1) showing similar positive results, or the best results of the 10 retained neural networks were determined and described during the work. Based on the achieved reliability values, it is not possible to definitely determine the neural structure with the best parameters. However, if we focus on the error calculated, we will definitely prefer the linear networks, with the Linear 90:98-4:1 network being preferred after detailed examination. On the other hand, another tool, confusion matrix, suggests the opposite result. All four situations, i.e. the company does not go bankrupt, the company failure is expected in a given year, the failure is expected in two years, and a failure in the future is expected, are best predicted by the multilayer perceptron network MLP 15:15-54-66-4:1.

Given the usability of the model and minimal deviations from the remaining two models considered, it may be concluded that the best results are reported by the MLP 15:15-54-66-4:1 network. Due to its parameters, it can be stated that the result could be used in practice. By means of the MLP 15:15-54-66-4:1 network we may assess the ability of a construction company in the Czech Republic to survive possible financial distress.

The sensitivity analysis displayed interesting results. Based on its results, the following can be concluded:

1. The year of the foundation of the company indicates that a company with a longer history gathered more experience during its existence, and is therefore more likely to survive possible financial distress.

2. A company that generates higher trade receivables is more likely to survive possible financial distress. This is a rather daring assertion, as based on the accounts statements it is not possible to analyze the structure of receivables. The receivables may be overdue receivables or even irrecoverable receivables. Trade receivables may thus be a false positive indicator.

3. Higher value of short-term financial assets expressed in thousands of CZK indicates the ability of the company to survive possible financial distress.

4. A company that creates higher other current assets is more likely to survive possible financial distress.

5. Higher value of short-term liabilities means higher ability of the company to survive possible financial distress. Optically, it can be false positive indicator. But looking at

the result with a prism of creating money stock, the indicator makes sense. By extending the maturity of its liabilities, the company accumulates short-term financial assets. The indicator thus usefully complements the point 3.

6. Higher sales of goods in thousands of CZK create a presumption that the company is more likely to survive possible financial distress. What is interesting is the fact that sales of goods appear in construction. It could be assumed that more likely there will be sales of the products and services. However, this indicator is definitely not false positive.

7. Higher value of interest incomes in thousands of CZK indicates higher ability of the company to survive possible financial distress. Even in this case, it could be a quite negligible item in the profit and loss account of the construction company. However, the indicator is definitely not false positive.

The objective, that is, to create a model by means of neural networks, that would be able to predict the ability of a construction company to survive possible financial distress, was achieved.

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Contact

Marek Vochozka

Institute of Technology and Business in České Budějovice

Okružní 517/10, 370 01 České Budějovice, Czech Republic

vochozka@mail.vstecb.cz

THE CREATION OF THE NEW MEDIA ECOSYSTEM IN NEW YORK CITY: AN ENTREPRENEURIAL APPROACH

Cliff Wymbs

Abstract

Purpose: The objective of this study was to further the understanding of entrepreneurship by disaggregating entrepreneurial activity into three distinct actors (freelancing, anti-institutional and institutional). Each of these actors performs different functions in the creation and evolution of the new media ecosystem/cluster.

Design/methodology/approach: This paper uses a qualitative historical analysis of the New York City New Media Ecosystem (Silicon Alley). The analysis identifies a key tipping point where institutional logic changes, a necessary condition for ecosystem creation, and furthers the study of ecosystems by fitting the study to a dialectic process model.

Findings: Each of these entrepreneurial actors (freelancing, anti-institutional and institutional) performs a different, but complimentary, role in a different phase of the ecosystem evolution, so they warrant individual attention. The study of ecosystems is furthered by the identification of the dynamic relationships among these entrepreneur actors and how their roles, and the relative importance of their roles, change over time.

Research/practical implications: We know very little about how individual entrepreneurs actually transform the institutions that foster or preclude the creation of ecosystems, which makes it relatively hard to put theoretical insight into practice. A dialectic process model is used to analyze a historical case and gain insight into the processes of contestation and entrepreneurship that explain the emergence of a new ecosystem.

Originality/value: The study highlights the importance of using a narrative approach to identify continuous change factors rather than the traditional comparative static approach to study network changes.

Keywords: Entrepreneurs, ecosystems, process theory, case analysis, New York City

JEL Codes: L26, L82, O33

Introduction

The paper seeks to address two important and related questions surrounding the formation of an entrepreneurial ecosystem cluster. The first pertains to the process through which new ecosystems emerge, while the second has to do with individual -- entrepreneurial behaviors associated with that process. The questions are important for related reasons. First, the function that "healthy" ecosystems have in promoting entrepreneurial activity (that can then translate into economic development) has long been theorized, so understanding how new systems emerge can help us create policies that better foster their creation. Second, we know very little about how individuals can actually transform the institutional logic that foster or preclude the creation of those ecosystems, which makes it relatively hard to put theoretical insight into practice. A dialectic process model is used to analyze a historical case and gain insight into the processes of contestation and entrepreneurship that explain the emergence of a new ecosystem.

By using a qualitative historical analysis of the New York City New Media[36] Ecosystem (Silicon Alley), this paper furthers the understanding of entrepreneurship by disaggregating the entrepreneurial process into three distinct entrepreneurial actors (freelancing, anti-institutional and institutional). Each of these actors performs a different, but complimentary, role in a different phase of the ecosystem evolution, so they warrant individual attention. The study of ecosystems is furthered by the identification of the dynamic relationships among these entrepreneurial actors and how their roles, and the relative importance of their roles, change over time.

1   Literature Review

Ecosystems used in the business context describe activities that support and encourage a network of customers, suppliers, distributors, entrepreneurs, institutions, and complementary businesses (Iansiti & Levien, 2004). Research in this area is quite diverse, as evidenced by Castells (1996) in The Rise of the Network Society who discussed the general innovative processes associated with the creation of technology-based ecosystems around the world since the 1960s, to Saxenian (1994), who specifically compared the information technology ecosystems of Route 128 and Silicon Valley.

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[36]"New media" is a generic term that is made possible through the use of computer technology and includes web sites, streaming audio and video, chat rooms, e-mail, online communities, web advertising, virtual reality environments, digital cameras, and mobile computing. New media is often contrasted with "old" media forms that are static representations of text and graphics and include print newspapers and magazines.

Other scholars highlighted the need for research in certain key areas. Santos & Eisenhardt (2005) called for boundary conditions associated with business ecosystems to be explored, while Meyer, Gaba, & Colwell (2005) concluded that volatile ecosystems are becoming the stuff of everyday organizational life, but receive scant attention in organizational theory and research. Li (2009) commented that analyzing a business ecosystem is not an easy task, and therefore only a few studies have been made, even though scholars and managers know their importance in value creation, establishing platforms and enhancing performance. Also, Suddaby & Greenwood (2005) noted that even less attention is paid to the formative phases of ecosystems. They observed that we know very little about what causes shifts in institutional logics, a necessary condition for the creation of a new ecosystem and we lack accounts of the process by which the assumptions that define logics are contested and changed; however, we are reasonably certain that entrepreneurs play a key role. Yayavaram & Ahuja (2008) shed some light here when they find that market ordering institutions can fail because technological inadequacy – technological developments create completely new opportunities not envisioned by the existing institutional logic and practices. This analysis explores the formative phases of one ecosystem, new media. It specifically addresses how entrepreneurial actors come together and create entrepreneurial momentum (Shepherd & Zacharakis, 2001).

Greenwood & Suddaby (2006) identified one type of entrepreneur change agent, Institutional Entrepreneur (IE), and discussed its relationship with institutional theory. They defined IE to be the existing management of a company who uses its broad knowledge of the environment to mobilize a variety of resources and endogenously institute change affecting the firm's basic institutional logic. Their research is a necessary first step in unpacking the entrepreneurial functions, but it did not go far enough. The entrepreneur research previously discussed alludes to two additional latent types of entrepreneurial change agents, i.e., anti-institutional entrepreneurs (one who breaks from the organizational status quo and seeks new combinations) and freelance entrepreneurs (ones who looks to technology to reorder the market).

Anti-institutional entrepreneurs (AIE) are entrepreneurs who are not organizational leaders but who seek radical change within their organizations by highlighting frame-breaking anomalies within existing practices (Casson, 2005). Often their power and legitimacy is tenuous because if current management exhibits strong institutional tendencies, AIE are likely to be ignored and more likely forced out of the organization. However, AIE often break from their existing firms and seek out other like-minded entrepreneurs that share a common, risk-seeking culture and tend to geographically cluster.

Alternatively, freelance entrepreneurs (FE), from the beginning, engage in the practice of creative destruction, i.e., they usually combine new knowledge elements and create technological innovation (Schumpeter, 1943). Their discoveries attach existing marketing-ordering institutions. FE are responsible for exogenous change to the focal industry and often look to their peers, rather than the market, for their rewards. (Often, their rewards are psychological, e.g., peer recognition rather than monetary.) This study describes in detail how these three types of entrepreneurs grow and co-evolve in the development of an ecosystem.

At the heart of the analysis is the change in institutional logics driven by entrepreneurial actors. Specifically, the way these actors socially construct the new media ecosystem is by changing the meaning associated with historical patterns and manipulating material practices (Thornton, et al., 2012). The model described below is one of the few attempts to examine the processes by which institutional logics are reconfigured (Jain, 2013).

A dialectic process model is used as the vehicle to link the entrepreneurial actors with the creation of the ecosystem. This development model is appropriate if: (1) At least two entities exist that stand in opposition to one another; (2) The opposing entities confront each other and engage in conflict through some social/economic venue in which the opposition plays out; (3) The outcome of the conflict must consist either of a new entity different from the previous two or in the defeat of one entity by the other (Slotte-Kock & Coviello, 2010). To document the dialectic model, I carefully track steps involved in the conflict and its resolution and determine if a unitary sequence emerges that has sharp dividing points between the phases. (See Figure 1.)

Fig. 1: Dialectic Model
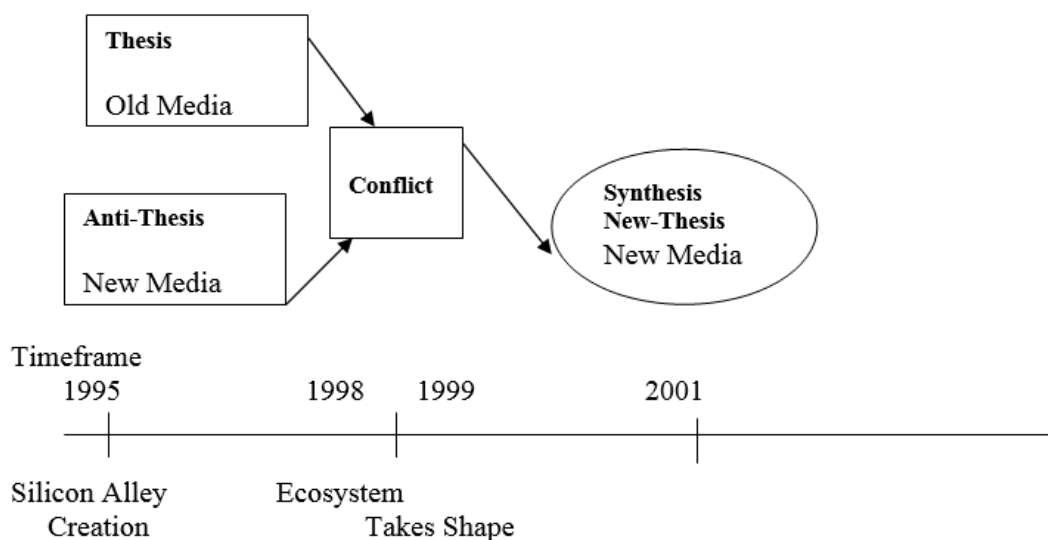
2   Data and Methodology

To generate a deeper understanding of the entrepreneurial process that mobilizes the ecosystem creation and evolution, an in-depth study of one ecosystem, the group of new media firms located in the lower Manhattan part of New York City, labeled Silicon Alley was conducted during the dot-com boom period. Even the study of one ecosystem is complex because "new media" is embedded in the broader context of rapid Internet growth and the Dot-com boom, so it is important to highlight their co-evolution.

In the 1996 to 1999 period, new media employment in Silicon Alley grew from almost nothing to 250,000 people among 8,500 companies with a market capitalization of $30 to $40 billion (Harmon, 2001). The dot.com boom period of 1995-2000 was one of those rare periods in economic history where a tipping point was reached and everything associated with the Internet was viewed positively. The Internet provided the facilitating technology for entrepreneurial-led new media to flourish, similar to the way that railroads provided the connecting infrastructure for overall commerce growth a century before.

To tease out dialectic model inputs and to better understand the relationships among the entrepreneurial actors, the study used a qualitative historical narrative, i.e., a research strategy particularly suitable for investigating "how" and "why" research questions pertaining to non-contemporary processes (Downing, 2005; Yin, 2003). This narrative approach provides a clear sequential order which connects events in a meaningful way, thereby providing critical insights in the evolution of an industry (Hinchman and Hinchman, 1997; Singh, Corner, Pavlavich 2014). Similar to Farjoun (2002) historical narrative methodology, the data used here drew on secondary sources (extensive public documents covering the period 1990-2007), including websites and financial filings of the major industry players; sources contemporaneous with the events studied, including discussions with investment bankers who were funding the build-up, and entrepreneurs who were living the dream; interviews; corporate announcements published in trade journals; and articles published in professional and academic journals. Sources also include conference reports, market analyses, periodicals, government publications, and memoranda, e.g., Red Herring, The Industry Standard, AlleyCat News, Silicon Alley Reporter, Silicon Alley Magazine, New York Times, Wall Street Journal, Crain's New York Business. These sources covered the variety of actors in the field, particularly vendors, producers, and end-users. I also consulted the authoritative review of Silicon Alley history written by Indergaard (2004). The collection of data throughout the evolution of Silicon Alley permits a shift in the analytical angle from looking into the future to looking at the future, i.e., how the

future is constructed in real time to marshal resources, coordinate activities and manage uncertainty (Brown & Michael, 2003). This approach is similar to the Jain, (2013) analysis that used a historical case narrative of the Indian telephone sector to inductively develop a process model of institutional change.

At the end of the day, when a single case analysis is used to generate inferences, it is important that the narrative be sufficiently robust to justify developmental causality in terms of criticality and generalizability. Evidence must be presented that shows that the new ecosystem is simply not the existing ecosystem that was given a massive exogenous shock (the creation of new technologies starting with the Internet), and became more porous in its borders and was forced to admit new members who shook the balance of power and internal logic. The new ecosystem must demonstrate a compelling argument that there is new industry trajectory represented by a different set of actors and a fundamental change in institutional parameters. Most importantly, when the new ecosystem is challenged, it must not revert back to old industry logic, but rather, continue on its own new path.

The analysis proceeds with first providing a counterfactual context for the analysis, then the new media narrative that explains the path dependencies and institutional inertias associated with ecosystem development process model is presented. Discussion of the key findings is the last part of the analysis.

3   Counterfactual Context

Good theory is practically precise in that it provides a systematic way to understand complex phenomena in a real world setting and guides research toward crucial questions and issues (Poole, et al. 2000). Mohr (1982) asserted that explanations of change and development should incorporate all kinds of forces that influence these processes rather than just the immediate preceding cause. To address this holistic challenge, provide context for the narrative and serve as a baseline to convey meaning about the phenomenon (Ericsson & Persson, 2017), several questions relating to a counterfactual background of the Silicon Alley ecosystem are first discussed. The counterfactual context provides at a very high level explanation of the diversity of forces affecting the emergence of the new media ecosystem in New York City. It provides the background motivation for the entrepreneurial actors' effort and temporally fills in pieces of the puzzle of the ecosystem evolution.

3.1 Why did the ecosystem emerge in NYC?

The three main reasons for the emergent of the digital media ecosystem in NYC were location, timing, and institutions. To begin with, New York City with its advertising, TV stations, and publishing industries is the recognized media (old) capital of the world. Silicon Alley (new media) is strategically positioned between Wall Street and old media in mid-town Manhattan, thus providing easy access for venture capitalists to monitor their projects and for change-oriented old media veterans to seek alternative careers without moving their families. Also, New York possesses one of the deepest (media) and most diverse pools of intellectual capital anywhere and much of the creative part of it was spatially located in and around Silicon Alley. In 1994, the New York New Media Association was formed with the main purpose of bringing the new media industry to the public eye and providing matchmaking services. The lack of government assistance also let the new media industry organically revitalize a depressed downtown real estate market that had vacancy rates of over 20% (Wymbs, 2005).

3.2 Were there efforts to create similar ecosystems elsewhere?

In the mid-1990s, the number of places with "silicon" in their name grow exponentially, e.g., Silicon Gulf (Philippines); Silicon Forest (Portland, Oregon); Silicon Hills (Austin, Texas); Silicon Sand Bar (Cape Cod, Mass.), etc. During boom times, funding chases creative ideas; however, when rationality returns to markets, path dependent, geographic clusters that were present before boom tend to reform, albeit changed. If the change represents a new industry trajectory, then a new ecosystem is possible, if not the dominant logic of the old cluster re-emerges.

