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Dears Participants of the Conference

The international scientific conference “Karviná Ph.D. Conference on Business and Economics” is the annual platform for international scientific discussion of Ph.D. students and young researchers on business and economics issues in its broadest sense.

The tenth volume of this conference was held on November 1-3, 2017, Karviná, the Czech Republic. As in previous conferences, this year's one is a platform for the worldwide dissemination and sharing of ideas for research in the field of Business Economics, Management, Marketing, Economics, Public Administration, Informatics, Information Management, Operational Research, Finance, Banking, Accounting and Taxes.

I would like to thank the organizing committee for their efforts in helping us compile this volume. I would also like to express my deeply appreciations and thanks to all participants for their high quality contributions. It was our pleasure to welcome at our conference a significant number of participants from abroad.

We are happy that we have been able to get such broad participation from different sectors of the scientists, practitioners, policy makers and private sector actors. Together we try to advance efforts and present new ideas related to different aspects of business and economics.

The proceedings contain only papers that have successfully passed a blind referee process and whose authors had agreed with publication in the proceedings. There have always been two referee reports on each paper. The referees selected are distinguished scholars from Czech as well as foreign universities.

I hope that next volume of our conference will be successful and enjoyable to all participants. We look forward to seeing all of you next year at the eleventh volume of “Karviná Ph.D. Conference on Business and Economics”.



Dr. Michal Tyrdon
Vice-Dean of Science and Research

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EXISTING APPROACHES TO BUSINESS EXCELLENCE MODELS

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Abstract

The importance of Business Excellence (BE) models is linked to the ongoing global pressure to increase organisations' performance. BE models are frameworks that help the organisation to take action more systematically and more structurally, thereby increasing its performance. These models are internationally recognised, and they are focusing on all areas of the organisation and the factors driving performance. Among the best-known models are the Malcolm Baldrige National Quality Award (USA) and the European Foundation for Quality Management Model (Europe). The aim of this article is to identify and describe existing approaches used in Business Excellence models. The critical research is based on the acquired knowledge from selected respected articles in scientific journals by using the Web of Science database. CitNetExplorer citation software is used to display the resulting relationships of individual articles and the most important authors in this area. The contribution of this article is the systematisation of the existing foreign approaches used in BE models.

Keywords

Business Excellence models, EFQM, BE approaches, Quality Management, Performance measurement, Continuous improvement.

JEL classification

M10, M11, M19.

1 Introduction

Business Excellence (BE) models are used to increase organisational performance for nearly fifty years. The BE models began as Quality Award or Total Quality Management (TQM) models in its beginnings. Over time, however, the word's well known TQM was replaced by Business Excellence term to make the models more transparent. The meaning of business excellence can be explained differently. For some authors, BE means excellence in strategies, business practices, and stakeholder-related performance outcomes (Dale et al., 2000). Rusjan (2005) says business excellence is a set of principles and approaches that produce the best overall results and support for a sustainable future for organisations. In general, BE is a set of principles and approaches to the organisation that stimulate better performance and can ensure a strong position in a given market, based on the cumulation of the previous definitions. Organizations, therefore, turn their attention to BE models. The Baldrige Excellence Framework mainly used in the US is the world's well-known business excellence model (NIST, 2016). Other well-known business excellence models are the European Foundation for Quality Management Model, used in Europe (EFQM, 2017), the Singapore Quality Award Model (Spring Singapore, 2015) and Japan Quality Award Model (JQAC, 2016). Malcolm Baldrige National Quality Award and European Excellence Award Criteria are often the starting point of inspiration for the emerging BE models. Becoming an awarded organisation is a prestigious affair, and worldwide organisations use national quality awards for improving their organisational excellence (Lasrado and Uzbeck, 2017). Research shows that, despite the apparent and distinct differences in business structure and institutional environment between North America and Europe, the higher performance of TQM awarded companies has been re-achieved (Boulter et al., 2013). Kanji (2001) emphasises that organisations that have achieved a higher level of BE have demonstrated a very high growth in their customer base, thus improving overall profitability and stakeholder values.

The importance of BE models is now increasing with the increasing global competitive pressure. BE models can be a key mechanism for organisational performance and aid to increasing national competitiveness. Zárraga-Rodríguez and Alvarez (2013) believe that BE models will enable organisations to improve their performance due to today's turbulent global environment by helping

to use and manage information more efficiently as a critical success factor. Therefore, it is important to focus on existing approaches when implementing these models into organisations that have not yet received sufficient scientific attention. The literature review is undertaken to highlight the importance of this emerging area, which is business excellence approaches.

The aim of this article is to identify and describe existing approaches used in Business Excellence models. The literature review is designed to analyse the findings of existing BE models articles related to model approaches. The structure of the paper is as follows. The second section introduces the selected research method to find out existing approaches to BE models used by organisations. The third section of the article presents and comments findings of literary research. This section also shows the resulting relationships of individual articles and the most important authors in this area found. Figures are also used for better visualisation of results. This section also includes the systematisation of existing foreign approaches used in BE models. The last section of this article summarises the most important findings of BE approaches and present a future work.

2 Research method

The literary review method was chosen to achieve the aim of this article. The narrative review with the scoreboard plus the detailed strategy was chosen for presenting the result in this literature review. This strategy includes table shows a list of individual studies in different categories that enable the reader to trace the studies should they wish and, if they are familiar with the field, to see if any have been omitted (Hartley, 2008). The author identified four research questions:

- [1] What are the links between the articles found?
- [2] Who created the core publications in search area?
- [3] What approaches are used in business excellence models?
- [4] What are the aspects of approaches found?

The advanced search database Web of Science (WOS) was used for searching relevant articles. Search terms included business excellence models and business excellence approaches in the English language, the article only. The papers were analysed according to the search terms criteria, exploring the title, abstract, author keywords and keyword plus of the paper. The search was limited to management and business categories. A sum of ninety-seven results was searched. A sum of fifty articles was identified as relevant to the article's review questions.

The CitNetExplorer citation software was used to display the resulting relationships of individual articles and the most important authors in this area. The option includes non-matching references was unchecked. In this case, the non-matching references were ignored. CitNetExplorer found thirty-three citation links between researched papers as is shown in Figure one.

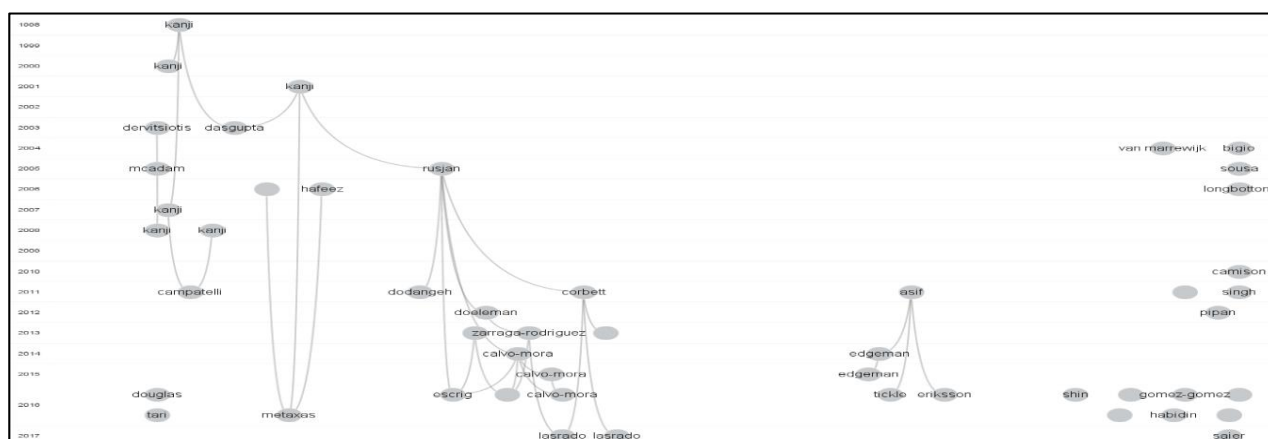


Fig. 1. The basic visualisation of analysed papers (Source: The author's work in CitNetExplorer software)

Each circle in figure one represents a publication labelled by the first name of the first author. Publications in the visualisation are from the 1998-2017 period. There are some non-displayed labs in figure one to avoid overlapping labels. It can be estimated from the picture that there will be certain relationships between articles as cluster articles and core publications.

The pre-selection from WOS database identified a sum of fifty relevant articles focusing on approaches to BE models. CitNetExplorer software was used to make a cluster analysis and finding core publications in the search area. Identifying these clusters is helpful in creating a linked literary review. Individual clusters include publications that refer to each other, and therefore we have some certainty that we find the information we need on the topic in publications. We can compare articles based on keyword phrases, citation relationships, or a combined form of the previous two when creating an analysis cluster. The cluster analysis used in this article was based on direct citation relationships. The method of direct citation relations in comparison was used mainly because keyword analysis can cause problems with many words in different disciplines. These words may misinterpret the interconnectedness of publications, but are very general and are used in different areas, and they do not provide useful information about the similarity of publications (Eck and Waltman, 2017). Authors of core publications are listed in Appendix 1 as the most important authors in the search area. Cluster publications are subsequently analysed by the content page as the basis for identifying individual approaches. The results of analyses are the identification and the systemization of existing approaches used in BE models.

3 Approaches to business excellence models

The findings of a literature review focus on approaches used in business excellence models are structured into three parts as a cluster analysis, a core publications analysis and the findings of narrative review based on cluster analysis.

3.1 The cluster analysis

Two clusters of researched papers cluster analysis identified as a figure two shown. Twenty-six publications do not belong to clusters due to the minimum size requirement (10). Cluster analysis found twenty-four publications belong to two clusters. There are twenty-eight citation links between articles in clusters. A colour of articles indicates a group to which the publication is assigned. It has been chosen in settings that each publication can be assigned to only one cluster. Publications are clustered in a green or a blue cluster based on their citation relationship.

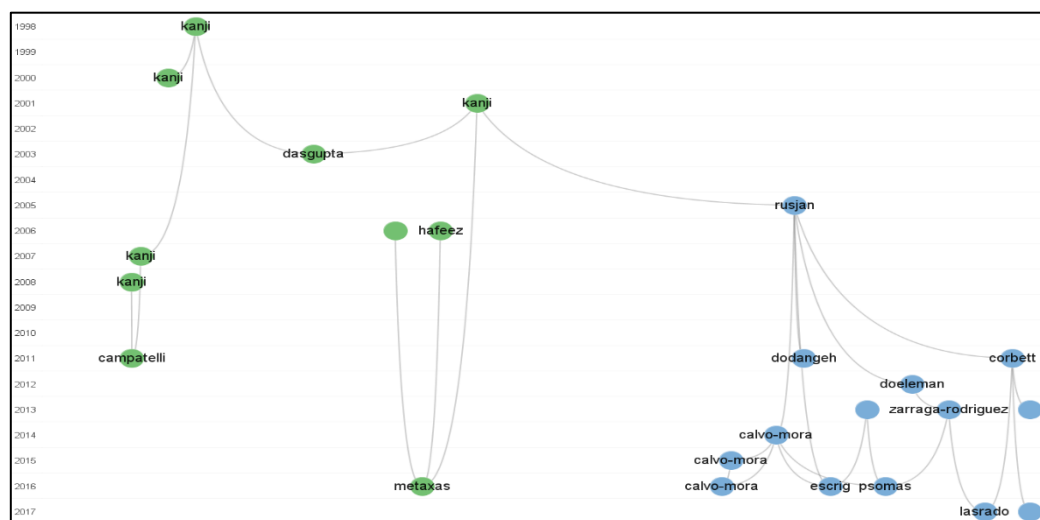


Fig. 2. Clustering by publications citation relationship (Source: The author’s work in CitNetExplorer software)

The vertical dimension of the figure two represents the date of publishing an article. Publications on the top of the picture are the oldest (1998), publications closer to down are newer up to 2017. Publications in a green cluster tend to be closely linked to each other in the citation network, as well as publications in the blue cluster.

The horizontal placement of the publications suggests their relationship regarding quotations. The software does not specify the names of the authors of each publication for greater clarity in some fields. Strongly related publications are Hafeez (2006) with Sureshchandar and Leisten (2006) in a green cluster. Strongly related publications in the blue cluster are of Dodangeh et al. (2011) with Corbett and Angel (2011); Boutler et al. (2013) with Zarraga-Rodriguez and Alvarez (2013) and Rowland-Jones (2013); Calvo-Mora et al. (2016) with Escrig and Menezes (2016) and Psomas and Jaca (2016); Lasrado and Uzbek (2017) with Lasrado (2017). The lines that link individual publications are visible in figure two. The quoted publications are under the publication that cited it.

3.2 The core publications analysis

An analysis of key publications is used to identify publications considered as the core of a citation network. This analysis is used if we want to get rid of unnecessary publications on the cypher network periphery (Eck and Waltman, 2014). CitNetExplore identified eleven core publications from 2005 to 2017, as figure three shown. Core publication has at least two of citation relationships with other core publication. Core publications have incoming and outgoing citation relationships treated identically.

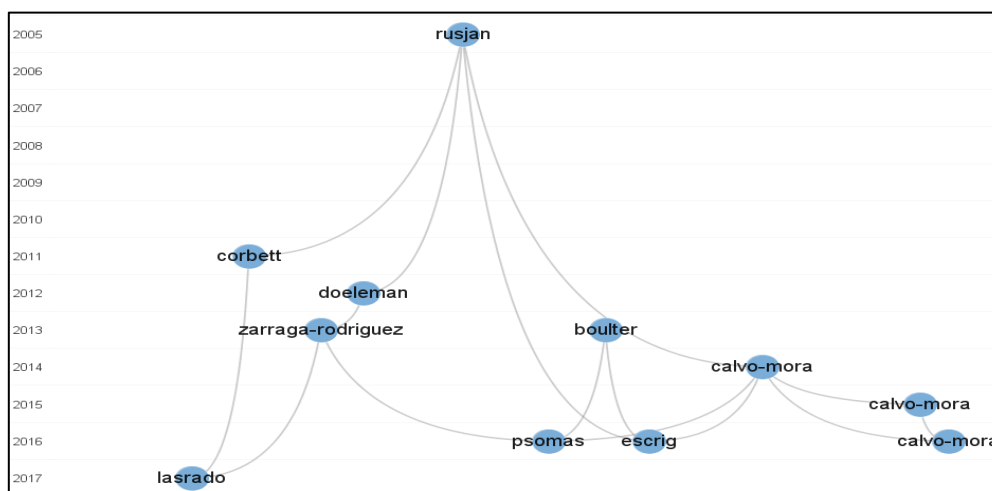


Fig. 3. Core publications in BE approach area (Source: The author’s work in CitNetExplorer software)

The most important authors in this area, based on the core publications analysis, are listed in a table in Appendix 1. The table also includes the title and source of the articles.

3.3 Existing approaches to BE models

The literary research explores twenty-four publications divided into two clusters devoted to existing BE approaches. Many studies are examining the importance of BE models in increasing excellence of companies (Corbett and Angell, 2011; Calvo-Mora et al., Louise Boulter et al., 2013; 2016; Lasrado and Uzbek, 2017). Empirical results show that the processes adopted by research organisations confirm much of the TQM and business excellence literature on what they need to do or have to implement these frameworks (Corbett and Angell, 2011; Daniel et al., 2011). The EFQM business excellence model as a practical tool can be used as a guide to identify areas for improvement.

However, the researchers identified some problems (organisations with limitations of time, budget and resources) which are not able to identify the priorities in Area for Improvement (AFI) (Daniel et al., 2011). The above problems are not the only issues that are associated with the implementation of BE models in organisations. Adopting the overall theory of quality management into practice also brings other issues that organisations are confronted. Few organisations can successfully implement BE models based on a holistic approach because they place great emphasis on technological elements compared to soft issues of TQM (Hafeez et al., 2006). A holistic approach is also important when implementing software metrics for better corporate excellence (Sureshchandar and Leisten, 2006). The biggest problem is that business excellence models do not provide any structured approach to how to use strengths or how to classify or prioritise improvement areas (Rusjan, 2005). For this reason, organisations use different approaches to BE models (Rowland-Jones, 2013). Access to the implementation of BE models is based on the principle of self-implement of these models in an organisation. However, there are also external experts who can fully implement BE models into the organisation (EFQM, 2017). Implementation of individual models is supported globally by national policies. Organizations can use training, assessment and recognition tools to use as membership in one of the non-profit foundations, focusing on BE models. The organisation itself needs to assess which approach is appropriate for the introduction of BE models due to its structural, information and organisational conditions. The following paragraphs focus on identifying and specifying aspects of approaches based on self-implement of business excellence models on organisations.

The systematisation of the existing foreign approaches used in BE models was created based on findings of this literature review. The systematisation was created for better orientation in the found approaches. Table one represented a scoreboard of individual approaches. Approaches are organised from the least occurring to most occurring approaches in the articles examined. All of these approaches are described in the following paragraphs.

Table 1. The systematisation of existing approaches used in BE models

Found approaches	The number of the articles examining the approaches
Questionnaire approach	1
Matrix chart approach	1
Workshop approach	1
Pro Forma approach	1
Award Simulation approach	1
Benchmarking	1
System approaches	2
Business Excellence Index	2
Six Sigma	4
RADAR	4

Source: The author's systematisation based on the literature research.

Different approaches are used to implement the EFQM model. Calvo-Mora et al. (2016) divide these approaches into two levels as criteria and sub-criteria. The criteria level is an essential construct that can describe the actions and consequences that derive from an excellent authentic management in a comprehensible manner and adjusted to the reality of the organisations. The level of the sub-criteria includes some criteria that describe detail elements that adapt the system approach. The objective of the sub-criteria is to provide a more specific and more practical approach and therefore the criteria are defined at operational levels. These criteria are leadership; people; strategy;

partnerships and recourses; processes, products and services; people results; customer results; society results and business results. The system approach of the other three models mentioned in this article differs in just the minimum of information (information Management – JQAM, innovation as leadership source – SQAM, measurement and analysis – MBNQA). EFQM, JQAM, SQAM and MBNQA approaches are the same in the criteria of leadership, strategy, process, people and customers.

The EFQM model can also act as a framework for implementing the knowledge management process. TQM as a management philosophy based on continuous improvement, innovation and learning should be put into practice through the reference framework EFQM can serve as a context and support for the start-up and later development of a KMP (Calvo-Mora et al., 2015). Daniel et al. (2011) observe that in EFQM exists some self-assessment approach including Questionnaire approach, Matrix chart approach, Workshop approach, Pro Forma approach and Award Simulation approach.

The Basic Questionnaire approach help to organisation identify its current position and identify future directions and priorities. The type of questionnaire used differs according to the organisation's effort. The organisation can choose a basic questionnaire or customised questionnaire. The customised questionnaire has a more direct address to the organisation. By this type of questionnaire can find better information reflecting the reality of the organisation. The questionnaire approach can be completed in three ways (EFQM, 2017). The first is the completion of an individual that will help you understand the EFQM excellence model and develop a personal evaluation of your organisation. Another way is to compare the organisation's evaluation making by individual separately. In this way, organisations can get results that are more objective. The last way is a group exercise. The first step on the way to business excellence is using the questionnaire. The next step can be a workshop with management and the subsequent deployment of EFQM by an external expert. However, the organisation can implement EFQM itself without the services of an external expert.

The literature research found other approaches (Matrix chart approach, Workshop approach, Pro Forma approach and Award Simulation approach) used for self-implement in BE models. These approaches require a greater organisation and higher effort from the organisation.

The Matrix chart approach is based on group discussion of managers. The Matrix chart includes a series of performance reports presenting each of the nine strategic important model areas (EFQM, 2017). This approach, like the Questionnaire approach, is considered as the first step towards business excellence models. The results can be subjectively affected since only the managers of the organisation act with this approach.

The subject of the Workshop approach is to gather relevant data on which the management group evaluates the performance of the organisation against 32 sub-criteria (EFQM, 2017). Responsible managers collect data and provide evidence of individual criteria scores. The aim of the workshop is to agree on criteria score; details of strengths and identify areas for improvement (Breen and Dale, 2000). This approach is also influenced by a subjective assessment of individual managers.

The Pro Forma approach is based on the external evaluation of trained colleagues from different departments. They compile a list of strengths and weaknesses involved in the development of BEM results for the organisation (EFQM, 2017). This approach is therefore based on the objectivity of the evaluators.

The Award Simulation approach is based on an external evaluation based on the simulation of a European Foundation for Quality Management Award (EFQM, 2017). According to EFQM, however, this approach brings the risks associated with less involvement of the management team and the potential for creative writing to cover real issues. This approach causes a significant workload for the organisation and includes the writing of a full submission document using the criteria of the chosen quality award and employing the complete assessment methodology including the involvement of a team of trained assessors and site visits (Breen and Dale, 2000). The award Simulation approach is one of the most challenging approaches to business excellence models.

Benchmarking is another approach found. The benchmarking is a good approach to implementing BE models is the use of benchmarking as BE tools. However, benchmarking itself may not always reflect the state of the organisation when comparing sustainability with other organisations. The problems that arise from this situation can be solved by using an integrated benchmarking methodology for the sustainability of organisations. This method combines elements of fuzzy analytical hierarchy (FAHP) with TOPSIS (Metaxas et al., 2016). This merger has created an approach that enables better decision-making by authorised persons. Benchmarking is a continuous and systematic process of comparison and measurement of products, processes and methods (Elmuti and Kathawala, 1997). Based on the definition of benchmarking, this approach can be used not only for the implementing of BE models but also after implementing of BE models. Thus, organisations can continually identify activity that needs to be improved.

The Six Sigma approach provides valuable access to BE measurement. Proper use of Six Sigma methodology can help improve both product quality and process (Kanji, 2008). The Six Sigma is nowadays very popular around the world and is being used in various areas, not just for manufacturing organisations. For example, Dasgupta (2003) used the Six Sigma framework to create a structured methodology that can effectively measure, monitor, and improve the performance of the chain and its entities. The DMAIC is the basic methodology of the Six Sigma approach. This methodology focuses on define, measure, analyse, improve and control. The DMAIC method is often described as an approach for problem-solving (Mast and Lokkerbol, 2012). This approach is based on continuous measurement and improvement of organisation quality. This approach is used after the implementation of BE models for the continuous improvement of business excellence.

The public sector, which is looking for new ways of measuring performance that would encourage quality improvement for stakeholders, is interested in BE models too. Two approaches to excellence in public administration have been found in this area. One approach for implementing excellence models for public administration processes was built on the Six Sigma framework (Campatelli et al., 2011). Kanji (2008) also found the Six Sigma metric as a good statistical technique that should be incorporated into the BE measurement system. Kanji's Business Excellence Measurement System is another approach that could be applied to the needs of public administration based on the principles and concepts of overall quality management (Kanji and Sá, 2007). BE models are not only business organisation issues but can be fully utilised with public administration to improve process and management.

The RADAR logic model is used as an approach for improving the level of BE model in organisations. RADAR term is an acronym includes required results, plan and develop approaches, deploy approaches, assess and refine approaches and deployment. The RADAR framework provides a structured approach to questioning the performance of an organisation. RADAR is a simple management tool that can help assess the maturity of the implemented approaches. This model states that an organisation needs to determine the results as a part of its strategy, plan and develop an integrated approach, deploy the approaches systematically to ensure implementation and assess/deploy the deployed approaches (EFQM, 2017). Many researchers use to score the level of the organisation's excellence RADAR logic model (Escrig and Menezes, 2016, Calvo-Mora et al., 2013, Calvo-Mora et al., 2015). However, the principles of this model may not only be used in the BE process but can be a suitable methodology for collecting data and evaluating the existing management position (Rowland-Jones, 2013). RADAR access is used as a tool for constantly improving the approaches used to business excellence.

The Business Excellence Index approach based on benchmarking organisations excellence among themselves is another approach in BE models. Unlike benchmarking, this approach works with an index value that allows for direct comparisons across each organisation. The Business Excellence Index (BEI) is a measuring customer', employer's and shareholders' satisfaction simultaneously within an organisation to obtain a comprehensive evaluation of the organisational performance (Kanji, 1998). Kanji proposed a structural model the Kanji Business Excellence Model (KBEM)

named. The KBEM measure BEI. Through the BEI, it is possible to compare the different areas of the organisation's activity, and the high BEI score encourages the organisation to apply for a quality award (Kanji, 1998). According to this model, the process of business excellence begins in leadership. Leadership is based on the principles of customer satisfaction, management by fact, people-based management and continuous improvement. These principles are the focal point for the organisation's core concepts. Core concepts directly affect business excellence. The model was modified to a short version with ten latency variables; and the model is suitable for measuring business excellence both directly and over time (Kanji and Wallace, 2000).

The organisations approach to BE models is influenced by the size of the organisation. This claim is based on an analysis of the content pages of the Escrig and Menezes (2016) article. They found in their research that an equivalent effort in improving Leadership and systems design might lead to greater effects in large organisations. Therefore, when implementing BE models, it is important to account for the size of the organisation and choose appropriate approaches to apply.

The key factor of implementation management approaches was identified in the literature. Kanji and Wallace argue that the key success factor of the organisation is customer satisfaction (Kanji and Wallace, 2000; Kanji, 2001). There is some connection between customer satisfaction and the quality of information management in the organisation. This assumption has been confirmed by research that has examined highly developed competence in companies by self-assessment reports (Zárraga-Rodríguez and Alvarez, 2013). Based on this research, it has been demonstrated that effective management of information is another key factor that enables organisations to improve their results. In contrast to these views, the following researchers found different key factors in implementing management approaches. The key factors of business excellence models implementation to organisations are management leadership, human resource management and a flexible culture oriented towards continuous improvement (Calvo-Mora et al., 2013, Psomas and Jaca, 2016, Lasrado, 2017). Active leadership as a key element in the success of BE model implementation are also confirmed by other scientists who argue that the most influential factor in the relationship between management control construct and purposive change is transformation management (Doeleman et al., 2012).

4 Conclusions

This article identifies and describes the existing approaches used in Business Excellence models. CitNetExplorer citation software was used to display the resulting relationships of individual articles and the most important authors in the search area. The author identified four questions focusing on articles citation relationship, the most important authors in the search area, existing approaches to BE models and aspects of these approaches. Based on the research, it is possible to answer them.

The cluster analysis identified two clusters with twenty-four publications. Publications in these clusters tend to be closely linked to each other in the citation network. Publications from 1988 to 2017 were identified based on the vertical position. Twelve strong citation links were identified based on the horizontal position of the searched publications. In the green cluster, only one strong citation link was identified between Hafeez (2006) and Sureshchandar and Leisten (2006). In the blue cluster, eleven strong citation links have been identified between Dodangeh et al. (2011) and Corbett and Angel (2011); Boutler et al. (2013), Zárraga-Rodríguez and Alvarez (2013) and Rowland-Jones (2013); Calvo-Mora et al. (2016), Escrig and Menezes (2016), and Psomas and Jaca (2016) and between Lasrado and Uzbek (2017) and Lasrado (2017). Twenty-eight citation links were identified between papers in clusters.

The core publications were also analysed to identify the most important authors in the BE approaches. Eleven core publications were identified as the core of the citation network from 2005 to 2017. Core publication has at least two of citation relationships with other core publications. The authors' names are shown in Figure 3. A more detailed analysis of important articles is included in the appendix to this article.

Twenty-four articles were identified for further investigation regarding their content to identify existing approaches to BE models and aspects of these approaches. It was found that approaches to BE models are divided into self-implement and outsourced implementation by external experts for a fee. Ten approaches used in BE models in the self-assessment sub-category was found. Systematization of these approaches shows that the least explored approaches in the articles are the Questionnaire approach, the Matrix chart approach, the Workshop approach, the Pro Forma approach, the Award Simulation approach and the benchmarking approach. The System Approaches and the Business Excellence Index are more widely researched approaches. The most researched approaches in the area are the Six Sigma approach and the RADAR approach. While some approaches are used to implement BE models into organisations (Questionnaire, Matrix Chart, Workshop, ProForm, Award Simulation and System Approaches), others are also used after the implementation of BE models for constant improvement of business excellence (Business Excellence Index, Benchmarking, Six Sigma and RADAR).

Questionnaire and Matrix chart approaches are the first basic step towards business excellence. These methods are the least difficult for organisations to deploy. The most difficult approach to BE models is the Award Simulation Approaches, based on the simulation of the application for an EFQM Award provided by an external evaluation. The aspect of Benchmarking and Business Excellence Index is an ongoing assessment of organisation with other organisations. The following approaches to improve business excellence can be used to post implement BE models. RADAR is the structured approach used for evaluating the maturity of the implemented approaches. Six Sigma is another valuable approach to measuring BE. Six Sigma approach by using the DMAIC method is capable for described an approach for problem-solving in the context of continuous improvement of organisation quality.

Future work will focus on the practical side of BE models approaches based on this theoretical review. The approaches used for BE models in practice, their benefits and impact on increasing business excellence will be identified in the first phase of future research. The questionnaire technique is chosen for this step. The key factors (return on capital, return on sales, EBIT, the net profit) of implementation management approaches in Czech organisations will be identified in the second phase of the research. This step will be provided by analysing factors from an annual report in connection with the achieved national quality award. Then will create an integrated approach to BE model implementation. The integrated approach will be created as a combination of theoretical knowledge (obtained by this theoretical research) and practical implications of approaches used in BE models (obtained by the future research).

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Appendix 1 The most important authors in Business Excellence approaches area

Authors	Title	Source
Rusjan, B	Usefulness of the EFQM excellence model: theoretical explanation of some conceptual and methodological issues	Total quality management & business excellence
Calvo-Mora, A; Picon, A; Ruiz, C; Cauzo, L	The relationships between soft-hard TQM factors and key business results	International journal of operations & production management
Corbett, L; Angell, L	Business excellence in New Zealand: continuous improvement, learning, and change	Total quality management & business excellence
Zarraga-Rodriguez, M; Alvarez, M	Exploring the links between information capability and the EFQM business excellence model: the case of Basque country quality award winners	Total quality management & business excellence
Boulter, L; Bendell, T; Dahlgaard, J	Total quality beyond north America a comparative analysis of the performance of European excellence award winners	International journal of operations & production management
Doeleman, H; Ten Have, S; Ahaus, K	The moderating role of leadership in the relationship between management control and business excellence	Total quality management & business excellence
Calvo-Mora, A; Navarro-Garcia, A; Perianez-Cristobal, R	Project to improve knowledge management and key business results through the EFQM excellence model	International journal of project management
Calvo-Mora, A; Navarro-Garcia, A; Rey-Moreno, M; Perianez-Cristobal, R	Excellence management practices, knowledge management and key business results in large organisations and SMEs: a multi-group analysis	European management journal
Escrig, A; De Menezes, L	What is the effect of size on the use of the EFQM excellence model?	International journal of operations & production management
Psomas, E; Jaca, C	The impact of total quality management on service company performance: evidence from Spain	International journal of quality & reliability management
Lasrado, F; Uzbek, C	The excellence quest: a study of business excellence award-winning organizations in UAE	Benchmarking-an international journal

Source: The author's work based on the core publications analysis by CitNetExplorer software

IMPORTANT STEPS OF MANAGING THE STRONG BRAND IDENTITY

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Abstract

Brands frequently provide the essential points of differentiation among competitive offerings, because they may help customers to connect all the factors of the product or company. Thus, when the customers purchase the products, they will consider the brand first, because it indirectly leads them to associate the products with the quality, functions, and the design. Brand-building effort has to be in accordance with organizational processes that help to deliver the values to customers. It follows that is so important for the company to have a document that will be engaged as a lead to building and managing its own brand. That is why the aim of this paper is to create a several-step guide to notify how brands can be built and managed in today's marketing communications environment. The core is to identify significant components of the brand identity and to distinguish fundamental elements of building the strong brand identity over the STP process. For achieving this aim the literature review as a method will be used.

Keywords

Brand Values, Segmentation, Targeting, Positioning.

JEL classification

M31.

1 Introduction

In present market with increasingly rational buyers faced with abundant choice, the essence of strategic marketing that promotes profitable value delivery process choosing the value, providing the value and communicating the value through segmentation, targeting and positioning (STP) process, the networking of a value chain of both primary and support activities cannot be controverted. (Ogunsiji, 2012)

The STP process has been fundamental to traditional marketing for decades. It is believed that these three activities, performed in that order, describe the content of strategic marketing. Two main ideas underlie the STP concept: first, markets are not homogeneous but “differentiated” (the concept of market segmentation); second, the needs of individual segments should be met by developing an appropriate product differentiation strategy (the concept of product differentiation). Emphasis in STP logically began to move from the concept of market segmentation to the idea of brand segmentation and the idea of product differentiation moved to the idea of image (imaginary) differentiation. This idea inspires a natural tendency of managers to divide customers into “ours” and “others”, which in turn involves the search of different positioning lines in order to differentiate their brand from that of their competitors. (Kostadinova, 2013) A key element of a successful company is the carefully designed and integrated brand, i.e. strategic brand management. Lannon and Cooper (1983) regarded brand as holistic entities with plenty of traits of living beings. The brand attracts customers by appealing to their emotions, creating a trustworthy relationship between them and the company. Brands that are reliable and popular bring value to enterprises. There is no doubt that brand is important, because strength and popularity of brand influence consumer behaviour. It means that the companies have to focus on building the strong brand identities, what is not as easy.

Thus, the aim of this paper is to create a several-step guide to notify how brands can be built and managed in today's marketing communications environment. The core is to identify significant components of the brand identity and distinguish fundamental elements of building the strong brand

identity over the STP process based on the literature review. The results of the paper could help the enterprises with visualisation processes of managing their brands.

2 Brand Identity and STP Process

Aaker (1996) argues that one key for building the successful brand is to understand how to develop the brand identity. It is needed to realize what the brand stands for and after to effectively reflect that identity. To be effective, a brand identity needs to resonate with customers, differentiate the brand from competitors, and represent what the organization can and will do over time (Aaker and Joachimsthaler, 2000). (Ghodeswar, 2008)

STP process is fundamental to the formulation of marketing strategy (Malhotra, Charles and Usley 2005). Segmentation is the process of organizing consumers into groups with similar features. Targeting involves a company determining market segments can satisfy, and then choosing an appropriate targeting strategy for the segments. Positioning is how consumers perceive a brand or product, particularly in relation to other brands and products. (Ponduri and Sailaja, 2014)

2.1 Brand Identity

At the beginning of the process of building the strong brand, it is necessary to build the identity. So, at first it is needed to realize, what the brand stand for, what was already mentioned by Aaker (1996). It means that the company has to develop its values and create mission and vision.

In understanding the real essence of management a reverse logic should be used, from the consumer's needs toward value creation by the company in order to satisfy these needs. A company does exist to create value for consumers, and the profit it makes represents only a consequence of its actions and not a first priority. The profit is necessary since it is an existential requirement, but it is not anymore the driving force of the company. In this view, even the company model changed from the mechanical one to a social one. A company is a living entity which has got a mission, a vision and business wisdom based on some core values. (Brătianu and Bălănescu, 2008) *“All companies exhibit the behaviour and certain characteristics of living entities. All companies learn. All companies, whether explicitly or not, have an identity that determines their coherence. All companies build relationships with other entities, and all companies grow and develop until they die.”* (De Geus, 1999, p. 17)

All individual values of employees are integrated at the organizational level according to the operational power of the organizational integrators. The result consists of the core corporate values. These can be formulated in an explicit way and incorporated into the mission statement or they just flow through the organizational culture in an implicit way. (Dess, Lumpkin and Eisner, 2006) Company values communicated properly and shared by all employees may become a strong integrator for the organizational intellectual capital. These values can be communicated as an independent statement or as a component of the mission statement. (Brătianu and Bălănescu, 2008)

According to Peters and Waterman (1995) the specific content of the dominant beliefs of the excellent companies is also narrow in scope, including just a few basic values:

1. A belief in being the best.
2. A belief in the importance of the details of execution.
3. A belief in the importance of people as individuals.
4. A belief in superior quality and service.
5. A belief that most members of the organization should be innovators, and its corollary, the willingness to support failure.
6. A belief in the importance of informality to enhance communication.
7. Explicit belief in the importance of economic growth and profits. (Brătianu and Bălănescu, 2008)

Vision is a strong integrator (Bratianu, Jianu and Vasilache, 2007). People sharing together the same future image of their organization will strive to find best solutions to transform that vision into reality. Mission is an assumed responsibility of the company born from its social goals. Mission reflects the way in which vision can be transformed into a tangible existence for the company. (Bratianu, 2005) A good mission statement should reflect on the existential plane the vision of the company; incorporate the core corporate values; be feasible, understandable and concise; be generous in stating the company goals; have a semantic impact on all stakeholders; have a good literary formulation. (Brăţianu and Bălănescu, 2008)

Looking at the mission statement from a more practical view, we may say that it is more realistic than the company's vision, answering the following questions: who, what and why. WHO we are? WHAT we want to create? WHY we want to exist? All possible answers cluster around the consumer needs, stakeholders' interests, shareholders financial returns, and our legacy to create value and competitive advantage. (Bratianu, Jianu, Vasilache, 2007; Bratianu, 2008)

Brand Values

The concept of brand values implies that what makes a brand a brand is its “personality” which distinguishes it from others and that the presence of this personality imparts some utility – however tangible – to the consumer. There is a strong body of research supporting the idea of brand personality as a source of value to the consumer. (King, 1973; Christopher, 1996) Consumers are likely to find brand's identity more attractive when the brand matches their own sense of who they are because such identities enable them to maintain and express their sense of self more fully and authentically (Bhattacharya and Sen, 2003; Tuškej, Golob and Podnar, 2013).

Brand values, especially if they are congruent with the values of the target group, play a major role in influencing consumer behaviour. Firstly, brand values should be determined based on the values of the largest segment of current or potential customers; and secondly, it is important to consider that just like values of target groups change over time, so should brand values. Therefore, brand managers should constantly monitor perceived values of the brand as well as values of consumers to examine whether an overlap exists between them. (Tuškej, Golob and Podnar, 2013)

Furthermore, the finding that congruity between perceived brand values and consumer values increases consumer–brand identification highlights the importance of focused and personified brand communications because it shows that consumers are more likely to identify with brands whose core values are consistently communicated and relevant for them. (Tuškej, Golob and Podnar, 2013)

2.2 Segmentation

When the company has stated its mission, vision and its values have reached the values of the customers, the segmentation should be accomplished. The company has to segment the market because of better identifying and targeting the needs of customers. In this step the customers should be analysed, selected and afterwards the values of the brand can be communicated appropriately to specific groups of customers. In this point it is also necessary to create personas, which will represent these groups.

A successful company today does well in keeping and managing its customers through providing a number of attractive, personalized services that satisfy customer needs. This is due to the premise that it is less expensive to “cross-sell” an incremental product or service to existing customers, and that attracting new customers is expensive. (Peppard, 2000) Therefore, a company needs to understand its existing customers and their needs better than ever before (Peppers, Rogers and Dorf, 1999). From this perspective, it is important to understand customer behaviour by analysing customer information to differentiate between customers, to identify the most valuable customers over time, and to increase customer loyalty by providing customized products and services (Gulati and Garino, 2000). Moreover, it is also important to predict the customer purchasing behaviour. (Sung, 2007)

In today's environment, most companies contact and serve customers or customer groups by utilizing a range of commercially viable channels. To understand their customers with a unified view, companies try to integrate an abundance of data collected via multiple channels. These include Web browsing, purchasing behaviour, complaints, and demographics. Furthermore, companies divide customers into numerous groups with similar preferences and examine distinct characteristics of each group in order to determine the most profitable segments. Experience, however, shows that business is ceaselessly changing and that customers continue to evolve over time. Customer segments and related knowledge discovered from multiple data sources change over time as the customer base changes. (Kracklauer, Mills and Seifert, 2003) This means that knowledge and predictions about customers are valid during a particular period. Thus, it is necessary to track of customer shifts among segments in order to monitor changes in the segments over time, and then investigates segment knowledge in order to predict behaviour patterns of customer segments. Aggregating each customer's transition path reveals the dominant transition paths that the majority of customers follow. It is possible to predict the next path that each customer is likely to shift by examining the dominant paths. This is helpful in responding appropriately to customers and in exercising customer centric strategies. (Sung, 2007)

To attain a sustainable competitive advantage, companies require insight about their customers. By understanding customer needs and value, enterprises can increase the value of each customer relationship. By understanding the value of each customer relationship enables companies to segment customers into “portfolios of relationships” that would increase a company's return on relationships. (Johnson and Selnes, 2004; Kumar, 2010; Thakur and Workman, 2016)

Every company admittedly should know its customers and also try to build the relationship with them in today's environment. Based on the information about the customers the companies can select them into the portfolios.

By segmenting customers into portfolios, an organization can better understand the relative importance each customer represents relative to total sales and profits. Such an understanding will assist companies not only in retaining valuable customers but also in creating additional value with these customers through relationship development. Consequently, the organization can methodically allocate resources and apply marketing strategies toward the retention and development of its most valued customers, better known as customer portfolio management (CPM). CPM (Fig. 1) analysis reveals the small number of strategically important customers that contribute to the current and future value of the company and should receive the company's resources. (Terho, 2008) CPM assists companies in determining their priorities when selecting and developing their customer base (Brennan, Canning and McDowell, 2010). This novel strategic technique adds value to the overall customer relationship management (CRM) process and emphasizes the firm's knowledge of each customer, their strategic planning, and the most appropriate execution of resource deployment according to the strategic plan. In addition, CPM assists in the segmentation of the customers into portfolios and positions the company's customer base as a portfolio of exchange relationships that create value over a period of time. (Thakur and Workman, 2016)

Value to the Company	<i>High</i>	Superior Service (Platinum Customer)	Best Service (Gold Customer)
	<i>Low</i>	Good Service (Silver Customer)	Better Service (Bronze Customer)
		<i>Low</i>	<i>High</i>
Cost to Serve: Relative Service Level for Optimal Resource Deployment			

Fig. 1. Customer Portfolio Management (CPM) matrix (Source: Thakur and Workman, 2016)

Successful firms use a portfolio approach to manage customer relationships and to establish closer relationships with their customers. As businesses shift their focus to customers, managers are discovering a portfolio approach can help companies understand and anticipate the needs of current and potential customers, thereby attracting customers based on their value. CPM approach can also be used to segment customers. The segmentation of customers enables companies to provide a multidimensional view of the customer. It also helps companies effectively leverage this information to create customer value (Wayland and Cole, 1994), increase profit, reduce operational cost, and enhance customer service. This approach also helps companies track costs to serve and revenue from different groups of customers, thereby enabling companies to determine the optimal allocation of scarce resources to maximize profit. (Thakur and Workman, 2016)

Personas

As mentioned the step of segmentation include the creating of personas, which are very helpful for imagining the real customers with specific needs, skills, habits. Every team member can easily and quickly get acquainted with groups of customers through personas.

Personas are fictitious, specific, concrete representations of target users. A persona represents an aggregate of target users who share common behavioural characteristics (i.e., is a hypothetical archetype of real users). (Pruitt and Adlin, 2006; Miaskiewicz and Kozar, 2011)

Personas are abstractions of groups of real consumers who share common characteristics and needs. A persona is represented through a fictional individual, who in turn represents a group of real consumers with similar characteristics (Pruitt and Adlin, 2006; Turner and Turner, 2010). Even though a persona is not a real person, a name and a picture are selected to represent the fictional representative. Second, a persona is described in narrative form. This narrative has two goals: (1) to make the persona seem like a real person, and (2) to provide a vivid story concerning the needs of the persona in the context of the product being designed. The narrative of a persona starts with a description of the type of individual that the persona is, likes and dislikes, occupation, and so forth. This part of the narrative brings the persona to life (Cooper, 1999; Grudin and Pruitt, 2002). Then, the persona's specific needs and personal goals in the context of the product being designed are described. This segment of the narrative helps to inform the resulting design decisions (Pruitt and Adlin, 2006). These are the same needs that one would find in a standard requirements document but are now written in the context of the narrative describing a specific persona. (Miaskiewicz and Kozar, 2011)

2.3 Targeting

When the company formulated its values, mission, vision, analysed and selected its customers, created the personas, it would target. In this part it is necessary to build brand equity, communicate with the customers and to make up relevant content, which is distributed by relevant channels to them. The model used for building the brand equity CBBE model, created by Keller, was chosen. This model contains all of the blocks, which are needed to achieve the purpose. The brands have to head toward choice of two faces – rational and emotional. Thanks to this model the company can become aware of its direction.

In 2001 Keller extended the customer-based brand equity model to address more specifically how brands should be built in terms of consumer knowledge structures. The CBBE model emphasizes the duality of brands – the rational route to brand building is the left-hand side of the pyramid, whereas the emotional route is the right-hand side. The creation of significant brand equity requires reaching the top or pinnacle of the brand resonance pyramid, which occurs only if the right building blocks are put into place (Fig. 2):

- *Brand salience* is how easily and often customers think of the brand under various purchase or consumption situations.
- *Brand performance* is how well the product or service meets customers' functional needs.

- *Brand imagery* describes the extrinsic properties of the product or service, including the ways in which the brand attempts to meet customers’ psychological or social needs.
- *Brand judgments* focus on customers’ own personal opinions and evaluations.
- *Brand feelings* are customers’ emotional responses and reactions with respect to the brand.
- *Brand resonance* refers to the nature of the relationship customers have with the brand and the extent to which they feel they’re “in sync” with the brand. (Keller, 2009)

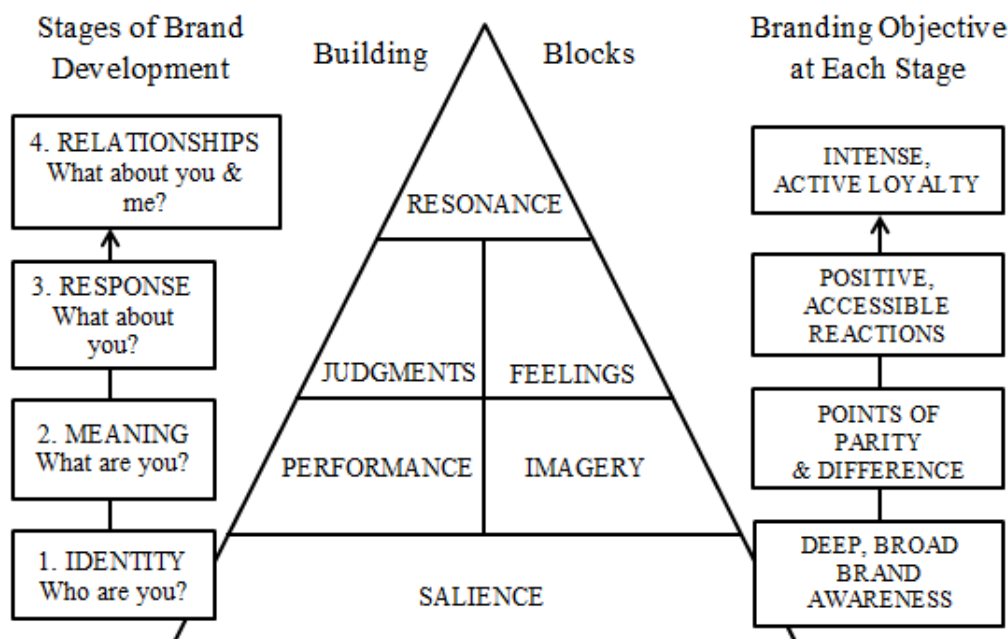


Fig. 2. Customer-based brand equity model pyramid (Source: Keller, 2009, p. 144)

Resonance reflects the intensity or depth of the psychological bond that customers have with the brand, as well as the level of activity engendered by this loyalty. Certain product or service categories potentially allow for more resonance because they have inherently high levels of interest and activities. Some brands with high resonance include Harley-Davidson, Apple and eBay. (Keller, 2009)

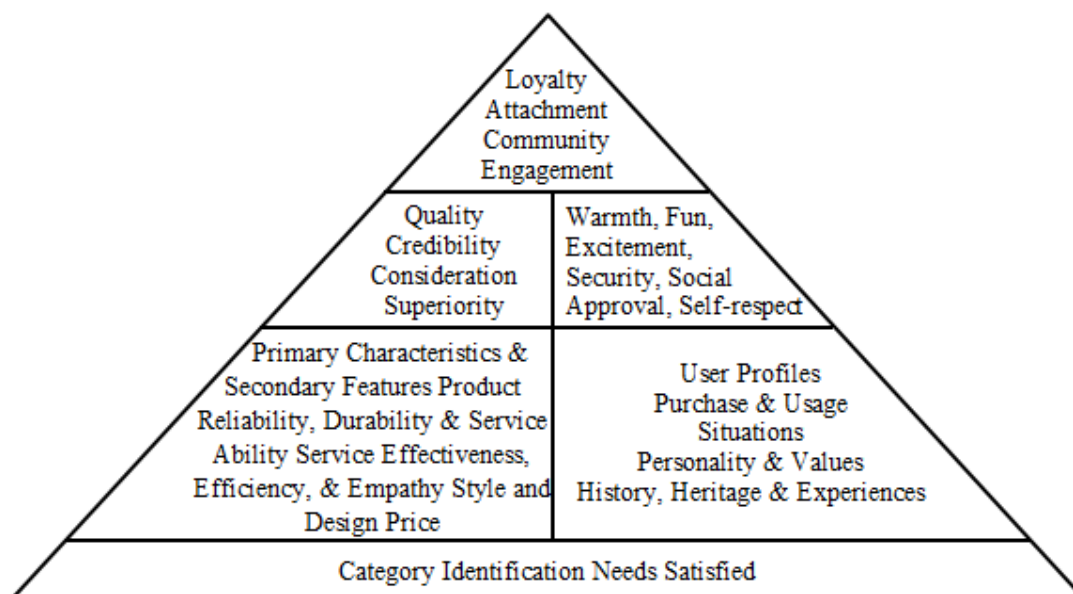


Fig. 3. Sub-dimensions of brand building blocks (Source: Keller, 2009, p. 144)

Brand resonance has four dimensions (Fig. 3), which each capture a number of different aspects of brand loyalty (Keller, 2009):

Behavioural loyalty – customers’ repeat purchases and the amount or share of category volume attributed to the brand – How often do customers purchase the brand? How much do customers purchase of the brand?

Attitudinal attachment – when customers view the brand as being something special in a broader context – Do customers “love” the brand? Do customers describe the brand as one of their favourite possessions? Do customers view the brand as a ‘little pleasure’ they look forward to?

Sense of community – when customers feel a kinship or affiliation with other people associated with the brand – Do customers interact with fellow brand users or employees or representatives of the company? Does this customer interaction occur on-line and/or off-line?

Active engagement – when customers are willing to invest personal resources on the brand – time, energy, money, etc. – beyond those resources expended during purchase or consumption of the brand – Do customers choose to join a club centred on a brand? Do customers receive updates, exchange correspondence with other brand users or formal or informal representatives of the brand itself? Do customers visit brand-related websites, participate in chat rooms and so on?

To create brand resonance, marketers must first create a foundation on which resonance can be built. According to the customer-based brand equity model, resonance is most likely to result when marketers are first able to create (Keller, 2009):

- proper salience and breadth and depth of awareness;
- firmly established points-of-parity and points-of-difference;
- positive judgments and feelings that appeal to the head and the heart.

With a firm foundation in place, marketers can then optimize the four dimensions of brand resonance. There is a number of marketing communication activities that can be put into place to impact any one dimension of resonance. Any marketing communication may also affect more than one dimension of brand resonance. For example, when BMW created its on-line video series, the driver, featuring top film actors and directors, it arguably enhanced brand attachment, community and engagement. In fact, there may be interactive effects such that, for example, higher levels of attachment lead to greater engagement. To maximize brand resonance, levels of both the intensity and activity of loyalty relationships must be increased. (Keller, 2009)

At this stage the company should think about the marketing communication means. Through marketing communication the company can reach all of the directions, which were clear from the CBBE model. By marketing communication the company can show its values, advantages, history, goals, etc. Also the company should build the strong content by mixing and matching the traits of marketing communication according to how the situation requires that. Choosing the right channels for created content is integral part of targeting.