Probably the city that most closely approximated the NYC old media/new media cluster was Toronto. Both had real estate underutilization, a large artist community that was underemployed and an active social/club scene; however, they differed in their approach to learning (NYC-self learning/new creation vs. learning on the job/incremental innovation). After the Dot-com bust, Silicon Alley remained but the Toronto new media cluster was not as fortunate (Wymbs, 2005).

3.3 Why did the eco-system take this particular shape?

The sense making process of the three main entrepreneurial actors was not about getting it right, but rather represented a continued redrafting of an emerging story. The narrative endogenously created by the ecosystem marriage of money and ideas became more comprehensive and compelling as observed data supported the initial bold assertions. The press and industry

organizations were quick to highlight many new, creative applications being developed by the freelance entrepreneurs and more and more new media anti-institutional entrepreneur start-ups were obtaining massive amount of funding. Many of the new applications reflected path dependencies associated with nearby old-media industries, i.e., new media advertising agencies (Razorfish) and the monitoring of advertising on the Internet (Doubleclick) (Indergaard, 2004). These new applications changed the ecosystem debate from old media vs. new media, a technology argument, to an argument based on which media the general public was going to consume more in the future, a behavioural argument. If Internet viewing time was to increasingly replace old-media channels, then a new media ecosystem had to develop and would survive.

3.4   Were there efforts to shape it differently?

Most old media, including advertising firms, publishing companies, TV networks, PR firms, etc., initially chose to ignore these rapidly growing start-ups. Their expressed view was that none of them would become big enough to affect old media's bottom line in the foreseeable future. Of course, if old-media was not as well entrenched in the market and their institutional roots were not as deep, their resistance to new media applications would have been considerably less. Also, many of the leaders of old-media were not well versed in the technology aspects of new media, so rejecting the area was a much easier short-term approach than learning the nuances of it and how it might change their fundamental business, old media.

3.5   Were there other players who tried to participate, but were excluded?

FE and AIE developed local networks based on shared interest. Spatial geographic clustering of social and professional relations led to spatial concentration of the new media industry. This was reenforced by the fact that venture capitalist also liked to fund target companies that were in close proximity to their New York offices.

During the loose money days of late 1990s, many firms without coherent business plans should have been excluded, but were funded anyway. In fact, many NYC banks, consulting firms and corporations experienced a brain drain of employees because of the amount of money being used to fund start-ups and the expectation of money to be made. The dot-com bust brought a sense of normalcy back to the market, and once again revenues and profits became relevant funding criteria and many new media firms did not make it. However, the relevant question is whether or not the media industry was on a new trajectory because of the dot-com run-up, a

necessary condition for a new ecosystem, or whether it will revert back to old media fundamentals.

With the industry context now established, I now use the narrative to articulate the factors contributing to the success of new media and to link the dialectic model with entrepreneurial actors and show how structure and agency interact in the emergence of a new ecosystem path.

4   The Model

The dialectic process of institutional and network change begins by linking different types of entrepreneurs (Institutional, Anti-Institutional and Freelance) with the uncertain environment facing media firms during the Internet period (1995-2000). Entrepreneurs, depending on the particular type and ecosystem development phase, are simultaneously viewed as both linking and destabilizing forces affecting the ecosystem transformation. The network of firms to be evaluated and the entrepreneurial roles that they perform must extend beyond the old and new media industry because complementary firms and activities are necessary to provide the critical mass for ecosystem creation. Challenges to the industry's institutional logic by the totality of intervening players are evaluated to see if they are sufficient to create an identifiable thesis/anti-thesis (Van de Ven & Poole, 1995). If a new anti-thesis is adopted, then a new ecosystem with a new institutional set of logics will likely form. This is consistent with recent trends in institutional research now addressing its dynamic aspects, namely, the processes and tensions that are the cause of exogenous, episodic or endogenous institutional change (Bylund & McCaffrey, 2017; Kuchar, 2017). Over time the system-level dialectics are resolved; however, if an ecosystem is created it will proceed along a new trajectory based on reformed institutional logics and structures.

Within the dialectic model construct, each type of entrepreneur actor represents a change agent whose behavior and impact is a function of the particular ecosystem phase. During the initial phase of development, freelance entrepreneurs are expected to dominate. They will create their technological sub-network with dense geographic proximate ties and attack the status quo. Foster (1986) argues that these FE possess "attacker's advantage" and incumbents frequently lag behind, sometimes with fatal consequences. During this "Creative Period" (1995-1998) phase (where the ecosystem anti-thesis -new media is developed) there is limited demand for new media ecosystem resources because FE are operating under the broad context of the dot-com expansion and their new media innovations are not particularly well publicized. Although there is no clear transition between the first phase and second phase – the "Get Rich Quick

Period" (1999-2001) -(open conflict between the thesis and anti-thesis), this transition is expected to take on some of the same properties as a paradigm shift. New applications keep being created and as they gain traction, this leads to more applications being created, more funding, more press and more anti-institutional entrepreneurs. In the second phase the anti-institutional (within industry players) and the evolving institutional entrepreneurs (complementary outside industry players who adapt their business models to factor in the new media changing environment) create a continuous cycle, feeding on one another. The cycle contains both the finding of "search" opportunities involving the combining of existing elements in new ways and "discovery" of new elements that continuously change what is possible for the media industry in the emerging Internet era. Collectively, these three entrepreneurial actors redefine the scope and boundary of the value network associated with the emerging new media industry (Christensen & Rosenbloom, 1995).

The co-evolution of technology, markets, and institutional market failures in Silicon Alley appears to reveal two distinct periods of network adjustments associated with ecosystem creation, i.e., "Creative Period" and "Get Rich Period" (Koza & Lewin, 1999). During each one, the entrepreneur groups play distinct and changing roles. Over time, complementary players join the ecosystem and collectively drive the institutional changes necessary to create a credible thesis/anti-thesis dialectic.

Discussion

The forming of a new network/ecosystem of customers, suppliers, distributors, technology entrepreneurs and complementary businesses requires fundamental change of an industry at the most basic level. De Rond & Bouchikhi (2004) have shown that similar patterns and sequence of events existed in the formation of the biosciences ecosystem a decade or so earlier, i.e., initial new-to-the-world innovation was spurred on by freelance entrepreneurs and not by traditional industry players, primarily because locked-in existing institutions resisted the development and implementation of break through technologies.

Existing industries (old media and pharmaceuticals) benefit during periods of less uncertainty when stabilizing institutional forces are strong, and suffer, through market capitalization reductions, during periods of extreme uncertainty when industry institutions have misaligned interests and are being severely challenged. Not surprising, the opposite is true for FE and AIE. What seems interesting is that there appears to be a threshold level of extreme uncertainty (usually centering on fundamental changing of industry structure) that start-ups have to

collectively reach to have the general public thinking that a new ecosystem could develop. Before this period, the freelance and anti-institution entrepreneurs do not have the necessary resources to achieve an industry tipping point, so they have to obtain the support of a coalition of related, complementary players including, at a minimum, the press in various media outlets, and the financial market community. Existing institutional players and even some institutional entrepreneurs offer considerable resistance to radical industry change; however, the new ecosystem gains traction after a credible narrative of the potentially disruptive power of the ecosystem emerges.

The narrative must emphasize the novelty of the innovation to the industry (or possibly create an entirely new industry), why prior rules or institutional logics do not apply to the particular innovation, and the need for new institutions and guidelines that the new players are more than willing to supply. The narrative appears to build on itself in a self-escalating fashion. Each time a new group lends its support to the ecosystem, it serves as a catalyst to increase the overall credibility of the narrative anti-thesis in the dynamic dialectic. During the rapid growth phase of the ecosystem, negative news is dismissed and the outside world increasingly buys into the narrative. In effect, the narrative becomes the reality (the new thesis) and both internal and external players' sense-making activities are evaluated against what the ecosystem could become, as opposed to the existing world. Expectations are driving reality, i.e., you see what you believe.

This is the critical phase for the organizational entity (ecosystem or the entrepreneurial group within the ecosystem) because everyone wants to be part of the "next big thing." In the new media case, the extreme uncertainty associated with challenging the status quo (in this case old media) had been removed, momentum for the new narrative grew, and the loosely defined, institutionally weak anti-thesis had been accepted. A bubble type mentality developed, i.e., "I better enter this market before I miss the run-up window." Interestingly, the projects that got funded here were increasingly more risky and of poorer quality than the ones at the being of the ecosystem, but were viewed by the funding sources as less risky because the market had bought into the ecosystem's narrative.

Conclusion

This paper furthers the understanding of entrepreneurship by disaggregating the entrepreneurial process into three distinct activities (freelancing, anti-institutional and institutional). Each of these entrepreneurial actors performs a different role in a different phase of the ecosystem

evolution, so they warrant individual attention. This paper furthers the study of ecosystems by identifying the relationships among these entrepreneurs and how their roles change over time. It identifies key tipping points where institutional logic changes, a necessary condition for ecosystem creation, and furthers the study of ecosystems by fitting the study to a dialectic process model. This paper highlights the effective and frequent ploy of stampeding people into an investment frenzy, and labeling the questioners as those "who don't get it." And finally, the paper highlights the importance of using a narrative approach to identify continuous change factors rather than the traditional comparative static approach to study network change.

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Contact

Cliff Wymbs

Department of Marketing and International Business

Baruch College / City University of New York

One Bernard Baruch Way, New York, New York, 10010, USA

Clifford.Wymbs@baruch.cuny.edu

ORGANISATIONAL CULTURE AND LEVEL OF MOTIVATION IN SME SECTOR EMPLOYEES

Anna Wziątek-Staśko

Abstract

Purpose: The objective of the article is to present the results of the author's own empirical research devoted to assessing the current and desired model of organisational culture according to Polish SME sector employees. The research was also promoted by the urge to assess the occurrence of some statistically significant dependencies existing between a declared model of the organisational culture and a perceived current level of respondents' motivation.

Design/methodology/approach: Two research tools were used in the research process, namely: the Organisational Culture Assessment Instrument (OCAI) by Cameron and Quinn and the author's own questionnaire, to assess occurrence and intensity of any dysfunctional phenomena at the workplace as well as the level of motivation. Statistical analyses of significant differences between variables were conducted based on Pearson's chi square test of independence.

Findings: The research results show that the model of organisational culture which, according to respondents, existed at their organisation at the time of the research is different depending on the size of an enterprise (with the exception of microenterprises and small enterprises). Moreover, the model of the organisational culture only in medium-sized enterprises has a statistically significant impact on the degree of employee motivation.

Research/practical implications: First, it would be necessary to conduct a cyclical research of employee preferences in order to identify the current and desirable model of organisational culture in the effort to create the friendliest work environment (the majority of employees' shows a definitely higher preference for the clan culture features than for the market culture and hierarchy). Important is also, that the organisational culture model is not the key factor which determines the level of employees' motivation.

Originality/value: The article presents the results of empirical research conducted by the author, which open new directions for scientific inquires focused on issues related to the organisational culture and its impact on the degree of motivation in employees working for enterprises from the SME sector as well as in large enterprises.

Keywords: Motivation, model, organisational culture, SME sector

JEL Codes: M12, O15

Introduction

The organisational culture is one of the concepts which are most controversial and difficult to define. However, fans of management, who come in big numbers, are never tired takeoff taking yet another attempt at exploring its nature. It seems that a particular difficulty comes from the multi-aspect nature of the essence of the culture, complicating our understanding of its internal structure and deepening the intuitive character of deliberations devoted to this culture. On the one hand, it is considered a tool useful in building "a positive organisation" (Kasprzak, 2017, p. 14), "the personality of an organisation" or "the identity of an organisation" (La Montagne, 2016, p. 9; Schneider, Ehrhart & Macey, 2013, pp. 361-388), on the other hand, "a tool of domination and oppression (…) a pseudoscientific trend and fashion, mental prison" (Sułkowski, 2011, p. 8) or "one of the main sources of social behaviour pathologies" (Tarnowska, 2011, p. 74). Dualism of views on the organisational culture increases researchers' curiosity about the concept and continuously sets new directions for scientific deliberations. Irrespective of some, quite significant, discrepancies in the reception of the essence and importance of the organisational culture, the area of its applications remains impressive. Interest in the organisational culture is related to its vast impact on various areas of a life of an organisation as well as on its surroundings. The organisational culture affects performance of individuals and units, efficiency of an organisation, work satisfaction and engagement, planning and task delivering strategy, recruitment and selection of staff and their acceptance by the enterprise, the scale of resistance against changes and organisational conflicts, if any, socialising and the nature of interaction, innovation and new product development, marketing and sales (Serafin, 2015, p. 74). The organisational culture seems to be popular and well known scientific area, but still inspiring to ask some new questions, such as:

– Which model of the organisational culture is the one currently found in enterprises and which is desired by employees at present?

– Does the size of an enterprise have an impact on differences in assessing the "current" and "desirable" model of the organisational culture by employees?

– Does the interdependence between the variables: "the current model of the organisational culture" and "the level of respondents' motivation" is statistically significant i.e. does the current model of the organisational culture determine the level of employees' motivation?

This paper focuses on discussing and emphasising the role of an organisational culture in the process of optimising the efficiency of motivating employees working in enterprises from the SME sector and tries to find the answer to the above questions.

1   Organisational culture as a tool improving the efficiency of motivation

A multi-dimensional nature of organisational culture makes it an important management tool, as already pointed out by Serafin (2015). A model of culture determines not only the efficiency of human capital management but also proper operation of a number of other areas in managing an organisation, to mention only: change management, managing innovation, sales management, strategic management, quality management, etc. The above-presented view is confirmed by numerous researchers from all over the word, who perceive the organisational culture predominantly as a factor which determines work effectiveness (Houdek & Koblovsky, 2017; Neagu & Nicula, 2012), the degree of identification with an organisation (Costanza, Blacksmith, Meredith, Severt & DeCostanza, 2016) or employee commitment (Reis, Trulen & Story, 2016). Many believe that the rules for conduct, standards and values arising from an organisational culture also determine the effectiveness of motivation systems (Jyoti & Rani, 2017; Narman, Johnson & Gingnell, 2016). In addition, a particular attention should be paid to mutual complementarity of the concepts discussed in this paper and their feedback. This does not go unnoticed by Aniszewska (2007, p. 142) claiming that: "There is a feedback between a method used in an organisation to motivate employees and the culture prevailing in the organisation. On the one hand, the organisational culture, together with its values and standards is an indicator for motivation (I motivate according to what I believe in and with what is important for me). On the other hand, motivation efforts involved in drawing up personnel policy procedures, governance and communication methods in a company lead employees to understanding and accepting standards and values of the culture. In addition, as in the definition, it shapes people's attitudes and behaviours and they also come as manifestations of the organisational culture". Both research categories seem to have a clear and very significant dependence. Assessment of the above-mentioned dependence in the context of operation of SME sector enterprises and, additionally, of large enterprises (solely for the purpose of comparison) remained a research gap.

2   Research objective and research methods

The author's own empirical research was aimed at evaluating the current and desirable model of the organisational culture in the opinion of Polish employees. It was interesting to verify

whether such model is dependent on the size of the enterprise: micro (less than 10 employees), small (10-49), medium (50-249), and also large (250 and more) enterprise. Another research objective was to assess occurrence of some statistically significant dependencies between the declared model of the organisational structure and the level of employees' motivation. Two research tools were used in the research process:

- the Organisational Culture Assessment Instrument (OCAI) by Cameron and Quinn (Cameron & Quinn, 2003)
- and the author's own questionnaire to assess occurrence and intensity of any dysfunctional phenomena at the work place, including the present level of employees' motivation (29 questions followed by the respondents' characteristics)[37].

Statistical analysis of significant differences between variables was conducted with Pearson's chi square test of independence. As significance level of α=0.05 was assumed for the test. Anonymous empirical research on a randomly selected sample of respondents from the Silesian Region was conducted between April 1, 2016 and November 30, 2016, with the paper (hard) copy of both research instruments. In total, 700 copies of questionnaires were handed out to respondents, 664 complete and correctly filled out forms qualified to be analysed eventually. The structure of respondents presents Table 1.

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[37] This paper presents only a small portion of rich factographic material gathered as a result of running a project entitled: "Organisational Culture Models Versus Workplace Pathologies". The low level of motivation has been treated as the one of 29 possible, analysed dysfunctions.

Tab. 1: Respondents – statistics

The respondent's characteristic		Respondents in numbers (N)	Respondents in percent (%)
Sex:	women	347	52.2
	men	317	47.8
Age:	18-25	337	50.8
	26-35	170	25.6
	36-45	124	18.7
	46-55	30	4.5
	55 and more	3	0.5
Education:	elementary	1	0.15
	vocational	6	0.9
	high	530	79.8
	university	126	19.0
	academic/scientific	1	0.15
Position:	blue collar workers	246	37.0
	non-blue collar workers with no managerial responsibilities	296	44.6
	lower level managers	31	4.7
	medium level managers	71	10.7
	top level managers	20	3.0
Work experience:	> 5 years	328	49.4
	5-15 years	202	30.4
	< 15 years	134	20.2
Sector:	private	526	79.2
	state	117	17.6
	third sector	2	3.2
Enterprise size:	micro	99	15.0
	small	127	19.1
	medium	152	22.9
	large	286	43.0

Source: own study

The model of the organisational culture used for researching for the purpose of this paper is the Competing Values Framework developed by Cameron and Quinn, presented in Figure 1.

Fig. 1: Competing Values Framework developed by Cameron and Quinn
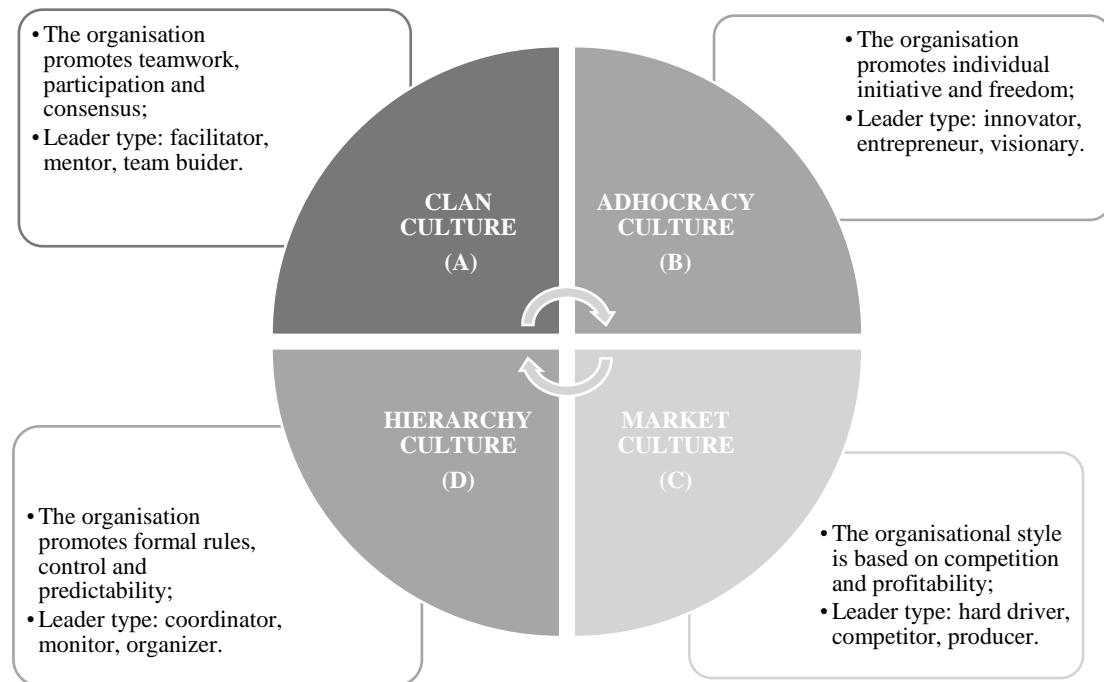
Source: own study based on: Cameron and Quinn (2003), Kultura organizacyjna-diagnoza i zmiana, Kraków, Oficyna Ekonomiczna, p. 40.

3 Research results-presentation and discussion

When starting the research process, answers were sought to the following questions:

- Which model of the organisational culture is declared as currently existing in their enterprise and which they believe is desired, as declared by respondents?
- Does the size of an enterprise have an impact on differences in evaluation of the "current" and "desirable" model of organisational culture by respondents?
- Does the interdependence between the variables: "the current model of the organisational culture" and "the level of respondents' motivation" is statistically significant i.e. whether the current model of the organisational culture determines the level of employees' motivation?

The research results related to answer to the first question are presented in Figure 2.

Fig. 2: The current organisational culture model in micro, small, medium and big enterprises
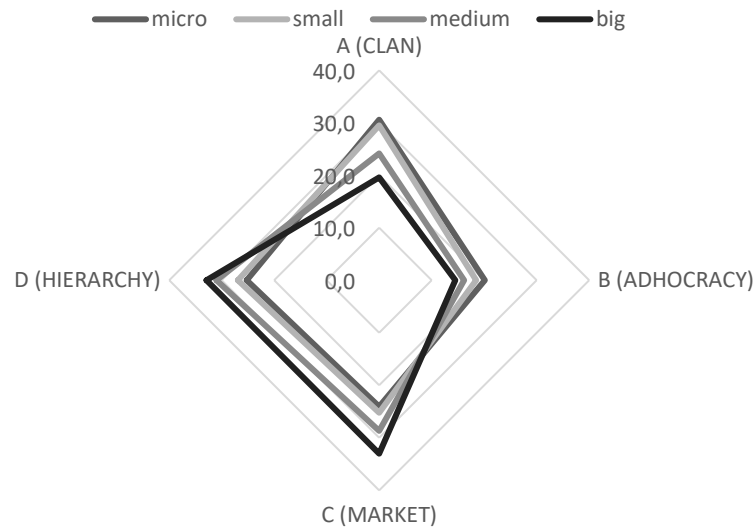
Source: own analysis

According to the data illustrated in Figure 2, the models of cultures, indicated by respondents as the currently existing ones differ, depending on the type of enterprise they apply to. In micro- and small enterprises, the clan culture ranked as the dominant model of culture (30.6% and 29.5%, respectively), the hierarchy culture was dominant in medium-sized enterprises (31.0%), while the market culture dominated in large enterprises (also covered by the research for the sake of comparison (33.0%). Preferences as to the model of the organisational culture indicated by respondents as their "desirable" model are presented in Figure 3.

Fig. 3: The expected organisational culture model in micro, small, medium and big enterprises
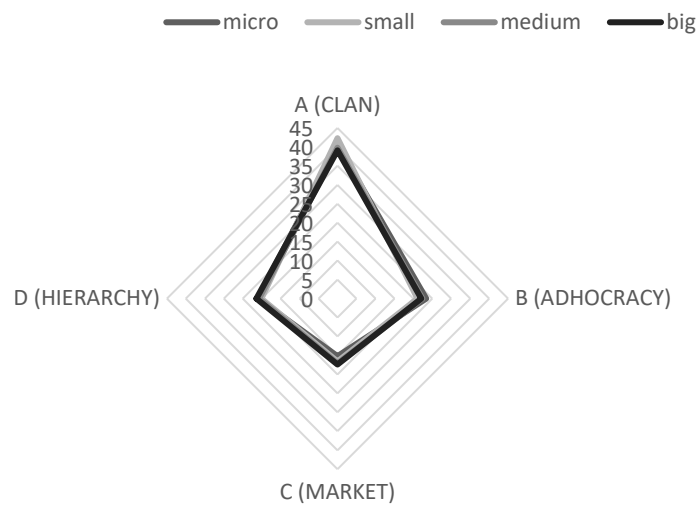
Source: own analysis

Figure 3 reflects a very interesting condition. According to the majority of respondents, the most desirable model of organisational culture, irrespective of the size of their organisation, turned out to be the clan culture (above 39.0%) while the market culture ranked as the least desirable culture (17%). The discrepancy seems rather significant. Preferences for the other two models ranged between (21.0%-22.0%). In this case, respondents' opinions seem astonishingly consistent. Another objective of the research was to establish whether the size of an enterprise has an impact on differences in respondents' opinions on their current and desired model of organisational culture. As it turned, in case of all types of analysed enterprises, the model most desired by all types of analysed enterprises was the clan culture, irrespective of the model they identified as their current one. No differences in this respect were identified in micro and small enterprises – both types identified the clan culture as their current and desired model. However, such differences did exist in medium and large enterprises. Respondents representing medium-sized enterprises identified the hierarchy culture as their dominant current model while respondents employed in large enterprises claimed that their dominant current model was the market culture.

The last research objective was to establish statistical significance, if any, of the dependence between the "current model of the organizational culture" and "respondents' level of

motivation" i.e. whether the current model of the organizational culture determined the level of employees' motivation. The results of the analysis were presented in Table 2.

Tab. 2: Level of motivation and the type of the organizational culture model according to the size of enterprises-results of the Pearson's chi square test of independence

Enterprise size	micro	small	medium	large
	p-value			
the level of respondents' motivation	0.2990	0.7080	*0.0308**	0.0912

Source: own analysis

Data analysis proved that, in case of microenterprises, small and large enterprises, the organisational culture does not affect significantly the level of employee motivation. However, such impact was identified in medium-sized enterprises (p=0.0308, p<α). Detailed opinions on the level of motivation of personnel employed in medium-sized enterprises are presented in Figure 4. Different models of culture are marked as in Figure 1, i.e.: A-clan culture, B-adhocracy culture, C-market culture and D-hierarchy culture. When assessing the level of motivation and work commitment, respondents used Likert's scale (1 to 5, where "1" indicated their critically low level of motivation, "5"-very high level of motivation and "2" to "4"- the average levels).

Fig. 4: The current model of the organisational culture and the level of employee's motivation in medium enterprises
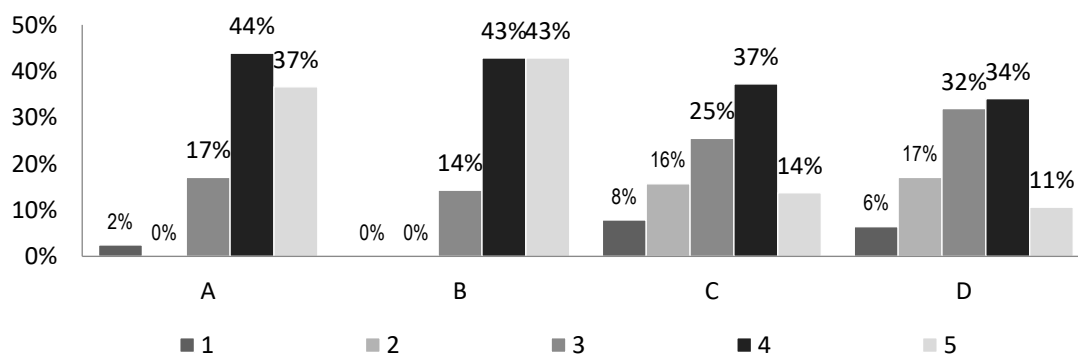
Source: own analysis

The factographic material presented in the graph 4 shows that the highest level of motivation (that received the biggest number of score 4 and 5) is demonstrated by employees employed in medium-sized enterprises in the adhocration type of culture (43.0% of all scoring given,

respectively). Similar was the case of the type A-clan culture enterprises (scoring 4 at 44.0% of respondents while 37.0% of respondents gave it the scoring of 5). Respondents working in medium-sized enterprises dominated by the market culture-C and hierarchy culture-D expressed slightly different opinions. They would more frequently declare that they had low and critically low motivation (24.0% of the scoring at 1 and 2 for the market culture and 23.0% of the same in case of the hierarchy culture), contrary to the previously mentioned models.

Conclusions

The issues concerning both the organisational culture and effective employee motivation remain interesting areas of scientific investigations, exposing new fields for open to exploration. It is the opinion of the author that the organisational culture and its importance is sometimes approached as a marginal phenomenon, in particular when it comes to its perception as a tool for optimising the level of employee motivation. The above-presented observation inspired the author to start research in order to learn about the actual opinions of the SME and large enterprises sector on the specificity of the model of organisational cultures currently existing in the enterprises which employ them and those desired by employees. Additionally, the research also included an interesting diagnosis of the model of the interdependence between the model of the organisational culture and the size of the enterprise. The research also aimed to diagnose whether the model of culture determined the level of employee motivation in SMEs and large enterprises.

The research results allowed for answering all the research questions and formulate some conclusions important for the economic practice:

- The model of organisational culture declared by respondents as the current one differs depending on the size of an enterprise (with the exception of microenterprises and small enterprises, which identified the same type of the model-the clan culture–as dominant in their organisations).
- There is no difference between the current and the desired model of an organisational culture in micro and small enterprises. The difference in the opinion is growing with the size of an enterprise.
- In medium-size enterprises, the dominant model of the organisational culture is the market culture and the hierarchy culture prevails in large enterprises.
- The clan culture is the model particularly desired by employees, irrespective of the criterion which is the size of an organisation. The result is quite meaningful and

proves that employees appreciate a friendly work environment where they can count on a support both from their line managers and the management. Therefore, employees working in medium and large-size enterprises should endeavour to modify the current model of the organisational culture, moving towards eliminating the red tape and uncompromising orientation to maximising added value while abandoning other values.

- It is only in medium-size enterprises that the model of the organisational culture has a statistically significant impact on the level of employee motivation which proved the highest in organisations with the adhocration and clan cultures. However, market and hierarchy model organisations had the highest percentage of persons demonstrating low and very low degree of motivation.

The author believes that the organisational culture is "the soul of an organisation which determines its difference and uniqueness. It requires a lot of attention, in particular, on the part of the top level managers, who should continuously aspire to acting as organisation-friendly creators i.e. creators who inspire employees to take transgressive actions and create great things of their own initiative.

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Contact

Anna Wziątek-Staśko

Faculty of Management and Social Communication

Jagiellonian University in Cracow

Łojasiewicza 4 Street, 30-348 Cracow, Poland

anna.wziatek-stasko@uj.edu.pl

REUSE CENTERS IN THE CZECH REPUBLIC

Martin Zelený

Abstract

Purpose: The purpose of the following study is to analyze institutional presence of the ReUse phenomenon in the Czech Republic using publicly available data. The aim of the research was to investigate regional distribution, diffusion in terms of time and ownership characteristics of ReUse centers in the territory of the Czech Republic.

Design/methodology/approach: The ReUse centers list is based on online research using search engines google.com and anopress.cz. We have searched for terms reuse centrum (reuse center), reuse shop and reuse, thrift store, dobročinný obchod, charitní obchod (charity shop), charitní bazar, dobročinný bazar, charitní šatník, dobročinný šatník, repair center, repair café, zero waste and cirkulární ekonomika with limitation on Czech websites. Each organization and center were individually checked and if they met the ReUse concept, the information about the date of establishment, type of ownership, number of operated centers and locations of organizations and centers were added. Then the organizations were categorized by their ownership, the date of establishment and location.

Findings: Result of this study is a list of 47 organizations that operates 166 ReUse centers. 30 centers are located in Moravskoslezský region, followed by Jihomoravský region (20) and Prague (20). Only 2 organizations were established before 2006, the largest number of the organizations were founded in years 2014 (11) and 2016 (9). Only 1 organization is municipal, 2 are private, 3 are non-profit and 41 organizations are a charity. No charity presents its centers as ReUse, even though they meet the criteria of the ReUse concept.

Research/practical implications: The paper provides implications for further research of the ReUse centers in the Czech Republic, among others concerning reasons for their regional distribution, awareness of ReUse, measuring ReUse centers activity and performance, benchmarking, impact on waste management etc. As for practical implications, the paper suggests new funding opportunities for charity organizations.

Originality/value: This paper fulfils the need to study the ReUse phenomenon in the Czech Republic, which is expected to undergo a major development in the coming years and yet there has been no effort made to systematically analyze its institutional presence in the Czech Republic. The list of ReUse centers in the Czech Republic can be used to further research, future comparisons and to measure the impact of upcoming governmental and European Union programs.

Keywords: ReUse, zero waste, sustainability, charity, used goods

JEL Codes: L31, Q32, R12

Introduction

In 2012, the European Commission published Manifesto for a Resource Efficient Europe, which, inter alia, includes: "In a world with growing pressures on resources and environment, the EU has no choice but to go for the transition to a resource-efficient and ultimatively regenerative circular economy" (EC, 2012). Since that time, the European Union has been supporting the member states in transformation of existing linear economy into circular one not only through education and laws but many programs as well. The most important of them is Horizon 2020 program and operation program Životní prostředí funded from the European structural and investment funds. Under the Horizon 2020 programme, the EC set aside 941 million EUR for 2018–2020 for the program axis "Connecting economic and environmental gains – the Circular Economy "(EC, 2017). A curious therefore is that neither statistics nor official list of organizations active in this field has been compiled to date. The public resources working with circular economy and ReUse terms make the impression that almost no organizations of this type are present in Czechia. However, there are many organizations in Czechia that operate centers that fully meet the criteria of the ReUse concept, and despite that they do not declare affiliation with the ReUse concept.

Therefore, the aim of this study is to create a list of both declared and non-declared ReUse centers in the territory of the Czech Republic. The list reflects the date of their establishment, type of ownership and regional distribution. We also consider the list as a first step towards future benchmarking of ReUse centers and to create a knowledge base for future monitoring of activity in the industry, which is expected to undergo a significant development in near future.

1   Circular economy

The idea of model of economy founded on the circular material flows appeared already in 1970s, however, the compact concept of the circular economy was first presented in 1989. Its authors pointed out to the fact that the existing economy in the context of circular economy, often called linear, is not developed with respect to necessity to recycle materials and behaves to the environment as to an inexhaustible source with vast waste reservoir (Pearce and Turner, 1989). The use of resources and raw materials now occurs like "mine – produce – use – discard", wherein majority society does not reflect on value of the waste. This establishes some pressure on natural resources spent in a way, which does not leave space for keeping of their quality and recovery.