Marketing communications are the means by which firms attempt to inform, persuade and remind consumers – directly or indirectly – about the products and brands they sell. In a sense, marketing communications represent the “voice” of the company and its brands and are a means by which it can establish a dialogue and build relationships with and among consumers. The marketing communications mix consists of eight major modes of communication: the first four can be seen as more mass media types of communications – advertising, sales promotion, event and experiences, PR and publicity; the latter four are more personal modes of communication – direct marketing, interactive (online) communication, personal selling and word-of-mouth. (Bennett, 1995; Kotler and Keller, 2009; Keller, 2009)

These different types of marketing communications perform many functions for consumers. Marketing communications can tell or show consumers how and why a product is used, by what kind of person and where and when. Consumers can learn about who makes the product and what the company and brand stand for; and get an incentive or reward for trial or usage. Marketing communications allow companies to link their brands to other people, places, events, brands,

experiences, feelings and things. Marketing communications can create experiences and build communities both on-line and off-line. They can contribute to brand equity – by establishing the brand in memory and creating a brand image – as well as drive sales and even affect shareholder value. (Luo and Donthu, 2006; Keller, 2009)

The manner in which brand associations are formed does not matter. In other words, if a teenage male has equally strong, favourable and unique brand associations with Axe body spray to the concepts masculinity, sex appeal and fun because of exposure to a viral video that shows women attracted in an exaggerated fashion to young males because of their use of Axe, or because of TV or print ads with similar messages, the impact in terms of Axe's brand equity should be identical. (Duncan 2005; Duncan and Moriarty 2006; Keller, 2009)

But these marketing communications activities must be integrated to deliver a consistent message and achieve the strategic positioning. The starting point in planning marketing communications is an audit of all the potential interactions that customers in the target market may have with the company and all its products and services. (Keller, 2009)

In developing an integrated marketing communication (IMC) program, a number of factors come into play (Schultz, Tannenbaum and Lauterborn, 1993). Marketers must consider several factors in developing their communications mix, such as the type of product market, consumer readiness to make a purchase, stage in the product life cycle and the brand's market share and positioning. From the perspective of building brand equity, marketers should be media neutral and evaluate all the different possible communication options according to effectiveness criteria (How well does it work?) as well as efficiency considerations (How much does it cost?). This broad view of brand-building activities is especially relevant when marketers are considering strategies to improve brand awareness. (Keller, 2009)

Anything that causes the consumer to notice and pay attention to the brand – such as sponsorship and out-of-home advertising – can increase brand awareness, at least in terms of brand recognition. To enhance brand recall, however, more intense and elaborate processing may be necessary, so that stronger brand links to the product category or consumer needs are established to improve memory performance. In terms of brand image, the question becomes what effects are created by the communication option, how strongly are they linked to the brand and how do the effects that are created affect, either directly or indirectly, consumers' propensity to purchase and use brands? Marketers should “mix and match” communication options to build brand equity – that is, choose a variety of different communication options that share common meaning and content but also offer different, complementary advantages so that the whole is greater than the sum of the parts. (Naik and Raman, 2003; Duncan and Mulhern, 2004; Naik, Raman and Winer, 2005; Naik, 2007; Keller, 2009) Social media, which include online channels for sharing and participating in a variety of activities, represent an increasingly important way for brands to communicate with attractive segments. According to the 2013 Social Media Industry Report 86% of marketers believe social media channels are important components of their marketing initiatives. Branded social campaigns provide additional touchpoints to encourage ongoing interaction between the consumer and the brand story throughout the day, which can deepen consumer–brand relationships, help marketers uncover common themes in consumer feedback, and persuade consumers to engage with online content. (Murdough, 2009; Ashley and Tuten, 2015)

Keller (2009) adds that thoughts, feelings, perceptions, images, and experiences from these touchpoints form a set of associations with the brand in consumer memory. Marketers have several options within the social media landscape for branding including placing paid display advertising, participating in social networks as a brand persona, developing branded engagement opportunities for customer participation within social networks, and publishing branded content (known as content marketing or social publishing) in social channels (Tuten and Solomon, 2013). Brands may utilize social media marketing as an integrated component in a marketing communications campaign, as an ongoing corporate communications channel, and/or as a series of micro campaigns specifically

designed for digital exposure. (Ashley and Tuten, 2015) Brands may be floundering in digital space because the number and lack of familiarity of each of these options make it challenging to develop creative that would be effective in social media environments (Sheehan and Morrison, 2009; Wilson et al., 2011; Ashley and Tuten, 2015).

2.4 Positioning

The steps from the part of targeting are very connected with the steps of positioning. By mixing and matching marketing communications and by content the company communicates its benefits, which should be already clear from the point of thinking of brand identity. From the CBBE model should be already clear, what kind of brand the company introduces. There are 4 types of global brands formulated by Steenkamp (2014). This table is helpful in formulating unique selling proposition, which should be also properly communicated.

The literature has often treated global brands as a unitary category, but it is useful to distinguish between different types of global brands. Steenkamp (2014) proposes to do this on the basis of two of the most fundamental aspects of market offerings, namely, the price of the brand relative to the category and the nature of the key differentiating benefits it delivers. While brands obviously offer a bundle of benefits, he regards as the most meaningful distinction whether the key motivators to purchase the brand are functional (mind) or emotional (heart) in scope. Cross-classifying these two dimensions give four types of valued brands (Fig. 4).

Prestige brands are high priced and deliver unique emotional benefits. While functional performance is important with all brands, the primary reason-to-buy is their emotional pay-off. Prestige brands have an appeal built on specific myths associated with the country of origin (Canali suits as the embodiment of Italian style and fashion) or the provenance of a founder (Coco Chanel for Chanel). These brands are disproportionately strong in display categories with high aspirational value. Prestige brands are aspirational and selective – they exclude many to appeal to the chosen few. (Baker, Sterenberg and Taylor, 2004; Steenkamp, 2014) The unique selling proposition of Fun brands also primarily resides in emotional benefits, but they are more accessible than Prestige brands due to their lower price. The quality may not be the best, but then, part of the fun is the relatively rapid roll-over of products. Consider two eponymous global Swiss watch brands: Patek Philippe (Prestige) and Swatch (Fun). The former came to global prominence by emphasizing that you purchase it to “Begin your own tradition” and that “You never actually own a Patek Philippe. You merely look after it for the next generation.” Swatch on the other hand emphasized funky, low-priced watches and possession of multiple watches to match different usage situations. International apparel chains like H&M and Zara have created strong Fun brands by popularizing the concept of disposable clothing. Ikea was the first retailer to uncover a global segment of young people that wanted disposable furniture rather than being stuck with the same furniture for life. Fun brands will appeal disproportionately to young consumers who do not want to commit to a product for a long time. (Steenkamp and De Jong, 2010) Premium brands are high-priced brands that excel on functional quality. These brands cater to the universal appeal of high-quality products, even if they cost more, as for most consumers quality weighs more heavily than price in their purchase decisions. (Zeithaml, 1988) While emotional benefits matter with all brands, Premium brands’ unique selling proposition is superior product performance. Take Volkswagen A.G.’s brand Audi (Premium) vs Jaguar (Prestige). While Audi is a luxury car, its tagline is “Vorsprung durch Technik.” Audi promises the most technologically advanced car. Of course, this will give emotional satisfaction but the source of it is functional. Compare this with Jaguar’s famous “Gorgeous” ad, which emphasizes that “Gorgeous can’t be ordinary even if it tries.” Based on functional performance, few motorists would prefer a Jaguar to an Audi. Finally, Value brands cater to another universal need – to get the best value possible (Levitt, 1983). These brands excel on delivering the best price-quality combination. Among the best examples are the private labels carried by international retailers like Carrefour, Tesco. (Gielens and Dekimpe, 2007; Steenkamp, 2014)

Price In Category	<i>High</i>	Premium Brands	Prestige Brands
	<i>Low</i>	Value Brands	Fun Brands
		<i>Functional</i>	<i>Emotional</i>
Nature of Benefits			

Fig. 4. Four types of global brands (Source: Steenkamp, 2014, p. 9)

At this point everything what the company already done, it could be booked into diagram for better visualisation.

As an example of the way branding agencies seek to describe, analyse and reposition the brands they work with, Fig. 5 shows a diagram of Enterprise IG’s ‘Brand Analytics’ framework, which is used by the agency to locate brands along a continuum stretching from ‘tangible’ on the left to ‘intangible’ on the right (Michel and Ettenson, 2005; Delin, 2005).

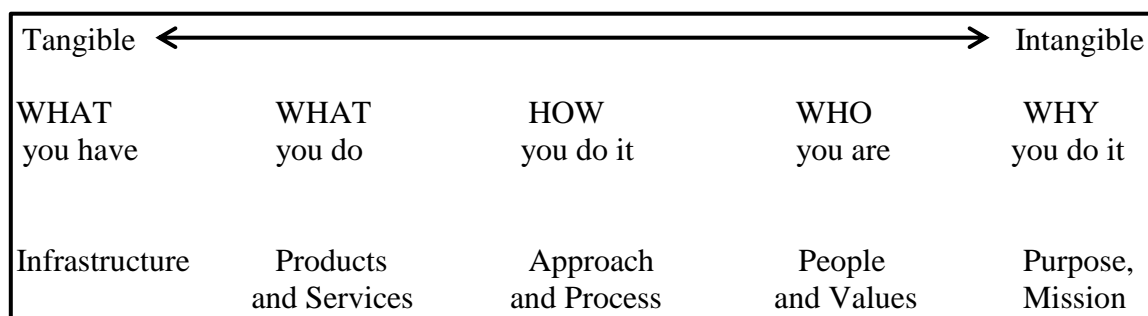


Fig. 5. Enterprise IG’s ‘Brand Analytics’ continuum (Source: Delin, 2005, p. 9)

Tangible brands are those whose offer to customers is focused on their own infrastructure – for a phone company, this could be the coverage of its mobile network; for a bank, it could be the number of branches and ATMs they have. It is clear that this is a very different offer from one at the intangible end of the scale, in which the brand’s position is based on a mission. For example, a phone company could attempt to communicate that they are passionate about keeping people in touch with each other; or a bank could try to express a desire to help customers achieve their dreams. In terms of brand values, brands towards the right of the scale may have more abstract values such as love and passion, while brands on the left of the scale may have more concrete values such as reliability, accessibility, and ease of use. In fact, in their analysis of the brand language of Nordea Bank and Bang and Olufsen, Henriksen, Jongejan and Maegaard (2004) have replaced tangible with concrete and intangible with abstract. (Delin, 2005)

Now, the company should realize all of its benefits, advantages, direction, values, but also the weaknesses. Therefore the company should be able to choose its archetype. Archetype is an absolutely great way to keep the right direction. Archetype does not just represent the brand identity; it is something that identifies the customers as well.

Archetype of the Brand

Jung (1963) divided the psyche into three levels: (1) ego (conscious mind), (2) personal unconscious (subjects that can become conscious, such as memory), and (3) collective unconscious (psychic heritage, experiences as species and knowledge with which we were born). The content of the collective unconscious is characterized by archetypes, which are innate to all individuals and represent universal ways to understand and perceive the world from ancestor wisdom. Archetypes are

pre-existing characteristic patterns in the collective psyche of the human race and that repeat continuously in our psyche, determining the basic ways we perceive and function as psychological beings. (Haddad, Hamza and Xara-Brasil, 2015)

Mark and Pearson (2001) argue that the conscious use of archetypes helps organizations to deliver meaning in their activities and provides a structure for communication. All narratives, modern and ancient alike, employ archetypes in portraying characters. Committing to an archetype helps a brand to endure situations of crisis and distinguish itself from the competitors offering products which the consumer would otherwise be unable to differentiate between. They identified twelve archetypes under which brands can be suited (Table 1.). (Raun, 2011)

Table 1. The 12 archetypes

Archetype	Description	Examples of Brands
Caregiver	They want to protect others from harm, to help, to take care.	Nivea
Everyman	Desire of connection with others. They want to belong, to fit.	GAP, Visa
Innocent	Desire of simple purity, goodness, happiness. They want to experience paradise and have as a goal to be happy. They have faith and optimism.	Coca-Cola, Disney
Explorer	They want to be free to find out who they are by exploring the world. Long to experience a better life, more authentic.	Amazon, Starbucks
Sage	They want to find the truth. Use their intelligence and analysis to understand the world.	McKinsey, Harvard
Hero	They want to prove their own worth through courageous and difficult action. Aim to exercise mastery to improve the world.	Nike
Outlaw	Their basic desire is revenge or revolution; they want to destroy what does not work (to themselves or to society).	Harley, Apple
Magician	They want to know the fundamental laws of functioning of the world or the universe and make dreams come true.	Vanish, Pantene
Lover	They want to achieve intimacy and experience the sensual pleasure. Aim to maintain a relationship with people and experiences they love.	Victoria's Secret
Creator	They want to create something valuable, lasting, forming a vision.	MAC
Jester	They want to live in the present, with fully joy, having fun and entertaining the world.	Pepsi, Burger King
Ruler	Basically they want to control, to raise a family, to build a prosperous and successful company or community.	AE, Microsoft

Source: Mark and Pearson (2001)

Many times marketing professionals feel completely lost when trying to manage the meaning of their brands, because they lack any reference points or significant frames that offer a system or a structure (Mark and Pearson, 2001). It is precisely this structure that archetypes provide for businesses, improving the communication with consumers over time. In order to help companies implement the archetypes to their brands, Mark and Pearson (2001) created the steps.

The first step of the system is the pursuit of the *soul* of the brand, which can be performed from a survey based on questions such as: Why was it created? Who created it? What was the context in which the brand was created? How do consumers relate to the brand? How is the culture and values of the company today and when it was created? among others. The second stage is the search for the *substance* of the brand, obtained by answering the following questions: What does this product actually offer? Why does the company want people to use it? When a product does not indicate clearly an archetypal identity, conducting a survey with consumers to discover their inherent tensions is required, also known as *consumer insight*. The analysis of consumer tension allows the company to reach the deeper understanding of the needs of their target audience and hence the construction of a

response to such tension. The third step of the system is the analysis of competitors, which identifies their *axes of differentiation* and their sustainable competitive advantage. In this phase, it is necessary to examine the competitive environment in terms of the archetypal meaning of competitors. Questions such as: What are the archetypes of my competitors? How are they positioning themselves? Do they clearly relate to the most appropriate archetype for their brand? How can I differentiate myself from them and move to a deeper level of relationship with my customers? Are good drivers for further analysis and decision about which archetype to use? The last stage is the analysis of the target audience, which is what ensures that the archetype is relevant and meaningful to their consumer. At this stage it is important to consider the *stage of life* where the customers are, which is a good starting point to examine their relationship with the archetype of a brand. The eight main stages are: infancy, early childhood, play age, school stage, adolescence, young adulthood, adulthood and old age. An archetype may have different nuances depending on the stage of the cycle in which a consumer is. Besides the choice of an archetype, the company has to worry about constantly renewing itself without losing its essence. Myths are as old as humanity; however, they are still renewed constantly to fit in contemporary life. (Stern, 1995; Haddad, Hamza and Xara-Brasil, 2015)

Finally, the purpose of the company should be connecting with the costumers by telling the story about its brand and about what it can offer.

Storytelling is a form of branding, or a way to represent a strong brand. Storytelling is not the only way to connect the past with the present and future but also demonstrate the emotions among people. Storytelling is used more in branding campaigns. Fog et al. (2010) believe that if companies are able to deliver messages by storytelling to the target groups, they are able to create a stronger brand. On the other hands, the brand is built by an emotional connection with the consumer and created by a strong corporate culture. In this case, target group such as customers and employees, is a means to connect the storytelling to branding, by comprehending company's value and message.

Why would anyone care to share or read such stories? Three rationales help to explain this behaviour. First, telling stories is inherently pleasurable to the authors; such storytelling allows authors to be both protagonist and audience and to vent anger or report bliss about events and outcomes over and over again, and to enjoy the nostalgia of reliving earlier experiences. Second, to some extent consciously, but mostly unconsciously, storytelling permits the teller to experience an archetype fulfilment; the plot line in the story told provides evidence that the storyteller-as-protagonist represents a regular guy/gal, lover, jester, creator, ruler, rebel, sage, hero, outlaw, magician, or some other archetypal primal form. Third, telling stories revises and deepens sense making of the meaning of events in the story and what the complete story implies about oneself and others. Schank (1990) proposes that people think mostly in terms of stories. (Woodside, Sood and Miller, 2008)

3 Results

The paper was focused on appointing the significant activities, which have to be done for building the strong brand. For summarizing and visualizing of described steps for building the strong brand the model was created (Fig. 6). The Model of the several-step guide for managing the brand shows all of the important operations, which the company has to do to reach the goal of strong brand.

As mentioned at the beginning, all of the companies have to identify corporate values, beliefs, essence accumulated into mission and vision. Afterwards the brand values come out of the corporate values and they should be in accord with values, which the company wants to bring to the customers.

Therefore the fundamental steps of the STP process are necessary to be done in the company. Except of the activities, which should be traditionally done in the process of segmentation, from the side of brand CPM matrix and personas are needed. According to the personas the companies can easier build their segments and form the activities for them.

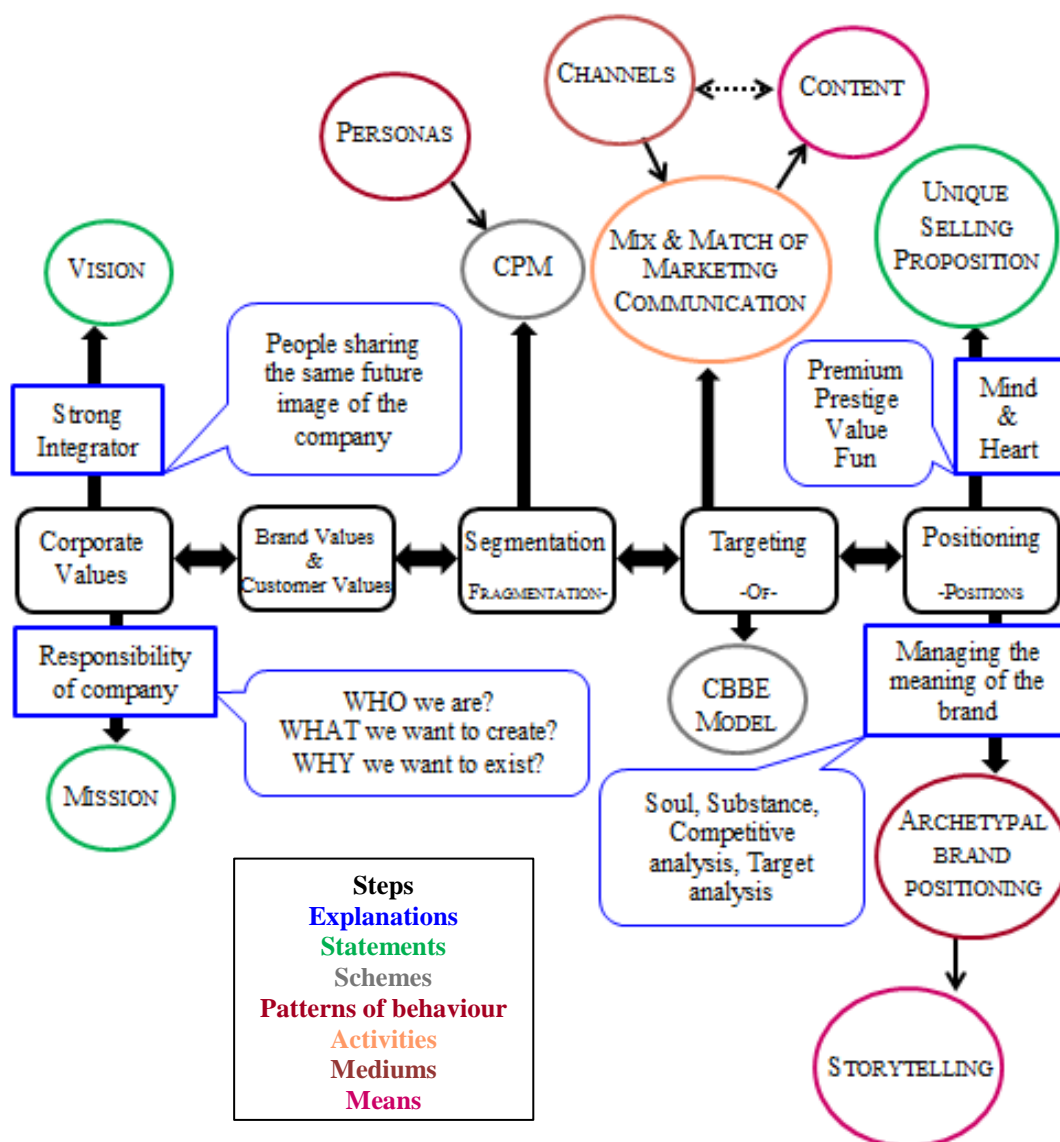


Fig. 6. The model of the several-step guide for managing the brand (Source: Authors' work)

Next in the process of targeting the company should build the CBBE model and by mixing and matching the tools of marketing communications create the strong content, which is consumed by customers through chosen channels. Creating the strong content touches also the last part of the process. In this part the unique selling proposition should be clear thanks to the previous steps. The company already has to know if its brand is more functional or emotional and adjust other activities to that. The meaning of the brand is managed by archetype through telling the stories about the brand. For better application it is necessary to identify the soul and substance of the brand and analyse the target and competitive from the view of archetypal brand positioning.

4 Discussion

There is much significant evidence that building the strong brand is necessary in today's environment. Also many of the activities, methods, and means are described as an important, but there is much less evidence of showing, how these activities can be used and cumulated in one process.

Managers need to have guideline for better managing activities connected with brand-building. Created model should help to managers to influence their marketing activities focused on the building and managing the strong brand identity. The created model certainly should be used in the company

in some period of time again and again because it is continuous process. The perceptions, habits of the audience are still changing, that is why the companies should adjust themselves. The structure of the audience is one of the main areas, which has to be monitored. The customers become more and more challenging, their needs are increasing. The companies should react to these increasing needs in the best way they can. That is why the companies should continuously carry on the exploring the customers.

The time of mass communication is slowing down. The companies have to build the relationships with their customers, to customize the offers. When they know their own customers, they can create a relevant content for them. By this content the company can show to their customers what it stands for and what they have in common. The customers like to associate with the brands and with the values, which they represent. The customers are the most important elements and the companies have to serve them the offers in better way than competitors. Thus, they should focus on following the recommendations over the whole process of satisfying the customers' needs and the model of the several-step guide for managing the brand can be one of these ways.

5 Conclusion

The aim of the paper was to create a several-step guide to notify how brands can be built and managed in today's marketing communications environment. Fig. 6 shows the significant components of the managing the strong brand identity over the STP process based on the literature review.

First of all the companies have to realize, what they stand for and try to communicate these statements in the appropriate way. It means that one of the critical point is to highlight the core values, opinions, directions and transform them into the mission and vision. In another step, in the part of segmentation the analysing of customers is necessary. After identifying themselves and their customers the companies can better meet the needs of their customers. The company influences own position in the minds of the audience by generating the relevant content and building the brand equity through CBBE model. The position also depends on the chosen archetype and the way in which the company wants to effect on the perceptions of the customers. By telling the stories the company can better express archetypal brand positioning and by communicated unique selling proposition the company can differentiate itself from the competitive.

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LONG MEMORY ANALYSIS OF AGRICULTURAL COMMODITIES: APPLICATION OF HURST EXPONENT USING LÉVY PROCESS

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Abstract

Nowadays, the trend of many economists and financial practitioners is to use the wavelet techniques or Hurts exponent methodology. Agricultural commodity market is characterized by volatile environment, shock or breaks. The aim of this paper is to investigate the dynamics of the main agricultural commodities - corn and wheat using stochastic Lévy process. The selected commodities are the most tradeable among financial institution. The prices of agricultural commodities are influenced by different events or factors, i.e. changes in production, weather or processing. The concept of long memory deals with persistency of time series over 2011 - 2015 period. For analysis of commodities the rescaled range method is used. Results show that there is an existence of long memory among corn and wheat prices. The H statistics of Hurst exponent indicates the strong form of memory with values above 0.75 under Lévy stochastic process distribution. Findings support the persistent behavior among commodities. The implication is for agricultural producers using hedging techniques or financial practitioners using empirical evidence of long range dependence.

Keywords

Long memory, Rescaled range analysis, Hurst exponent, Continuous process, Corn commodity, Wheat commodity.

JEL classification

C 13, C32.

1 Introduction

For capturing the long memory process from structural changes aspects the specific continuous time series are needed. The long memory models from econometrics approach have been used over decades by economists since 1980. On the other hand many researchers deals with persistency of time series in different fields. There are many studies in hydrology, climatology and physical sciences. Long memory series can attract with transformation of structural shocks and breaks to macroeconomic order. In other words the long memory process has an ability to remember the past price patterns and use that in forecasting purposes. Robinson (2003) defines the presence of persistence in time series as autocorrelation of long lags over hundreds periods. Authors Jin and Frechette (2004) deals with non - independency within data as a results of behavior with memory. Modeling of financial time series with the existence of memory has significant prediction with increasing forecasting efficiency.

There were fluctuations in the commodity market due to the financial crisis in years 2006 - 2009. (Bourdon-Huchet, Cheptea 2011). There are different problems with agricultural commodity investigation connected to storability, seasonality and external factors, i.e. weather.

Lévy process is described as continuous process with slow structural breaks and with long memory assumptions (Barndorff-Nielsen et al., 2001).

The long time dependence of agricultural commodity prices has a big impact to detect the specific behavior. The nature of memory analysis of agricultural prices involves detection if the structural breaks, bubbles or shocks are covered by model. Many agricultural practitioners are attracted by capturing the long - lived or short - lived character of shocks.

For detection of long memory character in time series the Hurst exponent most likely is used. Hurst exponent can be employed in many field of statistics, mathematics or fractal analysis (Mandelbrot, 1969). Hurst (1952) introduces this methodology with application on hydrology data. Thus, that was detected long - range correlations with separating trends. This framework is called

Detrended Fluctuation Analysis (DFA), see Kantelhardt et al., 2001). This paper assumes the alternative Rescaled range technique.

Motivation for long memory analysis is twofold: First, the analysis of long memory is an important issue for price movements prediction. Next, there is an implication for investment scenarios, i.e. commodity futures. Nowadays the investigation of long memory process performs for empirical evidence.

It is obvious that the concept of long memory analysis is relatively new concept in applied finance.

From the introduction presented above we can formulate the research hypothesis: (i) both agricultural commodity prices are long memory process under Lévy process conditions.

The main aim of this paper is to investigate if the agricultural commodity prices are time-dependent with long memory aspect. According to the main aim there is other problem, which is connected to determine the dynamics of time series.

The paper is organized as follows: The chapter Literature review describes the other authors and researchers in the field of long memory and agricultural commodities. Chapter Methods and data presents the selected method of R/S analysis and its application through Hurst exponent. Chapter Results displays the results obtained by selected method. Finally, the Chapter Conclusion sum up the main finding o the paper with recommendation on future research.

2 Literature review

There are many studies focusing on long memory detection. Kang et al. (2014) deal with time - varying process in the foreign exchange market. The Hurst exponent shows the uptrend within Asian currencies during 1997 financial crisis in Asia and worldwide financial crisis of 2008. Kováčz at al. (2013) deals with pig market in Hungary detecting the long memory properties with using of detrended fluctuation analysis. Carbone at al. (2004) calculated the detrended moving average to analyze the dynamical implementation of scaling technique.

There are several studies, which tested long memory using agricultural data with R/S method, for instance Kohzadi and Boyd (1995). They apply the rescaled range method to US cattle prices. The results of the paper show that the cattle prices are time - dependent with long memory. Next paper of Barkoulas et al. (1997) examines the commodity tradeable prices using fractals. The results display the long memory within time series. Baillie et al. (2007) work on analysis of six important commodities using long-memory analysis. They come to conclusion that the commodity time series are self-similar. Other paper of Tansuchat et al. (2012) provides estimation of long memory behavior through different commodities. They indicate the long – term dependence in the most agricultural commodities. Coakley et al. (2010) provide a long memory analysis for different commodities. They conclude that all commodities exhibit both structural breaks and long memory. Authors Power and Turvey (2009) found the long range dependence in agricultural commodities – corn and wheat.

3 Methods and data

Let us define the long memory process as a stationary time series with autocorrelation function:

$$\rho(k) = Ck^{-\alpha} \quad , \quad (1)$$

with $H = 1 - \alpha/2$,

where C is a constant, $\rho(k)$ we can define as autocorrelation function of data with lag k .

The rate of decomposition is determined by Hurst exponent (H). In the case of $H = 0.5$, then the time series are total independent. We can define that as a random walk.

If $0.5 < H < 1$, then the process is characterized by persistent behavior or with long memory (Alptekin, 2006). On the other side if the Hurst exponent is below 0.5 we can say that the time series are anti-persistent.

The data basement consists the prices of wheat (InstrumentWHEAT) and corn (InstrumentCORN) in term of post-crisis dynamics. The period is focused on the years of 2010 - 2014. Thus, there are 1264 observations. The frequency of time series is daily. The reason of selected period is in the field of post-crisis dynamics of time series. The software Gretl for further analysis is used.

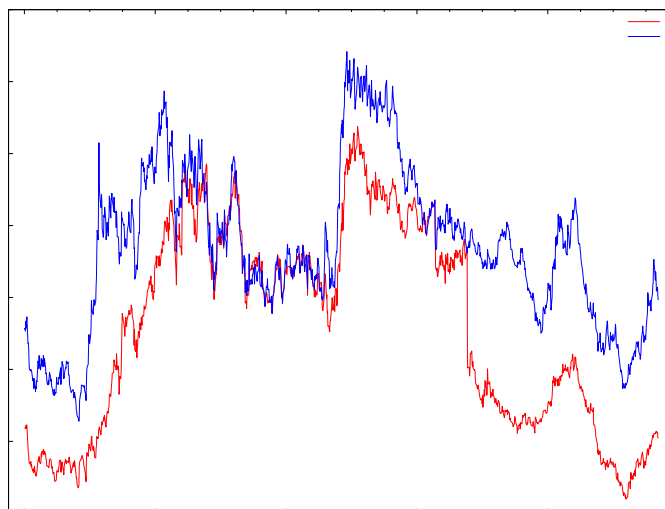


Fig. 1. Price trajectory of corn and wheat (Source: Gretl, own compilation)

From the figure 1 the both commodity prices are considered as a continuous Lévy process.

Firstly, it is needed to test the agricultural prices of both commodities, if there is a unit root. We can apply the Augmented Dickey - Fuller test on the data (Dickey et al., 1979). In the case of existence of unit root within data, we transform data using logarithmic transformation (Granger, Newbold, 1974).

After testing of time series for stationarity there is a transformation through:

$$r_t = \ln(P_t / P_{t-1}) \quad (2)$$

,where P_t is the observation at time t .

Let us Rescaled Range calculated for time series $X = X_t, X_{t+1}, \dots$: (Quian, Rasheed, 2004)

First step is to calculate the mean e :

$$e = \frac{1}{n} \sum_{i=1}^n X_t \quad (3)$$

after that it continues with transforming mean adjusted:

$$Y_t = X_t - e, t = 1, 2, \dots, n \quad (4)$$

Next it is needed to calculate the cumulative series Z_t

$$Z_t = \sum_{i=1}^t Y_i, t = 1, 2, \dots, n \quad (5)$$

From the equation (4) we form a range series R follows:

$$R_t = \max(Z_1, Z_2, \dots, Z_t) - \min(Z_1, Z_2, \dots, Z_t), t = 1, 2, \dots, n \quad (6)$$

Next step is focused on forming standard deviation of S :

$$S_t = \sqrt{\frac{1}{t} \sum_{i=1}^t (X_i - e(t))^2}, \quad (7)$$

$$t = 1, 2, \dots, n$$

Finally we can calculate the Rescaled Range (R/S):

$$\left(\frac{R}{S}\right)_t = \frac{R_t}{S_t}, t = 1, 2, \dots, n \quad (8)$$

The period is divided into several trading sequences of 316 days. It responds to trading year. We use the $t = 2^4, 2^5, 2^6, 2^7$ for regression purposes.

4 Results

According to Chart 1 the price trajectory of both commodities is not stationary. The Augmented Dickey-Fuller test is used. The p-values approve the null hypothesis about the existence of unit roots. That means the time series are not stationary. For further analysis it is needed to transform data via logarithmic returns.

Table 1. Augmented Dicky Fuller test, Gretl software

ADF test	CORN	WHEAT
p-value	0.465*	0.397*

*approval of the null hypothesis at 0.05 significant level

*Note: AIC was used for lag length selections

Table 2. Hurst exponents estimation for corn commodity

<i>Trading period</i>	<i>Hurst exponent estimation</i>
1	0.7212
2	0.7130
3	0.7218
4	0.7202

Source: Own compilation, Microsoft Excel.

Table 3. Hurst exponents estimation for wheat commodity

<i>Trading period</i>	<i>Hurst exponent estimation</i>
1	0.7420
2	0.7412
3	0.7398
4	0.7397

Source: Own compilation, Microsoft Excel.

Tables 2 and 3 display the estimated values of Hurst exponent. Corn prices are lesser than the wheat prices. We can interpret it that corn time series are lesser weak time –dependent than the case of wheat prices. The trading period 2 by corn commodity is close to weak form of long memory behavior. On the other hand the biggest value of H statistics is reaching the level of 0.75 within trading period 1. In general we can say that the wheat commodity prices have stronger form of memory dynamics. None of these commodities are close to the random walk. Both commodities assume strong form of Lévy process. The results are supported by the most authors of different paper, see Chapter literature review. According to Wei and Leuthold (1998) there are the findings of existence of long memory in corn and wheat commodities. In time series point of view we can say that both commodities have nonlinear dynamics structure.

5 Conclusion

The detecting the long memory with time series we detect the specific behavior of data in remembering the past event over history. This detection can be an important issue to price derivatives under arbitrage conditions. In order to investigate the long memory the Rescale Range method is used (Qian, Rasheed, 2004).

According to empirical results we can say that both corn and wheat prices are time dependent over history. In other words there is a long memory within commodity prices. The findings support that the prices do not follow the random walk. The value of H statistics is around 0.75. From this case it represents the strong form of persistency.

We can approve the research question because of the results suggest that the prices of agricultural commodities behave with memory. There are similar results to Barkoulas et al. (1997), which introduce the long memory evidence within agricultural data.

The results support the significance of high value of exponents, from this case the financial data are accurate for prediction. The idea of long memory supports the investment strategy decision making. First, the structure of data implies the using of long-time futures contract in both commodities with different maturity. Agricultural producers could use hedging techniques for decision making in these commodities.

Secondly, financial researchers and practitioners can use the concept of long range dependence for empirical evidence with support for other research issues.

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EXPLORATION OF NEW PATHS IN THE PROCESS MINING PRACTICE – STATE OF THE ART

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Abstract

The aim of the paper is to explore new paths in process mining research and practical applications. We will be focused mainly on business practice, but not restricted to it since the world of science is moving towards interdisciplinarity in recent years. Process mining investigates information from business data stored mainly in enterprise information systems and has a great potential in the future, because of the rising amount of data produced by the businesses. The discipline is not scientifically spread nowadays in a significant way. One of the main reasons might be the lack of knowledge about process mining and advantages one can achieve with it. In this paper, firstly, we present systematic literature review in the form of state of the art in the process mining field. Based on the literature review, we present, which parts of process mining have been successfully transferred into practice based on related articles, case studies and software packages and explore potential new paths of process mining applications. In conclusion, we discuss the results and potentials of process mining discipline.

Keywords

Process mining, State of the art, Business process management, Industrial application.

JEL classification

M15, M25.

1 Introduction of the process mining

Process mining is a relatively new and emerging discipline combining Business Process Management (BPM) and data science. Even though origin of process mining is dated to late nineties, it started to grow just recently because of rising attention of academic community all around the world. This raising interest, especially in business domain, is due to growing interest of businesses in exploitation and analysis of big data.

Process mining similarly to data mining is focused on extraction of information from big volumes of data produced by businesses. But unlike data mining, process mining is used to analyse processes represented through companies' data. Nowadays, even smaller businesses are using information systems like, e.g., Enterprise Resource Planning systems (ERP), Customer Relationship Management systems (CRM), Supply Chain Management systems (SCM), etc. These information systems are called Process-Aware Information Systems (PAIS). The usage of such information systems results in a production of large amount of data that were unused in the past. However, with the use of process mining, companies can exploit those large amounts of data to improve their efficiency and reduce their costs, while raising their competitiveness through discovering, monitoring and improvement of business processes.

The purpose of the process mining analysis is to analyse processes. Processes are represented by the data or in process mining terminology so called event logs. Event logs are formed by instances of the process called case and cases are broken down on events. Events are related to different activities done throughout the process. For the purpose of having more information about the process and its instances, events are allowed to have different attributes like, e. g., resources, results of the actions, roles, etc.

Data extracted from PAIS and used in process mining analysis are called event logs or logs. The extraction of logs from PAIS is much easier than from other systems. Logs might be delivered by the company in several different formats, e. g., CSV (Comma Separated Value), XML (eXtensible Markup Language) or XES (eXtensible Event Stream).

The aim of the paper is to introduce recent state of the art within process mining and explore present and new possibilities of use of process mining in practice. The paper is structured as follows, firstly, we will present state of the art of the process mining domain with the focus mainly in business sphere. Secondly, we will be focused on introduction of practical applications of process mining in the business domain and beyond. Lastly, we discuss our findings and explore the new possibilities of use process mining in the near future and we summarize our findings.

2 Process mining - state of the art

In this section we will introduce state of the art of the process mining domain. Even though, twenty years means in the area of informatics pretty long time, we believe it is important to start from the beginning to understand recent development. Software engineering and workflow management are in the background of idea of process mining discovery (Maruster et al., 2002). According to Tiwari, Turner and Majeed (2008) the pioneers in the area of process mining are Cook and Wolf, Agrawal and van der Aalst and their colleagues in their works. Cook and Wolf (1996) described Markov method for process discovery in their works. Agrawal, Gunopulos and Leymann (1999) were focused on mining models from workflow systems. They introduced discovery algorithm in the area that was in that time mainly focused on insuring right order of activities and successful termination of the process.

Aalst was not the first one to bring up discovery of processes from event logs, but because of his complex approach to the topic, the process mining developed into separate discipline. Arguably, the first appearance of term process mining, as it is used today was in the Weijters and Aalst (2001) paper. Authors introduced process mining as an alternative technique towards manual workflow design. As the main advantages time consumption and relatively often discrepancy between actual process and managers' view of the processes are stated. It does mean that collected data sets from PAIS, as objective description of reality, are often better sources for process modelling than subjective views of managers. Especially when the data needed for process mining analysis are today much more available, generated by practically every transactional system such as ERP systems, CRM systems, etc. While Cook and Wolf (1996), and Agrawal, Gunopulos and Leymann (1999) were somehow limited to sequential behaviour, Weijters and Aalst (2001) broadened the representation concepts with the use of Petri nets.

2.1 Omnipresent challenges for process miners

Quality of process mining analysis is mainly dependent on the quality of the data base. Process mining analysis can be only as good as the provided data are. In this section, we will pay attention to the data needed for process mining analysis (Aalst, 2015). Character of the data naturally vary based on the type of process mining analysis one does. The data needed for process mining analysis is almost never well structured or stemming from one source and immediately ready for analysis. More typical scenario is that the data is unstructured and is collected from several information systems or even through several organizational units, e. g., in the form of database tables, etc. (Aalst et al., 2008).

Even if we are able to gather our data together, we are far from being ready for process mining analysis. For process mining analysis to happen, we need the data to be in a form of an event log. In the data, related to one process, each event must belong to a single case – even though there are also techniques, where one does not have to know to which case each event belongs (Ferreira and Gillblad, 2009). Analogically, all events within all cases must be ordered. In practice this is usually done with

the use of timestamps. Ordering of events within the cases is crucial for discovering dependencies within the process. Besides that event logs can carry additional information about the process like, e. g., resources, etc. For formal definition of event log see, e. g., Weijters and Aalst (2001), Medeiros et al. (2003) or Aalst and Verbeek (2014).

Until 2010, standard for storing event logs was MXML (Mining eXtensible Markup Language) using XML based syntax. XES¹ is a new standard for event logs since 2010 adopted by the IEEE Task Force for Process Mining as the default interchange for event logs (Aalst et al., 2011; Verbeek et al., 2010). XES format was designed to solve several shortages of MXML especially with respect to attributes meaning. XES was designed based on a practical experience of researchers with MXML. Bose, Mans and Aalst (2013) summarize and discuss over dozen qualitative issues related to even logs. Later, Aalst (2015) addresses the issues of event logs and provides guidelines for creating event logs from raw data. Because of the nature of the data needed for the process mining analysis, one has also always to consider the possibility of abuse of the data from ethical point of view but many times also from legal point of view (Aalst and Dongen, 2002; Aalst, Reijers and Song, 2005).

Besides challenges on the side of data and constructed event logs, there are also many challenges on the mining side that both researchers and practitioners have to pay attention. Aalst and Weijters (2004) addressed several of them, e. g., hidden and duplicate tasks (also Medeiros et al., 2004b; Aalst, Medeiros and Weijters, 2005; Aalst, Weijter and Maruster, 2004; Silva, Zhang and Shanahan, 2005; Medeiros, Weijters and Aalst, 2007), non-free-choice constructs (Wen et al., 2007; Medeiros, Weijters and Aalst, 2007; Wen, Wang and Sun, 2006; Rubin et al. 2006), loops (Medeiros et al., 2004a, b), noise and incompleteness (Weijters and Medeiros, 2006; Silva, Zhang and Shanahan, 2005; Medeiros, Weijters and Aalst, 2005; Medeiros, Weijters and Aalst, 2007; Aalst et al., 2003; Maruster et al., 2002), etc. For example, promising approach towards hidden and duplicate tasks is a statistical approach, while for solving noisy and incomplete logs were used heuristics. Genetic approach towards process mining was applied to almost all of the problems because of the nature of genetic algorithms.

2.2 Main process mining analysis types

In the following section, we will pay attention to the main process mining analysis types, which are process discovery, process conformance checking and process enhancement. We start with the process discovery, because it is in general the first type of analysis one needs to perform. Knowing the process model is the key towards its improvement. Next, we introduce ongoing research in the area of process conformance checking and lastly, we introduce process enhancement.

Process discovery

The main objective of process discovery is to find patterns in the data base, as the starting activity to build process models. Process discovery is challenging and non-trivial task. To be able to discover process model we need the event log to fulfil three criteria: (1) each event must refer to a task, (2) each event must refer to a case, and (3) events must be ordered. This is done with the use of time of the events' occurrence in practice. This means that the log must represent well-defined process, structured into cases that we are able to order in time. Such event logs are nowadays relatively accessible due to expansion of information and other systems among companies. There are several types of techniques for the process discovery.

One of the first discovery algorithms was the α -algorithm introduced by Aalst, Weijters and Maruster (2002). Earlier, there was no other algorithm able to rediscover WF-net (WorkFlow-net). As Medeiros, Aalst and Weijters (2003) stated, algorithm is able to rediscover a WF-net if it is able to regenerate exact net structure of the original net. The algorithm is based on a four ordering relations (Maruster et al. ,2002) and the assumption of no noise and sufficient information in the event log.

⁻¹ XES. *IEEE 1849-2016 XES Standard*. [online]. [2017-09-23]. Available from: <http://www.xes-standard.org>

Fundamental relation directly follow represents tasks in the sequence following each other, based on directly follow relation we are able to define three other relations that are potential causality, parallelism and choice appearing in the log. Introduced algorithm represents discovered models as WF-nets. However, algorithm has also its drawbacks. The first drawback is the fact that it is not able to discover loops of length one or two. The second one - α -algorithm guarantees rediscovery of the net only if the log represents SWF-net (Structured WorkFlow-net) without any short loops and transitions with unique labels as stated in Aalst, Weijters and Maruster (2004) or Medeiros, Aalst and Weijters (2003). Authors discuss α -algorithm drawbacks in their work. WF-net as a class of Petri nets has a representational bias. That means Petri nets in general have a problem in dealing with non-free-choice constructs. α -algorithm has the same problem (van der Aalst et al., 2003). One has to also realize and keep in mind that two syntactically different WF-nets may produce same behaviour. Regardless of that α -algorithm is usable on wide range of WF-nets that are practically relevant. To summarize - main limitations of α -algorithm (Medeiros, Aalst and Weijters, 2003) are, like short loops, invisible, duplicate and implicit tasks, non-free-choice and synchronization of OR-join splits.

Aalst, Weijters and Maruster (2002) introduced a discovery algorithm that was able to discover processes based on minimal information in the log. α -algorithm only needed event logs composed from sequences or in other words - cases describing instances of modelled process in a basic form, e.g., $W = \{ABCDEG, ABDCEG, AEG\}$, where W is a workflow log containing three sequences $ABCDEG$, $ABDCEG$ and AEG . Today's information systems usually contain several other attributes. One of the recorded attributes might be the time of event occurrence – usually start and the end of the event. We call it a timestamp. This attribute provides us with the possibility to extract information about process performance according to Aalst and Dongen (2002). Authors extend α -algorithm to incorporate time information. The idea is to discover WF-net with log in a basic form and then replay timed log on discovered WF-net.

Medeiros, Aalst and Weijters (2003) addresses one-length and two-length loops. One-length loops are addressed with the use of pre-processing and post-processing. Patterns in log characterizing occurrence of one-length loop are removed, because it is possible to mine SWF-net without those places and get correct structure. Then, one-length loops are added in post-processing phase. Because the pattern in the data for two-length loops is not obvious, authors addressed this problem by redefining the definition of complete log and ordering relations. In Medeiros et al. (2004a, b) the authors tackle the problem of short loops more systematically and introduce $+\alpha$ -algorithm based on principles introduced in Medeiros, Aalst and Weijters (2003). Thus, $+\alpha$ -algorithm is able to correctly mine all SFW-nets. To solve one-length loop the authors use concept from previous work, but to solve two-length loops authors had to define two new ordering relations and redefine the old ones.

As mentioned above, one of the big problems of discovery of process models is noise that may occur in the collected data. By noise we mean events captured in the event logs that are not supposed to be there and that do not represent modelled process. Second problem besides the noise is incomplete event log. By incomplete event log we mean log that does not fully represent modelled process due to missing data in data patterns. To deal with noise and incomplete event logs, the heuristic approach to process discovery was introduced (Aalst et al., 2003; Weijters and Aalst, 2003).

Heuristic mining is based on a construction of dependency/frequency table (D/F table). D/F table is also conditioned by a directly followed relation. However, contrary to α -algorithm, heuristic mining defines and uses different set of relations. Heuristic mining also takes into consideration the frequencies of different types of relations occurrence in the event log. After that, one is able to derive relation table (R-table) out of D/F-table with the use of metrics introduced in Weijters and Aalst (2001). Maruster et al. (2002) introduce the use of logistic regression for determination of directly following relations based on D/F-table in their work. The inputs are values of three metrics derived from D/F-table, concretely - local metric, global metric, and causality metric. In Weijters and Aalst (2003), the authors introduced concept of the best candidate. The idea behind this concept is that non-first event must have at least one cause event and not-last event must have at least one dependent

event, which they implemented into their heuristic rule. In the same paper, they also state flaws (complex interconnected structures, recursion and short loops, etc.) of their heuristic rules and address them. Another approach in the form of a pre-process for process discovery introduced Song, Günther and Aalst (2008). Based on defined metrics they applied cluster analysis onto cases in event log to group the similar cases together and then analyse clustered subprocesses separately with some discovery method. Bose and Aalst (2009a, b) went a bit further and introduced a clustering based on similarity of subsequences to make several well-structured subprocesses from a “spaghetti-like” (complex and unstructured) process. Weijters and Ribeiro (2011) introduced flexible heuristic mining (FHM) algorithm based on original heuristic mining algorithm of Weijters and Medeiros (2006). One of the big upgrades in FHM was the introduction of causal nets (Aalst, Adriansyah and Dongen, 2011), which they used for representation of process model instead of Petri nets.

Region-based mining was introduced as the new approach towards discovering complex structures. The main idea behind region-based mining is to obtain a Petri net from transitional system based on regions. Transition systems are the most basic representation of processes. The problem with transition systems is a state explosion. Even simple processes tend to have many states. Thus, the region-based mining transition system is transformed into more suitable representation like a Petri net. Region-based mining introduced in their work Rubin et al. (2006). According to authors, region-based mining addresses limitation like, e. g., non-free-choices constructs and complex nested loops, duplicate activities, over-generalization, etc. Even though region based approach is very good attempt to handle complex processes, they are still very challenging for process mining in general. Such models are called “spaghetti”. For more information on region based mining see Aalst et al. (2010), where the authors use a new approach towards region-based mining based on Rubin et al. (2006).

The approach in Rubin et al. (2006) mentioned above uses state-based regions for process discovery. However, there is another approach towards region-based mining using language-based regions. The difference between both approaches is that region-based approach uses transition system for discovery of places and then process models. Language-based approach does not use transition system but so called languages derived from event logs. The concept of regions based on languages was introduced by Bergenthum et al. (2007). Werf et al. (2009) enriched the approach of Bergenthum et al. (2007) with optimality criterion and thus transformed the problem from solving system of inequalities into integer linear problem.

Inductive mining methods are focused on finding process trees from the log. One of the biggest advantages is that process trees are sound by nature of their construction (for more on soundness see, e. g., Aalst, Weijters and Maruster (2002), Dongen, Mendling and Aalst (2006)). Another advantage is that the process trees can be easily transformed into Petri nets or other representations. According to Aalst (2016) inductive mining is one of the leading approaches mainly due to its flexibility, formal guarantees and scalability.

Series of three articles dealing with inductive mining were conducted by Leemans, Fahland and Aalst. The inductive mining approach was introduced in Leemans, Fahland and Aalst (2013a). One of the biggest advantages of inductive mining algorithm is that it is proved to guarantee sound and fitting models in finite time. Thus, inductive mining is able to overcome many limitations of approaches introduced above. For example, α -algorithm guarantees soundness for only limited class of models. Genetic approaches does not guarantee finite time and heuristic nor fuzzy miner guarantees soundness. In Leemans, Fahland and Aalst (2013b) authors introduced extension of the previous version that is able to better handle noise in event logs in a form of a less frequent behaviour. In Leemans, Fahland and Aalst (2014), the authors focused on incompleteness of the event log and suggested several relations to deal with incomplete logs.

Conformance checking

Second type of process mining analysis is the conformance checking. After discovering a model of the examined process, we would like to know if the model has a good quality, if it is well fitting and

other characteristics. Conformance checking is in sense an opposite process to the process discovery. While in discovery analysis, we have an event log and we are trying to find an underlying model, in conformance checking we do have model of the process and we try to determine whether the model is able to produce original event log. The quality of the model is assessed with the use of several criteria that we mention herein after. This approach is used for a Delta analysis (Aalst, 2005), where one compares discovered process with some predefined process. Aalst defines conformance checking as an attempt to quantify “fit” between the event log and predefined processes (2005).

Aalst and Medeiros (2005) introduced the use of α -algorithm for audit purposes. And in fact firstly introduced second type of analysis – conformance checking. In other words, they used α -algorithm to discover normal behaviour and to detect undesired behaviour that can be considered as not secure. Aalst et al. (2011) proposed software architecture called OnLine Auditing Tool (OLAT), which enables to check business processes for auditing purposes. Aalst (2005) explores the use of a combination of process discovery, delta analysis and conformance checking for software development. Since Delta analysis does not have any quantitative measures to test fitness of the model, Aalst presents conformance checking with several metrics to measure fitness of the model as an alternative approach towards Delta analysis.

Besides metrics, Aalst (2005) also introduces very important concepts that are used as criteria for assessing the quality of the model. Concretely - underfitting and overfitting. In case of underfitting, the log contains behaviour that is not possible in predefined model or in other words, it allows for very different behaviour that was not seen in a log. In case of overfitting, the log contains behaviour possible in the predefined model but parts of the process model are not addressed by the log or in other words the model does not allow to generalize (for more detail on concepts of overfitting and underfitting see Rubin et al. (2006)). As one can see, it is necessary to find a balance between overfitting and underfitting (e. g., Fahland and Aalst (2011)). The authors propose post-process method for balancing overfitting and underfitting. The concept of overfitting is related to a generalization criteria and the concept of underfitting is related to a precision criteria. Another two dimensions in conformance checking are introduced by Rozinat and Aalst (2005), namely (1) fitness, and (2) appropriateness. The appropriateness is referenced as a simplicity nowadays and is related to the concept of the Ocamo's razor. Aalst, Medeiros and Weijters (2006a, b) and Medeiros, Aalst and Weijters (2008) introduce new approach based on typical executions of sequences or typical behaviour in the log by measuring the degree of similarity. Munoz-Gama and Carmona (2010) presented a technique for a precision estimation of a model represented by a Petri net with the use of FSM avoiding FSM's state explosion allowing only for behavior underlying Petri net. Another technique used in conformance checking is a trace alignment introduced by Bose and Aalst (2010). The trace alignment has its roots in biological sequence alignment. Buijs, Donden and Aalst (2012) present short overview of fitness, simplicity, precision and generalization. Besides that, Buijs, Dongen and Aalst (2012) point out the fact that most of the discovery algorithms focus on one or two dimensions. Hence, the authors present a genetic programming approach that is able to focus and optimize any of the four dimensions. Similar idea but different approach had Aalst and Verbeek (2014). The authors used a concept of passages for dividing the problem into smaller parts.

One of the limitations of process mining in general is the absence of negative examples in the event log, since the data is by the nature generated and thus captured only in a form of positive examples. This issue was addressed by Goedertier et al. (2009). The authors used artificially generated negative events for a process discovery. Business processes may change during their lifetime and then it is necessary to change the process model as well. Thus based on the work of Goedertier et al. (2009), Maggi et al. (2010) introduced method that is able to revise the model and make necessary changes. There is one more type of analysis called enhancement, which aims at improvement or redesign of processes and several perspectives, which we do not cover here because of limited space.

3 Process mining in practice in business domain and beyond

In the last decade, companies all over the world just discovered the power of the big data, they are either producing themselves or have access to. Thus, process mining is gaining on popularity between companies and also between researchers all around the world. In this section we depict the practical point of view on process mining, based on the previous sections where we focused on the theory behind it. In the first part, we present several case studies. Next part is focused on process mining tools and the last part is devoted to operational support and discussion over the possible new paths within process mining domain.

3.1 Practical uses of process mining

Several case studies are provided by the company called Fluxicon. We will introduce their process mining tool named Disco later in this section. First case study illustrates a company specializing in the production of mattresses. In this study, data from Warehouse Management System (WMS) was analysed. The two main goals were to (1) analyse already existed data to conform alignment between de jure model of the company and a model derived from data within the constraints set by company. Like equal amount of work throughout the shifts or First In First Out (FIFO) policy and (2) the modification of WMS to produce additional data for logs. The analysis showed that overall process was indeed in conformance with the assumed model. But problematic was that the constraints set by management of the company were not always respected, e.g. the most amount of work was done by morning shift, and FIFO rule was many times violated due to organization of stands in company's store². Second case study from Fluxicon was for an electronic manufacturer. The main goal of the manufacturer was to optimize their refund process, thus, the analysis was divided into three parts. First of all the process needed to be discovered. Then the performance analysis was conducted to reveal bottlenecks and lastly the conformance analysis was done, followed by several recommendations. The refund process was initiated either via callcenter or via the internet portal. If the refund process was started via callcenter, company needed additional information from customer in less than ten percent of cases. But if the refund process was initiated via internet, company needed additional information from customers in more than ninety percent of the cases. As a result, the time needed to settle customer's refund was too long. Thus company provided more information about the refund process³. The third study was conducted for a large global company with the aim to compare procure-to-pay process across affiliated companies all over the world. The company's goal was to (1) find deviations between de jure process and processes of the local companies and (2) to acknowledge if there are positive deviations in the local processes that could be used to redesign the standardized process. As the result, company's standard model was extended by best practices of the affiliated companies⁴. The interesting part of the fourth case study from Fluxicon is the area of use of the process mining. Concretely, the process mining was used to improve development of software systems with the use of agile methods. One of the characteristics of agile methods is that it is developed in small iterations. Every iteration produce executable part of the software that is discussed with customer and produced data can be used for enhancement of the software⁵. Similarly Ferreira

² Fluxicon 1. *Case study: process mining for analysing inventory processes*. [online]. [2017-09-27]. Available from: <https://fluxicon.com/blog/2014/01/case-study-process-mining-for-analyzing-inventory-processes/>

³ Fluxicon 2. *Case study: Process mining to improve service refund process*. [online]. [2017-09-23]. Available from: <https://fluxicon.com/blog/2012/11/case-study-process-mining-to-improve-a-service-refund-process/>

⁴ Fluxicon 3. *Case study: Process mining to compare procure-to-pay processes in different countries*. [online]. [2017-09-23]. Available from: <https://fluxicon.com/blog/2012/11/case-study-process-mining-to-compare-procure-to-pay-processes-in-different-countries/>

⁵ Fluxicon 4. *Case study: Process mining for analysing software processes*. [online]. [2017-09-23]. Available from: <https://fluxicon.com/blog/2014/04/process-mining-for-analyzing-software-processes/>

and Silva (2008) used process mining to determine if the ITIL framework used to managing IT services is implemented in one IT company accordingly to ITIL framework.

Taylor, Leida and Majeed (2011) present several issues related to business process discovery from the practical point of view in their case study, e.g., inadequate data quality, data deficiencies. Mahendrawathi, Astuti and Nastiti (2015) investigated ordering process of the customers and its fulfilment in leading telecommunication company in India with the use of data from company's CRM system. Authors demonstrated the use of process mining tools Disco and ProM on much unstructured processes, because the customers' orders may vary a lot. Authors successfully used heuristic miner algorithm for the process discovery that has ways to deal with noisy and unstructured process. The authors discovered that the company has very high rate of uncompleted cases and in many cases very long lead times. Another example of process mining use to analyse highly unstructured processes was conducted by Rozinat, Jong and Günther (2007). The case study was done in cooperation with leading manufacturer of chip-making equipment to test their wafer scanner test processes. In the study, several techniques like heuristic miner, conformance checker or LTL checker were used. Vázquez-Barreiros et al. (2016) presented the application of various process mining methods applied on IT service management like, e. g., measuring fitness of discovered model and various performance analysis (Adriansyah, Dongen and Aalst et al., 2011; Aalst, 2016). Jans et al. (2011) applied process mining, concretely fuzzy miner, performance analysis and role analysis to detect internal fraud detection that is very hard to detect especially in bigger companies.

Application of process mining in hospitals is also very frequent. Two case studies were shared at Fluxicon⁶⁷. In the first case study from healthcare domain are visible several characteristics of healthcare processes like complexity, flexibility, etc. The study concentrates on careflows. Careflow is a typical sequence of healthcare procedures provided to patients. Heuristic miner and trace clustering were applied in this study due to complexity of the processes in healthcare in general (Mans et al., 2008). Organizational perspective was applied to explore interaction between different departments of the hospital. In the second case study process mining was used for conformance checking of the de jure process of the hospital's emergency department described by hospital's manager (also doctor). As a result, real process was discovered based on provided data. The key feature in Rebuge and Ferreira (2012) and both studies was a cluster analysis. It seems as a good practice to use a cluster analysis as a pre-process phase, when dealing with highly individual and unstructured processes. Literature review from Rojas et al. (2016) provides a deep insight into the topic of application of process mining in a healthcare.

3.2 Operational support

All types of analysis we presented so far are being conducted on the data from past already completed processes, so called post mortem event logs. However due to new technologies, raise of the computational power allows new possibilities. One of them is operational support that is based on a combination of post mortem event logs and pre mortem event logs. Pre mortem event logs are data collected from running processes before their completion. This approach allows us to work with processes in the real time. While the trends of continuous rise of digitalization and spreading of internet of things (IoT) may provide us with appropriate data at the right time.

We believe that process mining operational support might be needed and useful approach for the concept known as Industry 4.0 (I40) also known as the fourth industrial revolution. I40 concept was introduced in Germany in 2011. I40 transforms manufacturing from separated automated units to fully integrated and continuously optimized production environment (Pan et al., 2015). One of the key concepts of I40 is the work with information in real time and in network systems. To make the

⁶ Fluxicon 5. *Process mining in healthcare: Case study no. 1.* [online]. [2017-09-24]. Available from: <https://fluxicon.com/blog/2011/05/process-mining-in-healthcare-case-study-no-1/>

⁷ Fluxicon 6. *Process mining in healthcare: Case study no. 3.* [online]. [2017-09-24]. Available from: <https://fluxicon.com/blog/2013/07/process-mining-in-healthcare-case-study-no-3/>

concept of I40 successful, it is necessary to revolutionize today's inflexible processes through the use of high performance computers, internet, intelligent products and machines to achieve active exchange of information. According to Qin, Liu and Grosvenor (2016), the whole concept of I40 will be based on two key technologies - Cyber-Physical systems and IoT. Scholars are also in concert with the four main aspects of I40 - smart factories, smart products, new business models, and new customers.

I40 is supposed to stand on automation, integration and communication. Operational process mining is able to provide many useful features to the concept of I40. Operational support, concretely online process mining has three activities – to detect, to predict and to recommend. Detect activity detects the deviations of real time processes from de jure processes. Predict activity predicts the events and their attributes to successfully complete real time process. Recommend activity recommends post fix of the process to successfully complete the process based on detect and predict activities. All of this would support processes to being autonomous, automated and intelligent, which is the concept of smart factories and its interactions with smart products. As we illustrated above, process mining has several successful applications in manufacturing, e. g., Rozinat, Jong and Günther (2007).

Of course, it is true that many limitations of the process mining will be in the environment of I40 truly tested at the new level. The challenge will be the amount of data produced by the manufacturers. Process mining algorithms will have to process up to millions of events. One also has to keep in mind that many of the process mining algorithms scale with the linear or worse time complexity. Another challenge that will be even worse under the circumstances of I40 are unstructured processes. Nevertheless, as we showed in the studies from hospital environment, trace clustering might be helpful. The complexity will be also very challenging. Complexity in our case refers to number of possible events and number of possible sequences representing the whole process.

4 Conclusion

The paper presented the state of the art of the process mining domain. In this paper, we focused mainly on the business domain, but we did not restrict ourselves to it and went beyond, when it was necessary or useful. We started at roots of the discipline and introduced originators behind the idea of process mining. Process mining has its roots in software engineering and workflow management systems. After that we presented many challenges that process miners, either in role of practitioners or researchers, have to face. Several challenges are on the side of the data and, in the collection of data from several systems or transformation from their raw form to needed even logs. As pointed out, problematic might be also the usage of the data from both legal and ethical point of view. Even after the data are prepared to use, the list of challenges continues.

The most of the research activities so far is focused in two types of process mining analysis, namely process discovery and process conformance checking. Thus, the most of scientific works is published in those two areas. Researchers were so far able to develop more than dozen process discovery algorithms, many of which were covered extensively in this paper. Most of the algorithms were developed to deal with some set of challenges. In that regard, inductive miner is one of the most successful algorithms due to its flexibility. But we need to state that not a single approach so far, was able to solve nor address all of the challenges mentioned in our paper. The most addressed challenges among researchers so far seems to be the noise, incompleteness of logs, and (2) hidden and duplicate tasks. On the other hand, the most addressed criteria related to process conformance checking seems to be the fitness criteria. Although genetic algorithms provide very interesting way to tackle all the four criteria at the same time or every criteria separately. Process conformance checking is especially popular in the recent years.

We presented several case studies to show that process mining is truly applicable in practice, especially in modern companies that are using the advantages provided by the new technologies. One of the several areas of use of process mining was manufacturing. We discussed possible new path of

application of process mining in the context of Industry 4.0. We presented several points of contact between the concept of Industry 4.0 and process mining discipline like, e. g., process automation, process management or real time monitoring. We believe that process mining has in that regard much to offer to the concept of Industry 4.0, despite many challenges. In that way Industry 4.0 will provide researchers with many opportunities and new paths for their research agenda.

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STATE OF SUB-SAHARAN AFRICA BEYOND ECONOMIC DEVELOPMENT

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Abstract

The paper examines the state of development in countries of Sub-Saharan Africa measured by Human Development Index. This index combines economic and social indicators and can therefore offer deeper insight into the standard of living in this developing region. The paper focuses on the impact of mineral dependency, previous colonial power and political situation on Human Development Index, as these variables differ significantly in Sub-Saharan Africa. The paper covers 48 countries and studies the relations between variables using regression analysis. The results suggest positive impact of higher level of democracy measured by different indices. Despite theoretical background, dependency on exports of mineral resources also has positive impact on Human Development Index in the region.

Keywords

Sub-Saharan Africa, Human Development Index, Democracy, Colonialism.

JEL classification

F63, O15, Q32.

1 Introduction

The region of Sub-Saharan Africa is one of the most underdeveloped parts of the world and is often on the margin of interest, especially by economists, as it only represents a fraction of world GDP, trade and investment. However, this region should occupy significantly bigger space in the economic research in the future thanks to its growing population and successful economic development in case of some countries of this region.

In this paper, we do not focus solely on economies of Sub-Saharan Africa, but we study the region from broader perspective, using the Human Development Index to capture the economic and social dimensions of current situation of the citizens of these states. The aim is to study the factors possibly influencing the values of Human Development Index in Sub-Saharan Africa, and to determine the impact of these factors.

The region of Sub-Saharan Africa consists of 48 states on African continent south of Sahara Desert. The desert served as a barrier between Sub-Saharan Africa and Northern Africa thus creating a region with its distinctive history, geographical features and culture. According to UN Statistics Division (2017), following states belong to Sub-Saharan Africa: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Republic of Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe. The region occupies the area of 22 424 636 square kilometres (The World Bank, 2017a) and in 2017 it has 1 014 318 745 inhabitants. This number is predicted to grow rapidly towards 3 934 828 498 inhabitants in the year 2100. (Population Pyramid, 2017)

This part of the world is marked by its colonial history and resulting state creation based on colonial interests disrespecting local tribal affiliations, language and religion. The conflicts based on the administrative division of Sub-Saharan Africa undermined the region after independence and some of them prevail to this day. Conflicts, political instability, corruption and indebtedness are only several reasons why Sub-Saharan Africa only represents 2.01% of world GDP (The World Bank, 2017b). The economies of Sub-Saharan Africa are underdeveloped and more than half of the people

still work in agricultural sector. According to the World Bank, 27 countries are low-income (The World Bank, 2017c) and 33 are enlisted as the Least Developed Countries. (UN Committee for Development Policy, 2016)

The one sector in Sub-Saharan Africa that is indispensable for almost all economies in the region and important also for the rest of the world economy is mining sector. The region has vast reserves of oil, natural gas, gold, diamonds and other mineral resources essential in modern industries. The abundance of mineral reserves in Sub-Saharan Africa has major impact on its economies and arguably also on the political and social situation in the countries of our research.

To identify the impact of three studied dimensions on Human Development Index, mineral resources, former colonial power and democracy, we chose the following structure of the paper. In the following chapter we introduce the literature review of works studying the impact of mineral resources, former colonial power and democracy on development. In the next part we describe the methodology of our research and the data we used. This part also contains the results of our research and its implications.

2 Development in Sub-Saharan Africa

The situation in Sub-Saharan Africa is unenviable by any standard. If we evaluate the situation in the country by economic, social, political or demographic indicators, the values of most of them in Sub-Saharan Africa is in the less desirable half of the spectrum. The explanations of this situation include belated development of agriculture, corrupt local leaders, unpaid labour, changing terms of trade unfavourable for primary production and bad institutions. (Allen, 2011)

Sub-Saharan Africa has a GDP of 1 496 billion USD, which represents only 2.01% of world GDP. There are significant differences between the countries' levels of GDP p. c., with the extreme values of Seychelles (15 390 USD) and Burundi (277 USD). The average GDP p. c. in Sub-Saharan Africa is 1 450 USD.

The other indicators describing social aspects and demographics of Sub-Saharan Africa testify to the similar picture of the region. The population of Sub-Saharan Africa grows rapidly and it will grow from 16% of world population today to 35% in the year 2100. (Population Pyramid, 2017) This results in the youngest population among the continents, with 43% of the population is under 15 years old and only 3% is over 65. (Population Reference Bureau, 2016) Although average life expectancy in the region is 55 years, it is growing. The main obstacles are high child mortality (136 out of 1 000 children die before the age of five) and significant HIV prevalence, especially in eastern and southern part of Sub-Saharan Africa. (Canning, Raja and Yazbeck, 2015) The population growth is problematic mostly because the majority of potential workforce does not have the required qualification (only 70% of the population are literate). The reported unemployment rate in Sub-Saharan Africa is 7,4%, but the statistics are less reliable than in developed world and underemployment is a big problem too. In addition, 34,3% of the employed people live in extreme poverty. (International Labour Organization, 2016)

The level of urbanization in Sub-Saharan Africa is 39% (Population Reference Bureau, 2016) and the rural area generally lacks basic infrastructure. In Sub-Saharan Africa 319 million of people do not have access to drinking water and 695 million lack sanitation. (World Health Organization, 2015)

2.1 The impact of mineral resources

Natural resources are one of the determining factors of the economy as one of the three factors of production. However, the impact of raw materials abundance in the economies is ambiguous. There are examples of countries that thrive with abundant reserves of natural resources (Norway) and without them (Japan, Switzerland). But there are many countries rich in natural resources which

belong to the poorest or least developed, including many countries in Sub-Saharan Africa. The economists studied the negative impact of natural resources on economies for several decades.

Countries of Sub-Saharan Africa are also impacted by resources, as some of them are important producers of oil (Nigeria, Angola, Equatorial Guinea), natural gas (Nigeria), gold (South Africa, Ghana, Mali), diamonds (Democratic Republic of the Congo, Botswana, South Africa) copper (Democratic Republic of the Congo, Zambia, Eritrea), coltan (Democratic Republic of the Congo, Rwanda, Ethiopia) and other minerals. (U.S. Geological Survey, 2017)

The most important economic theories dealing with negative impact of natural resources on countries are *Dutch disease* and *resource curse*. In addition, many economists studied the impact of natural resources on economic growth, public investment or savings.

The *Dutch disease* term describes the adverse effect of oil discovery in Netherlands on its industry and exports. Although the term Dutch disease first appeared in The Economist in 1977, it was developed to the economic model by Corden and Neary (1982). In the paper, they describe the impact of newly discovered resource on small open economy with three sectors, two traded sectors (booming energy sector and lagging industrial sector) and non-traded services sector. Their model explains the mechanism of the negative impact of sudden increase in the energy sector output on the production in the industrial sector by two effects, the resource movement effect and the spending effect. The sudden expansion in the energy sector increases the marginal products of the mobile production factor, labour, in this sector. As a result, the labour force is moving to the growing energy sector what we can describe as resource movement effect. With the growth of the marginal product, there is also an increase in employees' wages, which generates the spending effect. The spending effect affects the non-traded sector of the economy, which is simply referred to as the services sector in the model. Both described effects lead to the movement of workforce to the energy sector as well as to the service sector. The industrial sector is losing its labour force, leading to deindustrialisation. The resource movement effect is referred to as direct deindustrialisation and the spending effect is indirect deindustrialisation.

The Dutch disease became the leading theory dealing with the adverse effect of natural resources on economic performance. Many economists studied this phenomenon from various angles and in different countries, including countries of Sub-Saharan Africa. Ezeala-Harrison (1993) and Akinwale (2012) both studied and confirmed the existence of the Dutch disease in Nigerian economy as a result of resource movement effect on labour market leading to decreased output of agricultural and industrial sector. There is also one country notoriously described as success story on how to avoid the negative effects known as Dutch disease. This country is diamond-rich Botswana, studied by Jerven (2010) and Hope (2000). They both agree that Botswanan success can be ascribed to the combination of specific factors: Botswanan pula pegged to the South African rand, prices of beef exports fixed by Lomé agreements and migration of workers to South Africa to avoid unemployment.

The next big theory on the topic of natural resources was *resource curse*. (Auty, 1993) This theory focuses on the impact of natural resources on economic growth, but also describes the political consequences of resource abundance. Some economists studying the issue of natural resources consider Dutch disease to be one of the expressions of resource curse. Auty compared the growth rates of two groups of developing countries, resource-rich and resource-poor. According to his results, economic growth in resource-rich countries was slower than in resource-poor countries, even though resource-rich countries invested more. Auty explained the results by negative influence of natural resources on political environment in the country. He argues that governments use the significant income from resources to financially support groups that helping them remain in power.

The resource curse theory was also applied to several individual economies in Sub-Saharan Africa. In Nigeria, Sala-i-Martin and Subramanian (2013) described the negative political situation and suggest equal distribution of income from resources among Nigerian citizens. Similarly, Maconachie and Binns (2007) recommend providing this money to local communities to boost post-conflict reconstruction in Sierra Leone. Hammond (2011) suggests the creation of state-owned oil company

in Angola, to separate the oil income from government budget, along the lines of Venezuelan *Petróleos de Venezuela*.

The authors studying the impact of natural resources on economies did not focus only on Dutch disease or resource curse, but focused on different economic indicators. Van der Ploeg (2011) suggests that resource abundance leads to lower inflow of foreign direct investment and higher macroeconomic volatility and the negative effects are magnified by bad institutions. Papyrakis and Gerlagh (2004) describe possible negative impact of resource abundance on investment, openness, competitiveness or education. The negative effect of resource incomes can be avoided if the money is used to accumulate foreign capital and not to expand government spending. (van Wijnbergen, 1984)

The literature on the impact of mineral abundance on economic and social development is shifting from negative views of Dutch disease and resource curse towards exploring ways to avoid the negative consequences and to build upon the natural wealth and use it for the enhancement of economic, political and social climate in the country. The newer research suggests several approaches that countries can use to prevent the curse of mineral, which is perceived as avoidable.

2.2 The impact of colonial power

When the economists study formerly colonized developing countries, they often use the dummy variable of colonial background in their research. This approach enables the comparison of the situation of countries colonized by different nations and thus the varied impact of each colonizing power.

The premise behind this approach is that the different colonial systems adopted by main colonial powers influenced the quality of institutions in colonized countries and persisted to these days. Some authors studied the impact of different colonial institutions within one country, for example between urban and rural areas, and found significant impact on economic performance of these regions today. Among the countries studied are Cameroon (Lee and Schulz, 2012), Nigeria (Berger, 2009) or India (Banerjee and Iyer, 2005).

Generally, the differences in institutions within countries are not significant and hence the more obvious comparison is between countries. Joireman (2001) compared the impact of different inherited legal systems on effective rule of law in Africa. The results show that common law is better in providing rule of law than civic law, which favours former British colonies. British colonial rule is also shown to have a positive effect on democracy survival (Bernhard, Reenock and Nordstrom, 2004) and the quality of government. (La Porta et al., 1999)

Some authors conclude that the difference between countries cannot be ascribed to the different colonial heritage but can be explained by other factors. Hall and Jones (1999) claim that the difference in economic performance of former colonies depends on the level of involvement of European settlers. Also in countries where European did not face high mortality rates and so could settle there, institutions worked better and it positively influenced the economic situation of these countries today. (Acemoglu, Johnson and Robinson, 2000) White (1996) studied the differences between educational systems under different colonial powers and concluded that the quality of education was not influenced by colonial heritage because the variations between states and even regions was significant.

2.3 The impact of political situation

The impact of political situation on economic and non-economic indicators can be direct or indirect and is also studied in both ways. In connection to the previous part of our literature review, many authors suggest that natural resources' impact in the economy depends on political situation in the country. The differences between successful and failing resource-rich countries are almost always explained by different political climate.

To find the difference between thriving and failing resource-rich economies, Torvik (2009) studied the impact of natural resources on economic growth accounting for differences in quality of

institutions and investment climate. The impact on growth is still negative so he suggests further research using differences in political system or industrialization. To study the impact of political situation, Konte (2013) divided countries into two groups based on their *Polity* score. The results show positive impact of resources on economic growth after achieving certain level of democracy. Positive impact of democracy and good institutions on mitigation of negative effects of natural resources was further confirmed by Bhattacharyya and Collier (2014).

The importance of democracy in the development process is the subject of debates among political scientists and economists. In many respects this debate comes from ambiguous definition of development, as it ranges from pure economic development to development in political and social situation. Also some studies on the topic present an ambiguous result. (Helliwell, 1994; Barro, 1996)

The authors advocating the negative effect of democracy on economic growth often refer to *Lee thesis*. This is the concept named after former Singaporean Prime Minister Lee Kuan Yew, who advocated the need for strong, authoritarian leadership to execute reforms necessary for economic development of poor Asian countries. (Knutsen, 2010) During the 60s and 70s, after the decolonisation process, the proponents of this view were very vocal and their statements include “if the less-developed countries are to grow economically, they must limit democratic participation in political affairs”, “if economic development is the all-embracing goal, the logic of experience dictates that not too much attention can be paid to the trappings of democracy” or “political participation must be held down, at least temporarily, in order to promote economic development”. (Przeworski, 2000) Also the famous opponent of development aid, Dambisa Moyo, claims that “far from being a prerequisite for economic growth, democracy can hamper development as democratic regimes find it difficult to push through economically beneficial legislation.” (2009) Several studies present this conclusion based on data analysis, including papers by Saha and Zhang (2017), Rachdi and Saidi (2015) or Abeyasinghe (2004).

The vocal advocate of democracy as inherent precondition of development is Amartya Sen. His book *Development as Freedom* (1999) summarizes the works on this topic. Despite examples of successful economies built on authoritarian regimes, Sen does not see the need for authoritarian rules for economic growth, but rather promotes democracy as a path to sustainable economic and social development. This premise is supported by authors studying the effect of democracy on economic performance. (Gründler and Krieger, 2016; Rock, 2009) Additionally, other papers identified positive impact of democracy on innovation (Gao et al., 2017) that often has a form of new technology (Zagoršek, 2012) or is non-technological like business model innovation (Zagoršek and Slávik, 2017), lower child mortality (Ha and Cain, 2017; Wigley and Akkoyunlu-Wigley, 2017), access to treatment of HIV/AIDS (Justesen, 2012) and education (Dahlum and Knutsen, 2017).

3 Methodology and results

In this paper we study the impact of resource dependence, political situation and colonial history on Human Development Index in Sub-Saharan Africa. In the previous chapter we identified that dependency on mineral resources, former colonial power and democracy have impact on economic performance and other indicators. In our research we want to identify the impact of these dimensions on Human Development Index. The main methods used to identify the relationship between the variables are correlation analysis and regression analysis. All the data were processed using statistical software Eviews.

In our research we used data from 48 economies in Sub-Saharan Africa for the years 1995 to 2015. We decided to follow the trend of shifting from natural resources impact towards more specific impact of mineral resources, so for the impact of natural resources we use the indicator of the share of mineral resources in total exports. The international databases do not encompass the indicator of mineral resources share in total exports and does not divide all exports according to detailed SITC. To access data on exports divided to detailed SITC categories, we used United Nations Conference on Trade

and Development (UNCTAD, 2017) database. For the purposes of our research, we use following export categories from SITC: Section 3 - Mineral fuels, lubricants and related materials, Division 27 - Crude fertilizers, other than those of division 56, and crude minerals (excluding coal, petroleum and precious stones), Division 28 – Metalliferous ores and metal scrap, Division 68 – Non-ferrous metals, Group 667 - Pearls and precious or semiprecious stones, unworked or worked and Group 971 – Gold, non-monetary (excluding gold ores and concentrates). The sample of the shares minerals in total exports consists of 987 observations. The average value of indicator is 0.3404, the median is 0.2588. Values range from 0 to 1. The standard deviation is 0.3083.

For the data on political situation we used the data from three different databases to compare the results on their respective impact. The first indicator is *Polity IV* published by The Center for Systemic Peace (2017). The indicator can range from +10 (absolute democracy) to -10 (absolute autocracy). Among the studied countries, the mean value is 1.6242, the median value is 1 and standard deviation is 5.2377. The second one is *Democracy index* published by The Economist Intelligence Unit (2014) with the scale from 0 to 10, where ten is the most democratic regime. The mean value is 4.3096, the median value is 3.84 and standard deviation is 1.7683. The third democracy indicator is unique as it only contains data on African countries and is known as *Ibrahim Index of African Governance*. (Mo Ibrahim Foundation, 2013) It has a scale from 0 to 100, with 100 being the best, most democratic value. The mean value is 50.0338, the median value is 49.65 and standard deviation is 13.1545. The data on colonial heritage were used as dummy variables.

The dependent variable is the Human Development Index consisting of three partial indicators describing the economic situation, education quality and life expectancy. The index values can be on the scale between 0 and 1, where higher value means higher level of human development.

The correlation analysis in Table 1 shows the correlation of independent variables with Human Development Index. From the results in the table we can see that out of the independent variables, democracy indicators have positive correlation coefficient and the values are statistically significant. This suggests that democracy has positive impact on human development. Among the correlations of human development and former colonial power, the only positive correlation is with British colonial history. Other countries show negative correlation, however, the correlation coefficient between Portuguese colonial history and HDI is not significant.

Table 1. Correlation analysis

	Correlation coefficient	P-value
The share of mineral resources in total exports	0.016	0.804
Polity IV	0.200	0.002
Democracy Index	0.323	0.000
Ibrahim Index of African Governance	0.424	0.000
Belgian colony	-0.252	0.000
British colony	0.284	0.000
French colony	-0.160	0.013
Portuguese colony	-0.030	0.647

Source: Own calculations.

In Table 2 we continue to explore the impact of described variables on Human Development Index using the regression analysis. Based on the literature review in the previous chapter we included all three described dimensions into our model, as previous work showed that they have an impact on economic and social indicators. Bearing in mind the results of other authors' research, we expect following results. The economies that have higher share of mineral resources in total exports should have lower values of HDI. The countries formerly colonized by the British should perform better than former French, Belgian and Portuguese colonies. The countries with higher level of democracy should have higher values of HDI.

From the chosen indicators of democracy, only Polity IV was statistically significant in the regression, hence we included it into the model. Also included are the indicators of the share of mineral resources in total exports and dummy variables for former colonial power. The share of mineral resources has positive effect on human development and so has the democracy level, as both coefficients are positive and statistically significant. The impact of colonial heritage by country had negative and statistically significant in case of former Belgian, French and Portuguese colonies. The results of the impact of British colonial rule are not statistically significant.

Table 2. Regression analysis

	HDI
Constant	0.480*** (0.014)
The share of mineral resources in total exports	0.047*** (0.014)
Polity IV	0.004*** (0.001)
Belgian colony	-0.119*** (0.020)
British colony	-0.004 (0.015)
French colony	-0.060*** (0.015)
Portuguese colony	-0.057** (0.019)
R-squared	0.13

Standard error in parentheses.

*** significance ≤ 0.01 ; ** significance ≤ 0.05 ; * significance ≤ 0.1

Source: Own calculations.

The results of our research do not fully comply with the theoretical background from the second chapter of this paper. Our research does not confirm the negative impact of the share of mineral resources in total exports on human development in Sub-Saharan Africa. This result can be explained by the overall economic situation in the region, as mineral resources are one of the few commodities that underdeveloped countries can successfully export to developed economies. The countries in the region either have mineral resources and export earnings from it or they do not have any substantial export earnings at all. Therefore the countries with high share of mineral resources in total exports have higher per capita income.

The negative impact of French, Belgian and Portuguese colonial history is consistent with the literature review, although we did not confirm a positive impact of British colonial history. Our results suggest that other than British former colonies perform worse than average based on the Human Development Index values. The result for former British colonies is not significant probably due to the large number of very different countries in this category.

Similarly to the majority of previous research papers we also confirmed the positive impact of democracy on development, namely on the values of Human Development Index.

4 Conclusion

The region of Sub-Saharan Africa remains one of the least developed parts of the world which draws the attention of economists studying the roots of this unfavourable situation. Although some of the countries of Sub-Saharan Africa are in the middle-income category, they have problems in non-economic area like healthcare, education or political system. This is one of the reasons economists and social scientists use indicators that go beyond measuring economic performance. One of these indicators is Human Development Index.

In this paper we study the impact of natural resources, level of democracy and colonial heritage on Human Development Index. Based on the literature review, all of these indicators have an impact on economic development or other issues influencing the Human Development Index.

In the second part of the article we used the data from 48 countries of Sub-Saharan Africa in the years 1995 to 2015 to examine the relationships between the indicators. In the correlation analysis we identified that the democracy indicators have positive and statistically significant correlation with Human Development Index.

In the regression analysis we used these independent variables: the share of mineral resources in total exports, democracy index Polity IV and dummy variables for former colonial power ruling over the country. All independent variables except for dummy variable for British colonies were significant. Natural resources showed to have positive impact on human development, probably through raising the incomes and thus influencing economic aspect of the indicator. The positive effect of democracy is small but consistent with the majority of literature describing all the sectors positively influenced by higher democracy levels.

The results of the impact of dummy variables of colonial heritage also support the theory claims that countries not colonized by the British have shown to perform worse than the countries formerly colonized by the British. Although the results for British colonial history were not significant, all of the other former colonialists had negative impact. The ambiguous results of British colonialism can be explained by the great variation among former British colonies and their performance before and after independence.

The paper studied only some issues influencing the Human Development Index. But the complexity of the situation in Sub-Saharan Africa calls for further attention to other variables influencing the indicator. Also, further research could investigate the impact of natural resources, democracy and colonial heritage on the partial indicators of Human Development Index, as this may help improve the situation in either one of the concerned fields, economy, health and education.

The results of different impact of former colonial power can serve as an inspiration for further research of the causes of these differences. The explanation can be found in institutional background and current quality of institutions, infrastructure, educational system, health care system of legislature. All of these aspects can be improved in the countries of Sub-Saharan Africa, especially if they would be identified as the differentiating factor between successful and lagging economies in the region.

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THE RAVISHING ESSENCE OF THE 21ST CENTURY MARKETING

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Abstract

Since the beginning of the twenty-first century marketing has been undergoing significant changes. The conventional procedures and methods have been unable to establish a more personal contact with customers, which are giving rise to new marketing techniques and trends, in order to understand that the key to success is just a thorough knowledge of customer needs. Currently, we are hearing in connection with marketing words like innovation, movement, or change. Under these changes we usually see an immense amount of new trends that marketing influences. On the other hand, some premises also repeat in cycles, whereas most often it is a return to the customer, in one way or another. The aim of this research paper is to analyze and compare selected new trends applied in modern marketing, with emphasis on their implicit characteristics and use in practice, since however, it is very difficult to attract customers, who are on a daily basis overwhelmed by quantum of information as well as advertisements, literally all around them.

Keywords

Modern Marketing, Marketing Trends, Technology.

JEL classification

M10, M31, M50.

1 Introduction

Modern marketing should not be seen narrowly as a challenge to constantly finding smarter ways to sell products or services. Many people confuse marketing with one of its sub-functions such as advertising and sales. Authentic marketing is not a hard sell of what a company makes, but to know what to produce. It is the art of identifying and understanding customer needs and creating solutions that deliver satisfaction, profits, and benefits to customers, shareholders and manufacturers. Likewise, in the new-media-reality the Internet has caused a major breakthrough in marketing, since in the past marketing has been mainly advertising and brand management. Its arrival has completely changed the rules, and companies have no choice but to adjust if they want to succeed in tough competition. Of course, the media are still needed and play a very important role for many companies and their customers. However, using the Internet and new forms of communication, we can connect directly with the customer, in order to be successful and attract more potential customers, sometimes even without having to pay for it.

Looking back into the history of marketing in comparison with what is happening today, we can honestly say that marketing has undergone a very successful period of thirty-five years, until the year 2005. Around this period, there has been settling in the use of traditional marketing channels such as television commercials, radio spots, and newspaper ads. However, this peaceful time when traditional marketing methods have not been outdated for decades, was virtually aborted by a rush of new marketing techniques and trends. Since the internet has become the main information channel and has experienced unprecedented growth, businesses started to use it as sales and support channel for customers, company presentation, web presentations and many other areas. Because the development and progress is unstoppable, many types of marketing practices of the 20th century have become obsolete. Nowadays, consumers deem advertising on television as stereotype or as a necessary break that interrupts their program. Most consumers react, when the ad starts to run, negatively and instead use its monitoring time for refreshment. Furthermore, customers got over the time a certain kind of power and a greater influence. Previously, they were willing to endure the *advertising whoo*, accept unsolicited communication, because it often turned out to be a useful source of information. This method of communication often brought a certain value. However, that has changed. There are a

number of ways for consumers on how to get an information they need and they can do it when it suits them and not at the time when a company decides to approach them. The old way of addressing customers is rather annoying, whether it's a large number of shipments of direct mail, unsolicited e-mails, phone calls, which actively provide credit card or intrusive advertisements or some other activity. Every form of direct communication, such as unsolicited e-mail, unaddressed mail or insistent call that a potential customer may be considered harassment, and he/she did not request, leads to damage to the corporate brand. In a world where consumers have virtually instant access to any information they need, unsolicited forms of direct communication, are not only unwelcome but are likely to be perceived in a negative light.

The role of marketing in the new economy has fundamentally reversed from the customer search for products into searching products for customers. Internet enables businesses to exponentially expand its geographic reach. In the new economy and the modern marketing, a big corporation does not necessary has to be a global player anymore. For the first time, small businesses can reach potential buyers anywhere in the world. Also, these small businesses can be literally located anywhere. Conversely, large corporations with many local branches may reconsider their strategy. However, companies must think about the consequences of modern international marketing through the internet, because that means for them both advantages and disadvantages. Customers are no longer forced to buy overpriced products or services by sellers in their own country, where the same goods are available cheaper from merchants abroad.

2 Doctrine of Modern Marketing's Essence Centered on Cardinal Divisions

Living in an age when customers are smarter than ever, in a world of interconnected smart devices and gadgets, web messaging, blogs and social networks, customers receive social information more directly from one another, thereby reducing the earlier influence of advertising. Personal recommendations from friends, certainly had a big impact in the past, but now have a much greater range and thus influence nearly every single advertisement. If nowadays customers want to purchase a product or service, they will very likely look for the necessary information on the internet or turn to their personal network, friends, colleagues, family and contacts in online communities to which they belong. Through these influential channels they are likely to gain all the necessary information about potential sellers and it takes them a step closer to purchasing decisions. Then it is quite unlikely that they would have to seek information somewhere else. Both these forms transmit considerable power in the hands of customers. It is up to them to decide whether they will promote the product or service based on oral recommendation and will alert their friends. Regarding internet search, it is obvious that it is necessary for companies to be at places exactly where the customers are looking and to know where to look. At this point, companies will communicate with them, provide them with valuable information, refer them to useful resources and arouse their interest.

It is obvious that such means of communication are the antithesis to the traditional marketing model, when companies tried as much as possible to attract the attention of customers, whether by the number of commercials aired or their aggressiveness and volume. An effective engage and communication with customers can be nowadays even more difficult, since there are gaining in importance the nontraditional forms of communication such as product placement and mobile communication. The phenomenon of the present is without no doubt social networking and e-marketing, whose success is largely conditioned by globalization and the internet, without which they could not arise nor function properly. Classical forms of communication using traditional marketing tools have rather lost its power and marketers are looking for new opportunities on how to reach customers.

Achieving integrated effect known as synergy in communication can be done besides direct marketing by the relatively new modern marketing trends such as event marketing, product placement, guerilla

marketing, viral marketing and other forms of internet and mobile marketing. In many cases, these marketing disciplines can significantly reduce the cost of the budget of promotion strategies and enhance their efficiency. The list of new marketing disciplines is not be definitive, because it is constantly changing and rising whether we encounter new modern marketing approaches in communication or by the tools that respond to the current market situation in terms of time and place. Range limitations of this research, however, make it impossible to attend to all new areas of modern marketing and even that would not be practical. In the following research, we will focus on the specific divisions of the modern marketing, which are considered to be essential.

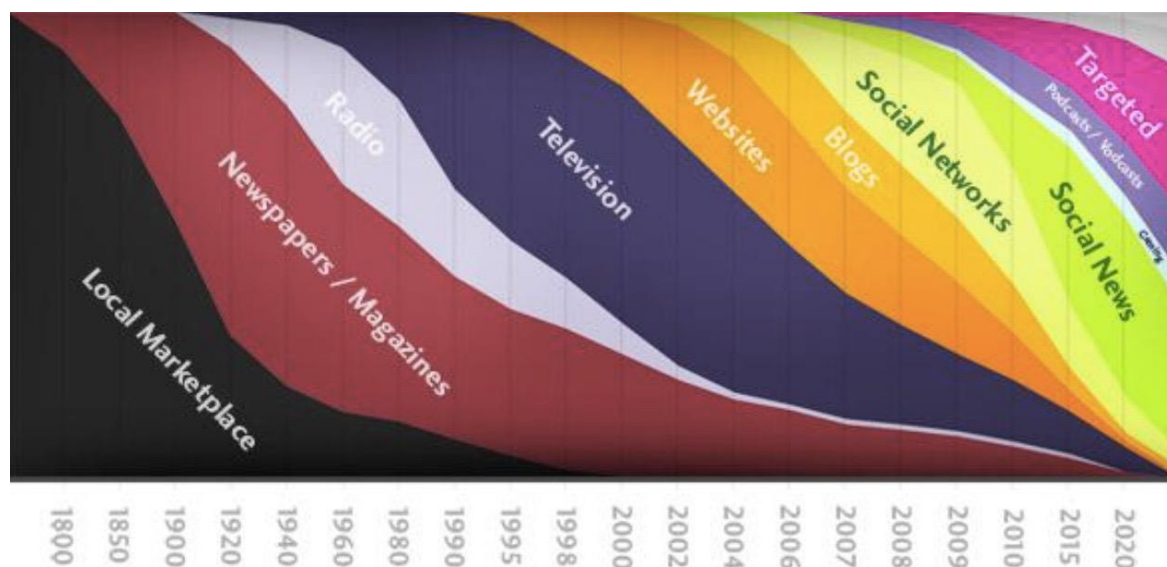


Fig. 1. The Development of Traditional vs. Modern Marketing (Source: Rolný, 2010)

2.1 Direct & Long Tail Marketing

Direct marketing is a modern marketing communication technique that is based on building permanent links and dialogue with customers. The emphasis is on maximum segmentation and targeted addressing of existing and potential customers (Pospíšil, 2013). The goal is to find the maximum number as precisely defined groups of customers and reach them directly by tailored offerings. It tries to communicate with customers, establishing contact with them individually and get their immediate response (Janouch, 2010). Modern direct marketing includes e-commerce, web seminars, while it has its own unique characteristics. Among the most significant ones we can include targeting a specific segment, flexibility, creating long-term relationships with customers, rapid and measurable feedback, and confidential competition. Direct marketing is always about communication and it can be divided into active and passive form. In the active form, the activity is directed outside the company. Passive direct marketing vice versa represents clients who are themselves looking for a product that is for example not commercially sold, so the activity is directed inside the company (Hesková, 2009). On the other hand, in retail terms, the long tail marketing portrays a specialty procedure of offering an expansive number of interesting (rare, exclusive, wanted) items in generally little amounts. According to Prentice, the expanding prominence of online retailers displays an intriguing open door for craftsmen and providers alike. Since it doesn't cost ecommerce locales like Amazon.com any more cash to list an underestimated book title then it does to list a blockbuster, they can stand to do as such. A physical shop be that as it may, with lease and overheads to pay, can't. The benefit of this to the provider (i.e. Amazon) is that they are making another deal. The preferred standpoint to the craftsman (writer) is that their book is being sold and conceivably recommended by the sites different recommendation channels and highlights. With respect to web content suppliers, the long tail hypothesis proposes that littler sites, concentrating exclusively on a specialty region, may come to undermine bigger web search tools that cover a huge swath of subjects. The long tail

marketing is genuine, and that given the decision, individuals will locate what's ideal for them. When outlining a marketable strategy, a company ought to dependably take a gander at the competition. What comparative things are right now accessible, how are they being showcased and how effective have they been? Advertising procedures, web architectures and substance are an ideal opportunity to be special and make a feeling of company singularity and cutting edge considering.

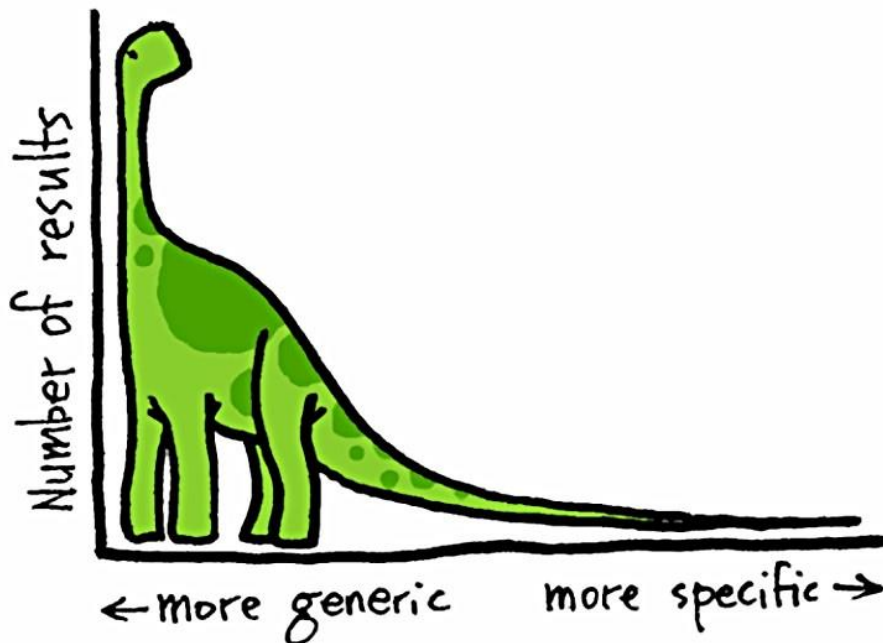


Fig. 2. The Long Tail Marketing Opportunities (Source: Prentice, 2010)

2.2 Guerilla Marketing

The term guerrilla marketing comes from guerrilla warfare which is a diminutive form of war or irregular warfare in Spanish language. The strategy and tactics of guerrilla warfare tend to focus around the use of a small, mobile force units competing against a large unit of enemy troops or more unwieldy one. Tactically, the guerrilla army would try to avoid any confrontation with stronger and more powerful enemy troops, strategically seeking and eliminating small groups of troops to minimize losses and exhaust the enemy force. While it may seem that marketing and guerrilla warfare have nothing in common, the opposite is true. Guerrilla marketing has proven to be an effective marketing tactic, especially in the tough competitive battle, serving as an unconventional marketing campaign designed to achieve maximum effect with minimum resources. Precisely unconventional and low costs of campaign are currently characteristics of guerrilla marketing. Unconventional campaign is a balancing act on the edge of legality, where the maximum effect with minimal resources represents its low costs.

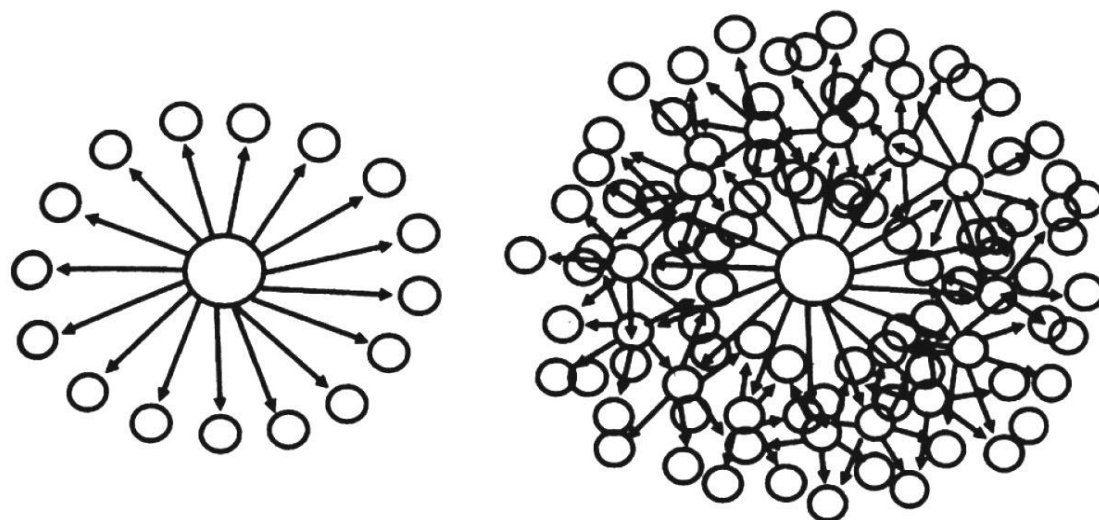


Fig. 3. Traditional vs. Modern Buzz Marketing Model (Source: Hughes, 2008)

One of the used methods of guerrilla marketing communication is also ambush marketing, implemented in connection with sponsoring, also known as free-riding on the activities of competitors. It most often occurs in sports sponsorship. For example, a link to the Olympic Games, World Championships in football or hockey, refers to companies that are actually not official sponsors of these sporting events. In practice, ambush marketing lies in the aforementioned sports where it is most famously known mainly during the Olympic Games. Additionally, it often happens in fact that the dresses of athletes have logos and brands that are not actually sponsors (Přikrylová, 2010). On the contrary, buzz marketing as a part of the guerrilla marketing creates turmoil and rumors frequently about a particular brand or event. Theses of buzz marketing is that personal recommendation is the best form of advertising, so it is trying to provoke debate, which exceeds the initial communication and ensures the spread and popularity of campaign.

2.3 Inbound Marketing

Modern marketing can be simplified by dividing into two parts: an inward (inbound marketing) and outward (outbound marketing). Very often businesses understand marketing only in the plane of outbound marketing and use marketing activities only in one direction, from company to customer. There is therefore focus on outbound marketing while the result is called push strategy since sellers try to push products to customers and force them to buy those products which they really do not want or need. However, it is more effective to focus on inbound marketing because orientation inwards are more efficient as it provides information about the needs of customers, thus providing the company data about the current market demand.

Perhaps literally can be inbound marketing translated as incoming or for a better capturing of its essence can be called a non-paying marketing, in the sense that company does not pay any fee (it is investing only its time, effort and knowledge) to the web site, or another place where a user can find materials or advertisements. The birth of inbound modern marketing resulted from a large oversupply of traditional outbound marketing channels. The number of advertising messages has steadily increased, and both virtual and real worlds are literally overfilled with advertising. A large number of services that are offered to people have resulted in too many marketing messages that desperately try to attract attention and fight for customers' time - one of the most valuable commodities. American author, entrepreneur, marketer, and public speaker Seth Godin, one of the pioneers of contemporary modern marketing says that the average consumer is exposed to about a million of advertising messages a year, which means about 3,000 advertising messages a day. So naturally it is not a surprise

that the brain is subconsciously trying to filter and block a large portion of these communications. However, this filter does not take place only subconsciously. Moreover, the reaction rate for e-mail marketing campaign is only 2% (Capon, 2013). Consumers have spam folders in their e-mail client, block list for contacts, automatically throw away leaflets and switch off ads. Simply put, these techniques are in retreat. Companies should therefore use communications which is anticipated, personal and relevant so then the unsolicited communication will be more beneficial.