Increasing attention paid to the phenomena of circular economy is the expression of the need to change the system for its long-term sustainability. The circular economy is a concept aimed at keeping and using of added value of products for maximum possible time, and the products are not seen as future waste but as a future source for further use (Lehmann et al., 2014). In other words, it is the support of sustainable development through closing of material and energy cycles with emphasis on minimum use of primary materials. Sometimes, the circular economy is also known as 3R concept, in particular Reduce, ReUse, and Recycle (Andersen, 2007) in the sense of handling with materials and energies. At least in Europe and Western countries, recycling has been applied for some time, and impacts thereof can be seen in day-to-day life. The two remaining phenomena enjoyed public interest over only a couple of last years, and their development both theoretical and practical can be expected.

2   ReUse

The ReUse phenomena can be found not only as a mere part of the circular economy concept but also as phenomena associated in particular with developing countries in connection with low wages and general poverty of the society, which is for financial reasons pushed to prefer repairs and reuse of the products over purchase of new products. Compared to this, the society of rich countries left due to its comfort a lot of historically implemented concepts, e.g. distribution of drinks in returnable glass bottles intended for reuse. To an increasing extent, citizens of these countries feel these environmental threats and re-discover the original concepts, try to revive and develop them further.

ReUse concept means reuse of already used product either for original or new purpose. ReUse need to be differentiated from recycling that is based on disassembly or break of the used products into feedstock used for production of new products. ReUse does not refer to re-processing of the used products, whereby it saves time, money, energy, and resources, and permit production of products under limited resources, creates jobs, and contributes to economy with its business activity (Cole et al., 2016; Krikke, 2011).

ReUse used in practice has two forms. The first of them attempts to keep the already produced product and to lengthen its lifecycle. It includes maintenance, repairs, and improvement, or offering of new use or re-use, if appropriate for the specific product. Purchase of each single product should include not only purchase of the product alone but its inclusion in the maintenance program in order to maximize its lifecycle, possible repurchase, renovation, and subsequent sale, and possibility of direct sale of used product.

The second form of ReUse aims at use of the used products or waste as a feedstock. It is based on an idea that no waste exists, and everything now called a waste has potential for further use. To make this idea happen, it is necessary the manufacturers think conceptually and intentionally design the product so that after the lifecycle expiration, its further use is as most potentially as possible, and to eliminate, if possible, the waste component (Pollard et al, 2016; Cole et. al., 2016).

Both mentioned forms assume change to paradigm on the onset of product's life cycle, i.e. at the manufacturers. This activity aims at future and there is a question who will deal with the problem of massive part of the waste produced in the past for which it is unthinkable that it would be further used under the programs currently implemented by the manufacturers? The potential response is the organization based on the ReUse principle. Their activity usually leads to combination of both ReUse forms, and becomes tangible in the form of ReUse centers. These are the centers processing waste with potential to further use be it in the form of repair, renovation, finding of a new purpose, or use as a feedstock for production. ReUse-based businesses can be divided into three main groups by type of their ownership. Though all these businesses respect the ReUse principle, their primary goals differ. For one thing, they are charity or non-profit making ReUse centers owned privately but operated as social businesses. Their primary goal is contribution to reduction of joblessness, giving a chance to people for re-joining in the society, and other social goals. For another, there are privately held ReUse centers with primary and understandable goal of generating profit for its further operation. The third organizations include subsidized organizations usually established as a sub-part of waste-processing infrastructure of companies operating at the municipal or communal level with the primary goal to avoid waste (RREUSE, 2017). The differences in reason of incorporation, motivations, and goals of each organization, in combination with the expected development of the area in near future, lead to the need of establishing of a list of the organizations, and subsequent monitoring of their development as well as the situation in the field.

3   Methodology and data

At present, there is no an official list of the ReUse centers and therefore, we inspired by the methodology used in research on business incubators in Czechia, which faced similar problems (Andera and Lukeš, 2016).

The starting point for data collection was the summaries of ReUse projects from information database of the Institute of Circular Economy, and summary of members of the RREUSE organization. Their main benefit consisted in description of potential practical applications of

the ReUse concept. According to RREUSE, the ReUse centers include interest centers as well, the centers of non-profit-making and charity organizations that receive potential waste, return its function, or use it as direct feedstock (INCIEN, 2017, RREUSE 2017). Based on the information gathered, a list of key terms used later for search was compiled for online research via the google.com and anopress.cz web search engines. We have searched for terms reuse centrum, reuse shop and reuse, charity shop, thrift store, dobročinný obchod, charitní obchod, charitní bazar, dobročinný bazar, charitní šatník, dobročinný šatník, repair center, repair café, zero waste and cirkulární ekonomika with limitation on Czech websites.

Vast majority of the organizations provide information about their activity via website as well as social media, and references to their activity can also be found in media archive. These resources helped us to check whether an organization or ReUse center meets the ReUse concept and if yes, information about date of incorporation, type of operator, number of operated centers, and their location was added. By type of operator, the organizations were categorized into four groups with additional differentiation of non-profit making organizations between charity and other non-profit making. Based on their own description, some centers or organizations were rejected because their activity did not meet the ReUse concept, mostly because the organizations were involved only in the phenomenon of recycling, education, re-sale, or unclear projects. Presence of the organization on the social media simplified extension of the list because it provided guidelines for further similarly focused or even cooperating organizations.

4   Results

The summary of ReUse projects obtained from information database of the Institute of Circular Economy showed to be starting point only because it included only a couple of projects. The follow-up online research brought better insight in the issues of the ReUse centers in Czechia, which have, in addition to currently published projects, rather long tradition in the form of non-profit making and in particular charity organizations, which, however, remain in unison silent about their activities in connection with the ReUse phenomenon. They include Charita České Republiky, which has opened thirty so-called Charity Wardrobes since 1991. In addition, in connection with the ReUse phenomena, Diakonie Broumov is often mentioned, which has been operating a nationwide network of collection and distribution points of textile and clothes since 1993. Elektrowin, which operates with rejected electronic devices, joined the nationwide networks in 2015. Although the three organization with 65 branches in total are the most important representatives of the ReUse centers in Czechia, they were removed from the part of

the research involved in regional distribution of the ReUse centers because of their even deployment across the country, and inclusion thereof in the research would make the outcomes unclear, wherein the differences in the final distribution of the ReUse centers would not be altered at all.

Following exclusion of the three organizations, there are 91 centers in total operated by 43 organizations regarded as the active ReUse centers in Czechia in 2017.The highest number of ReUse centers is located in Moravskoslezský kraj (30), followed by Jihomoravský kraj (20) and Prague (20) on second place. For detailed regional distribution, see Figure 1.

Fig. 1: Map of regional distribution of ReUse centers
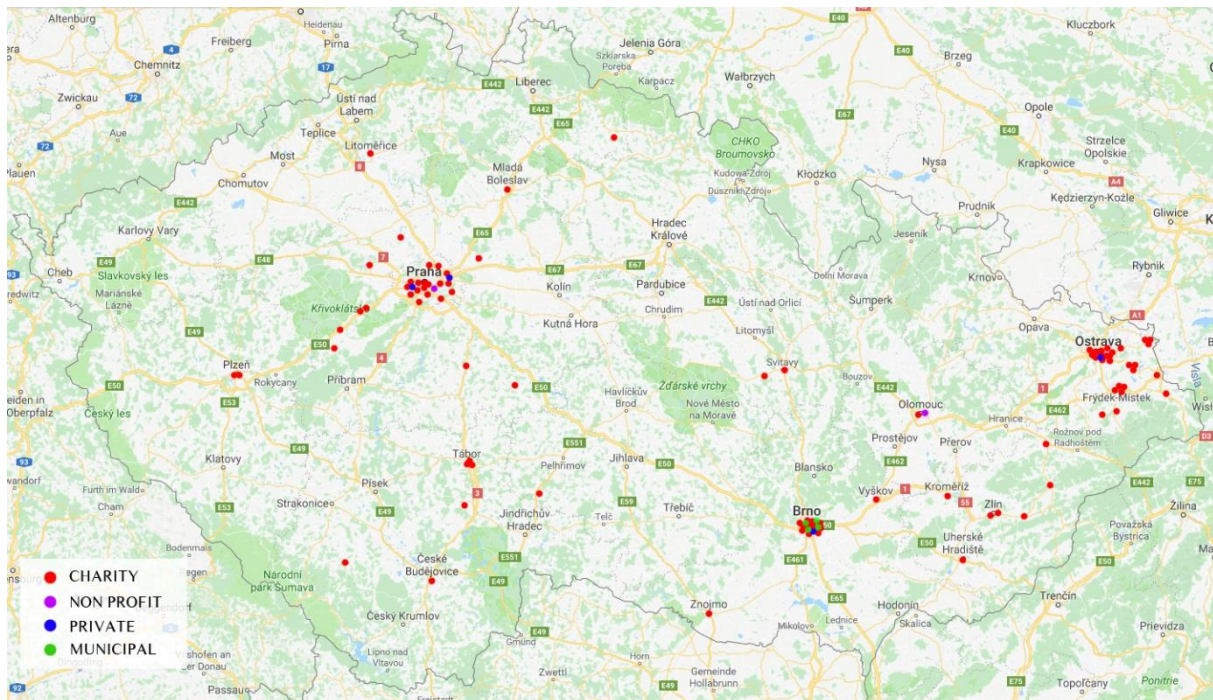
Source: Author

The regional distribution of the ReUse centers points out to the tendency to establish the centers in big regional cities, slightly surprising is dominance of the count of the ReUse centers in Moravia and Silesia (59) compared to Bohemia (42). The reasons may be different life conditions as well as importance of religion in the society of the regions, also because vast majority of currently active ReUse centers in Czechia is operated by charity organizations (41), and often cooperates with churches. The 2011 census supports this idea according to which the share of believers is higher in Moravia and Silesia than in Bohemia (CZSO, 2014). No charity presents its centers as ReUse, even though they meet the criteria of the ReUse concept. The reason may be a lack of awareness of ReUse in the Czech Republic.

Fig. 2: Regional distribution of ReUse centers and their ownership
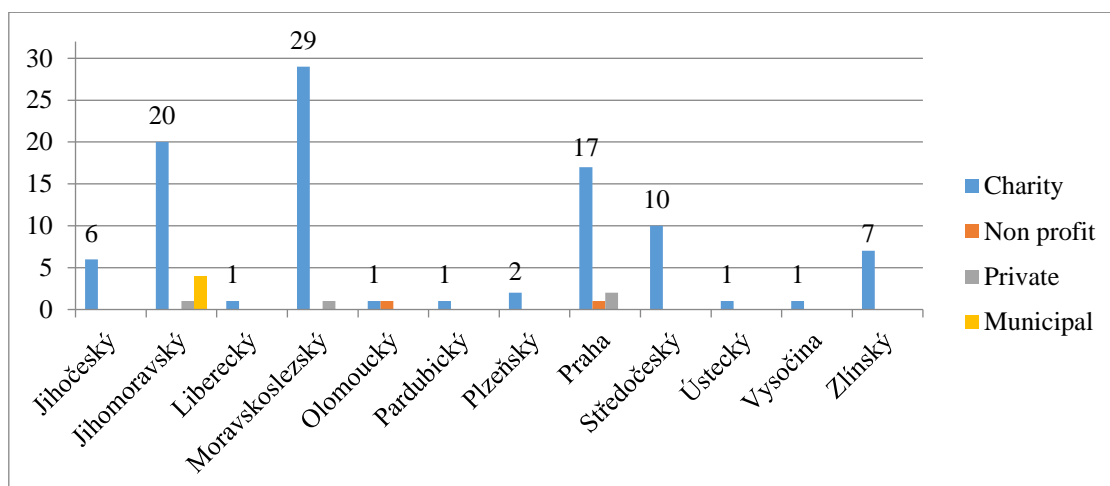
Source: Author

The origin of the ReUse activities in Czechia dates back to 1991 when Charita České republiky established first and still existing centers. It was followed by Diakonie Broumov in 1993, which used the same concept and developed it further. There had not been any development in this initiative for thirteen years, and the new organizations started to join the ReUse centers only in 2006. We failed in justification of long pause, but there is a thesis associated with further development. Many organizations refer in their materials to assumption of the model of charity shops, which have been operated in the United Kingdom for more than century. The new initiators were individuals who lived long time in the UK, and their domestic activity is import of a proven foreign model (Dostál, 2016).

Fig. 3: Origin of the ReUse activity organization operating current ReUse centers
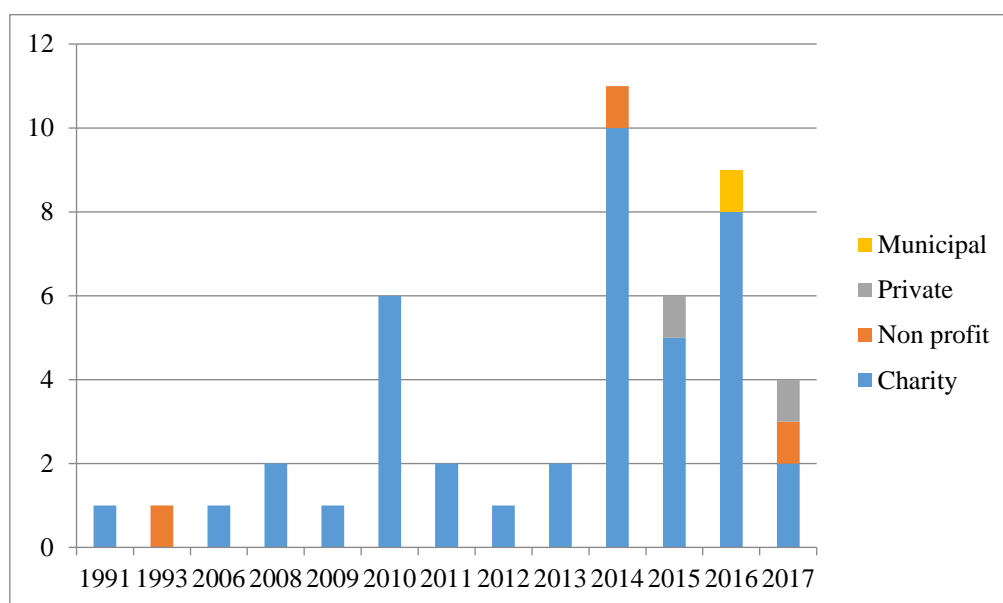
Source: Author

Before 2014, the ReUse centers were the exclusive domain of the charity organizations that operated them to support their other activities. Regarding establishment of new ReUse organizations, this extremely successful year brought also first non-charity project Zdrojovna aiming at more effective use and handling with potential waste. One year later, Electrowin with Druhý život project joined the ReUse concept. In 2016, the first and still rare municipality-controlled project of SAKO and Brno Municipality Office started its activity; today, the project operates four ReUse centers. Early in 2017, IKEA announced start of the ReUse centers in all its shopping centers in Czechia (IKEA, 2017). It should be noted that four of seven ReUse centers in 2017 are located in Prague. The interest in the ReUse centers in Bohemia is documented by information from Prague Municipality Office, which operates Nevyhazujto.cz online ReUse project, and which is now looking for a new location for a large ReUse center, as well as Liberec (Praha, 2017, Seifertová, 2017).

Conclusion

The research succeeded in establishing of the first list of organizations operating the ReUse centers, and the ReUse centers alone in the territory of Czechia. A weak point may be that the source data included public-available data, however, we are sure that as the organizations are public, information about them is available to public as well.

There are many organizations in Czechia that operate the ReUse centers; the charity organizations do not explicitly come forward to this in unison. Therefore, it may seem that the phenomenon of the ReUse centers is rare in Czechia, albeit the first signs appeared here already in 1991 and now, there are 47 organizations operating 166 ReUse centers in the territory of Czechia. The regional distribution points to dominance of Moravia and Silesia. Following the pause between 1994 and 2005, the number of individual organizations started to increase with climax in 2014 and 2016. This is all without significant public support being expected for 2018 onwards.

The list also provides a lot of impulses for further research focused on the regional distribution, impact of existence of the ReUse centers on employment, support of socially deprived households, and impact on the waste management. The specific economy of these organizations is also an interesting subject of the research because only two organizations, who operated the ReUse center and had to terminate their activity, were found. Last but not least the list could be used for study of the most successful centers, documentation of their best practices, performance metrics, and benchmarking. This list has been made for the period before

launching of the subsidy programs, and can be also used as one of the starting points for the future evaluation.

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Contact

Martin Zelený

Department of Arts Management, Faculty of Business Administration

University of Economics, Prague

Winston Churchill Sq. 4 130 67 Praha, Czech Republic

xzelm00@vse.cz

PUBLIC AND PRIVATE INVESTMENT IN INNOVATION. THE DIFFERENCES BETWEEN THE VISEGRAD GROUP COUNTRIES

Aleksandra Zygmunt

Abstract

Purpose: Regarding the role of innovation in competitive advantage of firms, regions and country it is essential to check how public and private investment in innovation differ between the European Union countries. Here, special attention was put on the Visegrad Group countries (V4). Hence, the aim of this paper is to explore how public and private investment in innovation differ between V4 countries.