Furthermore, inbound marketing is a relatively new approach to marketing. It is a set of marketing strategies and practices aimed at attracting and involvement of relevant potential customers. Inbound marketing is becoming increasingly popular because it adds to customer buying process. Customers use the internet to learn about products and services that best suit their needs and inbound marketing positively approaches them, providing quality content and useful information to help them but not to force them. As the name suggests, inbound marketing is actually the antithesis of traditional outbound marketing, where companies foist their offerings to customers. Outbound marketing is trying at all costs push its content through direct mail, telemarketing or demonstrations. Outbound marketing has become over the last decade less and less effective, especially also because its customers have learned how to use the tools to effectively block some of its channels. On the other hand, inbound marketing offers its audiences useful information and tools that bring customers to the website and in addition, gradually establishes future relationship. Inbound marketing tools are especially blogs, content creation, search engine optimization, social networking, social media. Furthermore, inbound marketing includes all activities that help to optimize entries in the company's catalogs, commodity search engines, video sites and blogs.

2.4 Mobile Marketing

Mobile Marketing represents one of the fastest growing modern marketing segments as a communication tool, which is forming gradually with the development of mobile networks. It can be understood as any form of marketing or advertising activities to promote sales, targeted at consumers and made through mobile communications. Mobile marketing is characterized by its rapid communication and interactivity with customers. Among its biggest advantage it is mainly targeting specific group of customers with distinctive characteristics (gender, age, phone type, location) and accurate measurement of the effectiveness of the campaign (e.g. number of calls, text messages, purchases, clicks). Among the disadvantages of mobile marketing we could include the diversity of operating systems, knowledge of the instruments (older people will probably not be able to properly work with QR codes) and constant monitoring of trends. Despite some of the potential shortcomings, mobile campaigns are very effective. A total of 94% of mobile communication is read by the receivers and 23% of it is then further transferred. User responds represents up to 15%, which is three times more than in the case of telemarketing or direct mailing. Furthermore, costs of acquiring a new mobile marketing customer are reduced by more than 20% compared to the traditional forms such as telemarketing or direct mailing (Frey, 2011).

2.5 Neuromarketing

Neuromarketing is a combination of neuroscience, psychology and marketing. It is a very modern discipline while the term was only introduced in 2002, forcing marketers to rethink views on consumer thinking and to think about the implications of these findings on their marketing activities by actually using imaging trying to understand and decipher the brain processes and buying decisions (Lechman, 2016). The reason why neuromarketing formed only recently, is the technological sophistication. In other words, until recently, it was only possible to examine brain after the patient's death. However, today's devices and technologies allow us to monitor human brain in real time directly in the decision-making process and learn more about brain activities. Strictly speaking, neuromarketing uses new scientific knowledge in the field of brain research and applies them to

marketing theory and practice. In addition, neuromarketing enables an inquiry into the mind of consumers and provides an understanding of different brain processes and pathways that consumers themselves have never been able to describe, because they often do not know about them. These processes, which have yet so powerful impact on shopping behavior, often run quite unwittingly and unconsciously, and even in the recent past they could not have been examined for technological reasons. In this regard, the neuromarketing provides irreplaceable information about the human brain, which may have far-reaching consequences not only for the field of marketing. Every marketer knows that the core of the shopping behavior lies in the minds of consumers. Modern technologies partially allow us insight into these heads and get a better understanding of the needs and desires of consumers. If we manage to streamline marketing, it will have a positive impact for both sides, both for consumers and for companies themselves, because they will save costs and thus reduce the price of products.



Fig. 4. Neuroscience (Source: Bugra, 2015)

In addition, the needs of customers will be satisfied at a much higher level because these needs will be better understood. While neuromarketing is still only a young discipline, it's getting a lot of popularity and talk in marketing circles, conferences and even the mass media. Neuromarketing uses the methods to measure activity of various parts of the brain or neuronal activation related to energy use by brain cells (brain mapping research, recording magnetic fields) called Magnetoencephalography, Transcranial Magnetic Stimulation, Positron Emission Tomography, Electroencephalogram and Functional Magnetic Resonance Imaging by also detecting changes associated with blood flow. Moreover, it also uses the methods that do not examine brain responses e.g. methods based on measuring the conductivity of the skin, providing such specific information on what a person feels at the moment (stress, happiness), measuring eye movements (how long and where a person is looking) (Hultén, 2015). Marketers are well aware of the potential of this new field, and approach it with respect. Some skeptics claim that neuromarketing is a blind alley that goes nowhere, and it is just a waste of time. But there is also the opposite pole, neuromarketing advocates, who argue that we may even uncover mechanisms in customer's heads, and then they will not be able

to resist the lure of the perfect marketing targeting precisely to their specific needs, while indeed, what information could be more accurate than those obtained directly from the brain of consumers.

2.6 Social Media Marketing

Social Media Marketing has become a powerful weapon as the process of gaining website traffic or attention through online media where content is co/created and shared by users in a constantly changing environment by increasing the content and adding new features. Marketers can through social media directly find out what customers require, what postures do they have to a specific brand or company, their complaints, likes. Social media marketing does not only include social networks but also e-shops, blogs, video blogs, microblogs, podcasts, wikis, discussion forums, Q&A portals, search engine optimization, multimedia sharing, virtual worlds, virtual reality, websites utilizing social elements and others. This form of modern marketing is primarily intended to communicate with customers in, not unlike traditional media, which communicate rather in one direction (mostly in the form of offers to the customer without feedback). The basic element of social media marketing is primarily communication, but also creating the (online) community. Each community has certain elements, has a clear-cut style, knows what products best suit its consumers (Janouch, 2010). The communities do not only help companies in creating a product to best suit the particular sort of customers, but they also help companies to build up reputation, of course if the product or service proves to be good. Building the reputation in social media takes place mostly in the form of ranking, rating, comments, polls, where companies are monitoring their feedback thus the important information about reputation and customer perception is received in both ways.

2.7 Viral Marketing

Viral marketing has in its beginnings become popular due to free mail service Hotmail, which has gained in 1998 and 1999 more than 12 million users. The principle of viral marketing is an independent spreading through advertising only by users or customers. Therefore, the idea behind viral marketing is just to convince a small group of consumers who will then spread advertising farther and farther like a virus (hence the name viral marketing) (Frey, 2011). If there was no internet, viral marketing could be described by the words rumor or verbal transmission of information. But the internet is undoubtedly the right catalyst that can exploit the true potential of viral marketing. Viral marketing exists in passive and active form. In its passive form, it is not trying to influence customers, relying only on the idea that quality offering creates a demand by the customer. On the contrary, the active form is trying to influence customers through advertising so that customers would spread it farther by their own resources. The advantages of viral marketing are mainly the speed of implementation and dissemination of communication (if the recipient can trust the source from which the message originated). Thanks to the active involvement of recipients, who are in the role of downstream broadcasters, viral marketing is not financially costly. On the other hand, the greatest danger of viral marketing is that at some point the campaign begins to live its own life and it is not possible to continue to control it. In connection with the threats of viral marketing it is necessary to mention the spam, as the fundamental enemy of viral marketing. Spam, or unsolicited e-mails, is not viral marketing, even if the name might suggest it. Unlike spam, viral marketing seeks to create a legal space to communicate with customers and even supports the global fight against spam.

2.8 Word of Mouth Marketing

WOM marketing is a method using oral spreading among customers on the basis of personal recommendations, which are currently successful thanks to new technologies, especially the internet. An example might be an e-mail service Gmail from the American company Google Inc., which, thanks to Word of Mouth campaign can boast of today's more than 1 billion monthly active users. The major types of word of mouth advertising media can be summarized as follows:

- buzz marketing is trying to cause a stir and draw attention to that brand;
- viral marketing presents dissemination of information or ads with customers;
- marketing community connects consumers with the same interest in a particular type of tag into groups, called communities. Community marketing is supported by companies that realize that it is not only important to acquire a customer, but also to keep the customer's attention. An example of online communities can also be: Facebook, YouTube, Twitter, Reddit, Playstation Community and others;
- product seeding means a deliberate and free sample of a particular brand donated to those people who influence the purchasing behavior of others (e.g. to athletes, singers, celebrities);
- brand blogging engages in creating blogs and their subsequent use for communication and dissemination of information about the brand (news, press releases and newsletters). The aim of brand blogging is feedback usually in the form of comments (Hesková, 2009).

3 The Dark Side of Modern Marketing

The most powerful tool of modern marketing's mass dissemination in the form of advertising and communication is undoubtedly the internet, while in 2015 it was used by over three billion people worldwide. Its advantage is a large transfer rate and much lower price compared to traditional marketing methods. Conversely, a disadvantage may be seen in sometimes complex targeting and sometimes substantially lower efficiency. Yet still many competitors overload consumers by a countless advertising messages in different forms. To maintain sustainable and socially beneficial competition it is necessary to partially regulate some aspects of the marketing area. However, it is clear that marketing agencies are more creative than legislators. Especially with the development of new technologies it is increasingly difficult to create the legal limits of modern marketing and yet not restrict competitors in their marketing efforts. Within the most important marketing tool of today - the internet, there have appeared several new aggressive forms of modern marketing. In connection with domain names there are cybersquatting, typosquatting and domain name hijacking that interfere with the rights of the competition.

Cybersquatting involves occupation of domain names in bad faith for somebody else's own profit or damage to competitor. It occurs specifically in situations where a competitor is trying to block an activity or damage reputation of another competitor by registering somebody else's domain name containing their business name or brand, product name or trademark. Situations when cybersquatter is blocking competitor's domain and provides it for a payment to the person who is entitled to it, and wants to use it, has elements of web racketeering and is thus very aggressive. In this case, the competitor is deprived of the possibility to register a domain in his/her name and is forced to register a name less attractive or deal with a competitor that had “his/her” domain name aggressively blocked. Cybersquatters also have tendencies to place a damaging content on their wrongfully registered domain content, designed to harm their competitors. Typosquatting is the equivalent of cybersquatting, which uses typos of addresses in internet browser on purpose. It most often occurs in frequently visited pages. An error in the address may consist of an addition or subtraction letters at some point or in bad odor because of unfamiliarity with the language or the exact name. The error may also be in the terminal domain. By registering a domain address similar the real one or legitimate, there is the effort to obtains and possibility to exploit a competitor's reputation or damage it. The effectiveness of the described negative forms of modern marketing is based on the damaging intention since it always applies that domain registration costs are relatively small. Apparently, this form has a

serious impact generally with the intention to drop customers or create damaging disclosure of information (Hays, 2016).

More pronounced forms are very annoying and aggressive commercial practice such as pop-up windows (which often deceive consumers) and then widespread spamming, or sending unsolicited e-mail. Likewise, the same happens in the case of demonstration actions whose purpose is mostly selling overpriced goods. This form of marketing is often fulfilling multiple characters of aggressive commercial practices (notably by creating the impression that the consumer cannot leave the area of sales; the consumer has won a prize, even if it does not exist) in recent years monitored by the media and also because there has been a tightening of conditions for retailers and greater consumer protection (Groza, 2016). In the field of modern advertising forms that can operate with a certain amount of aggression occurs mainly the dark side of guerilla, ambush and buzz marketing. These are characterized by great originality and efficiency, but it appears so that they are often in conflict with good morals of the competition (such as where the other competitors or their properties are used or good morals of the competition contradicts to the content of an ad) or inappropriate acts against consumers.

Not only that but also legislation is in some areas very complicated, different standards overlap and are not always sufficiently interrelated. Especially for consumers it is therefore very difficult to orient in individual laws. It must therefore be dealt with protection of their rights with expert advice, which is especially for some consumer groups unaffordable. For example, for seniors it is a big obstacle combined with the slowness of judicial proceedings. However, the effort to sanction all different forms of innovation and precise formulations in the law would be superfluous, since the societal and technological progress will always outrun reality readiness of the state to determine new and new rules.

4 Conclusions and Policy Implications

In today's world, we are entirely absorbed and distracted by advertising, prepared for us by a leading marketing companies and professionals. Their goal is to inform us about new products, brands and sell us the thoughts and ideas of their clients. With the shift in time to the new millennium and rapid development, information technologies arise constantly creating new ways to promote clients' objectives more effectively compared to the mass media, which include, in particular, impersonal communication with a high number of individuals where there is neither much interaction nor feedback. They have a wide but flat reach, which is an advantage especially for fast-moving goods. However, they are not suitable for use in addressing narrower specific target groups. Nowadays, in the 21st century we are witnessing a revolution in marketing practices, more complex than ever, largely thanks to the *viral marketing*. The Internet is nowadays the fastest growing media of advertising investment. Its emergence has had a major impact on the development of the entire marketing and advertising industry. On the same note, high-quality, clear web pages with plenty of information about the products in question, as well as the reasons to buy them are the foundation for attracting consumers. The theory of *long tail marketing*, known as why the future of business is selling less of more, points to the economic shift from large manufacturers and mainstream products to the masses rather among a larger number of smaller manufacturers, distributors.

This trend is mainly due to a drop-in distribution and storage costs - all thanks to e-shops and online shopping, since because of these cost savings, goods that are not part of the mainstream are becoming more attractive. A lot of online merchants then benefit from unsatisfied customers who can offer a wider range of goods and services, known *brick-and-click business model*, where bricks represent offline presence and clicks online presence while, it is important for every trade to have the right amount of bricks and clicks balancing. Likewise, *search engine optimization* is an important

part of every web site, improving keyword ranking above search results, known as top listing. It is a very profitable business, where successful companies are hiring programmers for a lot of money to improve their site and they regularly appear at the top of search charts. With the advent of social networks and communication over the Internet there are steadily increasing demands on any marketing campaign, whether we talk about its quality, effects, interactivity, integration or creativity. Consumers from all over the world have the power to reject or raise the value of any object. Simultaneously, especially *bulk purchasing* is a clear phenomenon of our age, dominated by so-called discount servers, which generate a maximum sales in a very short timeframe however, the goal is to engage the customer enough to come back without a discount coupon - spending a full price. Modern marketing currently represents a huge lever to customers. This real-time shift brings many opportunities, threats, but also questions. Former brand building, reputation, product awareness - all this can be destroyed in the blink of an eye. When? Just look at your watch.

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TRANSACTION DATA BASED HOTEL CUSTOMER SEGMENTATION

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Abstract

Customer segmentation plays crucial role in hospitality marketing. Identification of the right customer segments allows hotel managers to create the most effective marketing strategies. Transactions are great source of behavioral data that can be used in market segmentation. The goal of this paper is to run cluster analysis over transactional data to identify customer segment, identify the best ones of them and propose suitable strategy for them. Used data were exported from channel management tool and then processed using several non-hierarchical clustering methods of IBM SPSS tool (K-means and TwoStep Clustering). The results show that using transaction data for behavioral segmentation can lead to proper segment identification when strategies are being built.

Keywords

Transaction data, customer segmentation, segmentation in hospitality, TwoStep Cluster Analysis.

JEL classification

M31, L83.

1 Introduction

Modern, marketing based, hospitality management tries to understand needs and wants of the customers to provide them with better product (service or physical product), better distribution and communication and better prices. Customer knowledge is the most important decision making factor where transaction (customer) data represents competitive advantage for every single hotel. Market segmentation represents set of tools and techniques that helps hotels to target particular market segments that are likely to purchase the product, accommodation and other hotel services and products (Reid & Bojanic, 2009). Even when the market is divided into subsegments, these must fulfill several requirements (Dolnicar, 2008).

- Segment members should be as similar as possible.
- The difference between segments should be as big as possible. The bigger the difference between the segments is significant, the better the output (final segments) is.
- The segments should be identifiable. Some characteristics could be hard to quantify or identify even though they can be used.
- The segments should be reachable. As the segmentation is the first step in Segmentation-Targeting-Positioning strategy, next steps should be considered when segmenting the market.
- The segment should be suitable in size.

Doyle (2011) defines segmentation as „a process of subdividing a market into distinct subsets of customers that behave in the same way or have similar needs. Each subset may conceivably be chosen as a market target to be reached with a distinctive marketing strategy.“. Traditional way of segmentation in hospitality consist of combination of demographics and selected hotel-use characteristics.

Several studies were focused on different approaches of customer segmentation in hospitality industry. Hartman Group (2004) segments spa customers by their behaviour and price sensitivity. Customers were segmented by consumed products and the impact of price change on their decision making. Three main group were identified. Core spa customers with low price sensitivity and consumption of high-end, luxury spa treatments and activities with highly personalised services and high service provider loyalty. Mid-level spa customers looking for relaxation through traditional

treatments. Peripherals attracted by beauty and pampering services with low focus on health and wellbeing.

Legoherel (1992) examines expenditure based customer segmentation and instability of their behaviour. Legoherel focuses on whole market segmentation where individual property characteristics are suppressed. More general patterns are observed which can serve as valuable, but not precise information source on destination level. For example, short-term stays are one of these segments with high „per day“ expenditures and fast turnover. In this situation, the turnover management is crucial for sustainable development, and long term destination profitability.

Mazanec (1992) implements neural networks and advanced data-mining tools in process of customers segmentation. The paper focuses on the implementation of these tools in „a priori segmentation“ and „a posteriori segmentation“. Neural networks can be used for customer classification based on preselected variables into precise customer segments.

More recent studies, (Victorino et al., 2009) focuses on technology readiness index based segmentation or specific hospitality sector markets like boutique hotels (Lim et al., 2009) and Taiwanese „love motels“ (Alexander et al., 2010).

Dolnicar (2008) offers several approaches in hospitality marketing segmentation. Most used and easiest way to segment customers, the „commonsense segmentation“, based on previous experience of persons performing the segmentation. Characteristics are selected based on market knowledge and previous activities of customers. Most used variable in this approach is *Country of origin* segmentation used on destination level. Commonsense method is not the most sophisticated one, but enables experienced marketing manager to generate market insights and further market knowledge.

The proces of commonsense segmentation is described in Figure 1.

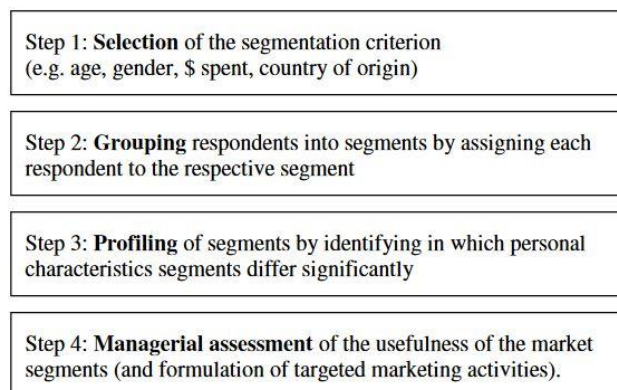


Fig. 1. Commonsense segmentation (Source: Dolnicar, 2008)

The same process can be implemented in “data driven segmentation” with following upgrade in step 2 (Figure 2).

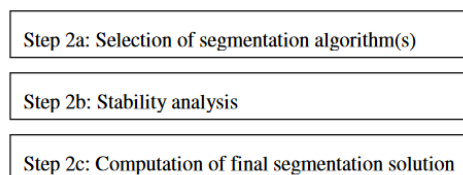


Fig. 2. Data driven segmentation (Source: Dolnicar, 2008)

Data driven segmentation provides managers with static market knowledge and following notes should be taken into considerations.

- Data-driven segmentation is static, when the market is dynamic. One –shot results can not be used as long term solution for customer segmentation.
- Market segmentation is highly dependent on complexe marketing strategy.

- Low number of segments does not mean bad market segmentation.
- Natural segment can be found hardly.
- Market segmentation is only exploratory process, further actions should be planned and later on implemented.

Hotel and restaurant are these days collecting huge amounts of data about their customers. Not only about their identification (demographics) and consumption but as well about their behaviour before and after service consumption. All these factors can be used when segmenting customers and then targeting their attentions when offering products. Using business knowledge supported by hard data can bring valuable insight about customers, their behaviour and can be used for creation of knowledge base during marketing decision making.

Several authors (Dursun et al., 2016) (Tsai, et al., 2004) (Hu, et al., 2014) are using consumption data (transaction data) for RFM analysis of the most valuable customers. These are evaluated by their recency, frequency of transactions and total monetary impact on the hotel. The total value of customer for hotel is evaluated. Dursun (2016) propose 8 groups of customers hotels should be focusing on. “*Loyal Customers*”, “*Loyal Summer Season Customers*”, “*Collective Buying Customers*”, “*Winter Season Customers*”, “*Lost Customers*”, “*High Potential Customers*”, “*New Customers*”, and “*Winter Season High Potential Customer*”. Based on segment membership, the hotel should create and implement suitable strategy.

On the other hand, data mining techniques such as cluster analysis are used to implement more variables and information about customers. This paper focuses more on the clustering methods, because RFM analysis shows several restrictions for its use in hospitality industry. Huge amount of data is needed as the services (in hospitality) are not purchased so often. The history of minimum 2-3 years is needed to truly identify the most valuable, returning and loyal customers.

2 Method and data processing

The key focus of this paper is to examine the possibility of customer segmentation based on transaction data using specifies clustering tools. Used data were extracted from RezGain (channel management tool, part of RateGain UNITY complex solution for hotel managers). Dataset contained 2208 transactions from 5 different booking sources (Boking.com, Expedia.com, Orbitz.com, Agoda, Splendia) created for stays from 28. 3. 2017 to 31. 12. 2017. For these transactions (cases) were identified following variables.

- Reservation ID.
- Booking date.
- Check-in date.
- Check-out date.
- Guest ID.
- Number of room nights.
- Number of rooms.
- Nett Rate.
- Gross Rate.
- Nationality.
- Channel (source) name.

Other 2 variables were computed. *Booking Window* which represented number of days between booking date and check-in date and *Nett Average Room Rate* that shows average room rate per night as the transaction data contains only the sums of daily rates.

When using transaction data, it is crucial to identify the most important (valuable) variables for clustering that can describe customer behavior. For further analysis, *Booking Window*, *Net Average Room Rate*, *Nett Rate* and *Number of Room nights* were selected.

Before the clustering was made, data were cleaned from outlier. Outliers were identified using boxplot with normal distribution (Figure 3)

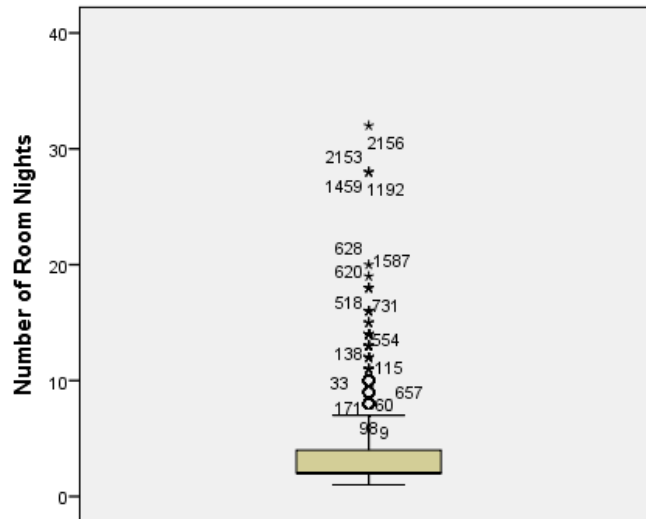


Fig. 3. Distribution based on number of room nights (Source: own elaboration)

After this data processing, business knowledge was applied, and the outlier identification was corrected. Internal processes of the hotel should be implemented because there is big difference between short and long stays, mainly in stay conditions and restrictions. Based on business information, the outliers were identified as long stays, that means stays with more than 14 room nights (for those customers, lower rates are offered etc.). These were grouped into separate segment (see Table 1 for descriptive statistics).

For further analysis, these long stays were excluded and all the values for selected variables were standardized (as they are using different metrics – days and €). For standardization, Z-scores were created using following formula

$$Z = \frac{x - \bar{x}}{\sigma}; \quad (1)$$

where Z stands for standardized value, X is original value, \bar{x} is mean of the variable and σ represents standard deviation of the data set.

Two different clustering methods were used and their outputs were compared based on their relevance to the hospitality industry. In both cases, Euclidian measure was used for distance measuring. Both, TwoStep Cluster and K-means Cluster were done in ISM SPSS Statistics. The main reason for selecting these methods was number of final cluster settings. TwoStep cluster enables to set maximum number of cluster and the final number of clusters is selected by minimization of BIC (Bayesian Information Criterion) automatically. Number of clusters for K-means clustering was based on the output of TwoStep clustering.

3 Results

With prepared dataset both methods were applied to identify if customer behavior based on transaction data can be used for their clustering, segmentation. During the data processing, the long stay customers were selected and described individually. Table 1 shows their basic description.

Table 1. Descriptive statistics – Long Stays

	Minimum	Mean	Median	Maximum	Std. Deviation
Number of Room Nights	14	16,5	14	32	4,557
Net Rate	572,4	3151,36	1673,54	19296	3612,3145
NET_ARR	36	189,544	107,6201	700,71	181,90321
Booking Window	16	87,6	76	204	48,992

Source: Own elaboration.

As it can be seen in the Table 1 even within this small group of long stay reservations there are visible difference caused by extremely high number of room night or extremely high Nett Average Room Rates. All these are caused by individual and highly personalized offers for these clients.

For further analysis, only short stays with standardized conditions are used for better comparison. After clustering, long stays were added and original cluster with following description. Long stays represents reservation for more than 14 room night (in average 16,5 room nights) with middle range booking window.

3.1 TwoStep Clustering

TwoStep cluster was tested on raw data for selection of suitable distance measure, information criterion and maximum cluster number. Including all the data (even for long stays) this approach created 6 customer segments that were not suitable for application in hospitality industry. Four of these segments had less than 5 members, one approximately 100 and the last contained more than 2000 cases. These segments were heterogeneous but too small for possible strategy creation.

After excluding long stays, TwoStep Cluster showed much better results. Using only 2168 reservations (transactions) three basic clusters were created. Figure 4 shows their basic description using total number of cluster members (size) and values of centroids for every variable.




Clusters			
Cluster	1	2	3
Size	 60,4% (1310)	 26,0% (563)	 13,6% (295)
Inputs	Booking_Window 31,12	Booking_Window 121,52	Booking_Window 71,60
	NET_ARR 129,88	NET_ARR 105,06	NET_ARR 345,36
	Net_Rate 258,99	Net_Rate 423,21	Net_Rate 1 680,87
	Number of Room Nights 2,05	Number of Room Nights 4,44	Number of Room Nights 5,20

Fig. 4. Cluster membership description (Source: Own elaboration)

Using TwoStep Cluster, following segments were created.

1. *Cluster 1*: The biggest customer segment represents 1310 customers with 2 night stays in average, short average booking window (app. 1 month prior to hotel check-in), low average net room rate (129,88 €) and low total revenue generated by the customer (in average 259,99 € per customer).
2. *Cluster 2*: The second largest segment with 563 members. Average booking window is extremely high with more than 121 days prior arrival, on the other hand, average net room rate is extremely low (only 105,06 €) and total revenue generated by average customer is slightly higher with 423,21 €. Average length of stay for this segment is 4,44 days, which can be described as short-medium stays.
3. *Cluster 3*: Represented by only 295 members, cluster 3 represents the most valuable segment for hotel based on the total revenue generated by the segment. Average expenses of these customers are 1680,87 € with medium length of stay (5,2 days) and the highest average net room rate (345, 35 €).
4. *Cluster 4*: Long stays described in previous part of this paper.

As shown in table 2 the most valuable segments are clusters 1 and 3. Nearly 70 % of total revenue is generated by these 2 segments.

3.2 K-means Clustering

Based on previous research of Sara Dolnicar (2002) K-means clustering method has been selected as the most used one when clustering hotel customers. Before transaction data can be processed by K-means cluster tool, several values should be set. The final number of clusters must be defined prior the analysis as well as the centroids for these clusters. Using the output from previous model, 3 clusters were selected. SPSS offers possibility to let the program select the most sufficient cluster centers and then select total number of iterations for increasing the quality of created segments and optimize their distance.

Using K-means clustering, following segments were created. Centers for these segments can be seen in Table 2.

1. *Cluster 1*: The most valuable segment for selected hotel with total revenue in inspected period more than 470 000 €, average length of stay of 2 night, low total and average accommodation expenditures and relative (in comparison with other segments) short booking window.
2. *Cluster 2*: The second most valuable customer segment with relatively low number of members (when compared with cluster 1) and medium-high average accommodation expenditures, average length of stay of 5 nights and medium-high booking window.
3. *Cluster 3*: Customer segment with high net average room rate and total accommodation expenditures, high length of stay and long booking window.
4. *Cluster 4*: Long stays described in previous part of this paper.

3.3 Output comparison

Table 2 shows result used for clustering methods comparison based on their results. As it can be seen in this table, the final results are completely different. Using previously mentioned segment characteristics, Booking Window should be excluded from clustering process, as the results are too close to each other.

Table 2. Clustering results comparison

TwoStep Cluster						
Cluster	Members	Booking_Window	NET_ARR	NetRate	RoomNights	Total Revenue
1	1310	31,12	129,88	258,99	2,05	339270,4
2	563	121,52	105,06	423,21	4,44	238265,7
3	295	71,6	345,35	1680,87	5,2	495855,8
4	40	87	189,54	3151,36	16,5	126054,6

K-means Cluster						
Cluster	Members	Booking_Window	NET_ARR	NetRate	RoomNights	Total Revenue
1	1753	56	121,76	268,3	2	470329,9
2	327	73	248,63	1085,8	5	355056,6
3	88	87	413,96	2817,8	7	247966,4
4	40	87	189,54	3151,36	16,5	126054,4

Source: Own elaboration.

Selection of variables should be based on business knowledge. Excluding booking window can highly affect the clustering result, as time plays important role in customer and business decision making. For example:

- Customers expect lower rates when booking long time before arrival.
- The longer the stay is the lower the customers expect the room rates.
- Hotel can only estimate the demand in long terms, the rates are commonly lower then few days prior arrival.
- If the revenue management is applied, hotel should continuously increase the rates to maximize the revenue.

These examples leads to conclusion that booking window is one of the most important factors affecting final product (service) rate and should be implemented in clustering.

Comparing outputs of K-means and TwoStep clustering without further business knowledge can lead to incorrect customer segmentation. From practical, business point of view, the K-Means Cluster methods does not provide the researcher adequate results, even though the quality of performed segmentation was good.

The results can be later used for:

- Marketing communication optimization,
- Customer centric marketing strategy creation,
- Business development,
- New market penetration,
- Business optimization etc.

4 Conclusion

Transaction data based segmentation can be easily implemented in hospitality industry not only for customer segmentation, but as well for product development and packaging. As this paper shows, not all the methods of clustering are offering really valuable insight about customer behavior and several approaches should be tested. The most valuable and realistic output should be used in business development. The most important part of the evaluation lies in hand of hospitality professional and hotel managers who can implement not only analysis outputs, but as well the business knowledge.

As the results shows, four basic customer segments can be found based on their booking behavior and accommodation expenditures.

1. Customers booking their short-stays just few days before the arrival. These customers are always looking for the lowest rates possible, but with high occupancy (market or hotel), they can serve as huge business drivers. Common knowledge leads to conclusion, that this segment is still growing and these *fast bookers* are having the most potential. This behavior is sometimes connected with Generation Y and travelers that see the value of travelling in real experience not in planning of the trip.
2. *Trip planners* are planning their trips long time before the arrival. This segment is always looking for the “first minute” discounts or flexibility restrictions using “minimum length of stay” or “book at least 60 before arrival” discounts or the “non-refundable” offers. Average room rate is low, but the length of stays is higher as well as the total spending of these customers.
3. *High spenders* can be described as “once a life travelers”. This tourist spends in destination from 3 to 7 days, buying high-end services and products and other luxury staff. Based on previous statistics, attracting these can lead to extensive revenue growth but in general, the demand in this sector is limited.
4. *Long stay customers* are great resource for long-term sustainable business within highly competitive market and high demand bargain power. In average, the room rates are lower but these long stays (from 14 nights) can represent highly valuable revenue source.

The segmentation was conducted over transaction data where several variables were not used. For that reason, following limitation of this approach can be identified.

Not all the booking sources are providing the hotel (channel manager) complete set of variables. For instance, the customer nationality cannot be used as segmentation criterion because high number of missing values was identified within the data set. The list on booking sources does not include all of them. Hotel is using another channels like websites, Facebook and direct reservations through email, telephone, or via tour operators and agents. Booking behavior can differ based on the used booking channel. For that reason, this segmentation can be used when preparing indirect, OTA based distribution and communication strategy.

The biggest problem of this analysis was based on the total volume of data. The more data can be included in the analysis, the better results can be reached. Several studies focused on RFM analysis of transaction data showed that RFM analysis can be used for value based customer segmentation and later on strategy creation. The implementation of RFM methodology can be also used for distribution channel optimization, distribution strategy settings and product portfolio analysis. Application of value based segmentation can be various hotel departments.

Another limitation of this study is low external validity. These outputs can be implemented only in selected hotel; generalization cannot be done because of the specific characteristics of the hotel. Even though transaction data shows great prospect and further research should be done in this value based segmentation area.

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THE BARRIERS OF USING CUSTOMER RELATIONSHIP MANAGEMENT

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Abstract

Customer relationship management (CRM) can create an advantage and improve company performance on business market. It is the management of company's interactions with customers. Companies that implement and work with CRM will gain the long-term relationship with customers and the loyal customers. However, some barriers of using CRM still exists, especially barriers for small and medium sized enterprises. A lot of marketers argue that many barriers are found during the implementation of this system. The article aims to summarize the barriers of using CRM system in companies from different studies. This data is obtained from top marketing journals. This article provides insights for future research within the area of customer relationship management.

Keywords

Customer relationship management, CRM, Customer, Relationship, Barriers.

JEL classification

M31

1 Introduction

Customer relationship management is one of the important part of company process, that can be employed by company to improve a competitive advantage. Accordingly, the company survival and growth in nowadays economic system largely depends on the acquisition of accurate and detailed information about customers. This information is about the customer needs, attitudes, personal reactions, or decisions. Consequently, the concept of modern marketing is based on the need to have this knowledge. Hennig-Thurau et al. (2010) argue that the rapid growth of new technology in existing business models also provides the opportunities to better understand customers and to manage customer interactions. Companies implement their activities on the market based on their experiences, but mainly these activities are supported by knowledge that have acquired from customer data analysis. This is the reason, why is important to speak about customer relationship management, which is still discussed topic in academia and businesses. CRM is a strategic approach that integrates people, business, and technology to understand the customer needs (Mohammadhossein and Zakaria, 2012). For each company are customers the key, because customers help company grow. CRM is commonly used in large companies, but unfortunately it is not in small and medium-sized enterprises (SMEs). Most SMEs do not implement CRM systems due to several reasons, such as lack of knowledge about CRM, limited financial and employee's resources, which affect information-seeking practices, lack of skills and expertise to implement it (Alshawi et al., 2011; Boot et al., 2011). Reynold et al. (1994) say that for SMEs, mostly the owners and employees have limited technical knowledge when it comes to implementing new technology in the organization.

The promise of customer relationship management is captivating, but in practice it can be perilous. When it works, CRM allows companies to gather customer data swiftly, identify the most valuable customers over time, and increase customer loyalty by providing customized products and services. But when CRM does not work, which is often, it can lead to debacles (Rigby et. al., 2002). Although customer relationship management helps managers and companies succeed in competitive fields, there are studies, which show that most of companies failed in implementing and using CRM (Saeidipour and Ismaeli, 2012).

CRM has a lot of advantages for each company, but there are still barriers that discourage right awareness of CRM and its implementation. The aim of this article is to summarize the barriers of using CRM system in companies from different studies. These barriers can also influence

idiosyncratic steps during CRM implementation. First part of article is about customer relationship management and its new concept named social CRM. The second part is about CRM barriers that are divided into general and implementation barriers and their close connections.

2 Customer relationship management

CRM traditionally has been seen as a set of philosophies, strategies, systems and technologies that would effectively and efficiently manage the transactions of customers with companies and the subsequent relationships with those customers (Greenberg, 2003). According to Bhattacharya (2011), CRM is implemented in organization to reduce cost and increase company performance - which means profitability result through customer loyalty. CRM is the most efficient approach in maintaining and creating relationships with customers. CRM is not only pure business but also create a strong personal relationship within people (Long et al., 2013). In this competitive market, customer is the most important asset in an organization. It is not surprising that the organizations increasingly use CRM to support different type of their customer. Customer relationship management will help an organization not only to retain existing customers, but also to expand their customer base and become more competitive in this challenging economy (Boon et al., 2011). The CRM includes technological aspects associated with marketing activities, customer service and sales. It provides channels for the effective communication among companies and customers (Liagkouras and Metaxiotis, 2015). CRM is an essential way to understand what motivates customers. The relationships with customers are becoming even more important as market conditions get more adverse (Shaon and Rahman, 2015). The root of CRM is relationship marketing, which has the objective of improving the long-term relationship and hence profitability of customers by moving away from product-centric marketing (Debnath et al., 2016). But the relationship among company and customer can be seen differently. According to Buttle (2009) and Lehtinen (2007) five CRM “schools” exist. First school is from USA in business to business market and this school says that relationship is built by three main areas: connections, sources, and human interaction. The Nordic school give priority to human element of the relationship. The third is Anglo-Australian school that argue the relationship as all connections that company has with its environment. The Asian school sees the relationship in good personal contacts. And the fifth school - North American school says that the relationship with customers are based on trust and open communication which brings value to company. An organization should understand their customer’s requirement before it can start to build a relationship with the customers. Any organization should understand how well it really knows its customers, which data are available to be used in the organization management, how different parts of organization consider their customers, and which possibilities are important for organization (Boon et al., 2011). According to Faed (2010), the customer relationship management amplifies the relationships of customers and competitors in a firm to increase the share of the organization in market place by integrating technology, procedures, and people. Similarly, Coltman et al. (2011) say that the asset of information technology in CRM is best implemented in combination of IT programs, human and business skills. It arises because of individual system activities, where there is no superiority among activities, but in combination with appropriate tools there may occur a significant contributing corporate performance. The understanding of the main components of any CRM initiative is very essential for its success. People, technology, and process are the three main components of CRM (Rababah et. al., 2011).

2.1 Social CRM

Marketers are working in challenging times. Never before companies have been able to get so close to customers and engage with them. Connection with customer relationship management and social media can deliver financial benefits to companies no matter what sector (Woodcock et al., 2011). Customer relationship management is a constantly developing system which is influenced by the

revolution of social media and customer interaction. Information technology has been recognized as an important part of CRM (Chang et al., 2010; Rapp et al., 2010). Social media, participation and personal approach facilitates the ability of CRM and relationship marketing. Social media helps to create products, services and values and provide access to large amounts of data about customers (Hoyer et.al., 2010). According to Reinhold (2012) is social media a platform for the interaction among many users (employees, customers, fans, sponsors etc.) who contribute opinions and experiences. This content represents the raw data for new concept of CRM – social CRM. The fundamental idea behind social CRM is managing the social networks, because with social media, business can have more channels where they can reach customers (Paul, Nilsson, 2011). Greenberg (2010) has defined the social CRM as a philosophy and a business strategy, supported by a technology platform, business rules, workflow, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment. It's the company's programmatic response to the customer's control of the conversation.

3 CRM barriers

As was mentioned in the Introduction and in the previous chapter, the customer relationship management give the option to build close relationship with customers. However, there are still grey areas regarding the successful implementation and operation of CRM system in companies. According to several independent studies, the success of CRM implementation is low (Rigby et al., 2002; Zablah et al., 2004). There are a several causes of low CRM success implementation.

Companies do not realize the CRM potential and benefits or they do not know how to start with it. These attitudes mainly arise in top management or owner of company. Consequently, from the management side of company arises the barriers, which impede the right CRM awareness or implementation within the company.

Table 1 and 2 show a summary of CRM barriers which was obtained from articles of top marketing journals articles, as Journal of Retailing and Consumer Services, Journal of Business Research, Journal of Marketing, Journal of Database Management, Industrial Marketing Management, Business Process Management Journal. Table 1 CRM general barriers and table 2 CRM implementation barriers are divided into four parts as a barrier, author, research type and content of article.

Table 1 contains seven CRM barriers. These barriers are named as General barriers. Despite CRM is popular and have a lot of benefits and advantages for building close relationships with customers, it is still perceived as unsatisfactory level of improvement. Companies do not see concrete advantages and forget that customer relationship management is about a long-term result. Unsatisfactory level of improvement in terms of profitability and customer satisfaction also consists another problematic area in CRM. And it is during the implementation. Many times, it is the reason of underestimation of the cost of implementation (Liagkouras et al., 2014). Reinartz and Kumar (2003) believe, that loyal customers are not necessarily lucrative. These scholars suggest that CRM's focus on customer retention is wrong. They insist that should be reassessed the business worthiness of each customer.

Table 1. CRM general barriers

Barrier	Authors	Research type	Content of article
Unsatisfactory levels of improvement	Liagkouras et al., (2014)	Conceptual	This article attempts to identify challenges and opportunities that the CRM system offers.
Loyal customers are not necessarily lucrative	Reinartz W., Kumar V. (2003)	Empirical	Factors that explain the variation in profitable lifetime value and several keys of value to decision makers.
Limited understanding of CRM	Liagkouras et al. (2014)	Conceptual	This paper attempts to identify challenges and opportunities that the CRM system offers.
	Piskar et al. (2009)	Empirical: qualitative	Case study analysis of CRM implementation with a positive outcome in Slovene service company. Article shows the need for efficient leadership, acquirement of resources and CRM strategy implementation control.
Lack of financial resources	Boon et al. (2011)	Conceptual	Article contains the reasons, why SMEs do not implement CRM, the benefits of CRM and possible methods to implement IT.
	Alshawhi et al. (2011)	Empirical: qualitative	Article identify the organisational, technical and data quality factors that influence CRM adoption in SMEs. It provides improved support to decision makers associated with the evaluation and adoption of CRM.
Limited technical knowledge	Boon et al. (2011)	Conceptual	Article contains the reasons, why SMEs do not implement CRM, the benefits of CRM and possible methods to implement it.
Managers do not want to risk in adopting CRM	Adebanjo (2008)	Empirical: qualitative	Study is about three different approaches to e-CRM implementation by 3 SMEs with a view to identifying commonalities and differences in approaches and how these impact successes.
	Boon et al. (2011)	Conceptual	Article contains the reasons, why SMEs do not implement CRM, the benefits of CRM and possible methods to implement the CRM system in SMEs.
	Kale (2004)	Empirical: qualitative	Failures of CRM are obtained from the companies' experiences.
CRM has to be technologically intensive	Rigby et al. (2002)	Empirical: qualitative	Authors show four perils of CRM that are common causes of failures in companies.
	Kale (2004)	Empirical: qualitative	Failures of CRM are obtained from the companies' experiences.

Source: modified according to the articles from top marketing journals.

Limited understanding of CRM (Liagkouras et al., 2014; Piskar et al., 2009), lack of financial resources and limited technical knowledge (Boon et al., 2011) are the common barriers of CRM, especially for small and medium-sized enterprises. Limited understanding of CRM is with close connection of the barrier unsatisfactory level of improvement. If the company do not understand why is CRM right, what is the result and how it can work, thus it is not possible to see the level of improvement. As was mentioned, the lack of financial resources and limited technical knowledge are the common barriers for SMEs. But it is the question if it is necessary for SMEs to own and pay the CRM software. Another general barrier is that managers do not want to risk the adoption of CRM. The main reason of this barrier is that managers are still unclear as to how CRM approach should be cost-effectively implemented and what technology options should be adopted. Consequently, they do not want to risk the wrong adoption (Adebanjo, 2008; Boon et al., 2011, Kale 2004). The last general barrier is an opinion, that CRM has to be technologically intensive. Rigby et al. (2002) and Kale (2004) say that many executives assume that more CRM technology is better, so executives do not want to implement it, because they have not enough resources and technical knowledge.

CRM barriers in companies are not only about to start to use this system, but also about problems which occur during the implementation. Table 2 is just about the implementation barriers. First and principal barrier of implementation is to be focus only on software (Liagkouras et al., 2014). Company that has decided to implement CRM is focused mostly on the technology, the software. They are focused on software complexity. They usually forget on the strategy; which customer data are important for them.

Table 2. CRM implementation barriers

Barrier	Authors	Research type	Content of article
Focus on software	Liagkouras et al. (2014)	Conceptual	This paper attempts to identify challenges and opportunities that the CRM system offers.
Without integration into company strategy	King et al. (2008)	Conceptual	Firstly, article adopts a novel approach by developing a conceptual model of benefits and then converting this model into a dynamic simulation model.
	Rigby et al. (2002)	Empirical: qualitative	Authors show four perils of CRM that are common causes of failures in companies.
	Starkey et al. (2002)	Empirical: qualitative	Study shows that exist a good correlation among CRM and business performance. Authors focus on Retention, Efficiency, Acquisition, and Penetration (REAP), which can provide e a four to one return on investment for well-managed programmes.
Customer data are not accurate and complete	Shah et al. (2005)	Conceptual	It presents an overview of issue related to data consistency and difficulties of data within the business and inter-business environments.
	Boulding et al. (2005)	Conceptual	Authors introduces ten articles trough a roadmap in the context of the CRM landscape. It contains suggestion of 11 propositions about what is known about CRM and the potential pitfalls.

Underestimating cost of CRM implementation	Liagkouras et al. (2014)	Conceptual	This paper attempts to identify challenges and opportunities that the CRM system offers.
Companies lack clear business objectives			
Companies underestimate the complexity of CRM			
Companies do not know what they are implementing	Rigby et al. (2002)	Empirical: qualitative	Authors show four perils of CRM that are common causes of failures in companies.
Implementing CRM before creating a customer strategy			
Isolation from the culture, people, and process within the company	Chen et al. (2003)	Conceptual	Paper contains the main and important aspects that influence CRM: people, processes, and technology.
	Ko et al. (2008)	Empirical: quantitative	The aim of this article is to identify the status of CRM adoption and explore the influence on CRM adoption process in the Korean industry.
	Minami et al. (2008)	Empirical: quantitative	Research is about CRM system and technology integration, such as data consolidating and data mining with loyalty schemes in Japan service and retail industries.
	Speier et al. (2002)	Empirical: quantitative	Data are collected from salespeople across two companies before and after adoption of sales force automation technologies.

Source: modified according to the articles from top marketing journals.

Another cause of implementation failure is that CRM is not integrated into the company's overall strategy (King et al., 2008; Rigby et al., 2002; Starkey et al., 2002). Executives create the CRM strategy, implement system, but they do not create this strategy according to company's overall strategy. The third cause of potential failure can be inaccurate or incomplete customer data (Shah et al., 2005). This failure can lead to poor decision making. Underestimation cost of CRM have two results of implementation (Liagkouras et al., 2014). First, company do not finish this implementation. Second, they finish it, but only with basic options for customer relationship management, what is sufficient. Liagkouras et al. (2014) also say, that other implementation barriers are that companies do not have clear business objectives and they underestimate the complexity of CRM. Rigby et al. (2002) add to the barriers that companies do not know, what they implement and firstly, company implement system and then they create a customer strategy. They know, what is CRM, but they have lack of knowledge about detail work with it. The scholars identified as another problem related with CRM implementation the perception that it consists only a technological tool isolated from the culture, people, and processes within company (Chen et al., 2003; Ko et al., 2008; Minami et al., 2008, Speier et al., 2002). CRM should be looked as a set of business activities supported by technology, people and processes that are designed to increase company's profitability by improving customer relationships. CRM should be looked as a set of business activities supported by technology, people, and processes (Coltman et al., 2011).

3.1 Connections among general barriers and implementation barriers

As was already mentioned, customer relationship management has a lot of benefits and advantages for building long-term relationship with customers. Nevertheless, there are CRM barriers, which are divided into general and implementation barriers in chapter 3. From this division it is clear the significant connection among barriers. It is important to realise this connection, because the general barriers can influence successful CRM implementation process in company. And it can have a consequence, why exists difficulties through implementation and using CRM system. Table 3 shows the barriers connection according to authors review of this article. Table 3 is divided into two columns. The general barriers and implementation barriers. Each general barrier has assigned one or more implementation barriers, which are in significant connection.

Table 3. Connection among CRM barriers

General barriers	Implementation barriers
Unsatisfactory levels of improvement	<ul style="list-style-type: none"> - companies underestimate the complexity of CRM - companies do not know what they are implementing
Loyal customers are not necessarily lucrative	<ul style="list-style-type: none"> - customer data are not accurate and complete
Limited understanding of CRM	<ul style="list-style-type: none"> - without integration into company strategy - companies lack clear business objectives - companies underestimate the complexity of CRM - companies do not know what they are implementing - implementing CRM before creating a customer strategy
Lack of financial resources	<ul style="list-style-type: none"> - underestimating cost of CRM implementation - focus on software
Limited technical knowledge	<ul style="list-style-type: none"> - focus on software - customer data are not accurate and complete
Managers do not want to risk in adopting CRM	<ul style="list-style-type: none"> - companies underestimate the complexity of CRM - companies do not know what they are implementing - customer data are not accurate and complete
CRM has to be technologically intensive	<ul style="list-style-type: none"> - focus on software - isolation from the culture, people, and process within the company

Source: author's work

If company has negative attitude about CRM, it can influence the implementation success. First general barrier which is mentioned in Table 3 has close connection with two implementation barriers. Company do not trust that CRM can get a level of improvement. Thus, during the implementation companies underestimate the complexity of CRM and do not know what they are implementing. Another general barrier is opinion, that loyal customers are not necessarily lucrative. Company whose perceive that only new customers are lucrative, and they are not focus on loyal customers, its customer data are not accurate and complete in database. Consequently, with incomplete customer data is not possible to properly manage the relationship with customers. It is necessary to know the customer information for managing individual relationship. As was already mentioned, limited understanding of CRM, lack of financial resources and limited technical knowledge are general barriers especially for SMEs. These barriers also have a great influence on successful implementation. Companies usually know what the customer relationship management means, but they still have the limited understanding, what exactly CRM involves. These limitation causes the failures during the implementation, such as that CRM is implemented without integration into company strategy, companies lack clear business objectives, underestimation the complexity of CRM and companies do not know what they are implementing. The last influence of this general barrier into the implementation barrier is that CRM is implemented before creating a customer strategy. The lack of financial resources barrier causes the underestimation of cost as well to be focus on software. If companies do not have enough financial resources, they focus especially on CRM software. They control if this technology investment is right without obstacles. Company with limited technical

knowledge is focused on software during the implementation. They perceive the needs of increasing technical knowledge for success implementation, but company overlook another important step of implementation such as customer data, integration into the company, customer strategy and others. It is very common cause, that managers do not want to risk the adoption of CRM and it has significant influence on implementation process. The result of this general barrier is that companies underestimate the complexity of CRM, they do not know what they implement and put incomplete customer data into the system. The last CRM general barrier is that CRM has to be technologically intensive. If companies have this barrier, it can influence that company isolate this system from the culture, people, and process within the company and they are focused only on software.

4 Conclusion

Technologies are still developing, therefore companies must accelerate the speed of knowledge and information about them. The article is focused on customer relationship management, that provide a customer knowledge to company. Although it exists a lot of CRM benefits, as customer satisfaction and loyalty, the long-term relationship with customers. Therefore, companies have reasons, why do not want to implement it, or causes, why the CRM implementation is not success.

The purpose of this article is to provide the summarization of CRM barriers. It provides an overview of barriers that are obtained from scholars. These barriers are divided into general and implementation barriers. This data is obtained from top marketing journals. The article shows the most common general and implementation CRM barriers in Table 1 and Table 2, that are written in different research papers. Subsequently, in Table 3 is shown the significant connection among mentioned barriers. The connection is created according to authors review. The general barriers can have significant influence on implementation of customer relationship management in company. It is necessary to realise this connection that have influence on company's opinion about using of customer relationship management. However, the most common barriers are limited understanding of CRM, lack of financial resources and limited technical knowledge. These barriers are usual for small and medium sized enterprises and it can be the reason that SMEs do not implement CRM system. Thus, the question arises how it is possible to solve these mentioned barriers to implement CRM system in company. The SMEs have to see the company results which use and work with CRM system. If SMEs realised the advantages of using CRM system and how it works and help to company, they will understand what CRM is. The limited technical knowledge and lack of financial resources are within the company. SMEs have a possibility to create their own system and technology which is known for them to begin with customer relationship management. There is no necessity to pay and own difficult external CRM software in SMEs.

CRM and constantly developing technologies are important parts for managing relationship with customers. Thus, the future research in this area should be focus on intense causes of CRM barriers and company's attitude to the technological aspect that are significant in CRM using. How companies manage the relationship with customers and which technologies they use for this managing.

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THE TAX BASE CALCULATED FROM ECONOMIC RESULT PREPARED ACCORDING WITH IFRS OR CZ GAAP

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Abstract

This article references about approximate costs which are recalled by quantity and quality of work which is needed for calculation tax base taken from accounting prepared in line with international accounting standards (IFRS) and in line with Czech standards (CZ GAAP). The quantity and quality of work is compared in their demands. On the other hand is there comparison between two years 2016 and 2015 in the Czech Republic. The rules are changed very often in the Czech Republic. There is something new in accounting rules or tax rules every year. This changes needs time and experts to acquaint new knowledge. This article compare amount of work which is needed when are statements prepared in line with IFRS and tax base is calculated from them or if are statements prepared in line with CZ GAAP and tax base is calculated from these statements.

Keywords

IFRS, Tax base, the CZ GAAP, Demanding of calculation of tax base, SME.

JEL classification

H20, H21, M41.

1 Introduction and the Aim

The basis of the business environment around the world is small and medium-sized enterprises (SMEs). These are mostly family-type businesses with one or more owners. Their importance for the economy is monitored by the Czech Republic as well as the EU and is a drive to support them. It is the state's duty to provide public service and due to collected taxes. The basis for calculating the income tax base comes from accounting. The State regulates accounting to make a control and insists on calculating the income tax base on the Profit and loss statement prepared according with CZ GAAPs. On going globalization requires harmonization of accounting and taxation, especially within the EU. The IASB issues IFRS for SMEs with a recommendation voluntary input this international standard into national rules. The Czech Republic does not allow to assemble and public the closing financial statemnets in line with IFRS. The main reason for this decision is calculation income tax and easy control by financial authority¹. This fact forces the enterprises to manage two accounting system in case that they are for some reson obliged to assemble the financial statements according to the IFRS (Procházka, D. 2014).

The company which wants to aske for bank loan, financial or operating leasing, is subsidiary, seeks new owner or only wants to be compared with foriner ones is made to prepare financial statements according with CZ GAAPs and IFRS, too. Is main reason to not allow IFRS as tax base it is question which wants to be answered in this article. The tipical small entity was chosen as example to discover difficulties of calculation of tax base.

The aim of the work is to estimate the quantity and guality work in coparison when the tax base is calculated on the base of ecomonic result which comes from accounting prepared accourding with the IFRS or CZ GAAPs. The point of view is the work which has to be done by both sidess - the tax administrator and the tax entity.

In order to fulfill the aim of the work, are an over view of the adjustments that must be done under the current legislation (CZ GAAPs) for the transformation of the accounting result into the tax base. This corection schould be done by deductible items of costs and revenues regulated by Act No. 586/1992 Coll., On Income Taxes. Some of these adjustments can be recorded in the accounting

¹ §23, Law n. 586/1991, Code, Income tax.

analytical records (CZ GAAP001), some of these have to be determined by extra, special book keeping for tax purposes. Tax adjustments are reported and described in the tax return, and as special notes as its annex.

Two years - 2015 and 2016 are compared in difficulty of accepting changes of income tax and accounting prepared by the CZ GAAPs as the second step. This was done for better comparison acceptance of international and national accounting standards and amendments Czech regulations and conditions for tax deductibility of costs and revenues in two years (Mejzlík L., Artlová M., Procházka D., Vítek L., 2015). The difficulty in getting knowledge of each year changes are focused only on income tax and accounting.

Subsequently, is shown comparison an overview of the necessary adjustments of the accounting Profit or loss, when it is prepared in according with CZ GAAPs or if it is prepared on the basis of IFRS. The tax adjustments would be reported and described in the tax return and its annex as in present.

The rules for tax deductibility of costs and revenues are set by the Income Tax Act, actual in 2016.

2 Outline of the Problem

2.1 The European Union and the world

The proportion of 95 per cent of all companies worldwide is made up of SMEs². The SME definition is based on EC Regulation 70/2001 (see Table 1). Within the EU, 99.8 per cent are represented, of which 92.7 per cent are micro-entities, 6.1 per cent are small enterprises and 1.0 per cent are medium enterprises. A similar percentage distribution is also in the Czech Republic. A significant part of Czech SMEs is in employment area (L.Mullerová, M. Paseková, E.Hýblová 2010). This fact is shown in the overview prepared by the EU Small Business Act (SBA):

Table 1. Number of SMEs in the EU and the Czech Republic

Category of entity	Number of companies			Number of employed		
	Number in CZ	Share in CZ (percentage)	Share in EU (percentage)	Number in CZ	Share in CZ (percentage)	Share in EU (percentage)
Mikro	957 062	96.1	92.7	1 137 984	32.6	29.2
Small	30 849	3.1	6.1	631 965	18.1	20.4
Middle	6 231	0.6	1.0	658 710	18.9	17.3
SME	994 142	99.9	99.8	2 428 659	69.6	66.9

Source: SBA 2015 data overview – Czech Republic.

The free movement of trade and cooperation between states and businesses, both inside and outside the European Union, has started when the European Community was established. Cooperation, the restriction of cross-border competition and the possibility of comparison required the necessary steps (Nobes, Ch., Parker, R., 2008). The harmonization process started slowly and the accounting was covered by the 4th EU Directive on Annual Accounts (Žárová M., 2004). EU Regulation 1606/2002 establishes the requirement that companies whose securities are traded on a regulated market should keep accounts and prepare financial statements in accordance with IAS / IFRS from 2005 onwards. The financial statements have to provide true and fair information. SMEs and their specific features asked for correction of full IFRSs. The International Standards Committee issued International Accounting Standards for Small and Medium Enterprises (IFRS for SMEs) in 2009. It is up to national legislations if they implement this standard in the national framework or not. Most of the EU Member

² <http://www.ifrs.org/IFRS-for-SMEs/Pages/IFRS-for-SMEs.aspx>

States also allow SMEs to prepare financial statements in accordance with IFRS, but not the Czech Republic. The requirement for comparability, clarity and reliability of reported indicators in SMEs accounting between EU member states still exist (Albu N. - Albu C., 2010, Bohušová H., 2008, Quali A. - Paolini P., 2012).

Accounting records and the financial statements make the basis for calculation the tax base. The state sets rules, controls its compliance, and assesses taxes (James, S., 2009). According to some authors, reluctance to allow IFRS for SMEs may appear as the government's inability to influence tax revenues from corporate taxes (Mejzlík L., Artová M., Procházka D., Vítek L., 2015).

2.2 Czech Republic

Accounting, its regulation in the Czech Republic, is linked to tax obligations. There is defined the tax base as the difference between the revenues and costs comes from the accounting, but without the influence International Accounting Standards (Act No. 586/1992 Coll., section 23). Tax matters are firmly connected with accounting, and it is the entity's responsibility to establish analytical evidence in the "breakdown for tax purposes" (see CZ GAAP001, point 2.2.1.f). There are a lot of adjustments to the rules for determining the tax base (Mejzlík L., Artová M., Procházka D., Vítek L., 2015), some of which can not be captured only by analytical evidence, and extra-accounting records are necessary. In many cases, it is not only compliance with the Income Tax Act, but also the other laws which are needed for tax purposes. Resisting national regulation causes increase administrative burden in a remaining requirement of parallel records in a ledgers in line with IFRS and in line with CZ GAAPs.

The financial statements and accounting which are kept in accordance with the CZ GAAPs are incomprehensible to foreign users. At present there is a gradual process of separation of accounting rules from the rules for determining the tax base in the Czech Republic (Mejzlík L., _Roe J., Vítek L., 2014). This tax and accounting separation process is documented in the latest amendment to the Act on Accounting, which approximates the IFRS (exclusion of extraordinary costs and revenues, calculation product in process, new structure and definition of the financial statements, new donation charging, etc.)

The impact of the calculation of the tax base on the financial result compiled according with IFRS to the state budget was dealt with by a research project carried out by VSE Praha³. The project was based on publicly available data from the big companies. The research has failed to demonstrate a significant impact on the state budget; research opens up other possibilities of research, but it is hindered by poor data availability (Mejzlík L., Artová M., Procházka D., Vítek L., 2015). The examination of the impact of a common consolidated tax base on the state budget, which would also imply a common management of accounting, did not produce a positive or a negative result (Křehovná K., 2016).

Previous research used data from big companies that prepare the financial statements in accordance with IFRS (Procházka D., 2014, Křehovná K., 2016) or worked with macroeconomic indicators. This work is focused on small and medium-sized enterprises.

3 Own research and discussion

The tax obligations of the companies, the administration of taxes and their control are stimulated by the laws, in particular Act No. 280/2009 Coll., The Tax Code, as a procedural norm, and Act No. 583/1991 Coll., The Income Tax Act, as a substantive legal norm. In order to determine the tax base, it is based on the result of accounting recorded in the Profit and Loss statement, without the impact of international accounting standards⁴. The Accountancy in accordance with the Act on Accounting,

³ Assumption for Introduction of the IFRS as an Alternative Tax Base is a Small Open Economy: Evaluation of Its Impacts on Country's Competitiveness, GA ČR, č. P403/12/1901

⁴ §23, Act No. 586/1992 Coll., On Income Taxes

which also requires knowledge of tax law, due to the separation of accounting costs of revenues from tax deductible ones⁵, requires increasing demands on the quality of accountants, too, cooperation with tax advisors and higher financial resources, which cause administrative burden particularly for SMEs.

The duties of the tax administrator to control the correctness of determining the tax base are determined primarily by Act No. 280/2009 Coll., The Tax Code. It is assumed that the same procedure would be maintained if the financial statements and accounting would had been prepared in according with to IFRS.

The typical small company, with one owner and seventy employees is chosen as example⁶. There are receivables which are not repaid, the bank's long-term liabilities to finance fixed assets. Company has offices in the building which is leased by owner of this company. There are stocks with products from metal for particular clients The contract prices are calculated on the basis of the quantity of work and amount of material. The company received a grant from the EU to renewable resources. This company is oriented on export, especial to Germany. The owner wants to sell this company, because of no body from family wants to take it over. There are potential buyers in Germany. It will be kind to this company to prepare accounting and financial statements according with IFRS and calculate tax base from this the Profit and loss statement. It should be done till time than new buyer comes. The new buyer would want to know history of this company and the financial statements for several years.

The comparative analysis was chosen to qualificate difficulty two standards, CZ GAAPs and IFRS. In the focus is how much work must be done by tax payer to prove that tax base calculation is correct and how much work must be done by tax administrator to control it when the financial statements are prepared according with CZ GAAPs in comparison when the ones are prepared according with IFRS. We assume, the work which is done by tax administrator is equal to work which has to be done by tax payer. It is because of the tax payer has to prove all tax costs and all tax receivables⁷. The financial authority controls this proof.

There were determined areas with typical work must be done to prove correct accounting, correct statements and correct tax base. These areas will be evaluated by criterias where minimum work is done by CZ GAAPs, it means CZ GAAPs are base.

The areas:

- A1- Inventarization
- A2- Valuation of assets
- A3- Depreciation
- A4- Overdue receivables
- A5- Long-term liabilities
- A6- Exchange rate
- A7- Compliance accounting costs and revenues with tax costs and revenues
- A8- Estimations
- A9- Compliance with relative regulations
- A10- Familiarization with IFRS (Familiarization with new law)

The tax administrator, when control a cost and revenue eligibility, must necessarily to be familiar with internal principals, in particular valuation and stock calculations, assets and liabilities valuation, rule for refundation in the case if company use tools of employee, premiums and other benefits, transfer prices, exchange rate, etc. It is also necessary to acquaint with the inventory of assets and liabilities, especially in terms of its existence valuation and time structure in receivables or liabilities case. Another necessity is to acquaint with the company's operational records and supporting documents demonstrating the costs, revenues, valuation and existence of assets from the point of view of income taxes (eg photo documentation, book of journeys, attendance records). The proof of a

⁵ CZ GAAP001

⁶ KONSTROKTPOL s.r.o., Business register No.26388600, www.justice.cz

⁷ §92, Act No. 280/2009 Coll

correctly established tax base is on the tax payer side. Some of these acts will be more demanding for auditing than existing conditions, including familiarization with IFRS.

The difficulty of checking is determined by a scale from 1 to 5, where 1 means the same difficulty compared to the base, and 5 is a 100 per cent more in comparison to the base. The scale is prepared by the author of this article, in accordance to knowledge comes from praxes.

Criterion:	Description:
1	The same difficulty as in CZ GAAPs case
2	The difficulty is about 25 per cent more
3	The difficulty is about 50 per cent more
4	The difficulty is about 75 per cent more
5	The difficulty is about 100 per cent more

Firstly, is evaluated work of tax authority and tax payer in comparison when calculation of the tax base is taken from the Profit and loss statement prepared according with the CZ GAAPs and with IFRS. The burden of proof is on the tax payer. The quantity of tax administrator work is equal to quantity of tax payer, as was said.

$$C = \sum C_i / \sum A_i$$

C – criterion, A_i - area

Secondly, is made comparison quantity of work on the both sides (tax payer and tax authority) between two years, 2015 and 2016, when the financial statements are prepared only according with CZ GAAPs. The reason is never ending changing the tax law and the accounting law in the Czech Republic..

$$C = \sum C_i / \sum A_i$$

C – criterion, C_i – C₂₀₁₆/C₂₀₁₅, A_i – area

The tax administrator, when control a cost and revenue eligibility, must necessarily to be familiar with internal principals, in particular valuation and stock calculations, assets and liabilities valuation, rules for refundation in the case if company use tools of employee, premiums and other benefits, transfer prices, exchange rate, etc. It is also necessary to get acquainted with the inventory of assets and liabilities, especially in terms of its existence valuation and time structure in receivables or liabilities case. Another necessity is to get acquainted with the company's operational records and supporting documents demonstrating the costs, revenues, valuation and existence of assets from the point of view of income taxes (e.g. photo documentation, book of journeys, attendance records). The proof of a correctly established tax base is on the tax payer side. Some of these acts will be more demanding for auditing than existing conditions, including familiarization with IFRS.

Table 2 shows the difficulty, where is compared CZ GAAPs and IFRS, where the basis is the CZ GAAPs, and Table 3 shows the difficulty of work in comparison two years - 2015 and 2016. In these two tables are taken into account as accounting rules as tax rules together.

Table 2. Internal principles – necessary verifications and actions for the assessment of the tax deductibility of costs and revenues and their complexity

Area	IFRS	Criterion
A1	Inventarization	1
A2	Valuation of assets	1
A3	Depreciation	1
A4	Overdue receivables and adjustment for tax purposes present value	2
A5	Long-term liabilities and present value	2
A6	Exchange rate	1
A7	Compliance accounting costs and revenues with tax costs and revenues	2
A8	Estimation	2
A9	Compliance with relative regulation	1
A10	Familiarization with IFRS	5
	At all	18

Source: own calculation, own sources taken from accounting act No. 563/1991 and tax act No. 586/1992.

Table 3. Internal principals - necessary verifications and actions for the assessment of the tax deductibility of costs and revenues and their complexity in the years 2015 and 2016 (amendments were introduced by Act No. 221/2015 Coll., Act No. 298/2016 Coll. .)

Area	CZ GAAP 2016/CZ GAAP2015	Criterion
A1	Inventarization	1
A2	Valuation of assets	2
A3	Depreciation	1
A4	Overdue receivables and adjustments	1
A5	Long-term liabilities	1
A6	Exchange rate	1
A7	Compliance accounting costs and revenue with tax costs and revenues	2
A8	Estimation	1
A9	Compliance with relative regulations	2
A10	Familization with new laws (for 2016)	2
	At all	14

Source: own calculation, own appreciation modifications and knowledge accounting and tax acts 2015 and 2016.

When we compare the difficulty of accepting a tax base based on the profit and loss account compiled according with the IFRS (see Table 2), we can see that the intensity of the tax authority work and tax payer work increase by 80 per cent on the both parts .

If we compare the demand between two years – 2015 and 2016, when tax base is calculated from the Profit and loss statement prepared according with CZ GAAPs (see Table 3), we can see that the intensity increased by 40 per cent.

Every year, we are witness how is changed tax and accounting law (for example Act No. 377/2017, with effect from 1.1.2017). Increasingly, tax and accounting rules are being separated in the Czech Republic (Mejzlík I., _Roe J., Vitek L., 2014) and their convergence with IFRS is evident. The professional public points to the inconvenience do not allow prepared the financial statements according with IFRS, which is often connected with administrative burdens, and to persist in the requirement to calculate the tax base especially from the financial statements prepared according with the CZ GAAPs. The annual partial amendments the law, we can say, annoy both sides, as the tax administrators as the tax payers. The allowance prepare accounting and financial statements in

accordance with IFRS brings a significant change and burden on the part of the tax administrator and tax payer (see Table 2), but partial annual changes recall bigger administrative burden over the time horizon. If we convert the changes into numbers, the change from CZ GAAPs into IFRS would cost 80 units more. From third point of view due to year-on-year changes would be paid in about 2 years.

To illustrate and perform the necessities which have be done by tax payers to prepare tax return is shown in table 4. The same criterions are taken for comparison when tax return will be taken from the Profit and loss statement prepared according with CZ GAAP or according with IFRS. In this case are taken into account only tax rules. This is not comparison between years. The documents which describe all tax changes are part of this tax return. The special documents are processed to prove tax costs and tax receivables for the control tax administrators. These are saved in company. The comparison of difficulty of calculation tax base with all necessities both tax base is taken from CZ GAAP and is taken from IFRS, is shown in table 4.

Table 4. The Comparison of difficulties. What tax payer has to do to items in tax return be proof.

Item	Accounting	Taxes	Notes	Criterion IFRS/CZ GAAP
Fixed assets	Purchase price	Purchase price for taxes	Special evidence	1
Financials assets	Purchase price or , nominal value	Purchase price for taxes or nominal value	Special evidence	1
Depreciation	Accounting depreciation	Tax depreciation	Special evidence, shown in tax return	1
Receivable and adjustments	Accounting adjustments	Tax adjustments	Special evidence, shown in tax return	1
Long-term liabilities, liabilities, equity	Accounting value	Tax value	Special evidence, shown in tax return	1
Costs, expenditures	Accounting costs	Tax costs	Special evidence, analytic evidence, shown in tax return	1
Revenues, gains	Accounting revenues	Tax revenues	Special evidence, analytic evidence, shown in tax return	1
Score				7/7

Source: own calculation, forms of the Ministry of finance CR, Act n. 563/1991 Coll., Act n.586/1992 Coll.

When we compare the main differences between IFRS and the CZ GAAPs of the view of difficulty and demonstrating the eligibility of costs and revenues from the income tax perspective, it should be noted that significant changes in this area do not occur. From this point of view, it is not relevant claim to prepare tax base only on the base of accounting prepared especially according with CZ GAAPs. Familiarization with IFRS is concerned with certain amount of difficulty but is not connected with taxes (only with accounting). The implementation IFRS rules into national accounting would not mean more difficulty, however, change the tax rules. Even in the case of leasing, it would simplify them by excluding the conditions for eligibility of payments for tax purposes (see §24, paragraph 2h, paragraph 6, Act No. 586/92 Coll.), which would govern as assets by the existing depreciation rules.

4 Conclusion

The objective of this article was to assess how much quality and quantity of work needed for calculation tax base comes from accounting based on national and international rules on the bough side, as the tax payer side as the tax authority side. The reason for this is to call on the professional public to allow the preparing of financial statements in accordance with IFRSs, especially for SMEs that do not have such a strong professional and financial background as large businesses. SMEs are forced to prepare double financial statements, once according to the CZ GAAPs and once according to IFRS, if they are owned by a foriner company or because of a comparison of its financial positions on the international market.

The result of the findings shows the initial high intensity of implementation of IFRS in national and company rules (by 80 per cent more), but this initial investment would be reversed within two years, when we aware annual changes of tax and accounting law. Regardless of these changes in accounting policies are based on convergence with IFRS and accounting in the Czech Republic is increasingly separated from tax rules.

The burden on taxpayers in demonstrating tax-deductible costs and revenues does not change significantly. The tax costs and revenue are governed by the Tax Act and can be separated by analytical records and in the operational evidence for tax proof and they are listed in the tax return. From this point of view, there would be no significant change. A significant relief would be a reduction in the administrative burden caused by double accounting.

However, there is no doubt that in the first year of implementation of IFRS in national legislation brings hard work for tax payers and tax authority but in future it reduce administrative burden. Requirements for the quality of accountants would certainly be higher. Although at present, most entrepreneurs are leaving accounting for experts due to VAT obligations and related deadlines, too.

This research was conducted on the basis of the knowledge of the development of accounting and taxation in the course of at least twenty years. In comparison of the years 2015 and 2016 are considered changes that were known by the end of 2016. The intention of the research was not to list the number of changes in individual years, but changes to generalize. To quantify the impact of such generalized changes mainly in the case of SMEs. In the case of allowing the calculation of the tax base according to IFRS quantify how great a administrative burden will this step trigger off, on the side of the tax administrators and on the of side taxpayers. To identify areas demonstrating for tax purposes was made on the basis of the MF CR in the guidelines to completing the tax return and the experience of the author.

Further research will be oriented to the survey administrative burden of SMEs, caused by changes in accounting and taxation to calculate and demonstrate the tax base, in the professional community. The willingness adoption of new method in case IFRS by SME will be in focus, too. It will be done with the help of professional chambers.

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COMPENSATION OF EXPROPRIATION OF THE FOREIGN INVESTMENTS IN THE FRAME OF THE EU-RUSSIAN COMMERCIAL RELATIONS

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Abstract

Compensation is one of the forms of the reparation for a wrongful act in accordance with the international law of state responsibility, and in international investment law. Mostly it is a monetary form of the reparation. In the international investment law there is a principle of the “adequate, prompt and effective” compensation. However, the situation with award of compensation is controversial. The jurisprudence illustrates many approaches to the assessment of the issue of damage and payment of compensation. In the paper will be analyzed several cases and approaches of the tribunals to the compensation of expropriation of the foreign investments in the frame of the EU-Russian commercial relations, specifically in the gas sector. Since, the issue of the compensation of expropriation in the capital intensive investment projects is very sensitive, especially in the field of the state owned natural resources field, thus it should be considered carefully. The article suggests to include to the international and bilateral investment treaties the specific and concrete methods and approaches to the compensation of expropriation, based on the analysis of the relevant cases. Since, there is no single approach and definition neither the compensation, nor its calculation, the question is still open, not only to the lawyers, but to the economists.

Keywords

Compensation for expropriation, Yukos case, EU- Russian gas relations, Investment relations.

JEL classification

K00, F21, K32.

1 Introduction

In this paper will be discussed the compensation for expropriation under the investment agreements, in particular in the gas sector, in the framework of the European Union – Russian relations. Since the investments in the gas sector are capital-intensive, and on the other side this issue is related to such sensitive sector of the state economy as national resources, may occur the expropriation, and due to the international agreements for the expropriation should be paid compensation, lack of the common understanding what is “prompt, adequate and effect” compensation may lead to the uncertainties, and various interpretations, which in the final have a huge consequence not only for the state, but also and mainly for the taxpayers. Thus, the issue of compensation for expropriation of the foreign investments is very sensitive and relevant. The research question is whether the concrete approach to compensation should be included into international legislative document?

The European Union – Russian Federation commercial relations have a long history, particularly in the field of gas investment, where the cooperation experience lasted for more than sixty years. In the end of 1940, the first agreements on exchange of commodities to technology supports were concluded. The EU for the RF, as well as the RF to the EU – is a strategic and important partner. They are interdependent not only in the area of gas export and import, but also, in cooperation on joint projects of gas production, transmission, and delivery, as well as investment activity related to it. Such EU member states as Germany, France, Netherlands, the Czech Republic and Poland have been participating in the investigation of subsoil and gas production in Russia, supplying the innovative technology for the examination of the fields, construction of the pipelines, transportation of the gas, construction of gas storages, and CNG (compressed natural gas) stations.

However, there is no sole definition of the compensation in the international law, as well as no sole universal legal document, which will provide the definition on investment law, investment, investor, the compensation or the proceedings, not even unified the customary international law.

Definitions and frame in accordance with which to behave are given by the jurisprudence or academic statements, as opinions, proceedings from the conferences, scientific publications.

Between the EU and the RF does not exist a sole agreement which will cover the investment and energy cooperation, and various treaties are either not ratified, or obsolete. Moreover, the various definitions and references, sometimes mutually excluding provisions, used in BITs (bilateral investment treaties) between the RF and each EU member states require careful reading and consideration of the specifics of each EU member state history and particular relations with the RF. The only multilateral document, which covered EU- Russian investment energy relations, was the Energy Charter Treaty (ECT). However, due to the EU's development of the common commercial policy, and not the least the *Yukos case*, the situation has changed - the RF withdrew from the ECT, thus, leaving the room for the negotiations in the energy cooperation. Besides, the case of *Yukos* brought the issue of the compensation for the expropriation, regarding the international legal framework in the international investment field. It opened a question - was it a prompt, adequate and effective compensation for expropriation? And what is it – prompt, adequate and effective compensation?

The aim of this paper is a development or suggestion of the idea of the proportionate compensation for expropriation. The aim of this paper will thus concentrate on tackling the following. To explore approaches of the judicial and arbitration decisions to the compensation, and, thus, related to it questions. What are the main reasons of the different approaches of compensation? What is a prompt, adequate and effective compensation for expropriation? And does this imply any further complications for the international investment sphere?

Given the aim of this paper, it will cover and critically analyze the points mentioned bellow:

1. Expropriation, the reasons of its justification.
2. Compensation for the expropriation.
3. Case law
4. Discussion on the basis of some specific provisions.

By implementing a comparative analytical framework, the text will examine the controversy with the award of compensations, and different approaches to the assessment of the issue of damage and payment of compensation, with the analysis of the individual cases of decisions on the compensations of the judicial and arbitral proceedings in the area of the EU-Russia investment relations.

The second section will focus on the compensation for expropriation, by introducing the expropriation per se, Hull's doctrine of the prompt, adequate and effect compensation, as well as academic views on this definition, and the definition of the compensation in the international investment legal documents. The third and the fourth sections will provide the different approaches to calculation of the compensation, used by the judicial tribunals in several cases, based on the Energy Charter Treaty, or bilateral investment agreements between the Russian Federation and the EU state members. The fifth section will discuss the *Yukos case*, as an example of the changing approaches to the calculation of the compensation in the stage of appeal. The final sixth section is a conclusion, where will be made the main summaries on this research.

2 Compensation for expropriation

Before analyzing the compensation, it is good to understand, what is it an expropriation. Expropriation *de iure* means the depriving of investor's property by a court decision or on the grounds established by an international or national law, which however does not entail the termination of the property right. On the other side, expropriation *de facto* is when the property right terminated by a court decision on grounds of the international or national law for the state needs.

Expropriation is known as lawful, where such measures are taken in accordance with the national and international law, and unlawful. Šturma and Balaš (2013) emphasize that should be differentiated the expropriation and the regulated taking of property, however on the basis of the before stated legal conditions. The decision of the tribunal in a case *BP, Texaco Liamco v. Libya* (1977), indeed confirms that there is a sovereign right of the state to expropriate the concession, based on the investment contract in accordance with the national law of the host-state, thus the breach of the contract is not unlawful under the international law (Šturma and Balaš 2013).

Academic Brownlie (2003) points out that “*state measures, prima facie an exercise of powers of governments, may affect foreign interests considerably without amounting to expropriation. Thus, foreign assets and their use may be subjected to taxation, trade restrictions involving licenses and quotas, or measures of devaluation. While special facts may alter cases, in principle such measures are not unlawful and do not constitute expropriation.*” The other scholar Sornarajah (2010) refers expropriation to the nationalization. The Organization of the Economic Cooperation and Development Draft Convention on the Protection of Foreign Property (1967) provides that “*no party shall take any measures depriving, directly or indirectly, of his property a national of another party*”, unless the international conditions are complied with – in public interest, non-discriminatory, in accordance with law, with paid fair and proportionate compensation.

Compensation is one of the forms of the reparation for a wrongful act in accordance with the international law of state responsibility, and in international investment law, the monetary compensation is the most used type, which plays a practical role. Alongside with the compensation, the other form of reparation is the restitution, by which the violator should compensate the damage by restoring the existing state before the commitment of such violation (Dolzer and Schreuer 2008).

There are several international institutions, which regulate the relations in the investment sector and deal with the compensation. Multilateral Investment Guarantee Agency (MIGA), members of which are 150 states, based on the Seoul Convention 1985, fills a gap in public international law in respect of counting the amount of compensation paid to a foreign investor in the event of political risk with the adoption of state measures on nationalization of foreign property and equivalent to its effect the regulations of foreign investment. The other institution, as World Trade Organization (WTO) is also dealing with the issue of compensation, bringing to the parties the recommendation on achieving the acceptable compromise on compensation, however it lacks the enforcement mechanism, thus providing more political, than practical effect (Gudkov, 2015).

In the field of investment in energy sector, the culmination of the cooperation is the Energy Charter Treaty (signed in 1994 and entered into force in 1998), it is the first international document on energy sector, and it is governing trade and investment issues related to energy and energy supplies (Roggenkamp, 2000). Many consider the ECT as a model of global international arbitration mechanism for settlement of investment disputes. This is a multilateral agreement, which has been signed by 52 European and Asian states, including the states of the European Communities (EC and EURATOM), and ratified by 47 of them. It is comprehensive that the energy sector requires long-term and capital intensive investments, which are supplied by the foreign investors, expecting the profits from their returns. At the same time these investments are exposed to many risks, including economic, political and legal, which host state may impose on the foreign investment in the post-investment period (Boute, 2009). Thus, many disputes occur between the investor and the host state, which needs to be efficiently settled without damage for the third parties.

The Energy Charter Treaty contains provisions relating to the promotion and protection of investments in the energy sector, on treatments, payment of prompt, adequate and effective compensation for any expropriated assets; permit foreign investors to transfer freely from one country to another, in freely convertible currency, invested their capital and any income associated with it. The article 13 of the Energy Charter Treaty states: “*Investments of Investors of a Contracting Party in the Area of any other Contracting Party shall not be nationalized, expropriated or subjected to a measure or measures having effect equivalent to nationalization or*

expropriation (hereinafter referred to as “Expropriation”)). Further ECT repeats International Law standards, clarifies – “*except where such Expropriation is: (a) for a purpose which is in the public interest; (b) not discriminatory; (c) carried out under due process of law; and (d) accompanied by the payment of prompt, adequate and effective compensation*”.

Mentioned article 13 (1) (d) of the ECT provision is known as the Hull’s doctrine or formula from the year 1938. This doctrine based on the rule of the “prompt, adequate and effective” compensation for nationalization and/or expropriation. A number of scholars have expressed the view, that this formula is a customary norm of the international law. However, historically state-importers of capital in the Latin America, Asia and Africa for a long time did not want to accept this formula. They argued that the issues of property rights are in the prerogative of the national legislation, which may allow withdrawal of property of foreign investors in a lower than market price. The same negative stand had some socialist states of the Eastern Europe, which objected this formula, however argumentation based on a different point – they brought a question, whether should be done any compensation in a case of the nationalization and expropriation of property of national or foreign investors, as it contradicts the aim of the expropriation itself.

Some scholars, such as Dolzer, referring to the Resolution of the General Assembly (Resolution of UN General Assembly 3171, Resolution 3281, article 2 para 2 - Charter of Economic Rights and Duties of States), stress that international law does not require the full compensation.

Brownlie believes that states while providing the nationalization should accept the principle of compensation not necessarily based on the “adequate, effective and fast” formula, especially when it comes to the most strategic state area as natural resources, as in the case *Shahin Shaine Ebrahimi v Iran*, Tribunal stated that “the standard of “fast, adequate and effective” compensation is prevailing in the international law.”.

The situation with award of compensation is controversial, even the jurisprudence illustrates many approaches to the assessment of the issue of damage and payment of compensation. It is facilitated by the different legal content of the definition the term, as the compensation itself covers two types of actions: calculation operations and providing at the disposal the fixed amounts, which have been forced to withdraw by investor. Thus, there should be fulfilled the conditions, that will not lead to the emergence of a new form of property, by establishing an upper limit of compensation or payment by installments, or prohibition on conversion, remittances (Carreau, 2013).

The compensation shall cover any financially assessable damage, including the loss of profits insofar as it is established” (Crawford, 2001), and must “*re-establish the situation which would, in all probability, have existed*” prior to the commission of the internationally wrongful act (compare to the article 7.4.2. of the UNIDROIT 2010 – Principles of the international commercial contracts). Norton (1991) illustrates an approach of the tribunal regarding the unlawful expropriation in case of *Chorzow factory*, citing the decision of the Permanent Court of International Justice’ (1928), where was considered the possibility of restitution and compensation. It stated, that “*restitution in kind, or if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear <must be made>*”. In contrast, the lawful expropriation “*did not require restitution, but only payment of “the just price of what was expropriated” measured as “the value of the undertaking at the moment of dispossession, plus interest to the day of payment*”. In the decision on the case *BP, Texaco Liamco v. Libya*, the tribunal stated it should be paid only compensation, instead of the *restituio in integrum*, as that was lawful expropriation by the host state as a performance of its sovereign right (Šturma and Balaš, 2013).

The other issue occurs in regard with expropriation based on public interest, and the measures which entails and not lead to compensation. However, the right of the investor for compensation in a case of violation, may lead to an abuse by the investor of such arbitration possibility, „*investment treaties that were originally aimed at reducing the risk of investing aboard have now become an instrument that is used to attack the extremely wide range of actions of host-state*“(Choudhury, 2008), as in the case *Vattenfall v. Federal Republic of Germany* (ICSID case No

ARB/09/6.). A Swedish energy company *Vattenfall* was obliged by the host-state to shut down its nuclear power plants, due to German new energy legislation for the safety purposes, as well as its environmental and energy policy. Thus, the company brought an action to ICSID on the basis of the ECT. This is a conflict of interests, when the state is taking measures on regulating its economy and ecology and the need to pay compensation, again, in public purposes. Germany on the first time decided to pay compensation to the Swedish company, by choosing the amicable agreement, and milded the previously established restrictions on the nuclear power plants. In several years, *Vattenfall* brought an action against Germany the second time, *Vattenfall AB and others v. Federal Republic of Germany* (ICSID Case No ARV/12/12) the case is still pending. Some academics even talk about the problem of the privatization of the international law by the investment arbitrators (Franck, 2005). The other ones talk about the principle of the *abus de droit* in the context when was decided on the subject of the dispute (Balaš, 2009).

The other controversial situation with compensation bring parallel proceedings, as in the case *Lauder v CME*, the dispute with the Czech Republic, when two different arbitration bodies were considering on the basis of two different BITs – London arbitration tribunal considered on the basis of the USA - Czech BIT, which decided, that the violation of the Czech Republic has not occurred, and Stockholm arbitration tribunal – on the basis of the Netherland - Czech BIT, which concluded that the host-state applied the hidden expropriation and held that the Czech Republic should pay compensation in amount of USD 335 million (Franck, 2005). Thus, leading to the unpredictable and ambiguous situations, as whether should the compensation be really paid, and if so – then what amount should be paid?

As a consequence, the question of legitimacy arose, in which occurred in the legal vacuum fulfilled by uncertainty among the dispute parties.

3 Calculation of compensation

Although there is a large number of the judicial and arbitration decisions on the investment compensations, available to the public, the question of the calculation of compensation remains highly debatable.

There are a number of legal facts, that can force the arbitration to reduce the amount of the compensation, or even to decline the plea to award it, among these facts are doubts of the tribunal of the presence of the *nexus causalis* (proximate, foreseeable, direct) between the actions of the state and the damage to the investor, and the conduct or misconduct of the injured party to fulfil its obligations to minimize its losses (Commentary on articles of the state responsibility, 2001), as in the case *Estonian Innovation Bank*, based on the Estonia-US BIT (in this relation, we could remember the case *Gabcikovo-Nagyamaros*, based on the Slovak-Hungary BIT).

Therefore, the demand for compensation should meet the following points: (a) an investment must be actually done; (b) an investment must be made in the territory of the host/receiving state; (c) the expropriated object must correspond to the status of foreign investment, while the burden of proving is on the investor; (d) in a case of expropriation the measures should be the result of the actions of the host state (Neshataeva, 1998).

The Svea Court of Appeal in the case *Renta 4 v RF*, Spanish shareholders of *Yukos*, based on BITs with Spain, has brought one of the requirements for the compensation payments. In the case, the arbitration tribunal ordered to pay compensation of USD 2,7 million loss, due the unlawful expropriation of *Yukos* assets by the host state. The RF requested for revision the Stockholm District court, which later confirmed the decision of the Stockholm arbitration tribunal. However, in 2016 the Svea Court of Appeal overturned the decision of the Stockholm District Court, and approved the RF's plea. The Svea Court of Appeal found that when the relevant dispute-resolution clause (article 10 in conjunction with article 6) in the BIT is interpreted in accordance with article 31 and 30 of the Vienna Convention on the Law of Treaties: “...article 10 of the Treaty does not

include an examination of whether expropriation has taken place. <...> This interpretation neither leaves room for any remaining ambiguity or obscurity regarding the meaning of the article nor leads to a result that is manifestly absurd or unreasonable.” Article 10 states that: “1. Any dispute between one Party and an investor of the other Party relating to the amount or method of payment of the compensation due under article 6 of this Agreement, <...> may be referred to <...> An arbitral tribunal <...>.” Thus, stating the BIT covers jurisdiction over issues relating to the amount, or method of payment, of compensation paid in the event of an expropriation, and not cover the issue as to whether expropriation of an investment has occurred or not.

In the case *RosInvestCo v. Russia* (SCC Case No. Arb. V079/2005, Final Award, 2010), instead of the requested (Ziegler, 2011) by the claimant amount USD 275 million, the tribunal ordered to pay compensation in the amount of USD 3,5 million. The tribunal assessed the arguments of the respondent, that “*by the time claimant acquired beneficial ownership of the Yukos shares in 2007, virtually all of the allegedly wrongful acts complained of had already since long occurred*”, and thus claimant deserves no compensation, on the one side, and the claimants arguments on the other side - “*claimant cannot claim damages for acts that occurred before it became an investor*” (Para 658, p. 270 judgement *RosinvestCo v. Russia*). The tribunal further explained that claimants’ claim for compensation should be up to USD 3,5 million plus interest due to the fact that, that was the price of its shareholding at the time it gained beneficial ownership in 2007. The tribunal had not taken into consideration attempts to get a windfall and possible increase in value of the shares after 2007. It stated that the investor should not claim for damages it did not suffer (Para 658-660, p. 270 of the judgement *RosinvestCo v. Russia*).

However, there are several standards regarding the methodology of the determination of the compensation. One of them is the fair market value or as it is also used in the investment treaties and contracts – investment value, contractual value (Marboe, 2008), where the amount of compensation should reflect to the real value of the alienated property (Commentary on the articles on state responsibility, 2001). The World Bank Guidelines define “fair market value” as “*an amount that a willing buyer would normally pay to a willing seller after taking into account the nature of the investment, the circumstances in which it would operate in the future and its specific characteristics, including the period in which it has been in existence, the proportion of tangible assets in the total investment and other relevant factors pertinent to the specific circumstances of each case.*” In this relation it is good to mention the decision of the tribunal in the case *Amoco International Finance Corp. vs. Government of the Islamic Republic of Iran* (1987), where the tribunal stated, that in some cases this approach is impossible, when is not existing the comparable or identical assets or goods, and the hypothesis of what could be misleading. Moreover the fair market value may be lower than the actual value of the expropriated investment. Thus, though the conception is suggesting the flexibility, may not be applicable in specific case (Marboe, 2009).

The article 13 (1) of the ECT states the compensation for expropriation “*shall amount to the fair market value of the investment expropriated at the time immediately before the expropriation or impending expropriation became known in such a way as to affect the value of the investment*”. However, in the case of Yukos the fair market value increased during the process of the claim. Dolzer and Schreuer however stress that “*market value may often be a fiction <...> and is determined often on the basis of future prospects or earning capacity of the investment*” (Dolzer and Schreuer, 2008). Keynes emphasizes the necessity of the reasonable calculation. In his “General Theory of Employment”, economist says, that the investor before entering market of the host-state, evaluates the risks, as “*the actual results of an investment over a long term of years very seldom agree with the initial expectation*”, and “*all sorts of considerations enter into the market valuation, which are in no way relevant to the prospective yield. Rather than mathematical calculation, should be used such method of calculation, as a “considerable measure of continuity and stability in our affairs, as long as we can rely on the maintenance of the convention*” (Keynes, 1936).

The approaches to calculation of such compensation are complex, and require careful assessment, whereas the plea of the investor to satisfy its oral damages can be rejected. There are different approaches for calculation of the compensation, which are primary valuation methods in the context of the investor-state disputes, provided by the World Bank (Legal Framework for the Treatment of Foreign Investment Volume II Guidelines, 1992). The most common approaches of the compensation are the market, income and cost-based, as well as differentiated approaches. Each of them is based on a number of specific principles, in particular the market approach is based on the principles associated with the functioning of the particular market, the income approach – reflects the position of the user of particular investment or property, and the cost approach reflects the principles associated with the costs related to investment. The income approach allows more accurate to estimate the value of the investment, than the cost approach, and is more precise in evaluation of the particular investment in the time of absence of a sufficient comparative market base. In order to determine the present value of the potential or future incomes, are used several methods, as capitalization of earnings or income (for the known or functioning companies, calculated by dividing the expected income by the capitalization rate, based on the expert and industry analysis), and the discounted cash flow method (Kantor, 2008).

The ECT formula brings solutions and issues, for the investments in politically or economically unstable regions, where it is hard to calculate the real fair market value (Farhutdinov, 2014). In the Arbitration is commonly used the economical approach of discounted cash flow, which however may not be used in all the cases. As there are various approaches even to determining the discount rate, which is usually including the cost of alternative investments for a given period, accompanied by comparable risks, inflation and other factors. In other words, this method allows to determine the income which could be received by the investor in a result of the expropriation of its investment. Thus, these calculation methods might be used as a direction or a guide. If the acts of the host state are of discriminative character, or unlawful, then investor may have at its disposal more means of influence during an investment assessment negotiations, and the tribunal may be more supportive to investor claims (Farhutdinov, 2014).

At the same time the International Law Commission precludes compensation for speculative or uncertain damage (article 36(2)). This could be related to the so-called collateral costs, or the costs of the investor connected with the main amount of compensation of the expropriated investments. Related to the “collateral costs” issue – compensation for the moral damages, which is also ambiguous term without precise definition in the international investment law. As in the case *Lemire vs. Ukraine*, where the Tribunal rejected the claimant’s plea for US\$3 million in moral damages and found that moral damages may only be awarded, where the host state has subjected an investor to grave physical duress or its equivalent and caused the investor to experience mental suffering or loss of reputation (Wong, 2013). This issue is discussed among the scholars, whether the compensation for moral damages is in the competence of the investment arbitrations. On the other side, the investor uses the other way to claim the moral damage, as for example could be seen from the case *Yukos*, it may claim the compensation for the violation of the human rights.

4 Provisions on Compensation in the BITs between the particular EU member states and the Russian Federation.

The vast majority of bilateral investment treaties contain rules on the payment of the “prompt, adequate and effective” compensation in a case of expropriation. As the article 4 para 1 BIT between Denmark and Russia, states “the payment of prompt, adequate and effective compensation”, the BIT between USSR and UK and Northern Ireland, indicates the payment of “adequate and effective compensation”, article 5(1). In the Russian – Czech BIT, article 5 states accordingly that such measures “*are followed by adequate and effective compensation. The payment of compensation shall be processed without any unnecessary delay... and shall correspond to the*

real value of the expropriated investments immediately before the time when the actual or impending expropriation has become known”, and transfer of payments of compensation “*shall be made in a freely convertible currency*,” article 6(2). Nevertheless, there is no provision on how should be the compensation calculated, in a case of expropriation of investor’s investments. Uncertainty of legal provisions regarding calculation of compensation gives a possibility to arise uncertainty of payment and perspective of intra-state cooperation in the economical field. In the author’s opinion, issues regarding clear and concrete approach to compensation should be included into international legislative document or the BITs. Moreover, it is also significant, as in the rules of the Foreign Direct Investment Regulations stated that if the compensation is delayed, then on it should be applied “*reasonable, market-determined interest to deferred payments*”.

In the BITs between the RF and EU member states the terms, period and interests of payments differ, and in some BITs the provisions about the rates and terms are absenting. For example, in the BITs between the RF and Italy or Sweden, the interest is payable from the moment of expropriation up to the moment of payment of compensation, in this case in the BIT with Sweden the “*interest rate [which is] applicable in the territory of the expropriating contracting party*”, in the BIT with Italy interest rate in accordance with the rate of the central bank of the contracting party in the territory of which the investment was made. In such cases apply the provisions of the host-state law, in case of the RF Federal Law on Foreign Investment, which states regarding nationalization that “*the value of the nationalized property and other losses shall be reimbursed*”, and applies as for the foreign investors so for the companies/undertakings with the foreign investments. At the same time the BIT with Denmark provides the application of “*normal commercial rate established on a market basis*”. The BIT with Croatia (1996), article 4 provides that “*from the moment of expropriation to the moment of payment, the interest will be calculated in the same freely convertible currency on the basis of the market interest rate, which must not be lower than the London interbank rate (LIBOR)*.”

From the arbitration practice we can see the different approach, as in the Case *Sedelmayer v. RF* on the basis of the USSR - Germany BIT, where the tribunal interpreted the phrase “the rate which is in effect”, of article 4 para 2 the “*interest shall be calculated on the amount of the compensation in accordance with the interest rate in force in the territory of the Contracting Party concerned*”. The Tribunal decided that as the investor is a resident of Germany, further quoting SCC in *Sedelmayer v. Russia*, para 115 of the Decision, the “*relevant rate of interest ... would be the rate of interest which was used in Germany at the time in question shall, thus, be applied*”. However, considering the rate of interest and terms on which date it shall apply, the Tribunal refers to the national legislation of the RF (Civil Code). Interestingly, regarding the amount of compensation, the tribunal states that “*it has not competence to examine if compensation any such ground is justified*”.

The case of *Sedelmayer v. Russia* is worth to look at closer, the Arbitration Institute of the Stockholm Chamber of Commerce was deciding on the case Sedelmayer, the German citizen, but acting in the territory of the Russian Federation through its company *Sedelmayer Group of Companies International Inc. (SGC International)* incorporated in the United States of America, and in the year 1990 together with the Russian GUV D (Main Department of Internal Affairs) of the city Leningrad (St. Petersburg) owned a joint company in Russia. In 1995 Sedelmayer was informed about the cancellation of the previous agreement, without any compensation of his loss or investment made previously. In 1996 Sedelmayer made a claim to the Arbitration Institute of the Stockholm Chamber of Commerce on the basis of the BIT between Germany and the USSR 1989. Although the Tribunal concluded in 1998 that the RF should pay compensation to the investor Sedelmayer, the case itself brought many issues, including identifications of the parties.

In its judgement regarding the rate of interest of the compensation, the SCC stated “as the rate of bank interest on the day of performance of the monetary obligation or respective part thereof which existed *at the place of residence of the creditor, and if the creditor is a juridical person, at*

the place of its location <...> Since, in the present case, the creditor is resident in Germany, the relevant rate of interest would be the rate applied there. In the present case, compensation shall be paid in another currency than rubles.”

As it seen from the mentioned, the award of compensation in the international investment law is connected with number of the specific issues, which in the end determine the final amount of the compensation. The payment of the interest of the compensation is the part of the whole final amount, and the calculation of the interests is interconnected with the determination of the moment, from which the interest rate begins, as the interest, as well as the interest rate, in some cases may be higher than the amount of the compensation for the expropriation per se.

5 Yukos case

The case of Yukos as it may seem is not that easy. The case *Yukos v. Russia* has started in 2003. The claimant is the company (70,5% of the shares in Yukos) owned by the foreign companies, registered in the areas with the economic benefits – in the United Kingdom’s Isle of Man (Yukos Universal Limited), and Cyprus (Hulley Enterprises Limited and Veteran Petroleum Limited). Yukos was operating in the RF since 1993, in the oil gas industry, on the basis of the state companies – Yuganskneftegaz and KuybyshevOrgSintez. In 1995-1996 the state privatized the Yukos, and until the year 2000 the Yukos was the largest energy company in the RF. Since the company has become an ownership of the foreign investors registered in the offshore zones, it used the possibility of the reduction of the costs, and tax avoidance in the territory of the host state. It is comprehensive, that foreign transnational corporations, which avoid paying taxes, have an advantage compared to local entrepreneurs’ position. Understandably, that it is not only unfair, but also negatively affecting the country's economic growth. After several articles in the foreign newspapers on the Yukos’ tax avoidance (Besson, 2002), the RF in 2003 started an investigation on the tax avoidance and evasion, which reflexed in the high amount of the fines, and led to the insolvency of the claimant in the upcoming years. The claimant argued that the actions of the state were not in compliance with law, and were based on the discriminatory basis as such fines were imposed only on Yukos, not on the other comparable companies operating in this sector. The claimant further stated that the respondent failed to treat company’s investments in Yukos in a fair and equitable manner, thus breaching the articles 10 (1) and 13 (1) of the ECT, and claimed for USD 114 billion.

The case of *Yukos v. the RF* is composed of several cases - *Hulley Enterprises Limited (Cyprus) v. the RF*, *PCA case No AA 226*, *Yukos Universal Limited (Isle of Man) v the RF*, *PCA case No AA 227*, *Veteran Petroleum Limited (Cyprus) v. the RF*, *PCA case No AA 228*, and it is on the basis of the ECT, which is implemented by the Permanent Court of Arbitration at The Hague on the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL). The Hague Tribunal decided in 2014 that the RF should compensate unlawful expropriation of the investors’ (Yukos) activities in the amount of USD 50 billion. Thus, the provisional application of the ECT started to question by many lawyers and academics. Some of them (Konoplyanik, 2010, Belz, 2008) argue that the RF has rejected application of the Treaty even provisionally. Šturma and Balaš (2010) refer to the Report of the International Law Commission, in which was explained the international binding legal instrument, and the violation of this obligation may lead to the international liability, and this obligation is enforceable by default.