Design/methodology/approach: In this study zero unitarization method and multivariate analysis were applied. These methods enable to explore the differences between V4 countries in regard to R&D expenditure in the public sector, venture capital expenditures, R&D expenditure in the business sector, non-R&D innovation expenditures and enterprises providing training to develop or upgrade information and communication (ICT) skills of their personnel. The time period was 2009–2015. The study used data from the European Innovation Scoreboard 2017 relating to public and private investment in innovation dimensions: finance and support and firm investments.

Findings: The analysis indicates, among others, the high rank of the Czech Republic in terms of public and private investment in innovation indicators (in comparison to the other Visegrad Group countries). In regard to Hungary, Poland and Slovakia, the findings imply further enhancing the level of R&D expenditure in the public sector, venture capital expenditures, R&D expenditure in the business sector, non-R&D innovation expenditures and enterprises providing training to develop or upgrade ICT skills of their personnel.

Research/practical implications: The practical and policy implication of this study is that there is a need to strengthen indicators of public and private investment in innovation (in particular in Hungary, Poland and Slovakia). Regarding future research, it is important to study potential causes of differences between V4 countries (in terms of public and private investment in innovation).

Originality/value: This paper contributes to the existing literature by providing new insight on understanding the issues connected with public and private investment in innovation.

Keywords: Innovation, competitiveness, the Visegrad Group countries

JEL Codes: O30, R11, O52

Introduction

Maintaining or fostering competitiveness has become a key factor of economic growth of firms, regions and country. In this regard, special attention is put on innovation as an essential driver of adaptation to changes in the environment. Thus, there is a widespread agreement in the economic literature that innovation has become the important sources of enhancement competitiveness of firms, regions and country (see, e.g., Acs *et al.*, 2017; Fritsch & Franke, 2004). In particular, the ability of innovation to stimulate competeveness is particularly salient in knowledge spillovers theory and endogenous growth theory. The significant rank of innovation for economic growth is also noticeable in the European Union strategy Europe 2020, especially in creation the conditions for a more competitive economy (European Commission, 2017).

Concerning the above, the substantial is to explore how public and private investment in innovation differ between the European Union countries. In this regard, special attention was put on the group of Central European states. In consequences, the aim of this paper is to investigate how public and private investment in innovation differ between the Visegrad Group countries (V4).

To achieve the aim, theoretical and empirical analysis were carried out. Theoretical analysis was based on a related literature review of the problem, while empirical analysis was used data from the European Innovation Scoreboard (EIS). The time period is 2009–2015.

This paper is organised as follows: the first part concerns a brief overview of the literature on public and private investment in innovation. The second part contains methods of the research. The results of research are presented in the third part. The last part concludes the paper.

This study contributes to the existing literature by providing new insight on understanding the issues connected with public and private investment in innovation. To identify the differences between the Visegrad Group countries in terms of the public and private investment in innovation, zero unitarization method and multivariate analysis were applied.

1   Theoretical background and hypothesis development

The current state of literature on economic growth largely supports the idea that there is a strong link between economic growth of firms, regions and country, and innovation (see, e.g., Fritsch & Franke, 2004; Asheim & Coenen, 2006). Against this background, innovation is consider as "an effective tool for fostering and shaping the performance of countries" (Acs *et al.*, 2017, p.

6). Here, in line with knowledge spillovers theory and endogenous growth theory, the crucial is cooperation between regions and firms (see, e.g., Fritsch & Franke, 2004). Such cooperation will contribute to competitiveness' enhancement of firms, regions and countries. Thus, considering the importance of the issue, country and regional attention should focused particularly on the actions stimulating innovation. This approach is highlighted especially in the European Union strategy Europe 2020, with special emphasis on shaping conditions for innovation performance (European Commission, 2017).

Regarding the importance of actions stimulating innovation, it should be emphasised multitude of drivers associated with innovation. According to a number of studies, innovation framework conditions contain, among others, institutional environment (see, e.g., Acs *et al.*, 2017), entrepreneurial activity (see e.g., Zygmunt J., 2017), attractive research system (see e.g., Zygmunt A., 2017), R&D activity (see, e.g., Lopez-Rodriguez & Martínez, 2017) and project and firms' management (Maj, 2016). Here, the essential for enhancing of innovation is also public and private investment in innovation. In this context, the European Union puts particular emphasis on R&D expenditure in the public sector, R&D expenditure in the business sector, non-R&D innovation expenditures, venture capital expenditures and enterprises providing training to develop or upgrade information and communication (ICT) skills of their personnel.

Considering R&D expenditure in the public sector, there is a widespread agreement that such expenditure creates condition for networking research organisations, institutional environment, universities and firms (see, e.g., David *et al.*, 2000). Hence, R&D expenditure in the public sector is treated as "strategic tool to improve the competitiveness of countries" (Hammadou, 2014, p. 1217). The ability of R&D expenditure in the public sector to enhance competitiveness also results from the impact on R&D expenditure in the business sector. In this regard, a wide body of empirical literature assessing the role of R&D expenditure in the public sector to encourage firms to enhance R&D expenditure (see, e.g., Minniti, 2017). Another strand of literature emphasize also the significance of R&D expenditure in the business sector as the source of creation new knowledge concerning, among others, products or process development (see, e.g., Asheim & Coenen, 2006). In this respect, R&D expenditure in the business sector contribute to competitiveness of firms, regions, and country. Regarding non-R&D innovation expenditures, a number of theoretical and empirical studies highlights their importance in stimulation innovation (see, e.g., Lopez-Rodriguez & Martínez, 2017). Thus, minor modification of products or processes, or investment in equipment and machinery might impact on firms' productivity and, in consequences, on growth of firms, regions, and country.

Considering venture capital expenditures, the substantial importance is put on their significance in new business formation. Hence, venture capital expenditures support creation new firms with high innovation potential (Faria & Barbosa, 2014). Following this, such expenditures might impact on competiveness of firms, regions, and country. Regarding enterprises providing training to develop or upgrade ICT skills of their personnel, research attention has focused essentially on strong reliance between digital economy and competitiveness of firms, regions, and country (Sein & Harindranath, 2004). In this context, enterprises providing training to develop or upgrade ICT skills of their personnel, enterprises provide knowledge processes important for growth.

The role of public and private investment in innovation stimulation, requires undertake studies how public and private investment in innovation differ between the European Union countries (with special attention on the group of Central European states).

Concerning the above, the substantial is to explore how public and private investment in innovation differ between the Visegrad Group countries. Thus, the following hypothesis was posed: despite belonging to the same group of countries, the Czech Republic, Hungary, Poland and Slovakia differ in respect of public and private investment in innovation.

2   Methods of the research

The data employed for this study were extracted from the last report of the European Innovation Scoreboard (European Commission, 2017). According to the EIS, indicators of public and private investment in innovation are grouped into two dimensions, such as: finance and support and firm investments. These dimensions and their five specific indicators stay in accordance with knowledge spillovers theory and endogenous growth theory. The study uses data regarding the Visegrad Group countries: the Czech Republic, Hungary, Poland and Slovakia. The time period was 2009–2015. The descriptive statistics of diagnostic variables, comprising mean, standard deviation, minimum and maximum are presented in Table 1.

Tab. 1: Descriptive statistics of diagnostic variables

Variables			Mean	St. Dev.	Min.	Max.
Finance and support	x_{1t}	R&D expenditure in the public sector (percentage of GDP)	0.50	0.13	0.36	0.70
	x_{2t}	Venture capital expenditures (percentage of GDP)	0.04	0.04	0.01	0.11
Firm investments	x_{3t}	R&D expenditure in the business sector (percentage of GDP)	0.55	0.28	0.26	0.88
	x_{4t}	Non-R&D innovation expenditures (percentage of turnover)	0.84	0.21	0.62	1.16
	x_{5t}	Enterprises providing training to develop or upgrade ICT skills of their personnel (percentage of all enterprises)	17.46	5.43	10.28	24.14

Source: own calculations based on data from the European Innovation Scoreboard 2017 (European Commission, 2017)

To investigate how public and private investment in innovation differ between the Visegrad Group countries, zero unitarization method and multivariate analysis were applied. These methods enable "comparing the values of synthetic index for all years" (Balcerzak, 2015, p. 191) and analysing the differences between the European Union countries (Balcerzak, 2015). Above methods were used for each of the EIS innovation dimensions concerning public and private investment in innovation (finance and support and firm investments).

Firstly, normalization of diagnostic variables was conducted. In this regard a constant reference point (the range of the normalized variable) was calculated on the base of zero unitarization method (Kukuła & Bogocz, 2014):

$$R(X_{jt}) = \max_{it} x_{ijt} - \min_{it} x_{ijt} \qquad (1)$$

On the grounds that all diagnostic variables are the stimulants, the normalization of diagnostic variables was carried out using the following formula (Kukuła & Bogocz, 2014):

$$z_{ijt} = \frac{x_{ijt} - \min_{it} x_{ijt}}{\max_{it} x_{ijt} - \min_{it} x_{ijt}} \qquad (2)$$

, where $z_{ijt} \in [0,1]$; $(i = 1,2,\dots,n)$; $(j = 1,2,\dots,m)$; $(t = 1,2,\dots,l)$

Subsequently, a synthetic measure was calculated according to the following formula (Balcerzak, 2015):

$$SM_{it} = \frac{1}{m}\sum_{j=1}^{m} z_{ijt} \qquad (3)$$

, where $z_{ijt} \in [0,1]$; $SM_{it} \in [0,1]$; $(i = 1,2,\dots,n)$; $(j = 1,2,\dots,m)$; $(t = 1,2,\dots,l)$

The above procedure allowed for analysing how public and private investment in innovation differ between the Visegrad Group countries.

3   Findings

Table 2 and Table 3 provide the results of a multivariate analysis of public and private investment in innovation between the Visegrad Group countries. Following finance and support dimension, the results imply that The Czech Republic outstands the most from the other Visegrad Group countries (Table 2).

Tab. 2: The results of a multivariate analysis of public and private investment in innovation between the Visegrad Group countries – Finance and support dimension (in the period 2009-2015)

2009			2010			2011			2012			2013			2014			2015		
No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM
1	CZ	1.0000	1	CZ	1.0000	1	CZ	1.0000	1	CZ	1.0000	1	CZ	0.8533	1	CZ	0.5109	1	CZ	0.5626
2	HU	0.4852	2	HU	0.4445	2	PL	0.4834	2	PL	0.3251	2	PL	0.6190	2	HU	0.5000	2	HU	0.5000
3	PL	0.3803	3	PL	0.4375	3	HU	0.2851	3	HU	0.1112	3	HU	0.5000	3	PL	0.4653	3	PL	0.3968
4	SK	0.0000	4	SK	0.0000	4	SK	0.0000	4	SK	0.0000	4	SK	0.0732	4	SK	0.0326	4	SK	0.1837

Legend: CZ – the Czech Republic, HU – Hungary, PL – Poland, SK – Slovakia.

Source: own calculations based on data from the European Innovation Scoreboard 2017 (European Commission, 2017).

Among the other countries from V4, the Czech Republic distinguished relatively the highest level of R&D expenditure in the public sector and venture capital expenditures. This situation was especially seen in 2009-2013 and should be treated as positive in context of supporting innovation and, in consequences, competitiveness of firms, regions and country. Concerning Poland and Hungary, the results reveal the level of finance and support dimension indicators between the Czech Republic and Slovakia. According to the obtained results, Poland and Hungary distinguished relatively continuous changes in terms of R&D expenditure in the public sector and venture capital expenditures. Such situation, in relation to the decreasing level of indicators connected with finance and support dimension (in Hungary in 2010-2012, in Poland in 2011-2012 and 2013-2015), may result in a slowdown of innovation processes and competitive advantage of firms and regions from Poland and Hungary. The results also indicate that within the countries from the Visegrad Group, Slovakia ranked in the last place in terms of R&D expenditure in the public sector and venture capital expenditures (in 2009-2015). This implies relatively low potential of finance and support indicators to enhance innovation and competitiveness of firms, regions and country.

Regarding firm investments dimension, the obtained results highlight a relatively high diversity between the Czech Republic and the other Visegrad Group countries (Table 3).

Tab. 3: The results of a multivariate analysis of public and private investment in innovation between the Visegrad Group countries – Firm investments dimension (in the period 2009-2015)

2009			2010			2011			2012			2013			2014			2015		
No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM
1	SK	0.6728	1	CZ	0.8005	1	CZ	0.8005	1	CZ	0.7545	1	CZ	0.9333	1	CZ	0.6971	1	CZ	0.6971
2	CZ	0.6658	2	HU	0.3879	2	HU	0.3913	2	SK	0.4819	2	SK	0.3821	2	HU	0.4692	2	HU	0.4111
3	HU	0.2926	3	PL	0.3333	3	PL	0.3333	3	HU	0.3649	3	HU	0.3534	3	PL	0.3333	3	PL	0.3846
4	PL	0.0968		SK	0.3333	4	SK	0.3736	4	PL	0.3333	4	PL	0.1138	4	SK	0.2892	4	SK	0.3281

Legend: Like in table 2.

Source: own calculations based on data from the European Innovation Scoreboard 2017 (European Commission, 2017).

Against the background of the other V4 countries, the Czech Republic ranked in the first place in terms of R&D expenditure in the business sector, non-R&D innovation expenditures and enterprises providing training to develop or upgrade ICT skills of their personnel. Such a situation concerns the period 2010-2015 and should be treated as positive, in terms of enhancing innovation and competitive advantage of firms, regions and country. In compliance with the obtained results, the other Visegrad Group countries distinguished continuous changes in regard to firm investments dimension indicators. The highest changes featured Poland (in 2009-2010 and 2012-2014) and Slovakia (in 2009-2010 and 2013-2014). On the other hand, it should be emphasised that Hungary, Poland and Slovakia were endeavoured to enhance R&D expenditure in the business sector, non-R&D innovation expenditures and percentage of enterprises providing training to develop or upgrade ICT skills of their personnel. It proves that these countries were endeavoured to improve innovation and, in conequences, competitiveness of firms, regions and country. The results also reveal relatively low diversity between Hungary, Poland and Slovakia in terms of firm investments dimension indicators. This situation is especially seen between Poland and Slovakia (in 2010-2011, 2015) and between Slovakia and Hungary (in 2013).

Conclusion

This study provides that in the field of public and private investment in innovation, countries from the Visegrad Group differ from each other. In particular, the results reveal, among the V4 countries, the highest rank of the Czech Republic in term of all dimensions: finance and support and firm investments. The relatively high level of R&D expenditure in the public sector, venture capital expenditures, R&D expenditure in the business sector, non-R&D innovation

expenditures and enterprises providing training to develop or upgrade ICT skills of their personnel, may positively influence on the Czech Republic abilities to enhance innovation and competitiveness of firms, regions and country. With respect to the other Visegrad Group countries, the empirical evidence indicates continuous changes in indicators of public and private investment in innovation. This situation, against the background of decreasing (in selected periods) or relatively low level of R&D expenditure in the public sector, venture capital expenditures, R&D expenditure in the business sector, non-R&D innovation expenditures and enterprises providing training to develop or upgrade ICT skills of their personnel, may influence on the limited abilities to improve innovation and competitive advantage of firms, regions and country.

Practical and policy implications can be drawn from the findings. In particular, there is a need to strengthen indicators of public and private investment in innovation, especially in Hungary, Poland and Slovakia. Such actions should contribute to enhance innovation and competitiveness of firms, regions and country.

This study has some limitations. This paper used indicators of public and private investment in innovation and data from the European Innovation Scoreboard. It is also important to study how obtained results hold for other indicators.

Considering future research, one issue to be studied would be the potential causes of differences in public and private investment in innovation scope, between the Visegrad Group countries.

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Contact

Aleksandra Zygmunt

Department of Economic, Finance and Regional Studies, Faculty of Economics and Management

Opole University of Technology

ul. Luboszycka 7, 45-036 Opole, Poland

a.zygmunt@po.opole.pl

START-UPS SURVIVAL IN A TRANSITION ECONOMY

Justyna Zygmunt

Abstract

Purpose: With an existing literature widely focusing on market economies, still little is known what determines start-ups survival in a transition economy. Hence, the aim of the paper is to investigate what factors appeal to new ventures survival in Poland.

Design/methodology/approach: Hypotheses development was based on the literature review. Survival rates of Polish three- and five-year old start-ups were considered for periods 2008-2015, and 2009-2015 respectively. The Ordinary Least Squared regressions with robust standard errors were used for hypotheses testing. F-test was employed to examine the statistical significance of the results. To control for the autocorrelation, Durbin-Watson test was used.

Findings: The main finding is that survival rates of three- and five-year old start-ups in Poland are determined relevantly by R&D intensity. However, with regard to economic activity of these start-ups, this influence is divergent. Evidence has been provided that R&D enhances survival of new ventures in the service sector, whereas in the industry sector, together with R&D intensity survival rates decline.