However, the government of the RF has declared that the RF has never applied the ECT only in 2009 when it was withdrawing from the ECT. The RF applied for the annulment of the decision of the Hague Tribunal to the District Court of the Hague, which in 2016 stated that as the RF has not ratified the ECT, as it is in the conflict with the Russian law, therefore, the previous court did not have the appropriate competence to decide in that case, thus, the RF is not committed to compensate.

Even though the shareholders of the company are registered in the offshore zones, the company was functioning according to the Russian legislation and positioned itself as a Russian company, with Russian nationals, thus, many lawyers suggesting it should request for the compensation in accordance with the Russian law. In addition, the shareholders had not used the possibility of the Russian judicial system, but directly applied for the international tribunals. To that conclusion came also the Svea Court of Appeal, abolishing the Stockholm arbitration court and District Court of Stockholm on same case, based on BITs between the Russian Federation and Spain (Spanish shareholders of Yukos).

Regarding the amount of compensation, in the *Yukos case* the tribunal out of eight proposed methods of calculation the compensation by the claimants, chose the discounted cash flow, and the comparable companies methods, with the starting point for the valuation of Yukos.

In consideration the contribution, tribunal took into account the RF's arguments regarding tax avoidance, or abuse of low-tax regions, which could lead to the decrease of the amount of compensation. Moreover, the tribunal reduced the total amount of compensation to 25 per cent, as a responsibility apportionment between the claimants and the respondents (para 1637 of the decision, final award PCA). However, the whole amount of the compensation (USD 50 billion) seems arguable, especially how this was calculated, taken into consideration the company value in 2004 was USD 22 billion. The reason is counting the dividends that the investor could have received in years 2003-2007, but the company also could lose the dividends as well as investments.

6 Conclusion

The specifics of the international investment relations, particularly between the EU and the RF, necessitate greater transparency and predictability of international practice in the field of awarding compensation. In order to have the economic prosperous and transparent investment relations without unnecessary prolongation and other related proceedings, which are costly for the taxpayers, of the related host state, it is good to find a solution of this problem as determination and calculation of the compensation. The issue of the determination of the compensation is relevant in the current investment relations, as the clear idea of the amount compensation is missing, but it is very important in deciding whether the parties should participate in costly and lengthy international litigation.

There are several reasons of the differentiations of the approaches, one of them absence of the single definition of the compensation in the several international documents, as well as due to the fragmentation of the judicial system in the international law – various approaches of the various judicial and arbitration international bodies.

On the basis of several cases such sensitive issues as expropriation and compensation in accordance with the international investment law were analysed. In accordance with the discussed legal documents, in particular, the Energy Charter Treaty, and bilateral investment treaties, the state can lawfully expropriate the foreign investor's property or investments in strictly defined conditions (non-discriminatory and in public purposes), with the obligatory paid prompt, adequate and effective compensation. In this regard was discussed the expropriation.

In the article was discussed an issue of compensation for expropriation under the investment agreements, international treaties, as Energy Charter Treaty, and bilateral investment treaties between the Russian Federation and European Union Member states. It was examined the approaches of the tribunals and the international agreements on the calculation of compensation. Various tribunals were considering whether the expropriation was lawful, and based on what calculation should be paid certain amount of compensation.

It is needed to underline, that according to the made research, the tribunals are taking into account the specifics of the concrete proceeding and the need of the injured party, and in this

regard, the compensation for expropriation is used as a common form of the reparation, with the restitution and satisfaction.

Based on the research of the approaches of the academics to the issue of the compensation for expropriation, author is concluding that there is no sole opinion regarding, should be the compensation paid at all, in connection with the lawful expropriation of the host state as its right and obligation to protect the public interests. However, scholars agree on the approach of the award of the compensation, there should be the grounds for the payment of compensation, the *nexus causalis* should exist between the harm of the host state to the investments made and the payment of compensation, and that it is related to the investor's activity in this particular state.

Answering the questions stated in the introduction, and based on the analyzed cases, it is worth to stress, that various approaches to the compensation, as well as the definition of this term, and its use, in the international investment law by the judicial and arbitration tribunals leads to the difficulty of the establishing the general principle or the methodology for its further implementation. Various approaches do not allow to follow certain decision as a guideline in the potential proceedings, thus, it could lead to prolongation of the proceedings and again unpredictable results. Although, no single approach to the assessing compensations provides some flexibility to the proves, however at the same time it raises a problem of the choice in each specific case.

Further, on the one side, the approach to evaluation or calculation of the compensation is a certain economic model or has certain economic methodology, on the other side, it cannot fully reflect to the reality due to the theoretical imposed constrains. That suggestion is proved by the large number of the appeal or revision proceedings following the first decision of the judicial or arbitration tribunal, related to the amount of the awarded compensation, award of the interest to the main amount of compensation, of the delay payment of compensation, and the collateral costs and other issues, which are not measured.

The approaches to the issue of compensation are also controversial. As far as there is no sole document determining the compensation procedures, and all definitions of the compensation as “prompt, adequate and effective” lack the detailed description of what does it mean, all of it leads to the uncertainties and various interpretations, as it was illustrated above. The cases in regard of the European Union member states and Russian federation relations, as *Sedelmayer* and *Yukos*, show different approach of the tribunals on such sensitive issue. Uncertainty of legal provisions regarding calculation of compensation gives a possibility to arise uncertainty of payment and perspective of intra-state cooperation in the economical field. In the author's opinion, issues regarding clear and concrete approach to compensation should be included into international legislative document or the bilateral investment treaties. In that case, should be taken into consideration the method for assessing the compensation, the determination of the calculation as the amount, conditions and the certain procedure of its payment, as well the amount of interest and delayed compensation, and determination of the collateral costs in this regard.

It should be stressed the need of the interdisciplinary approach to the assessment of the compensation in the international investment proceedings, so the guidelines would not consist of the theoretical economic methodologies, which are not responding to the legal realities, but otherwise would serve as a certain reference to the parties in the further disputes and proceedings.

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CURRENT METHODS OF DATA GATHERING BY AUTOMATED SYSTEMS IN ASSISTED RETAIL

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Abstract

Knowledge of customers count in any retail store is a must in modern age. It is the main key performance indicator. Most of other indicators are based on this KPI. This paper summarizes current methods of collecting count of customers. It can be done by camera-based counting, specialized counting and security gates, special mobile applications, radio signal measurement, cash-desk systems, customer relationship management systems, installed reporting systems or by employees. This paper also divides stores into clusters by the principle of customer service and suggests best ways for development, easiest or cheapest solutions on how to apply this in new stores.

Keywords

Retail, Reporting, Sensor, People, Count, Customer.

JEL classification

L81, M53, C89, C99, E30.

1 Introduction

By definition, retail means selling in relatively small quantities directly to end customer (Harper, Douglas, 2017). It is something that we are in touch with, on a daily basis. There exists a lot of types, which can be divided into many groups by service, interests, goods or any other way. Everybody shops in retail. In business context, we can split the world into two parts. Retailers and customers. For one side, it is conscious battle with one simple goal – how to sell more, more expensively and more effectively. The other side has no idea of what is happening and how complicated processes are being used just to maximize the chance of buying one or more piece of any product.

It is a very complicated mechanism consisting of location of store, store design, pricing strategy, presentation, target customers and many other factors. We focus on other aspect – on retailer's employees and their productivity management. This is an extremely important view in assisted retail. The idea is simple. When the customer comes into our store, even if everything should look bad or wouldn't work, the best seller (meaning store employee) would still sell their product. Situation is very different in non-assisted retail, but this is not the topic.

For any type of productivity management, we have to know one basic indicator. It is the count of customers. It can be divided into count of customers who came into our store and count of customers we actually spoke with. We are looking for the answer to what methods we can use, what are their benefits and disadvantages for specific retail cluster. We also split stores into clusters by the grade of sale-assistance.

2 Methods and data

It is very complicated to get any information of how retailers do their businesses, because it is part of their know-how. For the purposes of this paper we went to real streets, malls, markets and did research in terrain. This includes 421 stores visited along the Czech Republic. Stores were picked according to their initial clusters with aim to more assisted clusters. In the beginning, it was not possible to determine which cluster a store would fit in.

2.1 Defined clusters

In addition to the field research we have divided stores into five clusters defined by the need of assistance in case customers want to buy goods or services. For each cluster, there is an example for better visualization.

2.1.1 Non-assisted stores

It is a store, where customers pick products by themselves and usually do not need any assistance. Customers can get in contact with employees only at cash-desk once they want to pay. However, there are more products available at cash-desk, which are also available in the store. This means that employees can offer these extra products in person. There are no goods specifically available at cash-desk, except for a few products like cigarettes and other age restricted items. Example of this kind of stores are big grocery markets (e.g. Billa, Albert, Tesco...)

2.1.2 Partially assisted stores

It is a store, where customers pick products by themselves but may need assistance. There are shop assistants available over the store floor to help the customer. Customers can get in contact with employees also at cash-desk, when they want to pay. However, there are products available at cash-desk which are not available in the store shelves. This means that employees can offer these extra products in person. There can be goods available only at cash-desk. Example of this kind of stores are big sport markets (e.g. Decathlon, Hervis...).

2.1.3 Half assisted stores

It is a store, where customers can decide if they want to shop by themselves or they want an assistant to help them. This store has enough employee capacity to take care of the usual number of incoming customers. From the store side, it is preferred to speak with each customer to maximize the number of sold goods. Each product is also available without any kind of assistance. If customers decide to shop by themselves, the only place where they are in touch with employees is at the cash-desk. Example of this kind of stores are small clothing stores, in most cases brand stores. (e.g. Adidas, Orsay...).

2.1.4 Partially non-assisted stores

It is a store, where you can grab products by yourself and then go to cash-desk, but the main purpose of visiting this place is available only at cash-desk. Customers can pick extra products, but they do not have to. Example of this type are big news stands/tobacco stores or gas stations (e.g. Relay, Shell...).

2.1.5 Assisted stores

It is a store, where the customers have no other option to get products than to speak with shop assistant. There are products placed all over the store, but customers can't grab them and go to cash-desk by themselves. One of the goals is to have enough employee capacity to serve any number of incoming customers without waiting or with minimal waiting time. There is a high risk, that if the customer has to wait, he will leave. Example of this kind of stores can be very small grocery stores or retailers selling services (e.g. RWE, Vodafone...).

2.2 Observed parameters

We have observed a few parameters for each store. Data was gathered over a long period of time so the parameters must be as simple as possible to achieve results consistency. Data was gathered during spring and summer of 2017.

2.2.1 Relative store size

Size was not measured in a particular way. It is not a key indicator for this paper. We defined three groups in order by estimated store size.

- Small store, maximum estimated size is 100m²
- Medium store, maximum estimated size is 200m²
- Large store, minimum estimated size is 200m²

2.2.2 Defined cluster

During a visit of one of the stores the cluster was determined. Some stores can fit in more clusters in the course of time. Only the current state was considered in the research. We aimed at more assisted clusters – especially partially not-assisted and assisted. We tried to follow a simple hypothesis, smaller store means more assistance from employees. As following data shows, this assumption is not entirely correct. This is the reason why most of the data is gathered from smaller stores and only a small number was from, at first sight, big stores.

2.2.3 Store location

Nowadays, the modern trend is to group stores into shopping centers and big malls. It is a place where shopping and entertainment is connected to attract more customers to more shopping. Because of this principle we decided to group them into mall-located stores and other. Other does not mean only classic stores on the street, but gas stations are also included.

2.2.4 Gate counter / security gate

Lots of shops selling goods has security system based on RFID or similar technology. This usually needs a gate in the exit. In most of the shops the entrance and exit are not separated. In these gates, there may be build-in functionality for counting people. It works on a principle of beam interruption or any similar way. From customer's point of view, there is no possible way of telling whether the gate is just for security measures or it can also count people. We assumed that these days these pieces of not very good-looking metal are used for more than “just” security, so each of them is considered as customer counter.

2.2.5 Camera counter over entrance

Very usual solution for customer counting is a specialized set of cameras over the entrance. These can be usually recognized from security cameras even from the customer's point of view. Example of these is shown in Figure 1 below. Presence of them means that the store is capable of counting their customers.



Fig. 1. People counting camera (Source: BRICKSTREAM product page)

2.2.6 Camera system pointing towards entrance

With advanced and simplified image detection technologies, there is also a possibility of customer detection from an ordinary security camera's images. For this functionality, the prerequisite is to have the cameras heading the direction of the entrance and exit. Having images from store's exit is useful for more reasons than just customer counting. Stores with this camera configuration are considered as counting ready, but may not be doing it in present time. There are stores, which count their customers by this method, and stores which do not. It is not possible to tell the reality from customer's point of view. This increases occurrence of errors.

2.2.7 Employee subjective offer / count reporting visible by customer

It is not unusual to see some methods of offer reporting based on paper form, with easy access to customer's eyes. It is so simple that in some stores salesman writes his points to the form immediately, after he offers goods or services to the customer. With this method we can measure the count of customers and also have a clue about productivity. Of course, this method is based on trust to store's employees.

2.2.8 In Store Wi-Fi or similar

This can be considered as a most advanced method, while also not very accurate. Nowadays almost everybody has a smartphone in his pocket or hand all the time. We can measure the number of discoveries of our Wi-Fi network, with technology similar to the iBeacon¹. There are also methods that are independent on customer's device. You can count people using just Wi-Fi, but it is very advanced technology and probably unused in current stores (Xi, 2014).

2.3 Gathered results

2.3.1 Cluster distribution according to size

We focused on more assisted stores, because of that, this result is not statistically significant.

¹ iBeacon is a term Apple is using to describe its own implementation of BLE beacon technology within iOS7. The term iBeacon is quickly becoming synonymous with the general term BLE beacon (which is good for Apple), but the technology is also supported by Android and BlackBerry devices, with Windows Phone support likely to arrive soon. (Newman, 2014).

Table 1. Cluster distribution according to size

Cluster	Size			
	L	M	S	All sizes
1 Assisted stores	0%	3%	22%	25%
2 Partially non-assisted stores	2%	20%	5%	27%
3 Half assisted stores	2%	11%	5%	19%
4 Partially assisted stores	0%	2%	14%	16%
5 Non-assisted stores	0%	6%	7%	13%
All clusters	4%	43%	53%	100%

Smaller store means more assistance.

2.3.2 Usage of (counting) gates

‘Gate to cluster’ is a portion of stores having a gate, to all stores having gates. ‘Gate to all’ is also portion of stores having a gate, but to all stores.

Table 2. Stores having gates

Cluster	Gate to cluster	Gate to all
1 Assisted stores	7%	5%
2 Partially non-assisted stores	38%	25%
3 Half assisted stores	25%	16%
4 Partially assisted stores	18%	12%
5 Non-assisted stores	12%	8%
Total	100%	65%

Almost two thirds of all stores have gates. This means they are capable of easily counting their customers. There is a high probability that most of them are used not only for security purposes, but also for customer counting.

2.3.3 Usage of counting cameras

‘Counting camera to cluster’ is portion of stores having counting camera to all stores having counting camera. ‘Counting camera to all’ is also portion of stores having counting camera, but to all stores.

Table 3. Stores having counting cameras

Cluster	Counting camera to cluster	Counting camera to all
1 Assisted stores	40%	3%
2 Partially non-assisted stores	20%	1%
3 Half assisted stores	23%	2%
4 Partially assisted stores	3%	0%
5 Non-assisted stores	13%	1%
Total	100%	7%

Counting camera is not a common method. There are plenty of commercial solutions available. This method is very simple and cheap nowadays, but still not very common.

2.3.4 Other methods

There is no particular way to detect if a security camera counts people or not. Same applies for radio based methods. These two methods are most advanced in technology, although not used very often.

Table 4. Other available methods

Cluster	Security camera	Wi-Fi / Bluetooth	Employee counting
1 Assisted stores	63%	18%	39%
2 Partially non-assisted stores	64%	15%	40%
3 Half assisted stores	74%	24%	39%
4 Partially assisted stores	71%	28%	39%
5 Non-assisted stores	68%	22%	43%
Total	68%	22%	40%

In table 4, there is one interesting fact. Employee's offer counting is used in the same share across all the defined clusters. And this result is only from a customer's point of view. It is also possible that a lot of stores do this in different ways, using cash-desk or any kind of software.

2.4 Benefits and disadvantages of mentioned solutions

Each method has its benefits and disadvantages. In the commercial space, the lowering of costs is usually preferred to the accuracy of customer counting.

- Using security cameras or radio based technology has one big problem. Very good (very expensive) software is needed to do this. The benefit could be in PR. This solution can be used in advanced technology companies, but these companies are often not retailers.
- Using counting gates is the most popular solution, which has been well-known for many years. If we are opening a brand-new store, and we need to cover security question with security gates, then this is the easiest way to count people as well. Big disadvantage is that it is difficult and expensive to implement this solution to already existing shops.
- Counting camera is a very cheap option. Instead of security gates it is very easy and cheap to install them. One disadvantage is that we need a lot of them if we have wide open entrance or exit to store. It is also very hard to calibrate them correctly, if we need more of them to cover wide space.
- Counting customers by store crew is a cost-free solution (if we do not measure the time used for counting against employee cost). This gives us also one more benefit. We can measure the productivity of offering extra products or services. This method is used in balanced share across all the shop clusters, which suggest the popularity of this method. However, there is a big disadvantage. We have to rely on our employees, who can influence the result very easily.

3 Conclusion

Several possible approaches to customer counting were discussed in the paper. Some of them are quite obvious, others are more complicated. Everything was rated only by the "customer's eye". Presented results may not correspond to reality, due to errors in observation, misconduct, poor camera recognition.

At first we divided the observed subjects into groups. Groups are not evenly distributed. There are more intentionally more entities in the group with more assisted sales. Non-assisted entities were even considered for eventual transfer of the right trends from unassisted sales to assisted retail. This hypothesis has not been confirmed and the principles applied to non-assisted channels are not suitable for assisted sales applications.

However, these results have confirmed that the use of subjective reporting is a very common and widely used phenomenon. Many forms were observed during the collection of this information. From primitive, pure pieces of paper that only record commas. Through printed forms, often table-oriented, again based on the principle of bars. Except for methods integrated directly into main systems or secondary systems. The software solution was difficult to observe, but it was also observed. It has often been seen when the vendor solves only the incoming customer (and makes a "comma"), and on the contrary, "makes a comma" after each offer to the customer.

As a result of the previous confirmation of the fact that subjective reporting is expanding, it is the right direction to go further. Together with this, it is necessary to think of the realization for as much convenience as possible for both seller and customer. A customer who knows that a reseller is "pointing out" everything he has offered will probably have a problem with building confidence in sales. However, these are subjective feelings.

4 Acknowledgement

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BENEFITS OF USE INTEGRATION ISO 21500:2012 AND ISO 31000:2009 IN PROJECT RISK MANAGEMENT

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Abstract

Nowadays is possible to hear more about term project. This term is used in school, business, in founding, and in many others environments, too. Some business activities are very complicated nowadays and those activities are running as a project. Based on this fact was established term project management. Project management leads very specifically projects. These big projects obtain a lot of risks. Project teams must assess each risk and monitoring them during all project duration. They must to review them, too. The purpose of this paper is create risk management process by standards ISO 21500:2012 and ISO 31000:2009 and highlight benefits of its use in project risk management process. If project team uses these two standards, it is possible to better use opportunities and manage threats. Project risk management process, which was created is described in this paper, too. Use established project risk management process may improve the success of projects in enterprises. Main goal of this paper is develop and described project risk management process, which was designed in this paper.

Keywords

Project management, Risk management, Project risk management, Risk.

JEL classification: G32, L21.

1 Introduction

Project risk management is main part of project management. Projects are very comprehensive, with higher costs and more team members take part in these projects nowadays. Projects must to reflect new trends, projects management standards, trends, processes, and techniques. Project management is very turbulent part of management and more and more important nowadays. Risk management process is significant for each project. It is necessary to exploit the benefits and minimize the impact of negative risks.

Project management is a well-known term. It is possible to define project management as: application of knowledge, skills, tools and techniques to project activities to meet project requirements [1]. This definition describes the term project management very unclearly. Project management is integrated into lot of enterprises activities and processes nowadays. Enterprises use project management when they want to: create new products, realize R&D activities, planning future, plan and realize some changes, etc.. It is possible to say, that every process, action or activity enterprises run as a project in generally.

Project management is possible to divide by PMBOK on some mainly parts (Fig. 1), which are important to run a projects. These parts are: project scope management, project time management, project cost management, project quality management, project stakeholder management, project procurement management, project risk management, project communication & IT management, project, HR management and project integration management [1], [2].

Actual trends in project management reflect and highlight of importance of risk management. *Project risk management* is a part of project management, which deals with risks, which can occur in a project.

This term is defined by Ocean State Project Management Institute as the project risk management process helps project sponsors and project teams make informed decisions regarding alternative approaches to achieving their objectives and the relative risk involved in each, in order to increase

the likelihood of success in meeting or exceeding the most important objectives (e.g. time) sometimes at the expense of other objectives (e.g. cost) [2].

The main goal of this paper is to create and define project risk management process, which is created by join of standards ISO 31000:2009 and ISO 21500:2012. Main benefits and disadvantage of using this risk management process are written in this paper, too.

Benefits and disadvantages of use project and risk management standards is possible to define, if risk management process is created and describe. This process was developed by join two international standards – ISO 31000:2009 and ISO 21500:2012. It is necessary to establish all benefits and disadvantages if risk management process phases are explained.

2 International project and risk management standards

Risk management encourages the project team to take appropriate measures to minimize adverse impacts to project scope, cost, and schedule (and quality, as a result), maximize opportunities to improve the project’s objectives with lower cost, shorter schedules, enhanced scope and higher quality, and minimize management by crisis [2].

The main *key success factors* for project risk management are: supports realistic, open, and honest recognition of project risks even; realistic talking and consulting every risk; leading an open discussion about risk; realistic and high quality data; participation of all team members and committees [1], [2], [3].

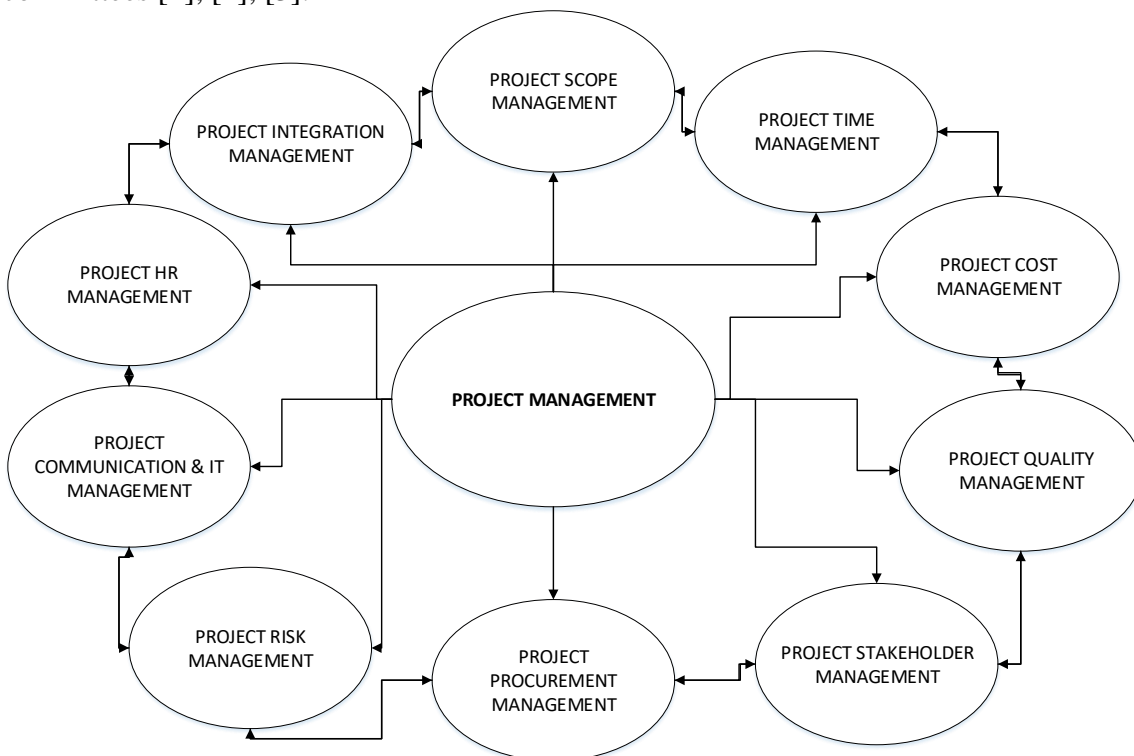


Fig. 1. Parts of project risk management [1],[2]

ISO standard has a lot of standards (over 19500), which touching all aspects of human everyday life. ISO standards guaranteed confidentiality, that products or services are safe, of good quality and reliable. They bring lots of benefits to society, because they are focused on soil, water, air, emissions, radiation, various environmental aspects, health, etc. [4], [5].

Enterprise use standards, because international standards bring them benefits, for example: environmental and society benefits, competitive and productivity advantages, standards open new

markets and prevent trade markets. International standards improve customer satisfaction and support cost savings.

ISO 31000:2009 provides generic guidelines and principles of risk management. This principle can be used by any enterprise, group, association or individual. It is possible to apply this principle to any type of risk [6]. Risk management process consists of steps, which are illustrated on Fig. 2 risk management principles by ISO 31000:2009.

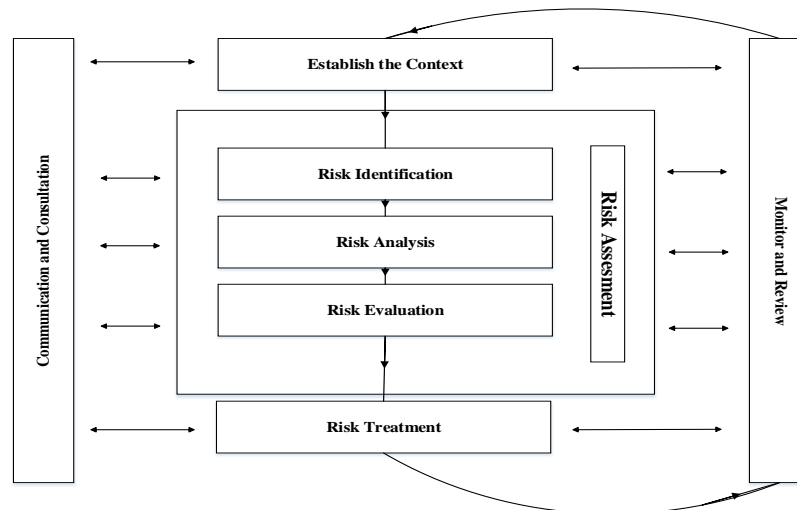


Fig. 2. Risk management principles by ISO 31000: 2009 [6]

Establishing the context is one of activity at the start of generic risk management process by ISO 31000: 2009. The main chapters are [5], [6]:

- describe organization, objectives, or some activity,
- describe internal and external environments,
- describe methods, which will be use in risk management process,
- describe and establish risk criteria.

The purpose of the risk identification step is to generate a comprehensive list of risks based on these events that might create, enhance, prevent, degrade, accelerate, or delay the achievement of objectives [6]. Main objectives which are important in this step must be described and team must have identified positive risks (opportunities) and negative risks (threats). It must be identified mainly risks and describe these risks and risk circumstances [4].

International standard ISO 21500:2012 provides guidance on the concepts and processes of project management (Fig. 3), which are important for it, and have an impact on, the performance of projects.

The target readership for this international standard is the following: senior managers, project sponsors, project managers in order to provide them with a better understanding of the principles and practice of project management and to help give them appropriate support and guidance to their project managers, project management teams and project teams; project managers, project management teams and project team members, so that they have a common basis upon which to compare their project standards and practices with these of others; developers of national or organizational standards, for use in developing project management standards, which are consistently at a core level with these of others [7].

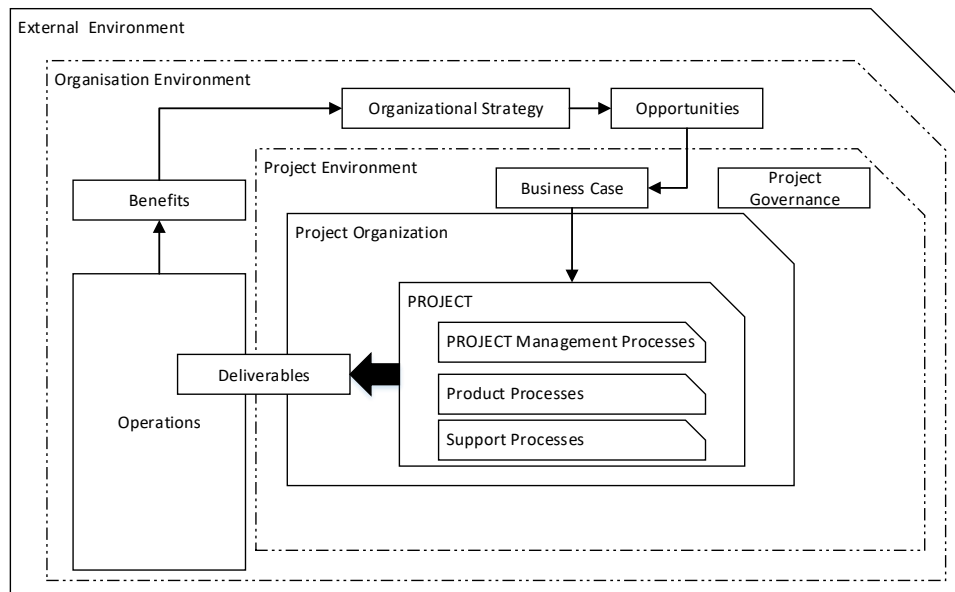


Fig. 3. Project Management Process by ISO 21500:2012 [7]

Project management context by internal standard ISO 21500 describe main processes of project management, which are important to run a project by this standard. It gives a lot of area to modification this process. It can be modified by project requirements and objectives. Benefits of using this standard, is, that this standard is possible to join with others standards.

The objective of the study is to create project risk management process, which will be consist of international standards ISO 21500:2012 and ISO 31000:2009. This paper describes main advantage and disadvantage of using this project risk management process.

Authors Muzaimi, Baraford, Karanja and Olechowski [4], [8], [9], [10] consider as the main requirements for project risk management process following:

- risk management must be one of the main part of the project,
- risks must be identified early in the project,
- fluently and regularly communication about risks,
- it is better to consider both threats and opportunities to project assessment,
- create ownerships responsible,
- risks must be prioritised and implement risk responses,
- risks must be registered,
- risks must be analysed in the right form.

2.1 New trends in project management & risk management

Market forces are very dynamic nowadays. It is necessary to assess all trends, which may affect development process. Enterprise Twenty-eight monitoring and find values, which can be a trend in various field of management. They find out, that the new trends for year 2017 are [17, 18, 19, 20, 21]:

- The Permanency of Agile Project Management – Organisation helping their staffs grasp agile way of thinking, send improve proposal and support them.
- Broadening Strategic Role of the Project Manager – Project manager is not about managing the constraints, but about reaching solutions faster and demonstrating strong, direct business impact.
- Turn, turn, turn – The Fundamentals of Change Management – Change management is a very good Opportunities to learn staff new skills and knowledges. It is needed to regularly changes projects.
- Upskilling Talent – Every Project manager must to have others skills – communication skills, strategic initiative, analytical thinking, technical finesse and business mindset.

- The Need for Design Thinkers.
- The Significance of Portfolio and Programme Management – various projects affect can bring for a project management in organization wide portfolio of products. It can bring for enterprise emergency keys too.
- The Spread of Project Management into Non – Pm Arenas – Project managements is used in many various professions. For example, it is used also in marketing, logistics, sales and many others field of business. The benefits of use project management are increase efficiencies, stronger strategic alignment, and improved customer satisfaction.

3 Methods

The main methods, which will be used are analysis, deduction and fusion. By fusion will be preparing new project risk process. It will be created by join two international standards ISO 31000:2009 and ISO 21500:2012. Analysis will be used to analysis of standards and highlight benefits and disadvantages of international standards.

Analysis is interpreted by the researcher in a way that reflects the interviewer's world view, which affects how the data are represented and thus the representation can therefore not be considered the absolute truth. [11], [12], [13] It will be described advantages and disadvantages of use project risk management process, and some recommendations to explore this framework by deduction, in this paper too. Graphical framework, will describe and explain steps and others important process characteristics, which are needed to follow to use this both standards in project risk management process.

Process, which will be used consist of next phases:

- assess current standards ISO 31000:2009 & 21500:2012,
- create graphic scheme of new risk management process,
- describe this process,
- assess this process.

The main goal of this paper is to create and define project risk management process, which is created by join of standards ISO 31000:2009 and ISO 21500:2012. Main benefits and disadvantage of using this risk management process are assess in this paper, too.

4 Results

Project risk management process is consider as one of the most important part of project management. Minimalize risks and explore opportunities is for every project important. Project risk management is running by concept risk management process. Fig. 4 graphically explain risk management process, which is based on standards ISO 31000:2009 and ISO 21500:2012. This process reflect all main current project risk action needs. It consists of 5 main parts: establishing the context, risk assessment, risk treatment, communication and consultation and monitoring and review.

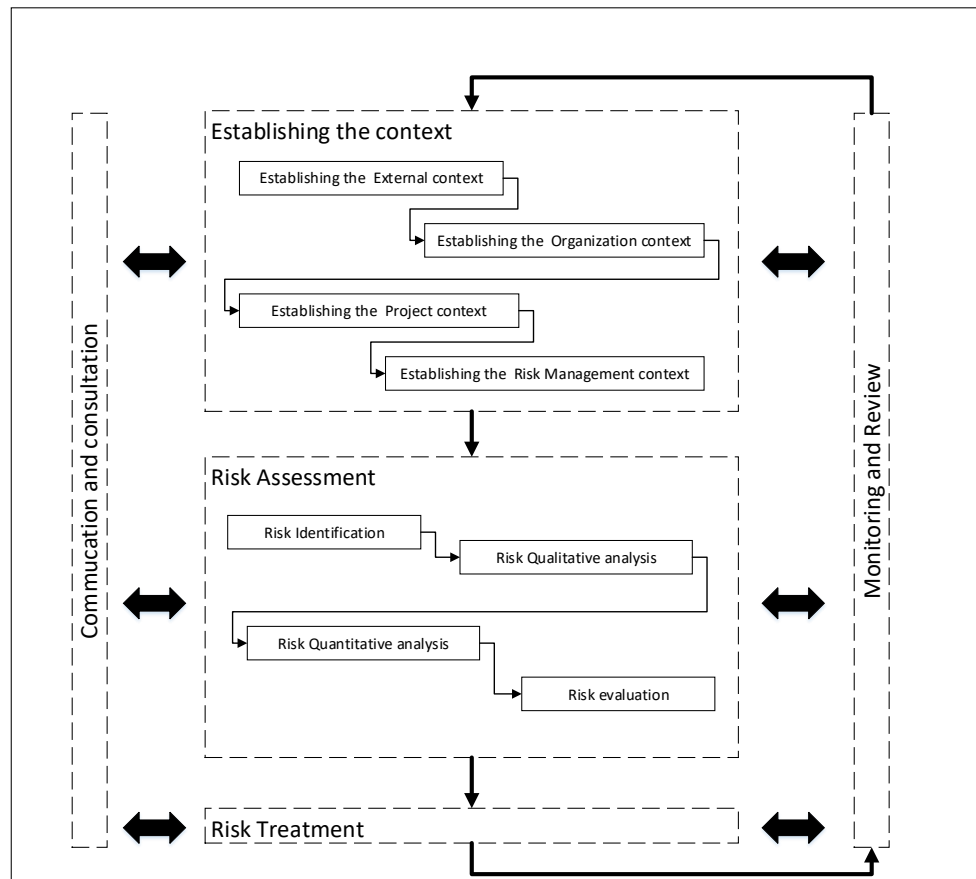


Fig. 4. Designed Project Risk Management Process (elaborated by authors)

Establishing the context is the first main phase, which is divided to 4 chapters – establishing the external context, establishing the organization context, establishing project context and establishing the risk management context.

Establishing external context describes external project environment. In this sub phase is described external environment, which can affect the project. It is needed to use for describing project external environment, some global ranking metrics such as: Legatum prosperity Index, which is focused on economics, business environment, governance, education, health, safety and society, personal freedom, social capital and natural environment key indicators.

Establishing the organization context describe organizational characteristics such as corporate culture, communication channels in organization, project program and project portfolio. It is necessary to describe product portfolio, similar and affected projects and project boundary limitations, which are established in the company.

Establishing project context consists of main description of project characteristics (Fig. 5). It is needed to create documents such as project specification, product/service description, product/service strategy, life cycle of project, project schedule, project financial metrics, project budget and project summary. Establishing project context is one of the most important project phase. In this phase, it is possible to understand project specification and define project boundaries.

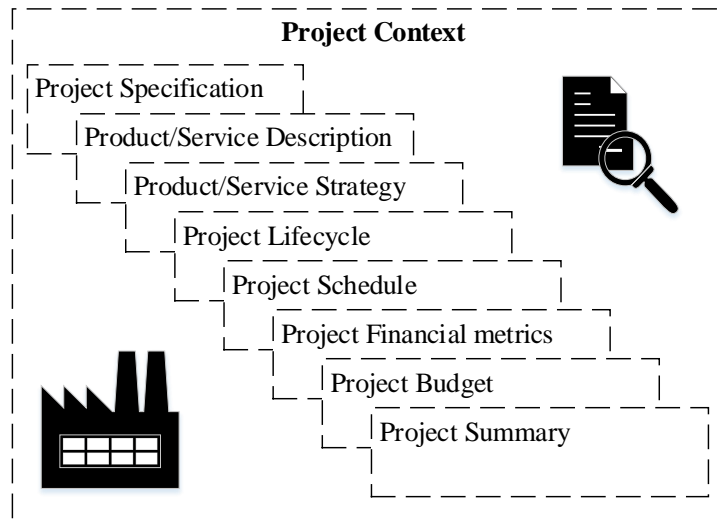


Fig. 5. Designed Project Context (elaborated by authors)

Establishing risk management context (Fig. 6) consist of database of risks, establish project risk quantify of probability and impact, risk category and risk matrix. Database of risk is very important part of phase establishing risk management context. In this sub phase is possible to get to know some historical risks, which were in similar projects. Project risk quantifies of probability and impact is necessary to risk evaluation and sort them to risk matrix. Risk category is possible to use, if it is needed to create risk breakdown structure.

Phase risk assessment is divided to 4 main sub phases: risk identification, risk quantitative analysis, risk quantitative analysis and risk evaluation. Risk identification can divide on 3 parts – methods for a risk identification (short description of methods, which will be used); risk identification (use methods in the particular case) and summary of the risks (description of risks, risk consequence and risk cause).

In this phase it is necessary to make a risk description, sort risk to risk category, choose risk ID and create risk breakdown structure number. Risk analysis is processed, when risks are defined by qualitative or quantitative analysis. Risk analyses can give to comprehend the nature of risk and it is possible to determine the level of risk by this analyse. Brainstorming is used for a risk analysis usually. Subphases, which can be used are similar like in previous chapter risk identification. Stochastic Monte Carlo method is usually used for calculating impact. It is needed to create risk evaluation table (consist of risk ID, risk name, probability, impact and risk level) and project risk matrix) in phase of risk evaluation.

Phase risk treatment is preparing for each negative risk, which is unacceptable and it is needed to use mitigation for a risk. Risk treatment consist of sub phases current risk state, and future risk state, and risk future state summary. It is needed to describe risk, and describe risk strategy, which will be used in this step.

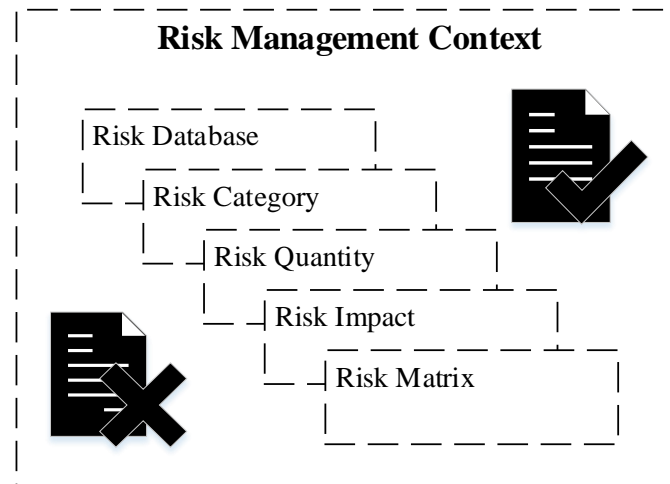


Fig. 6. Designed Risk Management Context (elaborated by authors)

Phases of communication and consultation management is one phase of a project risk management. It is a dialogue between organization and stakeholder and between project team and organization. It is continual and iterative process. This process is situated in two-way process. Information in this process will be shared between core project team and support project team. Communication and consultation are usually between core team and support team members and it is provided by emails and meetings. Meetings will be organized ones a week at the end of a month and if it is needed. Communication between project team and organization is provided by regularly half year meeting and meeting, which will be organized on finish each phase usually. Information, which will be share are information about project objectives, market objectives and project risk identification, analysis, evaluation, and treatment.

Control is a measure or action that can modifies risk. This process includes any procedure, practice, process, policy technology, method technique or device that manages or modifies risk. Risk treatments become modify or controls by existing controls, when they are implemented. By monitor process we can to supervise and continually check and critically observe risks.

This process determines the status and to assess whatever or not require or expected performance levels are being achieved. Risk review is an activity. These activities are carried out to determine whether something is a suitable and effective way of achieving established objectives.

Risk management process, which is describe is possible to use for each project, in each company. This risk management process is possible to use if the company does some changes too. It is possible to say, that this model is universal, and with a little modification it is possible to use in each enterprise and apply for each project.

Risk management process, which will be created brings to users lot of benefits. It is possible to say, that main benefits are: benefits of risk identification, benefits of risk assessment, benefits of risk treatment, benefits of risk mineralization, benefits of exploring risk opportunities, awareness about the risks, successful business strategies, saving cost and time, identificate new opportunities for a project, get to know new knowledge and skills, risk lesson learnt, continuous improvement, support, reduce impact and loss, better manages strategic plans.

Benefit of risk identification is main benefits of using risk management process. It is possible to consider, that risk identification is a main gate to identify opportunities and threats. It can provide new and comprehensive view for a project, and decision about project characteristics.

Benefit of risk assessment of using designed risk management process is well to know each risk characteristics and risk boundaries. It can help to better understand about each risk characteristics and bonds between risks.

Benefit of risk treatment consist of exploring opportunities and minimize risks. It is main idea of new trends, which are in project risk management. Model, which were created are prepared for use risk strategies as: avoid (risks that do not occur never hurt project. This is one of the best ways to

managed negative risks), mitigation (it is possible to use this strategy, if it is not possible to avoid a negative risk, so must be taken an action, which minimize negative risk. This strategy is the most used in project risk management strategies.), transfer (negative risks is possible to transfer by insurance. This strategy is used, when managers have a very cost loss risk), accept (sometimes are identified risks, which must be accepted, because of it is impossible to do anything with risks), exploit (this strategy may be used if entity want to exploit positive risk. By use this strategy, it is possible to increase the probability of occurrence of risk), share (if entity want to collaborate with other departments, so it uses this strategy, to exploit positive risks), enhance (enhancing a risk involves identifying the primary root cause of a positive risk so that it is possible to influence it for a greater likelihood of the opportunity occurring.), accept (if positive risks simply fall on lap, it is possible to choose to accept them. This procedure is usually called accept to positive risk.).

Successful business and project strategies can be provided, only if users use the right strategy and exploit opportunities or share them with other projects and minimize risks. Saving cost and time is benefit of each risk management process which is used in the correct form and with correct methods and techniques to analyse and evaluate risks.

Get to know new knowledge and skills project is a very turbulent activity, where project managers get new skills and knowledge every day. Risk management process provides them area to improve it by their skills, knowledge and project objectives risk lesson learnt is one of the most popular trend in project management. Companies and managers use lesson learnt, and planning by past data, which they got.

Continuous improvement risk management process, which was designed to reflect ideas of continuous improvement system, which focus on improvement in company. It can bring for company better competitiveness. Better managing strategic plans are supported by designing risk management process too. It is designed for better manage projects, which are running in company during its life.

Disadvantages of risk management process, which was designed are: difficult calculations, less stakeholder support, process are depending on support team and hard implementing project risk management process. Difficult calculations are main disadvantages. The main reason is, that this risk management process obtains risk quantitative and risk qualitative process, which is necessary to correct analyse and evaluate risk. Less stakeholder support is the main disadvantage, sometimes stakeholder does not see asset of risk management and they do not give to project manager enough time for implementing and use risk management process in all steps.

Risk management process is teambuilding activity, where is needed for participation all teams (core, stakeholder and support team). It is necessary to correct assess risks. Hard implementation risk management process must be according to enterprise strategy. Sometimes enterprises have bad company culture and it reflects than in risk management process.

In summary it is possible to say, that risk management process, which is created by standards ISO 31000:2009 and ISO 21500:2012 is right choice for project risk management process. It reflects actual trends and needs in project management. It can exploit opportunities and reduce risks.

Model, which is created by join these two standards brings for users lot of benefits. Main benefit is better efficiency and easy modification. This benefit is very important to research and development projects. Many times these projects are run in various organization. These organizations are running in different environments and with different conditions.

The advantage of this benefit is adaptations to project, organization, and external environment. It can easily identification, analysis, evaluation, and monitoring risk. Modification by company culture is main benefit. It can reflect company communication channels and communication rules.

Continuous improvement of project risk culture. Is very important for each model, which want to project manager use. Continuous improvement is main idea of kaizen and each global company. Model must obtain elements of kaizen, by new trends in global project management.

Expand opportunities and eliminate risk is important to correct understanding part of risk and risk treatment. By authors de Oliviera, Frasier, Hopkin [14], [15], [16] risk obtains two main parts (opportunities and threats). Every model must reflect these characteristics.

5 Conclusion

In general, it is possible to say, that every project activity is influenced by risks. Nowadays projects are more comprehensive and with high costs. It is needed to choose the best risk management process, which will be reflect company, project, and environment changes and conditions. Risk management process, which was created by standards ISO 31000:2009 and ISO 21500:2012 reflects everything, what is needed to assess risk in projects.

Risk management process, which will be created brings to users lot of benefits. It is possible to say, that main benefits are: benefits of risk identification, benefits of risk assessment, benefits of risk treatment, benefits of risk mineralization, benefits of exploring risk opportunities, awareness about the risks, successful business strategies, saving cost and time, identification of new opportunities for a project, get to know new knowledge and skills, risk lesson learnt, continuous improvement, support, reduce impact and loss, better manages strategic plans.

Process, which was developed is possible to use across all world. It is necessary to make some modification by project, company and others objectives, which may affect project. Process is created for assess risk in short life time projects, which are realised in company as “change”. It is possible to use in change management, lean management, and quality management.

Risk management process is consider by project managers as unnecessary part of project management sometimes. It is needed to exploit bibliography of project risk management. This process is necessary to manage risk and use risk methodology in correct form.

6 Acknowledgement

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ENCHANTING ESSENCE OF INTERCONNECTING SUSTAINABLE DEVELOPMENT AND MARKETING

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Abstract

Marketing is a set of tools at the service of companies, while the objective of sustainable development is common good and well-being. Sustainability values can be a successful differentiator in marketing, as a key part of the functional and emotional attributes of a product or service. The main objective of our research paper is to explain the reasons and the means for establishing closer links between marketing and sustainable development. The scientific methods used were analysis, synthesis and comparison and analogy. The main contributions of this paper include some of the key elements which well characterize a sustainable marketing and make the expression meaningful. The paper moreover presents the integration of social and environmental goals into marketing programs.

Keywords

Marketing, Sustainable development, Integration, Responsibility, Environment.

JEL classification

M31, Q56.

1 Integration of sustainable development into marketing

The essence of sustainable marketing is the integration of all elements of sustainable development to strategic marketing decisions. Firstly, it is necessary to explain the difference between the concepts of sustainable development and marketing, and identify their common features. The main objective of our research paper is to closely analyze the reasons and the means for establishing more convenient links between marketing and sustainable development as a broad view of social, environmental and economic outcomes; a long-term perspective and an inclusive approach. To accomplish our aim, we have constructed the following research questions during our research:

- What are the challenges facing marketers and companies today in their area of expertise?
- What are the reasons for integrating sustainable development in organizations?
- What are the variety of ways in which organizations acknowledge opportunities of sustainable marketing development?
- How can companies create competitive advantage through brand innovation?
- Does sustainable development in marketing intensify building trust with customers, consumers and society?
- How can companies better develop market opportunities?

Sustainable improvement is a convincing thought for many individuals and companies, since it focuses on how business can add to probably the most significant difficulties that the world faces today – from environmental change and biodiversity, to working conditions and wellbeing among the poorest on the planet. However, marketing researches have attempted to make an interpretation of these thoughts into reasonable business recommendations – into marketing methodologies that make upper hand, manufacture trust or grow new business openings. Also, advertisers have frequently confronted feedback for being a piece of the issue – for pushing the utilization of unsustainable items

and ways of life. Organizations make upper hand by understanding the movements in the public arena by mechanical developments and making patterns. These patterns are the establishments of marketing technique, and the rise of sustainable advancement as an issue of open and corporate concern is one such change in the marketing condition. However, is there extremely an open door for advertisers to utilize sustainable advancement as a lever of brand development, instead of the greenwash delineated in the toon beneath? Advertisers appropriately demand that speaking to maintainability esteems won't beat a principal shortcoming in item quality, yet with phenomenal items there is prove that social and natural perspectives can be utilized to separate or make a gainful specialty.

Furthermore, high-performing individuals are basic for high-performing associations. Regardless of whether driven by the need to enhance effectiveness, efficiency, or productivity, or by the want to give exceptional client benefit, the blend of two parts is basic: choosing capable and high-potential individuals to do the association's main goal and making a culture that backings them. To address these difficulties that a large portion of the associations sees competency models as a standout amongst the most essential instruments for evaluating workers' execution at work against all around acknowledged guidelines with a specific end goal to always enhance it by boosting the capability of human capital in accomplishing sustainable advancement to key marketing choices. Competency sustainable advancement models (Figure 1) are not intended to simply depict, but rather really to impact conduct by characterizing behavioral markers, that are basic for the authoritative achievement and to demonstrate the pathway between the everyday workers' conduct and more extensive key authoritative objectives, to guarantee consistency by utilizing basic dialect that makes the center hierarchical stays clear and reasonable for everyone in the element. Likewise, sustainability esteems can be a fruitful differentiator – a key piece of the useful and passionate properties of an item or administration. Numerous marketers contend that incorporating sustainability esteems into a brand through their own competency models can add to showcase development.