Research/practical implications: By emphasising that R&D intensity does matter significantly for start-ups survival in a transition economy, the findings may attract attention of policymakers. R&D intensity, being beneficial to survival rates in the service sector, need to be taken into consideration while establishing policy supporting new ventures growth.

Originality/value: While the link between firms age, size, industry entry rate, scale economies, R&D intensity, and survival rates has been increasingly studied for developed countries, the factors determining new ventures performance in transition economies are still not entirely recognised. This paper extends the previous research by focusing on survival dimensions of start-ups in an economy which faces transition to a market economy.

Keywords: Firm survival, start-ups, transition economy, Poland

JEL Codes: D21, L25, L26, M13

Introduction

An extensive body of research has indicated that new firms survival in developed economies is determined by various factors. It has been recognised that new ventures survival rate is affected by industry characteristics (e.g. Audretsch et al, 2000), regional dimensions (e.g. Fritsch et al., 2006), business cycle (e.g. Ejermo and Xiao, 2014), firms attributes (e.g. Ugur et al., 2016).

In contrast, little is known how start-ups survival is influenced in transition economies. By examining such economies valuable insights can be gained since firms performance, in particular private ones, relevantly determines transition processes to a market economy. This subject has attracted growing attention from scholars in recent years, mostly with a focus on such transition economies as China (e.g. Peng, 1997) and Russia (e.g. Aidis and Adachi, 2007). Relatively less studies concern the Central European countries. These studies mainly regard Slovenia (e.g. Konings and Xavier, 2002) and Hungary (e.g. Lyles et al, 2004).

To understand the conditions which have an impact on firms performance in an transition economy in Central Europe, this paper is aimed to investigate what factors appeal to new ventures survival in Poland. In order to examine this, the Ordinary Least Squared regressions with robust standard errors have been employed.

This paper extends research on firms performance in transition economies. By considering survival dimensions, the paper contributes to the existing literature by identifying determinants of start-ups survival in a transition economy. The findings may be supportive in promoting entrepreneurial activity in Central Europe regions.

The structure of the paper is as follows. First section focuses on the theoretical background and the formulation of the hypotheses to be tested. Estimation methodology is described in section 2. Data and variables are discussed in section 3, while section 4 presents an analysis of findings. Final section provides the conclusions.

1   Theoretical background and hypotheses development

Enterprises' performance is determined by various factors which include inter alia: innovation activity (e.g. Zygmunt A., 2017), competitiveness (e.g. Maj, 2016), human capital (e.g. Zygmunt J., 2017). These dimensions, among others, should be taken into account while considering newly born ventures' success and failure determinants. They may apply to start-ups' characteristics, economy sector, regional attributes, and involve specifically: minimum efficient size and regional employment change (Fritsch et al 2006), age (e.g. Lyles et al., 2004),

size (e.g. Audretsch et al., 2000), R&D intensity/employees (e.g. Fritsch et al., 2006; Ugur et al., 2016), industry life cycle (e.g. Audretsch et al., 2000; Ejermo and Xiao, 2014), capital intensity (e.g. Lyles et al., 2004), human capital and its productivity (e.g. Ejermo and Xiao, 2014; Ugur et al., 2016).

Since enterprises' survival depends mostly on their characteristics and the sector of their economic activity (Geroski, 1995), Audretsch et al. argue that "the dynamics of industrial organization are strikingly similar even across countries with very different institutions and policies" (2000, p. 10). However, with most of previous studies focusing in particular on developed countries, it seems interesting to verify whether these dynamics hold in a transition economy. Such economy distinguishes mainly by high level of uncertainty, with the economy structure, especially at the beginning of the transformation process, dominated by the public sector.

Start-ups survival in an transition economy may be determined by human capital. Since skills acquired before the transition appear in large part to be deficient in a market economy, obtaining appropriate level of human capital seems pivotal in determining new ventures survival. However, Lyles et al. (2004) identify that when previous experience in the industry is considered, with regard to the start-up owner or the manager in a transition economy, the likelihood of survival growths. Hence, it may be assumed that together with transformation processes, human capital adopts to competences demanded by the market economy, and determines positively the start-ups survival rates.

Survival of new ventures in a transition economy may be also driven by R&D activity of these firms. With investment in R&D, the competitiveness growth may be achieved, generally accompanied with high risk. For a transition economy, Konings and Xavier (2002) provide evidence that influence of firms R&D on their growth rate is not statistically significant. However, studies for developed economies indicate that R&D intensity influences start-ups survival rates. Indeed, Ugur et al. (2016) emphasises that R&D intensity impact on firm survival, with this relationship following an inverted-U pattern. Fritsch et al. (2006) recognise that R&D significance for start-ups survival differs with the industry sector. Specifically, they identified that R&D impacts positively on survival rates in the manufacturing sector, while in the service sector this influence is reverse. Thus, assuming that along the transformation processes start-ups survival from a transition economy is becoming sensitive to R&D intensity, there is no clear research anticipation on the direction in which R&D impacts on new ventures survival.

Hence, the following hypotheses are tested in this paper:

H1 *The level of human capital in start-ups within a transition economy positively affects their survival.*

H2a *In a transition economy, start-ups survival rates are positively influenced by the R&D intensity.*

H2b *Together with an increase of R&D intensity among new ventures in a transition economy, their survival rates diminish.*

2 Research method

To investigate what factors appeal to new ventures survival in a transition economy, the Ordinary Least Squared regressions with robust standard errors were employed. This approach is in line with e.g. Fritsch et al. (2006), and allows to check for heteroscedasticity. The following model was estimated:

$$Survival\ rate_i = \beta_0 + Human\ capital_i\beta_1 + R\&D_i\beta_2 + Size_i\beta_3 + Business\ cycle_i\beta_4 + \varepsilon_i \quad (1)$$

Statistical significance of the models was verified with F-test. Goodness-of-fit of the regressions were examined with the usage of the coefficient of determination (R^2). Durbin-Watson statistic was employed to control for the autocorrelation. To check for the collinearity among explanatory variables, Pearson's correlation coefficient was used.

3 Sample and Variables

The empirical analysis draws from the Eurostat country-level data of Polish enterprises. Dependent variable ($Survival\ rate$) was measured as the number of enterprises in the reference period (i) newly born in $i - n$ having survived to i, divided by the number of enterprise births in $i - n$. The analysis was conducted for $n = 3$ and $n = 5$, for periods 2008-2015, and 2009-2015 respectively. To allow for enterprises' size class, the following types of enterprises were regarded: (a) with 10 employees or more, (b) with 5 to 9 employees, (c) with 1 to 4 employees, (d) zero employees[38]. Since survival rates differ significantly between services and manufactory industries (Fritch et al., 2006), the models were estimated separately

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[38] An enterprise with zero employees is mostly when an individual business activity establishes and is runned by its onwer (self-employed firm), without any other employees. This legal form dominates in a structure of start-ups in Poland. See more: Tab. 1.

for *Service* and *Industry*. The number of enterprises in respective dimensions, for which the aggregated data from the Eurostat were regarded in this study is presented in Tab. 1.

Tab. 1: Number of start-ups

	Number of enterprises in the reference period (i) newly born in i-n having survived to i															
	n = 3								n = 5							
	10 employees		5 to 9 employees		1 to 4 employees		zero employees		10 employees		5 to 9 employees		1 to 4 employees		zero employees	
i	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I
2008	926	704	1 566	577	15 367	2 497	65 336	9 180								
2009	683	608	1 599	576	15 640	2 515	78 319	10 881	777	663	1 410	549	13 192	2 098	45 875	5 766
2010	768	555	1 413	546	14 814	2 340	78 577	11 162	814	614	1 338	487	12 311	2 058	50 684	7 025
2011	724	520	1 273	415	12 675	2 139	77 303	10 716	591	534	1 363	483	12 106	1 964	58 978	7 971
2012	326	254	1 813	612	13 246	2 014	80 523	11 816	662	481	1 173	441	11 447	1 854	59 314	8 290
2013	555	362	1 394	446	12 407	1 998	91 267	14 611	616	454	1 047	343	9 599	1 688	57 268	8 019
2014	597	353	1 655	534	14 061	2 125	78 842	11 668	277	229	1 475	491	9 834	1 546	59 454	8 873
2015	595	373	1 207	344	11 781	1 826	78 000	11 445	466	310	1 111	364	9 428	1 529	69 092	11 296

Where: S – *Service*, I – *Industry*.

Source: Own based on the Eurostat database Entrepreneurship Indicators [ONLINE] Available at: http://ec.europa.eu/eurostat/web/structural-business-statistics/entrepreneurship/indicators. [Accessed 8 January 18].

Explanatory variables were measured as follows. *Human capital* was proxy by the number of persons employed in enterprises newly born in $i - n$ having survived to i, divided by the number of persons employed in the population of active enterprises in i, with regard to start-ups' size class and the sector of economic activity. Similar to Audretsch et al. (2000) and Børing (2015), R&D intensity ($R\&D$) was proxy by the share of persons employed in science and technology in total employment in respective sectors.

Control variables were employed. It is expected that together with size growth of start-ups, their rate of survival tends to rise (see, e.g. Konings and Xavier, 2002). To control for the average start-ups size ($Size$), the number of persons employed in the reference period i among enterprises newly born in $i - n$ having survived to i divided by the number of enterprises in i newly born in $i - n$ having survived to i, was used. Enterprises' size class and the sector of economic activity were considered, respectively. Since enterprises' performance may be sensitive to the business cycle, it is anticipated that the new venture survival is higher during prosperity. The business cycle impact on start-ups survival was controlled by the growth of real

Gross Domestic product per capita (*Business cycle*). This approach is consistent with Ejermo and Xiao (2014).

4   Findings

With *Survival rate* considered in the following dimensions: $n = 3$ and $n = 5$, four size classes, *Service* and *Industry*, 16 models were estimated. High levels of collinearity[39] between variables were identified, leading to some variables exclusion in five models. Estimation results for regressions of four models proved to be statistically insignificant (with p-values for test F higher than 0.10). For five other models, the problem with the autocorrelation occurred. The results of the other models' estimation are presented in Tab. 2.

Tab. 2: Estimation results

3 year old start-ups		σ	R^2	p-value for test F	*5 year old start-ups*		σ	R^2	p-value for test F
From 5 to 9 employees					*From 10 to more employees*				
Service				**Model 3**	*Service*				**Model 9**
Human capital	0.892	1.211			Human capital	0.349	0.655		
R&D	2.696***	0.332	0.893	0.001	R&D	1.279**	0.224	0.913	0.026
Size	0.067	0.547			Size	0.026	0.009		
Business cycle	0.189	0.269			Business cycle	0.553**	0.115		
const	−148.358**	26.707			*const*	−37.181	17.867		
Industry				**Model 4**	*From 5 to 9 employees*				
Human capital	−0.338	1.094			*Industry*				**Model 12**
R&D	−2.293*	0.818	0.659	0.013	Human capital	−0.296*	0.122		
Size	0.698	0.456			R&D	−3.667***	0.488	0.902	0.009
Business cycle	−1.484	0.675			Business cycle	2.411***	0.301		
const	99,192***	10.354			*const*	98.237***	5.023		
From 1 to 4 employees					*Zero empolyees*				
Service				**Model 5**	*Service*				**Model 15**
Human capital	−1.259	1.255			Human capital	0.349	0.655		
R&D	1.694*	0.717	0.796	0.039	R&D	1.279**	0.224	0.913	0.026
Size	2.036**	0.562			Size	0.026	0.009		
Business cycle	0.709*	0.267			Business cycle	0.553**	0.115		
const	−78.818	54.014			*const*	−37.181	17.867		
Industry				**Model 6**					
Human capital	0.400*	0.148	0.751	0.029					
R&D	−0.876*	0.362							
Business cycle	0.192	0.330							
const	72.922***	3.689							

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[39] Pearson's correlation coefficient > 0.9

Autocorrelation consistent. Level of statistical significance: ***p≤0.01; ** p≤0.05; *p≤0.10. Source: Own estimation.

As opposed to research anticipation, findings reveal that human capital does not weigh to start-ups' survival likelihood in most of size classes. These results do not correspond to Hypothesis 1, and are inconsistent with the observations of e.g. Ejermo and Xiao (2014). However, human capital tends to impact positively on survival rates of newly born enterprises in $i - 3$ having survived to i, from the *Industry* sector (Model 6). Within this sector of economic activity, the contribution of human capital to new ventures survival rates was also statistically significant for enterprises newly born in $i - 5$ having survived to i (Model 12). Interestingly, in this Model the coefficient of the estimation does not confirm the expected effect. Indeed, the results for Model 12 show that the likelihood to survive among these start-ups diminishes with a growth in human capital.

The results provide evidence that R&D intensity in Polish start-ups have an impact of their survival rates. While this relationship is evident regardless of time of start-up born ($i - 3$ and $i - 5$) and its size class, interestingly the contribution of R&D on survival rates in regard to economic activity of new venture is not homogenous. In the *Service* sector, start-ups survival responds positively to the increased involvement in R&D activity. This observation is in line with e.g. Ugur et al. (2016) and supports Hypothesis 2a. However, findings for the *Industry* sector reveal that growing involvement in R&D lower survival rates of newly born firms. These results correspond to Hypothesis 2b, albeit they are not in line with some studies (though for economy which had not faced transition), which emphasise that R&D has a reverse effect on survival rates in this sector (e.g. Fritsch et al., 2006).

The findings for control variables are ambiguous. With an exception of start-ups newly born in $i - 3$ having survived to i, from the *Service* sector (Model 5), the analysis does not reveal any significant relationships between average size of enterprises and their survival rates. These observations are in contrast to e.g. Audretsch et al. (2000). The impact of the business cycle on start-ups survival rates stands in correspondence to research assumptions. Together with the growth of real Gross Domestic product per capita, survival rates of start-ups increase. These results are consistent with previous studies (e.g. Ejermo and Xiao, 2014). However, the estimation results confirm the expected effect mostly for start-ups newly born in $i - 5$ having survived to i, from certain size classes and economic activity sectors (Models: 9. 12,15). Except also for Model 5, unexpectedly the analysis of the other models does not provide evidence for statistically significant relationship between the business cycle and survival rates.

Conclusion

This paper may contribute to the existing literature by extending research on start-ups survival in a transition economy. The impact of human capital, R&D intensity, average size, and the business cycle on survival rates of three- and five-year old Polish start-ups has been analysed. Specifically, the results emphasise that to some extend survival of Polish new ventures follows the relations identified in previous studies. The findings suggest especially that R&D intensity has its substantial consequence for the survival rates. However, it is particularly interesting that the impact of R&D in a transition economy is determined by economic activity of new ventures. While stimulating survival in the *Service* sector, R&D intensity diminishes survival rates in the *Industry* start-ups. This observation stands in contrast to findings for economies which have not undergo transition to a market economy, where R&D intensity improve survival rates in the *Industry*, and reduces in the *Service* (e.g. Fritsch et al., 2006). This may provide some practical implications, particularly for policymakers in a transition economy, and be useful in the processes of policy implementation. Applying to all start-ups from the *Service* sector, regardless of their size class and time of born ($i-3$ and $i-5$), R&D impact should encourage policymakers to establish and intensify schemes for promoting and supporting R&D activity among start-ups in this sector.

This study is not without limitations. Firstly, this paper does not account for start-ups networking abilities, strategic orientation, entry barriers, finance sources availability. These factors are regarded as significant in determining survival rates (e.g. Audretsch et al., 2000; Lyles et al., 2004; Naudé et al., 2008), therefore future empirical analyses addressing the extent to which they influence start-ups' survival in Poland seem essential. Secondly, while the length of research period is in line with previous studies (e.g. Konings and Xavier, 2002), some may argue that it does not fully allow to observe new ventures survival in a transition economy. Hence, longitudinal approach should be considered in future discussions.

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Contact

Justyna Zygmunt

Faculty of Economics and Management

Opole University of Technology

ul. Luboszycka 7, 45-036 Opole, Poland

j.zygmunt@po.opole.pl

LEAN INNOVATION CAPABILITY: THE CONCEPT AND ITS MEASUREMENT

Pelin Bicen – William H.A. Johnson – Zhen Zhu

Abstract

Purpose: The current study explores how firms can achieve high innovation performance with limited resources. Our qualitative inquiry with ten startup companies and an extensive literature review on resource limitation led us to a concept called, Lean Innovation Capability (LIC). Drawing on the resources and capabilities literature, we conceptualize LIC as a higher order distinct firm capability. We aim to develop a new LIC scale and test its moderating role in a resource-limited innovation model in a multi-industry context.

Research design: In the LIC scale development process, we completed the item generation and reduction stages and are currently at the scale validation stage. In resource limited innovation model testing, unit of analysis is firm and sampling frame is high growth technology intensive industries. We are using both survey data and secondary data (e.g., Compustat) in model testing. To capture the ephemeral nature of resources, we use George's (2005) transient negative slack measure for resource limitation; and, for innovation outcomes we use growth related measures as performance measures.

Findings: We conceptualize LIC as second order reflective construct with four first order dimensions. The dimensions are: (1) Focus on product-market fit; (2) experimentation culture; (3) mission-oriented leadership; and (4) network learning capability. Our research generated 73 items for a total of four dimensions but this was too lengthy to be usable in practice. We had to reduce the initial item pool to an acceptable number of items using expert judgments (Churchill 1979), and then the statistical purification process with a larger sample size. This reduced the item pool to 37 items.