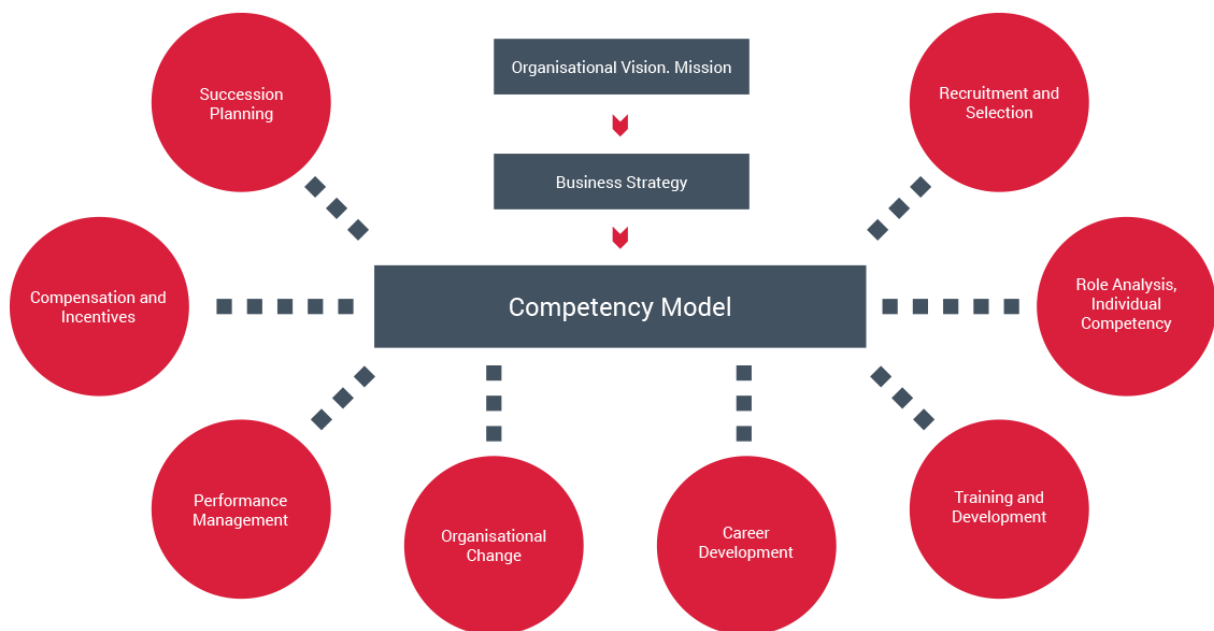


Fig. 1. Competency model applied both in marketing and sustainable development (Source: Catro, 2015)

According to ISO 26000, the International Standard providing guidelines and dealing with corporate social responsibility, sustainable development can be defined as: „*The ability of satisfying current needs without limiting the ability to meet the needs of future generations*“. Sustainable development can also be presented as *the ideal balance condition required by the society while achieving economic, social and environmental objectives* (Loupe, 2006).

Moreover, marketing is „*a social and managerial process, by which individuals and groups satisfy their needs and desires in the production and exchange of goods or other valuables* “ (Kotler, Armstrong, 2004).

On the one hand, we mean an ideal situation, which is based on certain values and visions of the desired functioning of society and on the other hand, we mean the organizational function with its goals and ambitions, which is diverse at the level of the major international groups, small businesses or NGOs. The correlation between the two concepts of different nature can be observed in cases such as:

- marketing functions through which businesses and organizations are aware of the increasing sensitivity of different market actors - entities (consumers, distributors, competitors) to the challenges of sustainable development;
- during strategic decisions, businesses and organizations take into account social accountability at all managerial levels (purchasing department, human resources, research and development).

Among the areas in which marketing and sustainable development are drifting apart, we can include firstly the requirements in the short term and secondly competitive environment. *The requirements in the short term* are one of the sources of differences, especially under the pressure of financial requirements, marketing needs to be adapted to the requirements of speed (challenging fast paced environment) and immediate profitability (sales growth combined with cost reduction) however, sustainable development requires in many cases temporary waiving from certain financial goals. Furthermore, both marketing and sustainable development behave differently *in relation to the competitive environment*. The concept and tools of marketing require the greatest diversity of supply and the ability to be more responsive to customers and to meet their needs than competitors. Sustainable development does not reject the idea of economic competition, provided that these rules will be defined and combined with the aspects of social and environmental responsibility. In this sense, we may be encountered with strategies where the concept of „competition“ can be replaced with the term „collaboration“ or „partnership“.

The aim of sustainable development is to define viable schemes combining the economic, social, and environmental aspects of human activity. These three areas must therefore be taken into consideration by communities, companies, and individuals. The ultimate goal of sustainable development is to find a coherent and long-lasting balance between these three aspects. In addition to these three main factors, there is a transverse consideration, which is essential to the implementation of policies and actions with regard to sustainable development: good governance. Governance consists in the procedures of the decision-making process. In matters of sustainable development, the consensus of all the participants in society is required in order to define objectives and implement them: private and public sector companies, associations, NGOs, unions, and citizens.

The company's ability to identify needs and to be able to answer them is the key task of marketing. Additionally, it is possible to integrate the theme of sustainable development into response to the needs that marketers define, but here arises a conflict of interests between finding instant gratification of needs and the ability to respond to future requirements (Brundtland, 1987).

The marketing approach does not preclude analysis in the long term, which are tasked with the selection of potential buyers and consumers for its products and services. In practice, it's often especially marketing that pushes all other enterprise departments to prepare now for future changes resulting from the market conditions. Assessing the development potential in the medium or long term time frame is used during the formation of business or financial strategies, capable of integrating complex of likely changes in the context of demographic, environmental, social, cultural and technological, etc. Lessons derived from marketing is that anyone who wants to be able to anticipate and constantly move forward, must be able to change the technology or even, as the last resort, the branch if the changing needs require it.

When searching for the optimum situation as well as the „win–win strategy“, satisfactory to all stakeholder interests, it is important to develop methods directed and designed for consultation and negotiation. The concept of sustainable development goes beyond the customer – supplier relationship dimension. Its goal is a mutual benefit, which is not defined solely on just this upper mentioned pair, where acts solely the consumer party and party supplier, but these relationships are composed of several partners. The ideas of sustainability do not penetrate only into marketing on the markets of manufacturing sector (B to B), but also into marketing on the consumer markets (B to C). In this case, it is important to note that properly planned marketing policy should include and be interested in the motivations, strategies and projects of a wide range of stakeholders from producers of raw materials, industrial processing, through wholesale and logistics, up to retail and suppliers of goods and services to final consumers.

The three pillars of sustainable development – economic growth, environmental stewardship, and social inclusion – carry across all sectors of development, from cities facing rapid urbanization to agriculture, infrastructure, energy development and use, water availability, and transportation. Cities are embracing low-carbon growth and public transportation. Countries are recognizing the value of their natural resources, and industries are realizing how much they can save through energy and supply chain efficiency. The way of creating the long-term value is by placing sustainable development at the core of business strategy.

Recognizing that every collaborative endeavor is unique and should be evaluated on its own merits, companies must do their homework before starting to work together. Successful innovation collaborations start with a clear understanding of how each company wants to benefit from the partnership, and how they will work toward a win-win outcome. Parties engaging in open innovation are attracted to working with other companies because of what they may gain through the affiliation. Here, size does matter, and certain generalizations of contributions are reasonable. While SMEs can differ greatly in size, capabilities and competencies, they usually share more similarities with other SMEs than what they share with large companies. In this sense, they can be considered symmetrical collaborators. These relationships are characterized by a high degree of mutual reliance and trust. Often each party “needs” the other to optimize the ability to create and capture value. Written agreements are very important, but the personal relationship between the parties is paramount (Weiss, 2013).

Below we propose a scheme that represents the area, where marketing and sustainable development intertwine, while each concept retains its characteristics.

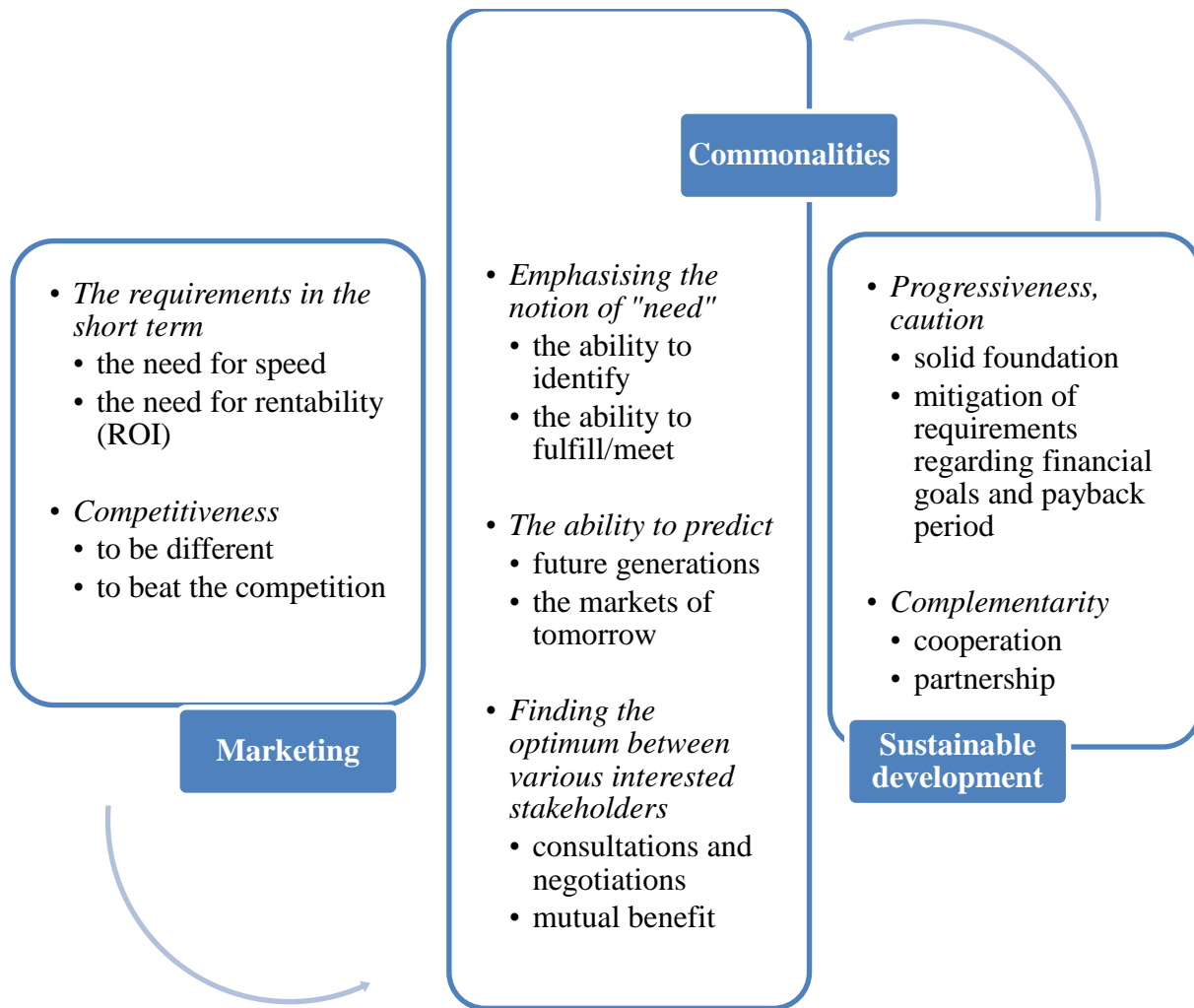


Fig. 2. Differences and commonalities of marketing and sustainable development (Source: Louppe, 2006)

2 The behavior of a company face to face sustainable development

Linking marketing with themes of sustainable development can be achieved only if a company or an organization is open to receive them as a part of their culture and strategy, and if this integration will take place at the level of whole enterprise. This integration can be looked upon by a company from the following two perspectives:

- on the one hand, companies perceive the environment and societal issues such as limitation, potential threats and distractions of normal and regular functioning of markets;
- on the other hand, there are companies for which the following aspects are part of their economic and social life and also represent opportunities for the development of their activities or the creation of new jobs etc.

In the first case, it is not just a marketing department that perceives social pressure and various restrictions such as creation of unfair costs borne by the firm and which have no economic benefit or shared value on the market. In this regard, community and social issues should be addressed outside the firm by external, especially government entities. In the second case, especially on the contrary, asking questions regarding the environment, social cohesion, respect for individual and social values opens the way for innovations that can be a source of value creation for companies and their

customers. Sustainable development is then presented as a series of challenges faced by the management as well as marketing of a company.

2.1 From rejection to acceptance, from acceptance to integration

Of course, the reality is not such dichotomous. Many companies are located halfway between two opposed positions. In addition, we can find within the same company (most likely in large companies) leaders who once look at a problem as a limitation (defensive manner) and other times as an opportunity (proactive method).

Environment, social issues and questions of ethics perceived as a *limitation*:

- generating costs that don't bring any economic benefits and don't create any market values;
- social problems must be dealt with outside companies, particularly with the help of government entities;
- sustainability risk include risks to financial performance from volatile energy prices and risks from product substitution as customers switch to more sustainable alternatives.

Environment, social issues and questions of ethics perceived as an *opportunity*:

- development of activities and creation of new jobs;
- creating values for consumers;
- real challenges for management and marketing companies;
- source of competitive advantage, sustainability is a way to stand out.

Below presented scale allows more accurately describe and characterize in more detail the linkage of elements of sustainability with a company. On the basis of the following characteristics can be observed internal and cultural progress (step by step), which a company passes from a stage of complete denial through the approach of approach to the degree of integration.

Stage	The level of connection	Characteristic
1.	Conflict	Enterprise leaders deny the existence of issues related to the environment or society as a whole and often express hostility against those who defend their existence. Any liability of an enterprise towards these issues is rejected.
2.	Protection	Sustainability issues are perceived as a threat. Enterprise adopts defensive behavior, such as lobbying for preventing and postponing the validity of the law, or limitation of their scope.
3.	Socialization	Issues of social, environmental, ethical orientation are known on the level of enterprise' awareness, but always remain outside its activities. The first deployment appears in the form of voluntary contributions such as participation in community life, educational and cultural activities, humanitarian aid and others.
4.	Cooperation	Enterprise leaders take into account sustainable development issues within professional communication and partially accept the principle of corporate social responsibility. At the same time, they are also involved in shared responsibility with other actors such as state or local communities and finance various activities falling

5.		within the scope of this expanded responsibility. The managers are expected to develop the structures, systems, ways of working and personal values that will support the organisation's sustainable development objectives.
	Integration	Sustainable development issues are considered as problems characterizing the state of society and the structure of markets. They require by enterprises special effort for strategic planning and adapting methods and practices. Performance in terms of sustainable development is seen as a challenge as well as new consumer demands and the need to maintain the competitiveness of a enterprise. Integration of sustainable environmental performance, corporate social responsibility, sustainable communications and constant marketing innovation create and maintain long-term positive growth and success for the organization.

Fig. 3. Scale of societal attitudes (Source: Louppe, 2006)

It is important to note that the role of marketing begins to take its justification from the moment when a company reaches the level of „cooperation“ on above analyzed scale or at least a company passes from the level of „socialization“ to the level of „cooperation“. Based on this scale, addressing social and political issues outside company's activities is totally inappropriate and in this case, it is completely unnecessary linking marketing with sustainable development goals.

The definition of sustainable development links the concepts of responsibility, safety, environment with traditional business objectives such as value creation, leadership and others. This interconnection with business environment includes aspects such as the environment, social aspects (human resources), security, innovation, ethics (human rights), social development (contribution to social development, community life). According to the World Bank, Sustainable development recognizes that growth must be both inclusive and environmentally sound to reduce poverty and build shared prosperity for today's population and to continue to meet the needs of future generations. It is efficient with resources and carefully planned to deliver both immediate and long-term benefits for people, planet, and prosperity.

We can talk about two forms of sustainable development integration:

- integration at the level of company management;
- integration at the level of marketing.

Integration at the level of company management

- sustainable development and cultural care are constantly presented and rooted in corporate culture since the beginning;
- complementarity of sustainable development implementation in practice;
- identifying and responding to emerging societal trends, and exploring the opportunities to deliver products in collaboration with the communities in which the company operates;
- control of integration and application of sustainable development into practice is carried out by one or more statutory body.

Integration at the level of marketing

- diversification of products and services that communicate company's orientation towards sustainable development (i.e. the development of activities - renewable energy);
- addressing customer and consumer needs, and informing and educating people about the impacts of their purchasing practices;
- development of new products and technologies (i.e. Hi-Tech products);
- plans to reduce waste volume (i.e. generated by manufacturing plants);
- development of services and counseling for clients, designers and distributors, who present ideas of sustainability (i.e. databases, good practice guides);
- personnel training on environmental, social or health risks.

3 Conclusion

Sustainable development integration transformed into corporate social responsibility is currently becoming an enormous trend and it is only a matter of time before its application becomes commonplace, since it represents a unique tool that can help companies to be successful in the long-term time frame primarily by reducing costs, increasing the efficiency of processes and improving relationships with stakeholders. Moreover, corporate social responsibility means behaving responsibly toward all stakeholders from employees, customers, suppliers, local communities through to the environment. In any case, it is not only about respecting the legislation, but it is a series of continual activities that goes beyond legal requirements. State of the environment and its protection is a society-wide issue because of its impact on the development, penetrating all spheres of society, and affecting each individual. Its continuous development reflects current social changes, changes in the market environment, the impact of technological progress and in particular the socio-economic factors in society. Despite the fact that sustainable marketing is a relatively young discipline, its domination, as a form of marketing that reflects environmental factors and issues from a business and corporate point of view continues to grow as a strategic choice and attitude undertaking those interests and efforts to maximize profit combined with environmental approach. We can talk about sustainable marketing if a marketing processes are in themselves sustainable. Sustainable marketing on the one hand, puts pressure on businesses to produce and provide environmentally friendly products and services, on the other hand, however, should target and persuade potential buyers based on added value, respectively, make sure that customers meet their needs in a positive and environmentally friendly way. Whether we talk about integration only at the level of marketing or at the level of company as a whole, it is necessary to proceed really responsibly and comprehensively and not only as a marketing tool, just with the prospect of profit.

When thinking about doing marketing in a sustainable way, historic definitions can result in conflict between business operations, individual needs, societal wellbeing and the unpredictable needs of future consumers. But for now, sustainable marketing at its core is about fulfilling the four areas of sustainable development, challenging preconceptions and acknowledging its responsibilities.

4 Acknowledgement

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ASSESSMENT OF THE SOCIAL IMPACTS OF FINANCIAL SUPPORT FROM THE HUMAN RESOURCES AND EMPLOYMENT OPERATIONAL PROGRAMME

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Abstract

With the growing interest in measuring the social impact of realized projects, there have been a range of approaches developed. In view of this, social impact assessment has increasingly come to the fore as a potential tool to mainstream social protection and social inclusion concerns into policy-making in the European Union Member States. The effectiveness of the use of funds is seen primarily in terms of economic and social benefits are often overlooked. In addition, investment projects and so-called soft projects, which are not associated with mandatory sustainability even after the end of the project, are evaluated in a very minimal form. In assessing the impacts of financial support for businesses this contribution does not evaluate economic but social impacts. Furthermore, this paper analyzes the financial support of so-called soft projects, from the Human Resources and Employment Operational Programme. The soft projects are evaluated rarely. The aim of this paper was to evaluate projects which organizations supported by the Human Resources and Employment Operational Programme realized. The evaluation has been done use to SROI method for the selected regions in the Czech Republic. The social return on investment (SROI) has received particular attention and is being promoted by third sector organizations, as well as public and private bodies. This approach is not widely used in the Czech Republic, as in other member countries.

Keywords

European Union, Human Resources and Employment Operational Programme, Non-profit organizations, Regions, Social impact measurement, Social Return on Investment.

JEL classification

H83, P48, R11, R58.

1 Introduction

The European Union under the objective Cohesion emphasizes balanced development that reduces disparities between the regions. Despite of the European Union efforts to reduce disparities continuously between regions, there are still significant differences between them not only between regions from all European Union but also between regions from individual countries. For the reduction of the social disparities the European Union used the structural funds. The European Social Fund (ESF) is one of three European Union structural funds which is most focused on social area. It is a key financial instrument for implementing the European Employment Strategy. The main mission of the ESF is to develop employment, reduce unemployment, and support social inclusion and equal opportunities with a focus on labor market development and human resources. The ESF in the Czech Republic consisted of three operational programs in period 2007-2013, and so the Human Resources and Employment Operational Programme, the Education for Competitiveness Operational Programme and Prague Adaptability Operational Programme. The Human Resources and Employment Operational Programme (HRE OP) was program with the most widespread on social sphere and due to this program was chosen for the analysis.

In the context of publicly supported services as education or social services, evaluation and measurement have often focused on performance aspects other than productivity. Evaluation of the EU supported projects aiming to achieve better measurement in provision of public services may conclude that such efforts have not been successful in dealing with public or regional problems (Hookana, 2011).

Over past decade, researchers have discussed the topic of efficiency in two main areas as public duty to increase output and secondly in area of value added to citizen's expectations or project beneficiaries as well (Manzoor, 2014).

In such context, this paper aims to measure social impact assessment. Firstly there were collected data about organizations which realized projects from the Human Resources and Employment Operational Programme in 2007-2013. Secondly, the effectiveness of support allocation was measured by modified ratio of social return on investment (SROI).

The research included all businesses except municipalities, regions and public administrations in the four regions in the Czech Republic. Author chose these regions: the Moravian-Silesian Region, the Ústí Region, the Hradec Králové Region and the Plzeň Region. These regions have been chosen because the Hradec Králové Region and the Plzeň Region are known as the regions “good for life” and the Moravian-Silesian Region and the Ústí Region are contrast to them. The Moravian-Silesian Region and the Ústí Region belong to the “worst” regions in the Czech Republic. Selection of regions was supported by the results of previous studies (Hučka, Kutcherauer, Tománek, 2008; Palová, 2015; Viturka, 2010; Wokoun, 2007).

The first chapter was carried out the theoretic background. In the theoretic background there was discussed the Human Resources and Employment Operational Programme, which was analyzed in the empirical part. This chapter included also information about methods of social impact measuring. In the next chapter was explained the research methodology and there was done the evaluation of financial support from the Human Resources and Employment Operational Programme. The last chapter before the conclusion was the discussion of the results. At the end of paper the conclusion summed up all obtained results.

2 Theoretic background

The effectiveness is the main indicator given by the ratio of the result obtained to the one Europeans Union fund program to achieve and that area is widely expressed. Within the framework of the Human Recourses and Employment Operational Programme, author can distinguish the following types of performance indicators, which there could be find in other EU countries (Poland, Romania and others) in their National Reports and research analyses covering programme above (Jalocha, 2012, Pădurean, et al., 2015, Wolińska, et al., 2010): (i) *Impact indicators* – describing immediate effects on beneficiaries and they are applicable in medium term. The Managing Authority is responsible for measuring the impact indicators. (ii) *Product indicators* – describe the product of activities of the persons as beneficiaries of the program. They differ according to priorities of the programme. (iii) *Results indicators* – present information about the changes taking place with regard to the direct beneficiaries. (Šebestová and Palová, 2016b; Potluka and Liddle, 2014). Efficiency cannot be directly evaluated. Therefore, different approaches concerning data and methodological framework have been used. Generally expressed, one would expect that public funds are directed to the essential policy areas, which support the overall objectives of the country, others prefer regional development or disparity measurement, when indexes and performance indicators are used by themselves to measure efficiency.

In this chapter was introduced theoretic background of the Human Resources and Employment Operational Programme and methods for measuring of social impact.

2.1 The Human Resources and Employment Operational Programme

The Human Resources and Employment Operational Programme was the program which was focused on the social sector and produced social innovations more than the other operational programs (Šebestová and Palová, 2016a). The Ministry of Labor and Social Affairs acted as the managing authority of the HRE OP. This program was focused on minimization of unemployment by means of active policy on the labor market, professional education, reintegration of socially excluded citizens into society, improvement of public administration quality and international cooperation in the above mentioned areas. Program consisted of five priority axes. In this paper author used only three priority

axes: Adaptability, Active labor market policy, Social Integration and Equal Opportunities. Priority Axes 4 Public Administration and Public Services was not included in this analysis because beneficiaries of funds were municipalities, regions and public government. Priority axis 5 International cooperation was not included in the analysis due to its specificity. There were interpenetration between different regions in the Czech Republic and it was not possible to distinguish the amount of finance and degree of impact. There has also been a spillover of social impact into other European Union countries. In this combination it was not possible to use the same assessment as for the first three priority axes. Because of its specificity, this priority axis has been eliminated.

2.2 Social impact measurement

Methods for measurement of social impact have been developed in response to the changing needs for management information resulting from increased interest of corporations in socially responsible activities (Maas and Liket, 2011).

The lack of consensus on the definition of social impact causes confusion and hampers the ability to study this phenomenon. Maas and Liket (2011) tried prepared and overview of a number of definition (refer with: Tab. 1.)

Table 1. Definitions of social impact and related terms

Term	Definition
Social impact (Burdge and Vanclay 1996)	By social impacts we mean the consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally act as a member of society.
Social impact (Latané 1981)	By social impact, we mean any of the great variety of changes in physiological states and subjective feelings, motives and emotions, cognitions and beliefs, values and behaviour, that occur in an individual, human or animal, as a result of the real, implied, or imagined presence or actions of other individuals.
Impact (Clark et al. 2004)	By impact we mean the portion of the total outcome that happened as a result of the activity of the venture, above and beyond what would have happened anyway.
Social Value (Emerson et al. 2000)	Social value is created when resources, inputs, processes or policies are combined to generate improvements in the lives of individuals or society as a whole.
Social Impact (Freudenburg 1986)	Social impact refers to impacts (or effects, or consequences) that are likely to be experienced by an equally broad range of social groups as a result of some course of action.
Social Impact (Gentile 2000)	Social impacts are the wider societal concerns that reflects and respects the complex interdependency between business practice and society.
Social Impact (IAIA ¹ , 2017)	Social impacts are intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions.

Source: Maas and Liket (2011).

For this paper there is post the approach by Burge and Vanclay (1996): “*By social impacts we mean the consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally act as a member of society.*”

¹ International Association for Impact Assessment

Since the 1990s, there have been developed many methods to measure social impact. Maas and Liket (2011) created a list of thirty quantitative (social) impact methods (refer with: Table 2). Every method is suitable for other type of projects and organizations.

Table 2. Overview of social impact methods

1. Acumen Scorecard	11. Measuring Impact Framework	21. Social Costs-Benefit Analysis
2. Atkinson Compass Assessment for Investors	12. Millennium Development Goal scan	22. Social Cost-Effectiveness Analysis
3. Balanced Scorecard	13. Measuring Impacts Toolkit	23. Social e-evaluator
4. Best Available Charitable Option	14. Ongoing Assessment of Social Impacts	24. Social Footprint
5. BoP Impact Assessment Framework	15. Participatory Impact Assessment	25. Social Impact Assessment
6. Center for High Impact Philanthropy Cost per Impact	16. Poverty Social Impact Assessment	26. Social return Assessment
7. Foundation Investment Bubble Chart	17. Public Value Scorecard	27. Social return on Investment
8. Hewlett Foundation Expected Return	18. Robin Hood Foundation Benefit-Cost Ratio	28. Socio-Economic Assessment Toolbox
9. Local Economic Multiplier	19. Social Compatibility Analysis	29. Stakeholder Value Added
10. Toolbox for Analysing Sustainable Ventures in Developing Countries	20. Wellventure Monitor	30. Charity Assessment Method of Performance

Source: Liket and Maas (2011).

The above-mentioned authors included the social return on investment (SROI) method as one of the appropriate methods for measuring social impact. Although a method might initially have been developed for a certain kind of organizations, the method could be used and adapted by other kinds of organizations. This method was initially developed for non-profit organization and is currently increasingly used by profit corporations. That was very important for this evaluation due to the beneficiaries of the Human Resources and Employment Operational Programme were not only non-profit organizations but also profit corporations. This method was explained in more detail in the following subchapter.

2.3 Social return on investment

Early descriptions of the methodology for calculating the social return on investment suggest that the approach initially evolved from standard methodologies found in the business finance literature for evaluating investments, with the important twist that nonprofits sector returns are defined in broader social terms (Thornley, Anderson and Dixon, 2016).

The social return on investment Lawlor (2009) defined as: “... *a modified form of cost-benefit analysis, which also takes into account the different types of impacts of the programs implemented.*” The authors Arvidson, Lyon, McKay and Moro (2010) do not see the large differences between cost-benefit analysis (CBA) and social return on investment method. The SROI method, as well as the traditional CBA, combines the discounted cost ratio over a certain period of time. Sometimes SROI is be criticized as being armed-over cost-benefit analysis, a well-established from cost-inclusive evaluation used in many settings for long time by highly trained economists using increasingly standardized methods (Yates and Marra, 2017a).

The purpose of implementing the method of assessing the social return on investment is similar to that of the CBA. The general framework of cost-benefit analysis as outlined above provides a ready-made accounting framework for undertaking social return on investment. The SROI is more suitable than more business-oriented return on investment (ROI) analysis (Cordes, 2016). Some authors, such as Schober and Then (2015), have noted close similarities between CBA and SROI. It claims, however, that the CBA has a very narrow economic interest compared to the SROI analysis.

The authors of Yates and Marra (2017b) dealt with the advantages and disadvantages of the social return on investment method. Among the most important benefits of this method included the following points:

- includes information about the amounts of resources used by the program, in addition to program activities,
- includes information on the value to society of outcomes achieved by the program, in addition to outcomes not expressed in terms of societal values,
- allows different programs to be compared even if their outcomes typically are expressed in different units,
- shows possible net gain in societal resources resulting from program operation,
- can represent program value to society as a whole rather than to a specific stakeholder group,
- and could motivate multiple stakeholders to participate from the start of an evaluation, because much is at stake.

The authors of Yates and Marra (2017b) in their contribution, besides defining the advantages of the SROI method, argue over the problems that are associated with it. These include, for example, the following problems or disadvantages:

- The authors point to a certain degree of uncertainty as to whether it is really possible to use the social return method of an investment for important decisions.
- They consider who is entitled or able to implement a method of assessing the social return on investment.
- The SROI could justify continued or exacerbated discrimination in program offerings.
- The SROI analyses often ignore the complexity of causal claim they depend on.

The framework of the social return on investment method is based on important principles such as stakeholder engagement, which encourages organizations to communicate with the people involved in their work and those who finance them. A guide for the method of social return on investment (Nicholls et al., 2009, p. 9) sets out the following seven principles:

- involve stakeholders,
- understand what will change,
- evaluate what matters,
- include only what is important,
- do not exceed the claims,
- be transparent,
- verify the results.

This strong emphasis on stakeholder engagement is a hallmark of the social return on investment method. Although the method does not prescribe specific methods for collecting values, this approach is focused on allocating financial value to inputs and outputs, leading to the final process of calculating the SROI or SROI index ratio. Given that this ratio is a concise and effective way to express the resulting values, it naturally tends to get the most coverage. However, the SROI manual emphasizes that this ratio should not be understood as the sole reason for such an assessment. However, this ratio remains the hallmark of the approach of the social return on investment (Lyon et al., 2010).

3 Research methodology and empirical part

The evaluating data was obtained from secondary research. The data were collected from official website of the European Social Fund Czech Republic (www.esfcr.cz). On this website there are all information about realized projects and supported organizations from the Human Resources and Employment Operational Programme. Author chose these regions: the Moravian-Silesian Region, the Ústí Region, the Hradec Kralové Region and the Plzeň Region.

The evaluated regions belong into the regions fell into the state-supported regions. The Ministry for Regional Development (2013, p. 58) identified in the Regional Development Strategy economically problematic regions, which in the context of the Czech Republic show a significantly lower level of economic and social indicators than the average level of the Czech Republic. The economically problematic regions were characterized by the high unemployment rate, the low standard of living, the low level of economic performance, the low average income of the population and the unfavourable socio-economic development. Companies operating in these regions thus appear to be very suitable potential recipients of financial support from EU funds, making them methodologically acceptable for this contribution. The size of the economically problematic regions was set by the Ministry for Regional Development as a municipality with extended competence and therefore it was necessary to create a larger unit. The regions were identified with NUTS 3. Thus, two regions were selected in the model regions, such as representatives of structurally affected regions and two regions where the least economically problematic regions were located, but at least one. The Ústecký Region (13 problematic regions from 16 regions) and the Moravian-Silesian Region (13 problematic regions from 22 regions) were selected as structurally affected regions. The least economically problematic were the Plzeňský Region (1 problem region from 15 regions) and Hradec Králové Region (1 problematic region from 15 regions).

Table 3 summarizes information about financial support for companies in selected regions. Some supported projects were implemented in more than one region. It was not possible to precisely divide the amount of financial support for organizations which realized projects in more regions. These projects had to be excluded from the overall financial analysis. On the basis of the conditions laid down, a database of projects implemented by companies in selected regions was established (refer with: Table 3). The largest number of projects and the allocated amount were implemented in the Moravian-Silesian Region. The Ústí Region was second in rank. On the other hand, the Hradec Králové Region and Plzeň Region implemented the smallest number of projects even in the volume of total financial support.

Table 3. Financial support of organizations

in thousand CZK		Moravian-Silesian Region	Ústí Region	Plzeň Region	Hradec Králové Region
Adaptability	Number of supported projects	159	57	39	34
	Average support per project	2 725	2 352	2 931	1 268
	Total support	433 298	134 070	114 310	86 200
Active labour market policy	Number of supported projects	54	49	6	5
	Average support per project	3 641	4 420	3 125	3 125
	Total support	196 626	216 593	18 750	15 625
Social Integration and Equal Opportunities	Number of supported projects	145	124	42	36
	Average support per project	3 675	4 086	4 135	2 226
	Total support	532 875	506 703	173 658	80 145
Total	Number of supported projects	304	230	87	75
	Average support per project	2 712	3 728	3 526	2 426
	Total support	824 476	857 366	306 719	181 970

Source: Own proceeding.

For an objective comparison of the allocation, the amounts of support were converted per capita. This solved the problem of various large geographic areas where the Plzeň Region and the Hradec Králové Region belong to the NUTS III regions with the smallest size and the lowest number of inhabitants.

The following chart (refer with: Fig. 1) shows the financial support from the Human Resources and Employment Operational Program per capita. The highest financial support per capita (CZK 1031 per capita) companies from the Ústí Region obtained. On the other hand, the company implementing projects in the Hradec Králové Region received the least amount of funds from the operational program (CZK 329 per inhabitant). Thus, the Hradec Králové Region received 68% less financial support than the Ústí Region.

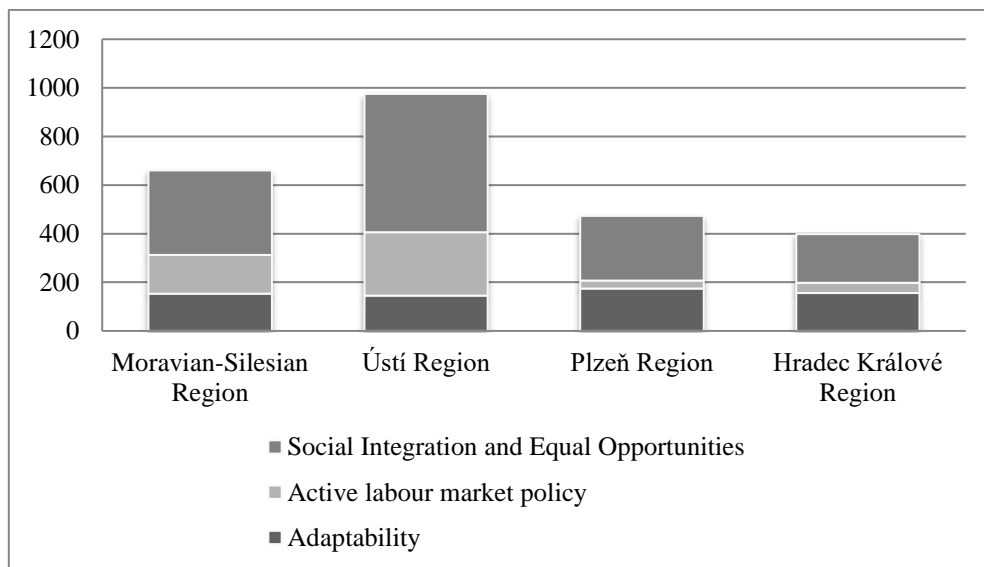


Fig. 1. Financial support per capita (Source: Own proceeding)

The evaluation of social impact has been done through method of social return on investment. This method was applied according to the Cooney and Lynch-Cerullo approach (2014), which is calculated from the expected EBIT over the five-year period after the investment:

$$SROI = \text{number of people supported by innovation} * \frac{\text{earning difference}}{\text{program costs}} \quad (1)$$

This basic indicator had to be modified according to the needs of individual priority axes and individual areas of support of the Human Resources and Employment Operational Programme. Due to data availability, SROI ratio modifications were created only for the first three priority axes. Table 4 below summarizes the modification of the EBIT calculation approach.

In the case of priority axis 1.1 and priority axis 3.1, there was calculated with the sustainability of the project n+2, the impacts there were calculated for the period after the end of the project, when number of supported person was the basic indicator. For priority axes 2.1, 3.2, 3.3 and 3.4, the basic indicator was the number of newly employed persons. Therefore, savings for unpaid unemployment benefit were selected for EBIT.

Table 4. SROI ratio modification

SROI ratio	EBIT
Basic type according Cooney a Lynch-Cerullo (2014)	Number of clients enrolled * earning difference
1 - Adaptability	Area of support 1. 1 Number of supported people using the project * earning difference per participants for two years
	Area of support 1. 2 Number of supported people using the project * saving from compensations in unemployment (5 months)
2 – Active labour market policy ²	Area of support 2. 1 Number of supported people using the project * saving from compensations in unemployment (5 months)
3 – Social Integration and Equal Opportunities	Area of support 3.1 Number of supported people using the project * earning difference per participants for two years
	Area of support 3.2 Number of supported people using the project * saving from compensations in unemployment (5 months)
	Area of support 3.3 Number of supported people using the project * saving from compensations in unemployment (5 months)
	Area of support 3.4 Number of supported people using the project * saving from compensations in unemployment (5 months)

Source: Own proceeding.

Through these modified ratios there were calculated EBIT and the SROI index for projects, individual regions, priority axes and areas of support (refer with: tab. 5). Areas of intervention of priority axis 1 Adaptability were calculated separately, because of their focus.

Due to their specification, the different input values were used to calculate the EBIT value. As was the case also with priority axis 3 Social Integration and Equal Opportunities, when the EBIT and SROI indicators were calculated separately for the support area 3.1 and especially for support areas 3.2, 3.3 and 3.4.

² Priority Axis 2.2 has not been included due to its focus on public administration.

Table 5. Economy and Efficiency evaluation

			Moravian-Silesian Region	Ústí Region	Plzeň Region	Hradec Králové Region
Adaptability	Area of support 1.1	Number of projects	105	56	6	34
		Total support (thousand CZK)	189 952	118 060	18 750	86 200
		EBIT per project (thousand CZK)	1 582	2 733	4 375	5 260
		SROI index	1.67	1.77	1.90	3.21
	Area of support 1.2	Number of projects	0	1	1	0
		Total support (thousand CZK)	0	2 596	3 343	0
		EBIT per project (thousand CZK)	0	4 069	8 139	0
		SROI index	0	1.77	2.43	0
Active labour market policy	Area of support 2.1	Number of projects	54	49	6	5
		Total support (thousand CZK)	196 626	216 593	18 750	23 240
		EBIT per project (thousand CZK)	3 633	4 468	4 273	1 241
		SROI index	1.35	1.13	1.44	0.27
Social Integration and Equal Opportunities	Area of support 3.1	Number of projects	40	19	23	5
		Total support (thousand CZK)	85 019	54 940	82 215	11 316
		EBIT per project (thousand CZK)	3 269	5 202	4 195	2 523
		SROI index	2.53	2.97	1.20	0.81
	Area of support 3.2, 3.3, 3.4	Number of projects	80	91	19	16
		Total support (thousand CZK)	299 729	361 396	69 569	54 305
		EBIT per project (thousand CZK)	4 135	4 213	4 419	1 344
		SROI index	2.77	1.22	1.07	0.41

Source: Own calculations.

As can be seen from the calculations, the SROI indicators was very low. The lowest efficiency was demonstrated by companies from the Hradec Králové Region, regardless of the socio-economic background. The SROI indicator had three areas of support below 1 which show the ineffectiveness of the allocation of funds, when the 1 CZK aid was CZK 0.27 (support area 2.1), 0.81 CZK (support area 3.1) and 0.41 CZK (support area 3.2, 3.3, 3.4) of the added value.

The total number of supported HRE OP projects implemented by companies in the Moravian-Silesian Region, the Ústí Region, the Hradec Králové Region and the Plzeň Region was 628. The frequencies of the individual SROI indexes that were calculated were plotted using the histogram (refer with: Fig. 2). The mean value of SROI index was 1.86.

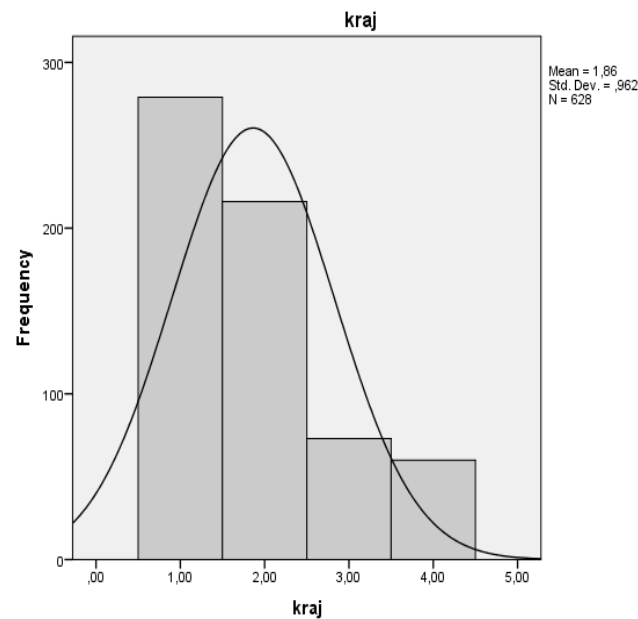


Fig. 2. Histogram of SROI index (Source: Own proceeding).

By comparing individual results using the order of SROI indexes and EBIT per project in individual axes (refer with: tab. 6). It is possible to obtain the overall cross-section of allocations efficiency in individual regions, where one was the best result within the priority axis, the number four was the worst. The best evaluation was in the Plzeň Region where the final score was 1.83. On the contrary, the worst efficiency was demonstrated in the Hradec Králové Region with a final mark 3.17.

Table 6. Efficiency evaluation

		Moravian-Silesian Region	Ústí Region	Plzeň Region	Hradec Králové Region
Adaptability	EBIT	4.00	3.00	1.00	2.00
	SROI	4.00	3.00	2.00	1.00
	Average	4.00	3.00	1.50	1.50
Active labour market policy	EBIT	3.00	1.00	2.00	4.00
	SROI	2.00	3.00	1.00	4.00
	Average	2.50	2.00	1.50	4.00
Social Integration and Equal Opportunities	EBIT	3.00	1.00	2.00	4.00
	SROI	1.00	2.00	3.00	4.00
	Average	2.00	1.50	2.50	4.00
Average rating		2,83	2.17	1.83	3.17

Source: Own calculations

The evaluation did not lead to too many conclusions. The regions with the highest social problems really got the highest financial support. The financial support very often was used not so efficiently. The highest mean value for all priority axes of SROI index was in the Moravian-Silesian Region (2.02) and in the Hradec Králové Region (2.06). It is not true that regions with higher social problems would be able to use the funds to reduce social disparities better and vice versa.

4 Discussion

In the context of the efforts aimed at improving the competitiveness of the EU as a whole, the European cohesion policy is the most important financial instrument to support the objective of the Member States convergence, namely to promote economic and social cohesion by reducing disparities, starting from the regional level.

The evaluation of social impacts from realized projects it is very hard. Evaluation of investments projects is easier because there are tangible measurement indicators as profit of companies, increasing orders / customers etc. There are not many authors who are involved in assessing the social impacts of so-called soft projects. In the Czech Republic Kadeřábková and Moghadam-Saman (2013) are devoted into this problematic area. According to their study the overall results was not satisfactory. Kadeřábková and Moghadam-Saman (2013) perceive the recommended social return value between 2 and 3. These values there were full field by companies in the Hradec Králové Region in priority axis 1.1, the Plzeň Region in priority axis 1.2, the Moravian-Silesian Region in priority axis 3.1, 3.2, 3.3 and 3.4 and the Ústí Region in priority axis 3.1.

The problematic effectiveness of spending financial support from european struktural funds deals also Zaman and Georgescu (2014). They found that the impact of structural funds absorption on macroeconomic indicators of Romania over the period 2007-2013 has not been significantly relative to GDP, gross fixed capital formation or to alleviating the financing gap increase.

Other options for extending this research it to devote the supported companies into profitable and not profitable. The hypothesis would then stipulate that non-profit organizations are closer to realizing social projects and are. Due to their experience non-profit organizations could implement social projects more effectively. Another important way for this research is also to link the evaluation of the effectiveness of financial support with the spatial distribution of social disparities. There should be set indicators for measuring social disparities in the selected areas. These indicators have to be related with the aims of the Human Resources and Employment Operational Programme. The measuring of these disparities should be done before the support (in 2007) and after the support (in 2015).

Of course, this research also has its limitations. The higher limitation is that we have to take off that the results of the SROI index were done as model for three priority axes. The input data here were designed to be applicable to a large number of projects. This marginalization therefore has its own narrowing. If each project separately is evaluated, the social benefit would be determined specifically. There would be various evaluations of different target groups, educational activities, etc. For example the creation of workplace for people with disabilities would be evaluated with the higher social value than creation of workplace for the graduates.

5 Conclusion

Currently, the assessment of the impacts of financial support is not using only the assessments of economic but also social impacts. One method of measuring social impact, both for non-profit organizations and for businesses, is a method of social return on investment. The purpose of this paper was to evaluate the social returns on investment of projects implemented by organizations in selected regions in the Czech Republic with the help of the Human Resources and Employment Operational Programme.

The method of social return on investment gives the social return on 1 CZK spent (depending on currency). The calculated SROI indicators were very low. The lowest efficiency there was demonstrated by companies implementing projects in the Hradec Králové Region, for three areas of support below 1, showing ineffectiveness of the allocation of funds, when CZK 1 per aid amounted to CZK 0.27 (support area 2.1), CZK 0.81 (support area 3.1) and CZK 0.41 (support area 3.2, 3.3, 3.4) of the added value. The overall result is not satisfactory. By comparing individual results using the order of SROI indexes and EBIT per project in individual axes, it was possible to obtain the overall cross-section of the allocation efficiencies in the individual regions. The Plzeň Region got the

best ranking with a final score of 1.83. On the other hand, the worst efficiency was demonstrated in the companies implementing projects in the Hradec Králové Region with a final mark of 3.17. The evaluation through the above mentioned social return method had fundamental importance for assessing the impact of financial support, which was able to summarize the results of individual priority axes and areas of support. The results show significant weaknesses of the managing authority, where it would be advisable to focus more on streamlining the actual financial support. There should be clearer rules in area of public support in comparison with the results and outcomes created from this finance. Furthermore, there should be a better spatial distribution of financial support in relation to the problems in the region. Although the perfect setting of conditions for the use of these public funds is practically impossible, the managing authority should at least try. There should also be more frequent evaluations of individual programs, through multiple types of methods. Each method, which is used, brings in a different approach and a new perspective. Due to this information the managing authority should be able to adequately include all the knowledge gained in listing new challenges and areas of support. This could increase the effectiveness of financial support, in fact, not only on paper. Political leaders are constantly talking about increasing efficiency, but it does not happen at all. On the contrary, the Czech Republic faces not only the problems of low efficiency of the spent funds, but also the problems of its abuse.

6 Acknowledgement

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FOREIGN POLICY MAKING AND ITS IMPACT: ABOLISHING IRANIAN NUCLEAR PROGRAM

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Abstract

Even though Iran ratified the Non-Proliferation Treaty and made its nuclear program subject to International Atomic Energy Agency verification, in early 2000s the revelation of clandestine uranium enrichment program raised concerns that it might be used for non-peaceful purpose. Although the civil use of nuclear program was claimed, it was considered that this case just confirms international relations theory – the more powerful your neighbor becomes, the more powerful you need to be. Because it has damaged the fragile equilibrium in the region, international community has adopted a sanction of different character. I focus on economic sanctions and their influence to Iranian uranium enrichment program and internal changes in politics preferences. I dedicate the text to impact of imposed measures on macro-economic indexes which probably caused the required change in nuclear program of Iran.

Keywords

Economic sanctions, Sanction foreign policy, Sanctions imposed on Iran, Economic diplomacy.

JEL classification

K22, F50, F51

1 Introduction

There is not any doubt, that sanctions are part of diplomacy, a tool to achieve its target, they are mainly deployed to pursue foreign policy goals. But it still exists many unanswered questions about sanctions, especially in economics point of view. Why are measures being imposed? What should they serve for? Do they work? If yes, do they set the required target? In regard of constantly changing conditions and circumstances, only few attributes are common to all cases of implementation of sanction measures. The success of sanctioning policies depends on the specifics of the environment and the period of their implementation.

In this text, I would like to focus on case of imposed measures against the Islamic Republic of Iran because of uranium enrichment program, so the limiting condition is year 2006, when the first dose of measures was considered. The text is dedicated to a comparison of imposed measures and their impact on Iranian policy. The aim of the text is to show relation between international imposed measures and the change in uranium enrichment program in Iran. The first part of the article is devoted to an overview of sanctions in time, the second part refers to impact of imposed measures.

Due to the unique politics and political system of Iran and the unique nature of imposed measures, the method of study best suited for this article is a single case study approach. The analytical approach used in the research included a historical study of past sanctions. The text explores and outlines the measures imposed against Iran for uranium enrichment reason and its development in economy and politics.

Sources used in the text include mostly reports generated by international organization, government reports and peer-review journals.

2 Introduction in to the History of Measures against Iran from International Law Point of View

Restrictive measures were adopted as part of a policy to persuade Iran to comply with its international obligations, mainly targeting nuclear weapon proliferation and ballistic missile programme (Katzman, 2010). Even though the Teheran regime claimed it was developing nuclear

power for peaceful purposes, including energy production or the making of medical isotopes, it was decided to force Iran to abandon its alleged pursuit of a nuclear weapon (Kenny, 2012). The sanctions imposed by United Nations (UN) were adopted by European Union (EU) through the European legislation, as well as by United States of America (USA). Except from sanction framework designed by UN, the USA has broadened the measures. The EU has done it too.

3 United Nation's Policy in Response to Uranium Enrichment program

In 2006, the Security Council of the United Nations has adopted first of resolutions requiring Iran to stop enriching uranium with nuclear proliferation purposes. Resolution 1737 (2006), according to the serious concern, has charged all members of United Nations to take the necessary measures to prevent the supply, sale or transfer directly or indirectly from their territories, or by their nationals or using their flag vessels or aircraft to, or for the use in or benefit of, Iran, and whether or not originating in their territories, of the items, materials, equipment, goods and technology which could contribute to Iran's enrichment-related, reprocessing or heavy water-related activities, or to the development of nuclear weapon delivery systems. It has also included a prevention the provision to Iran of any technical assistance or training, financial assistance, investment, brokering or other services, and the transfer of financial resources or services, related to the supply, sale, transfer, manufacture or use of the prohibited items, materials, equipment, goods and technology. It has been charged to freeze the funds, other financial assets and economic resources which are on their territories at the date of adoption of this resolution or at any time thereafter, that are owned or controlled by the undesirable entities, excluding basic expenses, such as payments for the foodstuff, medicine and medical treatment, or public utility charges.

Next round of sanctions is represented by resolution 1747 (2007) and 1803 (2008). By the resolution 1747 adopted in March 2007 Iran's arms exports was banned. It also froze the assets and restricted the travel of people involved in the nuclear programme. By the resolution 1803 implemented in March 2008, the scrutiny of the dealings of Iranian banks was enforced.

The resolution 1929 (2010) approved in June 2010 was the final round of sanctions. It prohibited Iran from buying military technics, such as missiles, toughen rules on financial transactions with Iranian banks and increase the number of Iranian entities targeted with asset freezes and travel ban.