Research/practical implications: Our contribution from this research is the elucidation of the LIC construct. We propose that LIC acts like a catalyst that helps companies both overcome the seemingly negative and extenuate the positive aspects of having limited resources. The picture that emerges suggests a substantially positive role of resource constraints for innovation performance. Early findings show that though the penurious resource environment and context of innovation create certain tensions in terms of resource limitations, the development and enactment of LIC can overcome that tension and lead towards successful innovation outcomes.

Keywords: Resource Management; Slack Resources; Innovation; Construct Development

JEL Codes: M10; M13

Introduction

The importance of fostering the creative use of resources, especially as environments become more turbulent, competitive and resource limited, is increasing (Sonenshein 2014). There are several arguments from the management literature on how the amount of resources is linked to innovation performance. One research stream, the slack resources literature, emphasizes the idea that limited resources (what we conceptualize as negative *relative* slack) inhibits the innovation process, and has a negative impact on performance. Researchers in this school of thought argue that firms involved in innovation practices must mobilize excess amounts of resources to incorporate new technologies, invent new processes, and develop new capabilities to create new markets (Mishina, Pollock, and Porac 2004; Nohria and Gulati 1996; Voss, Sirdesmukh, and Voss 2008). For example, Mishina et al. (2004) argued that slack resources help firms cope with the uncertainties of innovation process by providing them with higher flexibility in seizing market and technological opportunities needed to generate radical offerings.

A second view, though it is not as extensive as the first, has emphasized that the very presence of limited resources makes firms more focused, requiring them to seek diverse information in both close and distant proximity networks, and be more creative. This literature also discusses how the abundance of resources can detract from an organization's innovation capabilities (Katila and Shane 2005; Troilo, Luca, and Atuahene-Gima 2014). For example, Katila and Shane (2005) found that firms with limited resources are significantly more innovative than established firms when the technology is radical, and when the innovation takes place in highly competitive smaller markets.

1   The research framework

The current study explores how firms in the second view described earlier can achieve high innovation performance with limited resources. Our qualitative inquiry with ten startup companies and an extensive literature review on resource limitation led us to a concept called, Lean Innovation Capability (LIC). We conceptualize LIC as a higher order distinct firm capability. Further, we aim to develop a new LIC scale and test its moderating role in a resource-limited innovation model in a multi-industry context (see Figure 1). To do so, we follow established scale development process (Campbell and Fiske 1959; Churchill 1979; Gerbing and Anderson 1988).

Figure 1. Resource Limited Innovation Model
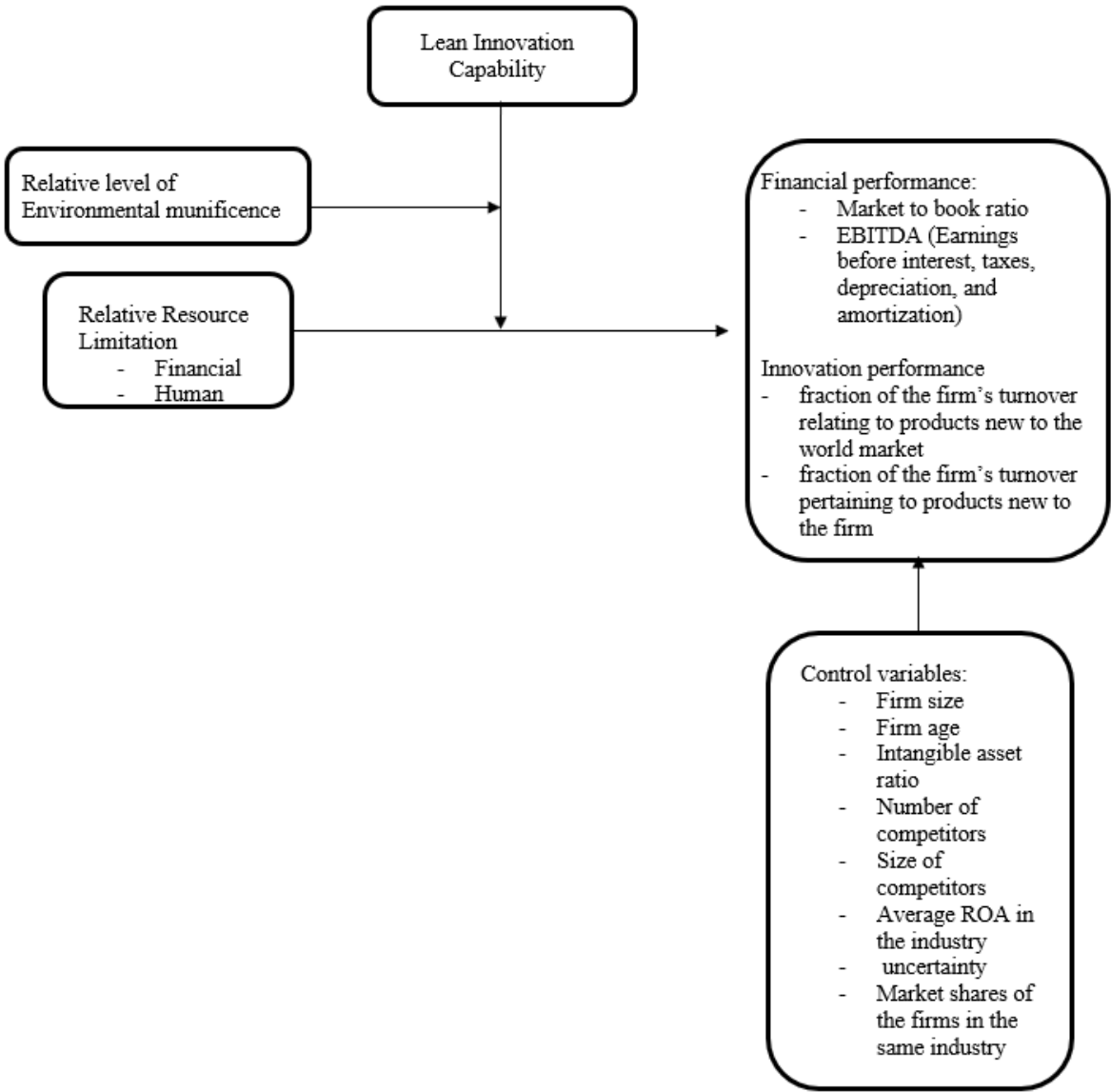
This is a working paper. Therefore, we currently completed the item generation and item reduction stages in the scale development process. First, we theoretically derived the definition of Lean Innovation Capability, its dimensions, and generated the item pool through an extensive literature review and qualitative interviews with ten startups[40]. Second, in the item reduction stage we validated this definition and its dimensions and reduce the item pool through in-depth

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[40] In our qualitative inquiry, our focus on start-ups, where resources are limited by default, made our choice of population a special case of a transparently observable process. In addition to our interviews with the founders, our preliminary research showed that start-ups do not have existing knowledge and resources (Cohen and Levinthal 1990; Katila and Shane 2005) like incumbents/large corporations may have.

interviews with an expert panel of twelve lean-innovation consultants[41]. We will be generating the scale and measure its moderating role in a resource-limited innovation model in a multi-industry.

## 2   Discussion of Initial Findings

Based on our in-depth interviews with ten startup companies and an extensive literature review, we define Lean Innovation Capability is *a firm's propensity to achieve sustainable business growth by experimenting with ideas that meet core customer needs while constantly iterating their initial offering with the purpose of validating and learning via continuous market feedback through effective leveraging and actual embracing of resource limitation.* Drawing on the Resource Advantage (R-A) theory, we argue that Lean Innovation Capability is a distinct capability for two reasons (Hunt 2000). First, distinctive capabilities make a disproportionate contribution to the provision of superior customer value. What matters most for firms with Lean Innovation Capability is what the core customer wants (Day 1994; Eisenhardt and Martin 2000). The focus is on understanding latent needs, which may be acute but that people may not be able to articulate (Blank 2013). Firms with lean innovation capability have a single-minded focus on driving what customers want while eliminating the processes that will not contribute to customer value (ibid). Second, distinctive capabilities are not readily matched by rivals. Lean innovation happens in a dynamic social setting (Sarasvathy 2001). Companies with Lean Innovation Capability has intense focus on learning. They are aware that knowledge about solutions is diffused among close and distant proximity networks. Therefore, they highly value their relationships with variety of networks (Liedtka 2014). The dynamic relationships among these networks are an engine of innovation that competitors can seldom replicate because it is not based on codified techniques or step-by-step processes (Hunt 2000).

Based on the in-depth interviews with startups and an extensive literature review, we conceptualize Lean Innovation Capability as second order reflective construct with four first order dimensions (Figure 2). The dimensions are: (1) Focus on product-market fit; (2) experimentation culture; (3) mission-oriented leadership; and (4) network learning capability. We define product-market fit as firms focus on finding customers for the product(s) that they are already building. With the experimentation culture, the firm specifically focuses on

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[41] Lean innovators and lean innovation consultants are experts at lean startup methodology and consult both startups and the large enterprises in streamlining their processes to be lean (e.g., elimination of waste and redundancy in innovation process). Twelve experts have all been actively engaged in both innovation processes and also consulting and advising companies with adopting lean innovation practices. Our experts have, in average, 22 years of experience in innovation practices in multiple industries.

minimizing the fear of failure and encourages experimenting with ideas and getting early results through the use of Minimum Viable Products (MVPs). Mission-oriented leadership is needed in times of confusion or crisis. This leadership means understanding why the company exists, what its goals are and the striving towards them, and for whom the project was intended, all provide clarity and direction. And, finally, Network Learning Capability is the ability of a company to leverage its relationships and interactions with other individuals and organizations to learn by proxy and continually expand its access to knowledge.

Figure 2. Lean Innovation Construct
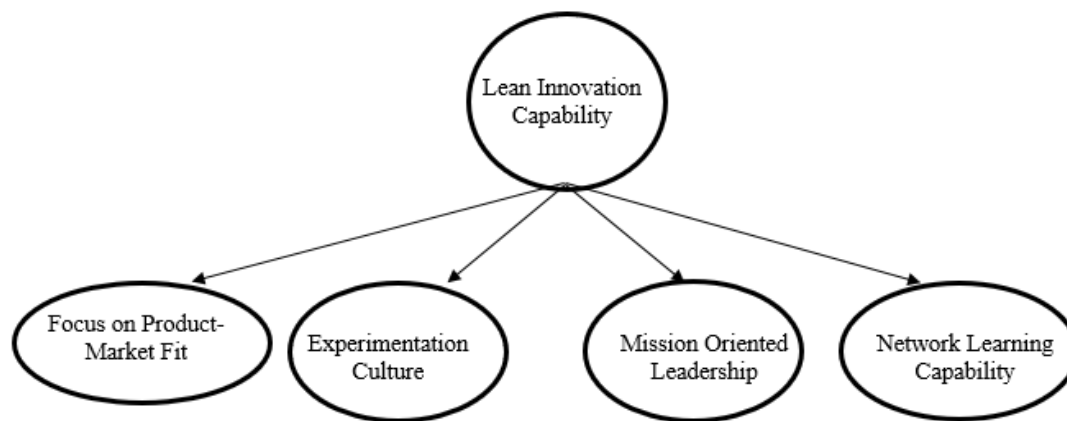
Case studies with ten startups and extensive literature review generated 73 items for a total of four dimensions. Because a scale with 73 items is too lengthy to be usable in practice, we had to reduce the initial item pool. Reducing a scale to an acceptable number of items first relies on the use of expert judgments (Churchill 1979; Rossiter 2002), and then the statistical purification process with a larger sample size. We completed the expert judgment process with twelve lean innovation consultants in an expert panel. We asked our experts to provide feedback on the definition of Lean Innovation Capability and its dimensions, and also ask them to rate the degree to which each of the 73 items fit the definition of its respective dimension. This process reduced the item pool to 37 items. We are currently in the process of the data collection for the item purification process (e.g., EFA, CFA). After the purification process, we will generate the scale by using a larger size multi-industry US. And, as the last step, we will be measuring its moderating role in resource limited innovation model in a multi-industry context. As lean innovation is an effective catalyst of successful, prosperous economies, it is important to also explore the phenomenon and validate the construct and its concept in countries that are trying to increase their innovativeness. A multi-country examination is useful for both generalizability

and exploring potential analogs or different interpretations of the phenomenon because the larger economic environment can affect the organizational level. As Figure 1 shows, Lean Innovation Capability is proposed to moderate the relationship between relative limited resources and innovation performance. We also propose that relative level of environmental resource[42] will moderate that moderated relationship (e.g., three way interaction). Briefly, a firm may have limited resources but may operate in a munificent environment (resource rich) or it may have limited resources and also operate in a resource poor environment. We argue that two-way interaction between Lean Innovation Capability and limited firm resources and their impact on innovation performance may change once we include the factor of relative level of environmental resources in the two-way interaction (e.g., Lean Innovation Capability has a stronger effect on the relationship between limited resources and innovation performance in resource poor environments than it has in munificent environments). In this study, the unit of analysis is the firm. We will use secondary data to measure relative resource limitation, environmental munificence, and innovation performance through COMPUSTAT database.

Conclusion

In this study, we propose that Lean Innovation Capability acts like a catalyst that helps companies both overcome the seemingly negative and extenuate the positive aspects of having limited resources. Firms with Lean Innovation Capability adopts a validity-driven approach in their innovation processes. Rather than focusing more on producing consistent and predictable outcomes (reliability-driven mindset), lean companies adopt 'could-do' logic to make-do by applying combinations of the available resources, through rapid prototyping and iterative learning from the market feedback, to new problems and opportunities in an experimental way. In essence, it affects innovation outcomes positively by encouraging companies to use what resources are available in creative ways. It helps companies to re-allocate and re-prioritize important available resources. Briefly, we aim to contribute to the innovation literature in both Marketing and Management by developing the metric for Lean Innovation Capability and empirically showing that while resource limitations may seem negative, in fact it is not- rather resource limitations may lead to positive innovation outcomes by developing and managing a firm's Lean Innovation Capability.

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[42] We will be using Sharfman and Dean (1991) measure of environmental munificence.

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Contacts

William H.A. Johnson

Sam and Irene Black School of Business

The Pennsylvania State University Erie, The Behrend College

279 Burke Center, 5101 Jordan Road Erie, PA 16563, USA

whj1@psu.edu

Pelin Bicen

Sawyer Business School

Suffolk University

8 Ashburton Place, Boston, MA 02108, USA

Email: pbicen@suffolk.edu

Zhen (Jane) Zhu

Sawyer Business School

Suffolk University

8 Ashburton Place, Boston, MA 02108, USA

Email: zzhu@suffolk.edu

BULGARIA'S PROGRESS ON THE EUROPE 2020 STRATEGY ON POVERTY

Cornelia Philipova

Abstract

Purpose: One of the key policy components of the Europe 2020 strategy is poverty alleviation. The aim of the paper is to analyse and systematize the current state of the indicator "population at risk of poverty and social exclusion after social transfers (without retirement payments)" as well as the relative share of vulnerable persons in the Republic of Bulgaria by type of household with a view to the country's progress on the Europe 2020 strategy.

Design/methodology/approach: Objectives are achieved with yearly comparison of indicator "people at risk of poverty and social exclusion after social transfers" in Bulgaria with its average value at EU28 and EU27, and social groups. Considering the fact that the National Statistics Institute (NSI) has started to evaluate the macroeconomic poverty indicators since the membership of Bulgaria in the European Union the analysed period in this paper is 2006-2016.

Findings:

The results of the conducted analyses highlight a problem with the optimization of the social spending in Bulgaria.

Research/practical implications: The paper represents an important social problem affecting the modern society. Despite the growing number of papers and literature related to social spending this publication provides an empirical evidence for the relationship between poverty alleviation and social spending.

Originality/value: Social dimensions to Bulgaria's statistics indicate a high degree of income differentiation. Despite the priority targets set for the Europe 2020 strategy and the impact of social policy, public social transfers are failing to reduce poverty.

Keywords: At risk of poverty, Bulgaria, Households, Poverty alleviation, Poverty reduction strategy, Social exclusion, Social transfers

JEL Codes: H53, I3, I32

Introduction

One of Bulgaria's flagship initiatives, as a full-right member of the EU, is the Europe 2020 strategy. The National Poverty Reduction Goal provides for a decline in the number of vulnerable people by 260,000 by 2020. There are four specific sub-goals that fall within its scope. According to the first sub-goal, it is necessary to reduce the number of children in the 0-18 age group living in poverty by 78,000 (30% of the total national target and 25% of the number of poor children in 2008). The second sub-goal aims at a significant reduction in the number of people aged 65 and over living in poverty by 52,000 (20% of the total national target and 10% of the number of poor adults in 2008). The third sub-goal is associated with a decrease in the number of unemployed people aged 18-64 living in poverty by 78,000 (30% of the total national target and 25% of the number of poor unemployed in the 18-64 age bracket in 2008). The fourth sub-goal is to reduce the number of employed persons in the 18-64 age group living in poverty by 52,000 (20% of the total national target and 22% of the working poor in the 18-64 age bracket in 2008). The most serious risk of poverty is traditionally among children and the elderly. That is why the policies set out in the National Development Program are targeted at them.

"Combating poverty and social exclusion is an important subject of the Lisbon Strategy, which represents the vision of a socially cohesive, economically prosperous and competitive European Union. This is reaffirmed in the Europe 2020 strategy where employment is again considered the best protection against poverty. Therefore, in recent decades, measures in the European Union have been aimed at ensuring full employment for all those willing and able to work" (Blagoycheva, 2016).

1   Literature review

In economic literature, there are various studies that examine the effects of state social spending on vulnerable groups of people represented through the indicator "at-risk-of-poverty-or-social-exclusion rate".

Some of the academic publications in the scientific literature show that the effect of social spending has little impact on the welfare (Kim & Moody, 1992; Flug, Spilimbergo, & Wachtenheim, 1998; Filmer & Pritchett, 2000; Dreher, Nunnenkamp, & Thiele, 2008). According to other studies, public spending has a beneficial impact on society (Bidani & Ravallion, 1997, Gupta, Verhoeven, & Tiongson, 2002, 2003, Baldacci, Clements, Gupta, & Cui, 2008. The dependence on a third group of authors (Rodrik, Subramanian, & Trebbi, 2004);

applies only to countries with good and socially oriented government. Recent studies have shown that the inefficiency of state social spending can be attributed to "poor" governance and institutional inefficiency.

In a report on sustainable development, (World Bank, 2003) argues that the "weak" association between distributed social spending and the results achieved is due to the fact that a small part of government spending provides a decent life for the poorest and vulnerable groups in the society. This argument is similar to that of (Dollar, D., Kraay, 2002) that find that policies against the poor do not have a significant impact on their income. In their findings, Dollar and Kraay, find that the share of income of the poorest quintile does not change systematically with middle-class income.

Some recent studies have examined the impact of social spending on poverty. Mosley et al., (2004) found that higher levels of government spending on support for vulnerable groups of people were linked to lower levels of poverty. (Gomanee, Morrissey, Mosley, & Verschoor, 2005) also conclude that higher public spending on socially disadvantaged people improves aggregate welfare. In contrast to this finding, Gomanee, Morrissey, Mosley and Verschoor (2005) also found that the causal relationship was weak among countries with predominant average income among the population.

2   Methodology, data and empirical results

The methodology of the present study is based on the basic information resource against the public and some additional statistical data, mainly by the following institutions: Ministry of Finance (MF), NSI and European Social Assistance statistical platform "Eurostat" for the period 2006 - 2016. Empirical research was conducted using the econometric software EViews, but some of the calculations are presented in MS Excel. The publication uses the analytical and comparative method, chronological analysis, observation and some mathematical-statistical and econometric methods: tabular method, systematization of empirical data and others. For this purpose a dispersion, linear regression and correlation analysis has been applied.

For the econometric survey of general government expenditure on social security, assistance and care, public expenditure on social assistance, health and education on the relative share of the population at risk of poverty and social exclusion, annual data were used for the period 2006-2016.

The following linear equation is used to calculate the estimates:

$$\hat{Y} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_{\beta_1}, (1) \ \text{(Shankar, Asthana, 2016)},$$

where:

$\hat{Y}$ - The population at risk of poverty and social exclusion after social transfers;

α – non-random/ structural component; Y-intersection (the value of $\hat{Y}$, when all independent (explanatory) variables tend to 0 or X = 0);

β_1 and β_2 - empirical regression parameters representing estimates of unknown parameters;

X_1, X_2, X_3, X_4 and X_5 - the result of the first and second expected result;

εt - standard error of the model, determined at 5%, i.e. $\varepsilon = 0.05$.

An empirical model was built on the basis of equation (1) and input data as per table 1. It is illustrated by formula (2). To measure the distribution effect, the indicator "population at risk of poverty and social exclusion after social transfers" is presented using the following formula:

$$\widehat{PRPAST} = \alpha + \beta 1 PRPBST + \beta 2 SASP + \beta_3 SSp + \beta_4 ESp + \beta_5 HSp \ \varepsilon_t, (2)$$

PRPAST – The population at risk of poverty and social exclusion after social transfers;

PRPRBST – The population at risk of poverty and social exclusion before social transfers;

SASP – Share of social assistance spending gross value added;

SSp – Share of social spending in gross value added;

ESp – Share of education spending in gross value added;

HSp – Share of healthcare spending in gross value added.

Tab. 1: Input data

Year	Esp	HSp	SSp	SASp	RPSEBST	RPSEAST	total
2006	0.036475	0.038	0.11669	0.02251	0.247	0.184	0.64468
2007	0.0343378	0.0374	0.1072	0.01958	0.255	0.22	0.67352
2008	0.0380504	0.03891	0.1083	0.01952	0.271	0.214	0.68978
2009	0.0388816	0.03609	0.12475	0.01985	0.264	0.218	0.70157
2010	0.0358185	0.04013	0.12829	0.01881	0.271	0.207	0.70106
2011	0.0328789	0.04021	0.12013	0.01817	0.247	0.222	0.6804
2012	0.0341192	0.04026	0.12263	0.02049	0.259	0.212	0.68851
2013	0.0375772	0.04309	0.13388	0.02447	0.267	0.21	0.71601
2014	0.0391103	0.04766	0.13623	0.02353	0.273	0.218	0.73753
2015	0.0352071	0.04484	0.13158	0.02082	0.284	0.22	0.73645
2016	0.0343747	0.04386	0.13021	0.01964	0.279	0.229	0.73608

Source: Eurostat, MF, NSI

2.1 Descriptive statistics

The data from table 1 is used to present the discretionary calculations from a five-factor linear regression model as shown in table 2. It gives the values for minimum, maximum, mean and standard deviation.

Tab. 2: Descriptive statistics for all dimensions

-	RPSEBST	RPSEAST	SSp	SASp	HSp	Esp
Minimum	0.247	0.184	0.1072	0.01817	0.03609	0.03288
Maximum	0.284	0.229	0.13623	0.02447	0.04766	0.03911
Mean	0.26518	0.214	0.12363	0.02067	0.04095	0.03608
Standard Deviation	0.01217	0.01167	0.0098	0.002	0.00352	0.0021

2.2 Regression model

The regression model as per formula (2) is presented in table 3. The calculated discretionary accruals are obtained as residual values of the regression which was tested. The assumed level of significance is $\alpha = 5\%$.

Tab. 3: Summary of regression model

Regression Statistics	
Multiple R	0.712329512
R Square	0.507413333
Adjusted R Square	0.014826666
Standard Error	0.011583635
Observations	11

As a result of the values shown in table 4, the regression model can be expressed with a formula 3:

$$\widehat{PRPAST} = 0.1674 + 0.1941PRBST - 3.8632SASP - 0.0299SSp + 0.1904ESp + 1.753HSp + \varepsilon_t, (3)$$

Tab. 4: Regression parameters, confidence intervals and their significance

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.16742125	0.09151	1.82947	0.12685	-0.0678	0.40266
Esp	0.19036061	2.61804	0.07271	0.94485	-6.5395	6.92024
HSp	1.75295778	2.11258	0.82977	0.44447	-3.6776	7.18352
SSp	-0.0298461	0.59772	-0.0499	0.96211	-1.5663	1.50665
SASp	-3.8632259	3.11112	-1.2417	0.2694	-11.861	4.13415
RPSEBST	0.19413958	0.49561	0.39172	0.71141	-1.0799	1.46815

Referring to the table 4 it could be summarized that only the parameters of non-random / structural component, risk-of-poverty and social exclusion before social transfers, public spending on health and education are statistically significant. Not significant parameters with alpha = 0.05 are the share of social spending and share of social assistance spending in gross value added.

Tab. 5: Coefficients of correlation

	RPSEAST	RPSEBST	SASP	SSP	HSP	ESP
RPSEAST	1.000000	0.457566**	-0.384627	0.184707**	0.326323**	-0.226820
RPSEBST	0.457566**	1.000000	0.104907**	0.551419**	0.621307**	0.288988**
SSASP	-0.384627	0.104907**	1.000000	0.466979**	0.471520**	0.544370**
SSP	0.184707**	0.551419**	0.466979**	1.000000	0.755929**	0.223945**
HSP	0.326323**	0.621307**	0.471520**	0.755929**	1.000000	0.087802**
ESP	-0.226820	0.288988**	0.544370**	0.223945**	0.087802**	1.000000

Legend: *p<0.05; **p<0.01.

Table 5 represents the correlation coefficients of the estimated indicators. The Pearson's Correlation Coefficient is used to show how close are they related. There are 2 options to indicate which relation is statistically significant. One is *p<0.05, and the other is **P<0.01. Despite the slight influence between the analyzed indicators a statistical dependence is detected.

2.3 Findings

The results of the conducted regression and correlation analyses provide evidence that some of the social indicators (education and healthcare) alleviate the poverty and the social exclusions in Bulgaria for the estimated period. Other parameters like social spending and social assistance and case do not contribute positively to reduce the vulnerable groups. In the same time, the demand of same social spending increases and this highlights a negative perspective for poverty reduction. The actual Bulgaria's progress, examined with a view to Europe 2020 poverty alleviation strategy, is presented in the following chapter 3

3 Bulgaria's progress on poverty

In December 2006 the Council of Ministers defined for the first time the official poverty line for Bulgaria and a mechanism for its calculation and updating. It is fixed once per year for the whole country. Its size must meet predefined minimum living needs and is calculated as a percentage of the median total net equivalent income for the country. The minimum living needs are defined as a certain level of consumed kilocalories and a certain ratio of expenditure on food and non-food goods of the households below the poverty line (Radev, 2008).

In Bulgaria, the calculation of two thresholds of poverty - social minimum and subsistence minimum, which are essentially different levels of living standard, has been adopted. The first includes a broader range of basic goods and services, while the second comprises only those goods and services that ensure the physiological existence of individuals (Georgiev, Angelova, Panteleeva, Chonova, 2011).

Tab. 6: Population at risk of poverty and social exclusion after social transfers (percentage of the total population)

Countries regions/period	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EU27 and EU28	16.5	16.6	16.5	16.4	16.5	16.8	16.8	16.7	17.2	17.3	17.3
Bulgaria	18.4	22.0	21.4	21.8	20.7	22.2	21.2	21.0	21.8	22.0	22.9

Legend: Since 2013 in EU there are 27 member states (EU27). EU28 is the abbreviation of European Union that consist group of 28 countries after Croatia's accession on 1 July 2013. Source: Eurostat; Hyperlink to the table: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_li02

Looking at the data in Table 6, there is a slight excess of the risk of poverty and social exclusion in Bulgaria compared to the EU28 average and the EU27 average over the whole period considered. The values are relatively stable over time, maintaining the range of 16.7 - 19.9% of the total number of people living in the country. Despite the double increase of the poverty line from BGN 146.75 (2005) to BGN 300 (2016), the relative share of vulnerable persons after social transfers notwithstanding the slight fluctuations varied by 1.9 pp. In this case, although the income of the population, the median income and the poverty line in the country are rising, the risk for the endangered persons remains.

Tab. 7: Number and relative share of the persons in the poverty trap

Year of the study	2011	2012	2013	2014	2015	2016	2017
Reference year of the income	2010	2011	2012	2013	2014	2015	2016
Poverty line – average monthly amount (BGN)	273.3	283.8	279.7	285.9	323.8	325.8	308.2
Number of people below the poverty line (in thousands)	1671.9	1558.8	1527.5	1578.3	1585.8	1638.7	1639
Relative number of poor people (% of the population)	22.2	21.2	21	21.8	22	22.9	22.9

Source: Institute of Market Economics

It becomes clear from the data in Table 7 that in the period 2010 – 2013 there was a decrease in the relative share of the persons entrapped by poverty, while their number increased in the years after 2014. The same tendency is evident when considering the numbers as a percentage of the total population. In 2016, compared to the previous year, the amonth of the poverty line decreased by 5.4% and the relative share of the poor population increased by 0.9%. The public social assistance system is essential to reducing poverty. Data for 2016 show that "if income from pensions is included in household income but excludes other social transfers (benefits, social and family allowances and supplements), the poverty level rises from 22.9 to 27.9%, or with 5.0 percentage points. Accordingly, when excluding pensions and other social transfers, the poverty level increased to 45.5% or 22.9 percentage points" (National Statistical Institute, 2017).

„The main factor influencing the risk of poverty for the prevailing part of population is the economic activity and participation in the labour market. For the observed period, the share of poor is highest among the unemployed (54.6%) and the risk of poverty for unemployed male is 6.7 percentage points higher than for unemployed female" (ibdl.).

Tab. 8: Relative share of the vulnerable persons per type of household

(percentage of the total population)

Household Type	Year to which the data refers										
	2006	2007	2008	2009	2010*	2011	2012	2013	2014	2015	2015
Without dependent children	16	18.4	21.9	23	19.4	20.4	19.2	19	16.7	21.7	19.1
Single-member aged under 65	27.1	29.9	32.7	32.5	30.7	33.3	30.5	22.9	19.2	23.9	28.8
Single member aged 65+	42.7	56	67.8	72.1	61.6	61.5	55.1	54.2	39.8	53.4	44.2
Single member – a woman	45.6	55.2	66.3	67.7	58.7	59.9	55.8	51.4	36.6	50.4	44.1
Single member – a man	22.5	28.7	34.5	39.4	34.5	35.2	29	26.8	22.8	25.8	28.9
Two adults aged under 65	12.3	17.2	16.5	13.3	12	12.7	13.9	13.8	13.2	15.1	16
Two adults with at least one aged 65+	15.4	15.1	28.7	35.4	26.9	24.7	21	21	16.3	21.8	12.7
Three or more adults	10.9	9.8	10.6	9.3	7.9	10.5	9.9	10.7	12	12.7	10.8
With dependent children	20.4	24.7	20.7	20.8	21.7	23.6	22.9	23	24.1	14.5	26.7
A parent with dependent children	30.6	33.5	38.3	30.9	42.3	35.4	42.5	36	31.6	32.3	47.4
Adults with dependent child	10.9	11.6	11.8	12.9	13.7	13.2	14.6	15	16.2	12.9	12.4

Legend: * The data for 2010 has been revised due to a change in the component "family allowances". At the time of development of this publication, published by the National Statistical Institute data on household budgets in Bulgaria are mainly to 2014 as reference year of the income.

Source: National Statistical Institute and Eurostat

The data in Table 8 shows that "compared to the previous year, in 2016 highest is the increase of the risk of poverty among single-person households with dependent children - an increase of 12.2 percentage points. Share of poor is lowest among households with two adults with one child (12.4%) and two adults aged below 65 years (16.0%). Among single-person households the risk of poverty is 15.3 percentage points higher for female than for male. Moreover, the risk of poverty among single-person households varies according to the household member age - it

is 15.4 percentage points higher for persons aged 65 and over than for those aged below 65 years" (Ibdl.).

The more important observations made on the basis of the data in Table 3 shows that female poverty is higher by 44.1% compared to 28.9% for males (2016). Almost every second single woman is at risk of poverty and social exclusion. The share of vulnerable persons among men over 65 is similar. Since the minimum wage is growing faster than the average wage, and the amount of the social pension lags behind that of the average pension, it is obvious that attention should be focused first on the minimum pension. It provides a standard of living that is well below the defined poverty threshold for people who have dropped out of the labor market due to retirement age. It can be summed up that the following types of households are most at risk: a single woman over 65, two adults with three or more children, and single parents with dependent children.

Conclusion

Although EU countries have different social policies, they all come together on the need to provide protection and mediation in finding work for vulnerable people of working age. Generated security extends to both their professional and family life. The latter is intensified both in terms of employment conditions and after falling out of the labor market. This is possible to be achieved thanks to the benefits received, which allow a relatively quiet reception of the increased costs. On the basis of the research it is concluded that the longer the period of incapacity in combination with guaranteed financial benefits, the more individuals are disstimulated for active job search and participation in the labor market. This situation has made it difficult to meet the objectives of a number of national and international documents aimed at increasing employment and reducing poverty and vulnerability in the EU, even after the global economic crisis.

Finding the optimal balance between the policies that form the incentives of the unemployed, the economically inactive and the low-wage earners is one of the key challenges for ensuring the sustainability and efficiency of the social system. At the same time it is possible by creating the conditions for long-term involvement in the labor market of some of the most vulnerable social groups.

The attained conviction that vocational education and training is a key factor for sustainable socio-economic development of the country is growing. The preparation of human resources with qualifications corresponding to the needs of the national economy requires new approaches

in the field of vocational education and training. It is necessary to improve the education system and to modernize the base so that it contributes to increasing the employment and social integration of vulnerable groups.

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Contact

Cornelia Philipova

University of Economics – Varna, Bulgaria

77 Knyaz Boris I Blvd., Varna, Bulgaria

K.Filipova@ue-varna.bg