By Resolution 2231 (2015), in January 2016 the UN lifted certain of its nuclear-related restrictive measures. The reason for that was that Iran had admitted the Joint Comprehensive Plan of Action designed by UN. Specifically, Iran is obliged to reduce its 12,000-kilogram stockpile of enriched uranium to 300 kilograms. It must remove about two-thirds of centrifuge. Iran must neither produce nor acquire highly enriched uranium or weapons-grade plutonium and assure daily access to the entire nuclear production supply chain to the UN's International Atomic Energy Agency inspectors.

4 International Response to Iranian Atom Program

During the past decade, the EU imposed autonomous economic and financial sanctions. Generally, it has included restrictions on trade in military and dual-use goods, restrictions in financial sectors, for example all Iranian banks identified as institutions in breach of EU sanctions were disconnected from the SWIFT, measures in the transport sector to prevent access to EU airports of Iranian cargo flights carrying prohibited materials or goods, and travel restrictions and asset freeze imposed against other listed entities.

After agreeing on the Joint Comprehensive Plan of Action, the Council lifted all remaining nuclear-related economic and financial EU sanctions against Iran.

The USA has imposed an arm ban and an almost total economic embargo including sanctions on companies doing business with Iran. A license from the Treasury Department was required. They also implemented a ban on all Iranian-origin imports, sanctions on Iranian financial

institutions, and an almost total ban on selling aircraft or repair parts. As a result of Iran verifiably meeting its nuclear commitments, the United States left nuclear-related sanctions.

5 Impact of Measures Targeting Iran

Despite the fact it is quite difficult to find relevant data given by Iranian national authorities, in the text below will be given brief introduction in the Iranian economy thanks to data given by International Monetary Fund (IMF) and World Bank (WB). By the description of the measures imposed on the Teheran regime, the impact of sanctions will be described. The data for 2017 are projected by IMF.

6 Economic Impact

Iran is the second largest economy in the Middle East region. Iran's economy is characterized by a noticeable state presence in manufacturing and financial services. Iran's economy can be described by continuing dependence on oil and gas despite many efforts to diversify, and the dominance of the state throughout the economy. So, the GDP is supposed to be dominated by oil and gas production. With 10 % of the world's proven oil reserves and 15 % of its gas reserves, which ranks second in the world in natural gas reserves and fourth in proven crude oil reserves (OPEC, Annual Statistical Bulletin, 2016), Iran is considered major player of world oil market. Revenues generated thanks to oil industry provide 40-50% of government revenue. How did measures imposed on Iran influence its economy? What change has occurred? Let me sketch out the effect of sanctions in the text below.

The sanctions could hurt Iran, there was not any doubt, but how much depended on two factors. It depended how much the sanctions have curtailed Iranian export and what have happened to the global oil price. After lifting sanctions, gross domestic product (GDP) was at level of 376.76 billion US dollars in 2016, with an annual change of 0,65 %. Mainly thanks to oil production industry. In many different cases, the dependence on oil industry has proven serious vulnerability, bringing plenty when its price rises, but poverty when it falls. On the other hand, according to Statistical Centre of Iran (SCI), in 2016 the main leader was services sector which grew by 54 %, followed by heavy industry with 21 %, agriculture represented 14 % GDP and oil production only 10 % of GDP.

From the geographical point of view, the economic impact brought consequences for the global, regional, and Iranian economies. The global effects fell mostly through the oil channel. There are also regional effects on Iran's major trading partners through an oil and non-oil trade. There are also effects on Iran's economy as barriers to trade are relaxed and the production mix shifts in favour of goods that fetch high prices abroad and its consumption towards cheaper imports, with attendant effects on economic growth, efficiency, and household welfare (Ianchovichina, Devarajan and Lakatos, 2016).

The global economy felt experience mainly by crude oil export. After lifting sanctions, in February 2016, Iran began shipping oil to Europe for the first time in three years. Four million barrels were shipped to France, Spain, and Russia. (Wilkin, 2016) According to a World Bank projection, the end of sanctions would mean a 14 % drop in world oil prices and a 15 billion of U.S. dollars boost in Iranian oil revenue. It is also foreseeing, in the report, that the end of sanctions would hurt other oil exporters. The bank estimates that Iran's return to crude oil markets could lead to annual losses of \$40 billion for Saudi Arabia and \$5 billion for Libya has written the Middle East and North Africa division of WD.

It is possible to demonstrate how imposed measures affect most used macroeconomic indicators. The table below shows some of macro-economic indicators, which help to understand changes implicated by imposed measures. GDP per capita is in constant price, in U.S. Dollars of 2006. Percentage change in real GDP is compared to the previous year, real GDP is adjusted by inflation. Inflation is measured by the consumer price index.

Table 1. Macroeconomic statistics of Islamic Republic of Iran

Date	GDP	Growth rate	Inflation rate	Unemployment rate	Real interest rate
2016	-	-	8,6 %	11,3 %	
2015	16 010	-1,5 %	13,7 %	11 %	8,8 %
2014	16 451	4,3 %	17,2 %	10,6 %	1,6 %
2013	15 965	-1,9 %	39,3 %	10,4 %	-18,4 %
2012	16 485	-6,6 %	27,4 %	12,2 %	-8,9 %
2011	17 876	3,8 %	20,6 %	12,3 %	-12,1 %
2010	17 444	6,6 %	10,1 %	13,5 %	-2,1 %
2009	16 563	0,9 %	13,5 %	12 %	9,4 %
2008	16 375	9,1 %	25,6 %	10,5 %	-5,5 %
2007	16 409	5,7 %	17,2 %	10,6 %	-7,5 %
2006	15 207	-	11,9 %	11,3 %	0,1 %

Source: CBI, IMF, WB.

According to the changes in tendencies of GDP per capita and growth, the simple assumption that imposed measures put pressure on economy cannot be confirmed. Fluctuations in these values cannot be explained by the price of oil on world markets (according to the WTI crude oil index). Change in growth rate can be explained in part thanks to reforms undertaken by president Hassan Rouhani, elected for the first time in 2013. Relation among growth rate and crude oil price in U.S. Dollars, basic price of 2006 (of barrels according to WTI – West Texas Intermediate) is demonstrated in Figure 1.



Fig. 1. Relation among growth rate and crude oil price. (Source: IMF, WB, Bloomberg Markets Data)

Thanks to enormous reserves of natural wealth, Iranian economy benefits from export, but foreign balance had been mostly adverse for more than 60 years, and in 2016 it rapidly changed. The main export commodities are liquefied petroleum gas (74 %), natural gas condensates (16,7 %), liquefied natural gas (6,7 %), light oils except petrol (5,6 %), liquefied propane (2,8 %), methanol, polyethylene and iron ore. The main countries in which Iranian exports are directed are the Peoples Republic of China (18,6 %), United Arab Emirates (16 %), Iraq (13,9 %), Turkey (7,3 %) and South Korea (6,7 %).

Import to Iran is mainly directed from Peoples Republic of China (24,6 %), United Arab Emirates (14,7 %), South Korea (7.9 %) and Turkey (6.25%). The main import items are agricultural products, such as maize, soya beans, semi-milled rice, unrefined sugar, then technical advices, like vehicles, LED modules and LCD monitors, spare parts for cars, forming machines, or hot-rolled iron. The import and export is graphically presented by Figure 2.

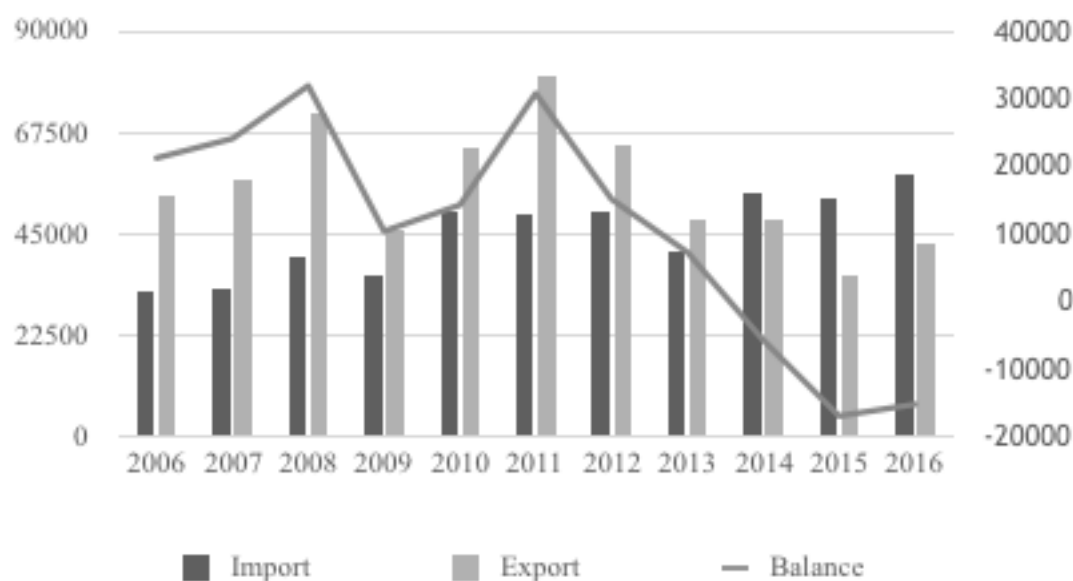


Fig. 2. Trade balance (in millions of euros) from 2006 to 2017 (Source: International Monetary Fund, World Bank)

Some author claims, that due to its relative isolation from global financial markets, Iran was initially able to avoid recession in the aftermath of the 2008 global financial crisis (Parsi, 2012). Even though the macroeconomic indicators shown in Table 1 refer to rise in unemployment rate, as shown on Figure 3, and turn down in current account balance. GDP a year after the stroke of economic crisis was still raising, but slower than before. On the other hand, inflation rate fell, as presented by the Figure 4.

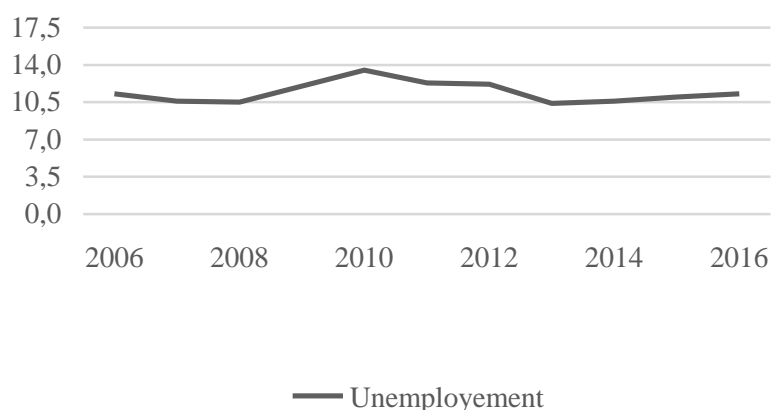


Fig. 3. Unemployment rate in Iran since 2006 to 2017 (Source: International Monetary Fund, World Bank)

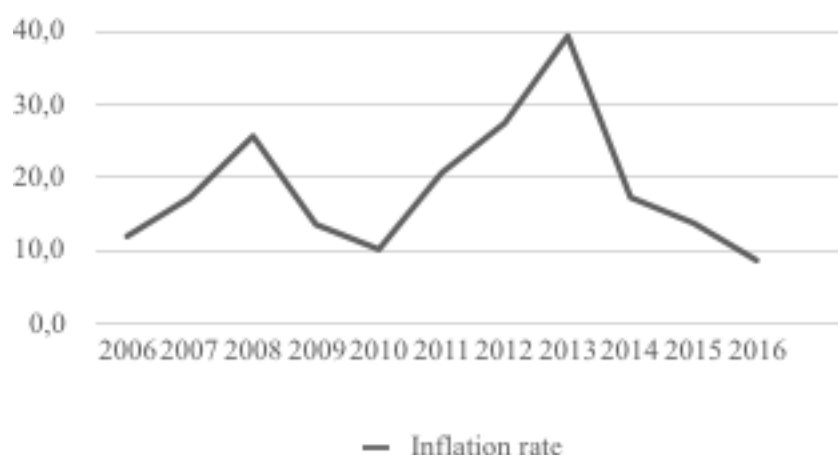


Fig. 4. Inflation rate in Iran since 2006 to 2017 (Source: International Monetary Fund, World Bank)

The consequences of sanctions were reflected also in the exchange rate. Following next expansion of international sanctions related to Iran's nuclear program, the Iranian rial fell to a record low of 23,900 to the U.S. dollar in September 2012. After lifting imposed sanctions, Iran's currency rial is gaining strength once a nuclear agreement is in place, so it can be assumed that it will make the country's exports less competitive.

Following moderate growth related to uncertainties regarding implementation of the JCPOA, the Iranian economy is projected to grow at an average rate of 4.5% over medium term 2017-2018, as the benefits of the removal of sanctions materialize. It is assumed that investment is likely to play a much larger role in generating growth. According to IMF outlook, after getting out of imposed economic measures, Iran's economy was expected to grow at an annual average rate of 4,6 % in 2016-2018. Latest data available for the first half of the Iranian calendar year 2016 (ending on 20 March 2017) suggest that the Iranian economy grew at an accelerated pace of 9,2 %. Over the medium-term investment was supposed to likely play a much larger role in generating growth on the assumption. Meanwhile, inflation was expected to ease to 8,6% in 2016. The fiscal balance was projected to improve to -0,4 % of GDP, as a result of an expected surge in the volume of oil exports and a parallel increase in non-oil revenues.

7 Political Effect

In 2005, the reformists lost electoral support and in the same year ultra-conservative Mahmoud Ahmadinejad was elected for president. Calls for social justice and return to the idealized revolutionary period have begun.

Ahmadinejad's election has again raised tensions between Iran and the United States, especially in connection with the Iranian nuclear program. The crisis in the relationship is also reflected in the fact that Iran has taken away 85 % of its dollar reserves exchanged for the euro over the last few years. It has helped to destabilize the dollar's position in global trade and it inspires similar economies in different parts of the world which would have devastate consequently the US economy. In the second half of 2007 people's satisfaction with the regime has been steadily declining, and although many people still believed in the Islamic Revolution, they were deeply disappointed in practice. (Holliday, 2011)

Despite strong anti-Western propaganda, the overwhelming majority of the population looked to the West for a democratic change because of their living standard's declining tendency.

In this situation, the regime has raised pressure through the moral police for example on women's clothing, and has used repression and violence against dissatisfied people, such as on May 1, 2007 when a massive anti-regime demonstration in Tehran occurred. (Brumberg & Farhi, 2016).

The calling for change has become stronger. In the presidential election on June 12, 2009, moderate Iranian politician Hosejn Musavi has received 33.75% of votes against 62.6% of Ahmadinejad, according to official results announced. After the announcement of results, massive unrest broke out. More than 100 pro-reform politicians were arrested, and on Monday, 15 June 2009, at least 8 people were killed in the turmoil in Tehran. According to unconfirmed data, Ahmadinejad ended in the elections as the third and the elections won Mir-Hossien Mousavi.

Subsequently, the situation in the country was complicated, protests has continued one month after the elections. As mentioned, the hunger for change has attired to the politics moderate cleric Hassan Rouhani. He led the Iranian nuclear negotiation team and was the chief negotiator with the European Union states - the United Kingdom, France and Germany - about the Iranian nuclear program. He was advisor to President Muhammad Khathami and criticized former President Mahmoud Ahmadinejad for the poor foreign policy and economic situation in the country. On May 7, 2013, he joined the presidential election. He said he would draft a "charter of civil rights" in the event of an election, restore the economy and improve wildlife with the West. In the June 14, 2013, he won 50,68 % of votes and won the first round, which was attended by 72 % of voters. Already the census of electoral votes has gained a big lead. His opponent, Tehran Mayor Mohammad Bagher Ghalibaf, gained 17 %. June 15 was declared the winner. The President's Office took over on August 3, 2013. In the 19 May 2017 elections, the presidential mandate was defended for a further four-year term, winning 58% of the votes in the first round. (Tamandofar, 2015)

When the sanctions on Iran have been lifted after it agreed to roll back the scope of its nuclear activities, the headline of the most known newspaper proclaimed, that a major crisis had been resolved. However, it was resolved for the time being. Experts of the situation also point out that Rouhani's success depend on the will of the supreme spiritual leader of the country, Ayatollah Ali Khamenei. Rouhani cannot make any major move that would be against the mind of the Ayatollah.

8 Conclusion

In relation to nuclear programme, Iran has been subjected to four rounds of United Nations Security Council sanctions which were joint by European Union, United States of America, Canada, and others. In spite of this, it has continued its uranium enrichment operations and it involved growing pressure.

After almost ten years of sanctions working, the Islamic Republic of Iran signed the Joint Comprehensive Plan of Action targeting its nuclear program for non-peaceful use. It is assumed, that economic sanctions had supported the decision which was adopted in 2006. According to the most common macro-economic indexes, the Iranian economy was wounded in less than thought. Mainly in long-term context, thru export channel, as it was demonstrated in figures above. It was also the price of crude oil on international market which has exhausted Iranian economy and it helped to achieve set target in this manner.

The purpose of economic sanctions is first of all to signal disapproval to certain policy, eventually to force the targeted subject to reverse its action. Measures imposed on Iran have provoked, at least, people's call for political change. The nuclear program agreement was accepted. The elected leader, president Rouhani, represents moderate politics, but many measure imposed over ballistic missile program remains. The fragile equilibrium in the Middle East depends on armament circle, when one country refuse to get rid of its arsenal because it has not any certainty that it would stop others to attack it.

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HUMAN CAPITAL AS PHANTOM ASSET OF HIGH-GROWTH TECHNOLOGY COMPANIES

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Abstract

Investments into young high growth companies are despite analytical scrutiny likened to purchasing lottery tickets. Lack of reliable fundamentals results in investors responding to market hype created by issuing investment banks rather than valuation reasoning.

Following up on the author's work on pitfalls related to technology start up valuation, this paper focuses on human capital as an important class of „phantom assets“ – unrecognizable assets that yet have significant value in perception of investors or acquirers and thus explain attributable part of market pricing.

A liability related to HC is often recognized – employee stock option pool, repurchased shares to be distributed to employees, etc., with no mirroring asset. Such recognized liability would then explain value of unrecognized asset, the human capital. This paper aims at identifying easily understandable measures that can be used to assess contribution of human capital to company value, review adequacy of employee compensation schemes and to allow for inter-company comparison. Those are above mentioned liabilities to employees, option plans, insurance contracts, non-compete agreements and other.

Keywords

High growth company valuation, Human capital, Phantom assets.

JEL classification

G32, M40.

1 Introduction

“Valuing firms even in the best of conditions is a difficult exercise. But valuing firms in the internet business is extremely difficult” (Gupta & Chevalier, 2002). Absence of flawless numerical techniques creates space for behavioural influence, fashion and hype that can lead to periods of significant mispricing, with the gravest known as the dot-com bubble. Online businesses are typical representative of technology companies.

Ofek and Richardson (2001) show that Internet firms valuation was roughly 35 revenue multiple at the end of 1999, which implied 605 P/E ratio, had the companies achieved industry average net income margins. .com hey-days are over, yet recent both primary and secondary market movements show that the taste of the investment universe is very favourable towards technology companies.

Technology company is very often an innovative start-up, which makes its valuation a very complex task due to inapplicability of some standard methods. Many such companies are subject to valuation while recording high growth but still negative earnings. The term “high growth” was first defined by David Birch (1979) as an annual growth higher than 20% p.a. in three consecutive years. Despite dramatic changes in market layout and further deepening in globalization, this definition is still applied by OECD. Due to difficult exercise of some of standard valuation techniques, market value of such companies is often more sensitive to savvy marketing tools employed by venture capitalists and underwriters who manage to create investor demand and boost valuation. Such trend is identifiable on cases of high-valued IPOs that tend to underperform in the long-run as valuation premia converge towards peer levels. Due to higher levels of uncertainty and overconfidence, IPOs with negative income seem to be different and more exposed to marketing hype than other IPOs (Zörgiebel, 2016).

Both scientific and professional papers mention the importance of discounted cashflow, relative and asset based methodology when valuing companies. (Vydržel, Soukupová, 2012, Zwilling, 2016,

Damodaran, 2009). The techniques have their flaws, and these are even more perspicuous in case of young start-up companies that moreover generate value from internally generated intellectual capital, which means knowledge that is of value to an organization, not necessarily carried on company balance sheet (Bassi, 1997). Very important part of company value is comprised of value of unrecognizable human capital, dwarfing explanatory power of asset based approach in particular.

Although innovative often means specific, not more than inevitable degree of subjective judgement is desirable and diligent valuation must always be performed. Human capital is known to be important value contributor and thus valuable intangible asset, whether it can or cannot be recognized within the financial reporting frame (Marr, Adams, 2004). Expansion of traditional financial reporting standards seems not to overcome problems arising from their fundamental criterions (Ijiri, 1965).

Despite its unrecognizability, it is commonly understood that human capital generates crucial part of company value. Managerial accounting is primarily a tool for internal management of the company and allows for value recognition for management purposes. Not bound by financial reporting standards, well-kept records identify and track elements considered to be crucial for commercial success, the value drivers and bearers, whichever form they should have. This paper discusses current practices of both financial and managerial accounting that can be used as an underlying for human capital value estimation.

2 Human Capital

There are many approaches to identification of substance and impact of human capital. Unlike specific and heterogeneous asset, it is abstract, aggregated and homogenous in its character (Dobija and Dobija, 2003). It is self-generating, expandable, shareable and transportable (Crawford (1991). It is often viewed as a labour force related to economic added value that is generated by interaction of human capital and other production factors. (Harpan, Draghini, 2014). Another approach emphasises knowledge and skills (wisdom, expertise, competencies) resulting from education, compulsory, general or vocational (Alan, Altman & Roussel, 2008). Researchers oriented on production aspects of human capital like Frank (2014) perceive human capital as *an amalgam of factors such as education, experience, training, intelligence, energy, work habits, trustworthiness, and initiative that affect the value of a worker's marginal product*. Sheffrin (2003) adds that human capital is *the stock of skills and knowledge embodied in the ability to perform labour so as to produce economic value*. The impact of human capital enhancement is material on several levels. Increased productivity increases individual income and enables individual worker to progress within organizational structure. The organization reaps benefits from increasing collective expertise and developing organizational culture. Aspects benefiting whole society are among other higher tendency to cherish democracy, human rights, political stability and consistency with a community (Kwon, 2009). Individuals representing higher volume of human capital also have more sense for social responsibility (Koziol, 2017).

It is commonly understood that quality of human capital explains part of market value of companies (Gamerslag, 2013). This paper will focus on human capital as crucial part of value of companies that have core value within technology advantage over competition. The advantage as such has immaterial substance, and also when seen as an asset, it would be classified as intangible. Valuation models suggest that earnings persistence is determined, in part, by an entity's going-concern status. Companies therefore need to maintain such technology advantage, which should prevent market position and arising economic benefits to diminish in the foreseen future, as analyses predict inverse relation between earnings informativeness and an entity's probability of termination (Subramanyam, John, 1996). Given abrupt development of technologies in general, each technology is in permanent risk of getting obsolete and replaceable. If a company is valued as a leader of its

segment, it needs to maintain that position which makes continuous development an inevitable foundation of applicability of *going concern* principle. Already possessed technology, expressed as an asset on balance sheet in form of a software or sophisticated tangible asset describes current situation, but does not guarantee preservation of current position. It is the role of human capital, e.g. software developers, to secure the advantage for the future. Part of the core of future benefits is thus clearly attributable to human capital. However, value of human capital can hardly be reported to any, let alone full extent on the company financial reports. The author believes that technology advantage is a favourable outcome of synergy of several drivers and circumstances.

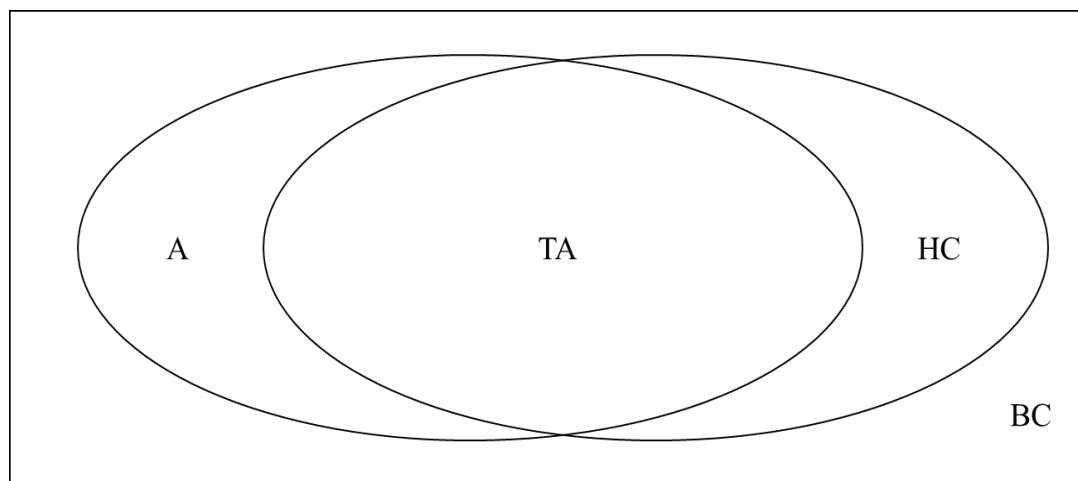


Fig. 1. Technology advantage (Source: Authorial)

The existence or generation of technology advantage can then be described as follows.

$$TA = A \cap HC \cap BC \quad (1)$$

Where

A	Tangible and intangible assets, recognized or unrecognized in form of hardware, software, etc.
HC	Human capital
TA	Technology advantage
BC	Overall business conditions, commercial relationships, sufficient level of fixed capital, high quality third party services, condition of overall economy

Favourable overall economic condition and sound business organization, like well-established selling channels, marketing, savvy financial management etc. are also a must-have to prove materiality of technology advantage. The diagram and equation show that technology advantage can be created and maintained only in case when already existing tangible and intangible assets generating value are operated by qualified personnel, that can not only use current state of art to maximize economic benefits, but can at the same time contribute to continuous upgrading of technology to ensure the going concern perspective. This paper will therefore consider human capital to be indivisible part of technology advantage. Following up on the author's work focused mostly on software as an internally generated asset, part of the paper will look on human capital as an internally generated asset and when appropriate, liken human capital to other, more typical internally generated asset from measurement perspective.

2.1 Human capital as a valuable but unrecognizable internally generated asset

Although accounting standards were amended several times to better reflect value of intangibles in the books, true value of intangibles is scarcely recognized. Innovative and technology advanced means powered by intellectual capital. Intellectual capital driven proportion of company value has significantly increased in last decades all over the market. Analysis performed by Cardoza et al. (2006) showed material rise in intangible book value to total book value among S&P index from 1.9% in 1975 to 43.2% in 2005. At the same time, intangible value to market capitalization rose from 16.8 % to 79.7%. Sector analysis shows that Consumer staples, Consumer discretionary and Information Technology rank in top 5 intangible value driven sectors with 94%, 88% and 82% respectively. It is reasonable to assume that even higher proportion of value of company with no profit, no stable customer base and no tangibles will be attributable to intellectual capital. Intellectual capital is a convergence of human capital. (Pedrini, 2007).

Despite the line between human capital and internally generated intangible assets being blurred from the perspective of technology advantage contribution, recognizability and treatment under accounting frameworks differ significantly.

Human capital within a company can be seen as a joint overall capability of several individuals leveraged by employed technologies and synergy of collaboration. These individuals already had some skills, capabilities and talents when they joined the company. Gaining experience inside the company, being mentored by older more experienced workers paid by the company, can be seen as an investment of the company into the capabilities of the employees both from the team and individual perspective. The contribution of the company, the internally generated part of value attributable to human capital, can be calculated as follows.

$$HC_{int} = HC - \sum HC_{ind} \quad (2)$$

Where

HC _{int}	Part of total human capital generated internally by the company
HC	Total human capital within the company
HC _{Ind}	Sum of individual capabilities of all individuals considered to be composing human capital

Internally generated intangibles often fail to meet the characteristics of an intangible asset, i.e. identifiability, control over a resource and existence of future economic benefits. If a cost expensed or a liability incurred cannot be allocated to an intangible asset, it must be recognized as an expense.

To simplify the recognition assessment, the standards require entities to classify their research, development, and other internal asset generation processes as either research phase, or development phase.

Activities included in the research phase include obtaining new knowledge, search for alternative technologies, materials, or redesigning. No intangible asset ever arises from the research phase of a project, since future generation of economic benefit remains uncertain. All costs incurred shall be expensed immediately.

The development activities are further advanced; therefore entities can sometimes identify an intangible asset, if they succeed to demonstrate the future flow of economic benefit attributable to this asset. Activities involved in the development phase typically are design, construction and testing of prototypes, operation of a pilot plant that cannot yet be operated on commercial basis. The design of the final products for sale is also development activity, as well as the implementation of researched advanced technology. One can say that general scientific research is never considered to be an asset, whilst implementation of a technology obtained by that research can be identified as an

asset if further conditions are met. From this perspective, investing into human capital has characteristic of research activities.

An asset can be recognized only if the entity is able to demonstrate the future economic benefit of the asset, which includes the feasibility of completing the asset so that it will be available for sale or operation, and also intention and capability of the entity of using or selling the asset. That means that the entity must prove that there is a relevant market for the output of the asset or the asset itself, or demonstrate the value created by the internal use of the asset by the company. The condition of ability to reliably measure related costs must be met as well, since intangible asset shall be recognized – initially measured – at cost. To measure the costs, the entity will most likely allocate costs incurred, such as salaries and programming licenses, if talking about software development. Although the word “selling” sounds disturbing in case of an asset in form of human capital, the link between qualification of consultants and their hourly rate is pretty straightforward.

Moreover, recognition and treatment of internally generated intangible assets is subject to different accounting frameworks. The standards set by IFRS were designed to enforce standardized accounting system comprehensive worldwide, whilst bot US GAAP and CAS are national regulations. ASC 350 Intangibles – Goodwill and Other, ASC 805 Business Combinations and ASC 730 Research and Development specify accounting for intangibles under US GAAP, whilst there is no separate category for intangible assets under CAS.

Let us summarize the main differences in recognition and treatment of internally generated intangible assets under the three examined frameworks.

Table 1. Recognition and treatment of intangible assets

	IFRS	US GAAP	CAS
Intangible Assets	Identifiable non-monetary assets without physical substance that are under control of the entity and promise future flow of economic benefits with reliably measurable costs.	Assets without physical substance separable from goodwill which promise future flow of economic benefits.	List of items Useful life longer than 1 year, carrying value higher than a limit set by the accounting unit.
R&D	Research – conducted to obtain general knowledge. (uncertain benefits) Development – implementing the results or research (probable benefits)	Research – conducted to obtain general knowledge. (uncertain benefits) Development – implementing the results or research (probable benefits)	Results of internal research and development held for sale or obtained as a result of a legal action.
Activation	Conditional	Not permitted (exc. Software with certain economic feasibility)	If held for sale or obtained as a result of legal action
Measurement	Purchase price, fair value, reported using cost model or revaluation model. Amortized on systemic basis. Tested for impairment.	Purchase price, fair value, reported using cost model only. Amortized on systemic basis. Tested for impairment.	Purchase price, reproduction price, internal costs, revaluation permitted. Amortized on systemic basis. Testing for impairment not specified.

Source: Authorial.

Given the individual freedom to quit job any time, human capital fails to meet the very basic definition of an asset in context of accounting standards and financial reporting. Debate over impairment testing or activation would thus be redundant.

Human capital is one of the assets that will never be reported on a company's balance sheet, despite its unquestionable contribution to the value of the company, just like other unrecognizable value generators, such as consumer awareness, reputation, etc. This part of company value that cannot be allocated to any reported assets will be reported as goodwill on the post-acquisition balance sheet, but will never be reported until acquisition occurs.

It is desirable to mention, that total book value of intangibles in case of start-up companies will be significantly lower irrespective of accounting standards. Obtaining intellectual capital based on legal act (acquisition) would be sufficient condition of asset recognition, however, young start-up companies usually generate their intellectual capital internally. Moreover, cost based approach does not capture the true value of intellectual capital either, since the innovative potential gives labour and other input factors extreme value creating leverage.

2.2 Phantomizing human capital

All value generators must be carefully managed in order to maximize value of a company, regardless their recognizability on the balance sheet. Managerial accounting, which is primarily a tool for company management and is not bound by any regulations, allows for creation of phantom assets – parts of company value that do not meet conditions of asset recognition and are thus not reported on a company balance sheet. Creation of phantom asset in managerial balance sheet must always be mirrored in managerial profit and loss statement. Shall a company find it appropriate to classify part of software code as a phantom asset, it would also capitalize all costs linked with its creation in managerial P&L. Such practice requires precise evidence of reconciliation accounts that must explain each and every disparity between financial and managerial statements. It is important to emphasise, that tax authorities take into account only official financial statements.

Let us say that the company needs to pay 1300 monetary units for work of its employees, for renting servers and for data acquisition, which are all typical software development cost categories. Let us also say, that the increment of the software does not meet requirements of asset recognition. Financial accounting would report the above in following manner.

			<table><tr><td colspan="2">Asset - Cash</td></tr><tr><td></td><td>1300</td></tr></table>	Asset - Cash			1300												
Asset - Cash																			
	1300																		
			or																
<table><tr><td colspan="2">Cost - Personnel cost</td></tr><tr><td>1000</td><td></td></tr></table>	Cost - Personnel cost		1000		<table><tr><td colspan="2">Cost - Computing power rent</td></tr><tr><td>200</td><td></td></tr></table>	Cost - Computing power rent		200		<table><tr><td colspan="2">Cost - Data Acquiring</td></tr><tr><td>100</td><td></td></tr></table>	Cost - Data Acquiring		100		<table><tr><td colspan="2">Liability - AP</td></tr><tr><td></td><td>1300</td></tr></table>	Liability - AP			1300
Cost - Personnel cost																			
1000																			
Cost - Computing power rent																			
200																			
Cost - Data Acquiring																			
100																			
Liability - AP																			
	1300																		

Fig. 2. Accounting under financial reporting standard (Source: Authorial)

Managerial balance sheet could show this software increment as a phantom asset, should the managers be convinced that such report would be best description of business reality.

	<table><tr><td>Asset - Cash</td><td></td></tr><tr><td></td><td>1300</td></tr></table>	Asset - Cash			1300
Asset - Cash					
	1300				
<table><tr><td>Asset - Software</td><td></td></tr><tr><td>1300</td><td></td></tr></table>	Asset - Software		1300		or
Asset - Software					
1300					
	<table><tr><td>Liability - AP</td><td></td></tr><tr><td></td><td>1300</td></tr></table>	Liability - AP			1300
Liability - AP					
	1300				

Fig. 3. Managerial accounting - recognition of phantom asset (Source: Authorial)

Phantom statements respect same principles as standardized financial statements. Operation on asset side of phantom balance sheet can be mirrored not only in phantom profit and loss statement, but also by recognition of corresponding phantom liability. Since financial reporting standards respect precautionary principle and tend to rather prefer to cause company undervaluation rather than provide too optimistic view, it is difficult to recognize assets and mandatory to recognize liabilities that have similar characteristics, such as probability of occurrence of respective inflow or outflow of economic benefits. The creation of phantom liabilities is therefore motivated not only by unrecognizability of these liabilities, but rather by aim at avoidance of unfortunate consequences of such liability recognition on official statement. Typical demonstration of the latter is company obligation to pay out deferred cash compensation to employees, often in form of Employee Stock Option Plans.

The options are either usual options, or phantom options, which means, that physical delivery of security is not allowed and the obligation will be settled in cash. However, both usual and phantom options settlements are treated like deferred cash compensation and therefore trigger tax liabilities for both the option holder (employee) and option writer (employer). Many European jurisdictions treat option granting as an expense on the side of the writer (employer) which lowers its tax base for income tax computation purposes, but creates liabilities towards public bodies managing health and social security. Usually, the overall tax effect is unfavourable to the writer. Moreover, when the option already has positive value (fair value of underlying security demonstrably higher than strike price), the employee is required to treat the value of obtained options as personal income, which triggers individual tax liability, usually including social and health security contributions. Given non-cash nature of options, being granted an option might result in significant cash outlay. Companies therefore currently tend to establish “truly phantomized” employee stock option plans, which are not recognized on balance sheet reported to tax authorities. Needless to say, that such practice is on the edge of tax evasion. However, such plans would then be reported only on managerial balance sheet and would be able to capture any detail or specific characteristic of the contract between the company and the employee, which might not be possible should financial reporting standards apply. This is appreciated in case of technology companies that are very often young start-ups with low number of employees allowing for very individualistic approach to employee compensation.

Flexibility of managerial accounting allows for subjective judgement, but enables much more accurate description of reality. Provided that the managerial accountant is an unbiased professional, phantomizing assets and liabilities is in perfect correspondence with substance over form principle and should thus be source of inspiration for further adjustments of current financial reporting standards.

3 Measurement

Standard methods of human capital measurement can be categorized into three basic types as suggested by Kwon (2009). Due to nature and purpose of this paper, only measurement expressed in monetary units will be considered. Human capital stock expressed by index is more appropriate for papers with macroeconomic focus, let alone pitfalls of wages used to construct the index (Slaper and Hall, 2011).

There are several quantifiables that can be used to derive value or amount of human capital. Human resources' productivity in the workplace (Lucas, 1988), (Rosen, 1999) and corresponding, organization/company/firm's productivity, and national economy, compensated by growth of an individual wage (Shultz, 1961), (Ferreira & Hamilton, 2010). This paper treats human capital as part

of company value, let us thus look at the problem from company perspective. The author suggests that human capital can be measured by slight adjustments made to customary methods of valuing more typical classes of assets and that the value of human capital can be derived from tools commonly used in corporate finance and human resources management.

3.1 Cost base of internally generated asset

Total human capital in context of a capability base promising future economic benefits is a value generating asset. Provided a premise, that one individual without any fixed capital or organizational and other background would not be able to generate same amount of future benefits, at least part of this overall human capital should be treated as internally generated. If a wage of a worker is a compensation for his current output delivered to his employer, then any other costs related to his qualification etc. can be seen as an investment into company human capital. Let us also assume, that the whole organization benefits from improvement of qualification on individual level, and that there is a continuity, as the organization itself is able to preserve “best practices” used by individuals. Based on these premises it reasonable to say, that human capital of a company is not only determined by currently employed individuals and past investments into them, but also by investments into individuals that have already quitted their jobs or retired. Let us consider human capital to be a time floating value. Therefore, let us value human capital at cost base taking into account all past investment discounted for time depreciation coefficient, which should capture the fact, that human capital must be invested into continuously to preserve the position on the market.

$$HC = \sum_{n=0}^n INV_{t-n} * (1 - df)^n * (1 + i)^n \quad (3)$$

Where

HC	Human capital
INV _{t-n}	Investment into human capital n years ago
Df	Discount factor to account for knowledge obsolescence
i	n years average escont rate to account for time value of money

Value of discount factor reflects the dynamics of technology advancement in the field of operation. High factor will be used in industries known for very fast technology development, such as ICT, biotechnologies, nano technologies etc. These industries also have larger part of value explained by intangible assets, as stated in part 2.1 of this paper. Thus, the more important is the innovation capacity of the company for its long-term success, the higher will be the discount factor applied.

Attention must be paid to social and political context when measuring the HC, especially in order to manage it for economic performance maximization (Ashton, Green, 1996). But if measured at cost, the amount will fail to capture that part of the value, that the individuals brought with them and that the company did not contribute to, such as education, sense of responsibility, etc. Measuring at cost allows for peer comparison only in case of companies operating in the same socio-economic environment.

3.2 Reflection of employer's liabilities

Employee stock option plans as well as pension plans can be interpreted as a liability corresponding to human capital as an asset. Provided that the company management is sound enough not to overvalue its stock of human capital, true value of that human capital should be higher than or equal to recognized liability. The amount of liability can thus be interpreted as a bottom line of interval where value of human stock lies.

3.2.1. Pension plans

There are two basic types of pension plans, defined benefit and defined contribution plan. The two differ especially in risk transfer, since in case of defined benefit, the risk is borne by the grantor, whilst in case of defined contribution plan, the risk is borne by the recipients.

Accounting for defined benefit pension liability requires the company to make actuarial assumptions. Future benefits must be estimated and then discounted to present value. There are several assumptions that need to be made, including life expectancy after retirement. Let us present a formula for computing amount of liability used in one existing company.

$$PVL = EFS * Bcoef * Y * \frac{1 - (1 + DR)^{-LE}}{DR} \quad (4)$$

Source: Confidential

Where

PVL	Present value of liability
EFS	Expected final salary
Bcoef	Benefit coefficient
Y	Years of service in the company
DR	Discount rate
LE	Life expectancy

The equation shows that the benefit is computed as a present value of annuity, where the annuity is derived from final salary before retirement and takes into account length of service in the company. Benefit coefficient allows for adjustments with regard to job title, participation on successful projects, etc.

Liability arising from defined contribution pension plan is reported as present value of plan assets. Amount of contribution at a point of time is calculated in similar manner as in case of defined benefit plans.

3.2.2. Employee stock option plans

Employee stock option plans are typically used by large multinational companies listed on stock exchange. Therefore, accounting for ESOPs is fully standardized. Share based compensation packages are reported as an expense using fair value. The same mechanism could be used for creation of phantom liability. Key inputs of option pricing models include exercise price, stock price volatility, estimated life, estimated number of options to be forfeited, dividend yield and risk-free interest rate. Only some inputs, such as the exercise price, are known at the time of the grant.

Start-ups are usually not in condition that would allow for establishing traditional option plan. The company needs to attract the best talents, but at the same time has only limited cash resources. Profit sharing might also not solve the problem, since successful start-ups often record periods of growth so abrupt, that despite generating value loss or only immaterial positive after-tax earnings are achieved. From the investors perspective, start-ups are pure growth investment and they are not even expected to deliver immediate profits. The benefits that the investors want to reap are sale of part or all of the shareholding in typically 3-5 years horizon. Since one of ESOP aims is to align the interests of company employees with those of the owners, deriving the deferred compensation from company value in 3-5 years horizon best serves the purpose. The owners also want to limit ability of option holders to discretionarily execute these options for two reasons. First, it is difficult and potentially disputable to set the settlement value of a company that is not publicly traded, and second, execution of options might mean cash outflow regardless whether the company has already

generated positive cashflow in the past. Most current trends therefore try to find way of creating a phantom option plan, that would deliver benefits only in case of some predefined event, such as sale of major part of shareholding or initial public offering and that at the same time would not trigger any tax liabilities at the moment of granting. Companies can establish a cooperative or other type of legal entity that is not owned by the company, but by its employees, who would be otherwise granted options. This entity is then part of any acquisition of the company secured via tag along right or similar contractual provision with predefined mechanism for valuation. This valuation of ESOP body will be always derived from company value, which will be clearly identifiable due to the ongoing acquisition.

Valuation of such option plan prior to acquisition would require diligent valuation of the company itself as the explanatory variable. Respecting the principle of effectiveness, companies do not value themselves in order to value this liability, since this information is not crucial for company management. The liability revaluation is event-based, performed when there is a third party indication of plausible company value, like binding offer from potential buyer or transaction including comparable company.

If human capital should be internally reported as a share of future value of a company, then a mirroring effect of comparison with ESOP is extremely efficient, since the value of liabilities towards employees is derived exactly from company value at a point of time. Amount of human capital to be reported internally would then be given by following function.

$$HC = LtE \quad (5)$$

$$HC = (CV - SP) * \frac{No.O}{100 + No.O} \quad (6)$$

Where

HC	Human Capital
LtE	Liability to Employees
CV	Company Value
No.O	Number of options in % of company stock
SP	Strike price (for 100% of the company)

Phantom option plans are similar to issuing new stock and eventually have dilutive effect on benefits of the shareholders, but do not influence voting rights. Let us show possible settlement on numerical example. It is important to emphasise, that each company can develop its own formula for computing deferred compensation for employees.

Table 2. Phantom liability to employees

Indicated company value	100 000 000
Phantom options granted	5 %
Strike price	50 000 000
Liability to employees	$LtE = (100000000 - 500000000) * \frac{5}{105} = 2380952$

Source: Authorial.

3.2.3. Individual approach

Human capital can be estimated with very reasonable degree of certainty in rare cases of extraordinarily qualified individuals. Top managers do often have a non-compete agreement, that can be bought out, which means, that should any company want to take the manager on board, it

would have to pay his or her former employer high compensation. This amount can be used as a proxy for value of the manager. Very similar principle applies when a club wants to transfer a sport star that yet has valid contract with different employer.

There is also evidence of understandable, yet sometimes a bit bizarre valuation of human capital with regard to insurance of body parts of sport stars and celebrities. Famous goalkeepers Manuel Neuer and Iker Casillas have their hands insured, F1 pilot Fernando Alonso has insurance on his thumbs (tremendous importance due to F1 controls). Top footballers David Beckham, Cristiano Ronaldo and Lionel Messi all insured their legs. Some singers have insurance on their voice, some on different assets, like bottom parts of Jennifer Lopez or Kylie Minogue. However unusual, all these moves are economically rational, since losing or damaging insured value generators would lead to extreme plummet of expected future economic benefits.

However, any of the above is very hard to adjust and generalize for standard human capital valuation purposes. First, mechanism of insurance computation is a non-public information and business know-how of insurance companies. Moreover, the cases described above refer to professionals who are unquestionably world top 50 in their respective fields. Same amount of time and diligence cannot be expected to be committed to value human capital in general.

4 Conclusion

True value of young, high growth technology companies can hardly be derived from usually available financial data and statements. The companies are often recording operating losses, which impedes applicability of valuation based on peer comparison and market multiples. Intellectual capital that generates company value does not meet requirements for asset recognition under any common accounting standards and thus asset based approach is hardly satisfactory valuation technique. Applicability of DCF method is usually jeopardized by the nature of companies under examination, such as already mentioned negative earnings, low asset base, dependence on private equity, illiquidity and risky environment.

Managerial accounting must be paid special attention to when assessing the value of a young high growth online company powered by intellectual capital. Bounded rather by best practices rather than rigid standards, well-kept managerial accounting provides much more precise hands-on information about the company on the true substance over form principle.

Managerial accounting statements usually recognize phantom assets to account for value internally created by the company that does not meet requirements for asset recognition under employed accounting framework. Accompanied by respective reconciliation accounts, managerial statements provide users of information with more precise description of business condition, also allowing for peer to peer comparison despite possible operation under different accounting frameworks. Managerial accounting statements typically report higher amount of assets and higher EBITDA in comparison with financial statements. Approach based on sum of recognized and phantom assets could then be introduced into the valuation matrix.

Human capital is very special category of value generators, which will never be owned by the company and thus will never appear on financial accounting statements. Research shows that importance of intangible assets in technology company valuation continuously grows, even though there are internally generated assets that cannot be recognized on official statements, among other unrecognized software, output of research etc. Managers account for phantom assets, value generators the company controls but which fail to meet the requirements of asset recognition. This includes phantom accounting for human capital.

Cost based approach needs to take into account all past investments into workforce in excess of compensation for current labour output (wage), since we believe that human capital is time floating value that derives part of its current value from skill culture created throughout whole company

history. At the same time, human capital is crucial for future performance of technology companies due to extremely fast development in the field – today’s top technology will be obsolete and maybe worthless in a year if not continuously upgraded by skilled labour force. Obligations arising from defined contribution and defined benefit pension plans can be seen as present value of future investment into current workforce and thus should be taking into account when expressing value of human capital. Human capital value can be also captured by looking onto deferred cash compensation of employees derived from company value as an underlying asset. This approach perfectly respects the relation between human capital quality and company value. However, due to flexibility of managerial accounting, subjective judgement has material impact and premise of sound management of human resources must be met for peer comparison. Extremely valuable composites of human capital, such as world top ranked individuals and even their body parts can be accounted for using amounts of insurance benefit in case of sport starts or celebrities or non-compete agreements in case of top managers, scientists etc. However, such individual approach is impossible to generalize for overall applicability. Because of absence of standardized methods, the user of information needs to be capable of abstraction and imagination to assess value of human capital within a company. Such degree of subjective judgement is hardly desirable.

Some practices employed within managerial accounting might be useful for further discussion on appropriateness of today’s accounting standards especially from the perspective of substance over form principle, which is a topic often addressed in the author’s research. It is yet important to state, that some liabilities to employees are not recognized not because the standards would not allow so, but because of negative tax consequences to both employers and employees.

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WINE AS A PRODUCT ON SLOVAK MARKET

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Abstract

There are more than one million wine makers in the world and Europe, led by France, Italy and Spain, is still the king as the world's biggest wine producer. Wine is a very important product on the market and therefore, each region of wine production in the Slovak republic has its own specifics and each one focuses on the production of the best quality wine. It has its traditional taste, brand and origin. But also the colour of wine can give us some information about quality or age of it. In this article we will deal with the comparison of wine production in the Slovak republic, Europe and in the world. In the paper, we will summarize knowledge and current situation of wine production in the Slovak republic now and in the future.

Keywords

Wine, Wine production, Comparison, Slovak republic, Europe, World.

JEL classification

L11, L17, L66, M31.

1 Introduction

Wine is the oldest drink of humanity whose history dates back to 5000 years before our time. It has gone along with the most important development stages of humanity and the culture of peasants from time immemorial. It has become a symbol of subtilization and worship. The wine cult was highlighted in literary or artistic monuments, as well as during the antique celebrations. Many archaeological findings show that the cultivation of grapes and wine production have been present in the Slovak Republic for more than 2500 years since the time of the Celts and Romans. Grapevine has permanently taken roots not only into the soil, but also in the economic and cultural life of our ancestors (Hronský, 2001).

Wine contains a varied mixture (over 100) of important nutritional and medicinal substances that have a beneficial effect on the human organism and it proves itself as a delicious low-alcoholic drink for thousands of years. It has brought not only comfort and pain relief, but also improved health or full healing. French poet Paul Claudel expressed it concisely: "Wine is a professor of taste, a liberator of spirit and a beam of light." Luis Pasteurs also stated: "Grapes are the best fruits and wine can be considered as the most hygienic and the healthiest drink."

Hronský (2002), defines the oldest documents about grapevine cultivation in Slovakia, known for their archaeological findings and coming from Small Carpathians vineyard regions- from Molpír by Smolenice. They are the proof that viticulture was here before the Roman period. Nowadays wine production is very widespread and popular in our region. Wine consumption is growing from year to year and new and ambitious wineries are still emerging. There are six vineyard regions in Slovakia, especially in the south (Small Carpathian, South-Slovak, Nitra, Central-Slovak, East-Slovak and Tokay). Vineyard region is a coherent, defined territory of vineyard regions with specific (particular) soil-climatic conditions suitable for the cultivation of grapevine.

2 State of agri-food industry in the Slovak Republic

Boros (2003) states that, the most important problem for the Slovak agri-food sector is to maintain its viability under the given macroeconomic conditions and its adaptation to the accession criteria of the European Union. Every year there is an increase in imports of agricultural commodities which we could provide for domestic production. Agri-food sector shares one third on the whole negative balance

Horská (2008) argues that Slovak market with agri-food products was preceded by dynamic changes since the emergence of an independent state and was heavily influenced by the transformation of ownership relations of production base as well as by the entry of significant multinational corporations into the field of food production and commerce.

According to Jamborová (2005) trade in the EU is the most regulated sector. Slovak market opened with full import from abroad. The offer and range of food products of domestic and foreign origin has expanded on our market to a large extent. A big share on it has the entry of multinational trading companies as well. There are still shortcomings in our nutrition, as can be seen from the differences in the amount of consumed food from the recommended dose by professionals. Future development in food consumption depend, among other things, on the economic security of our inhabitants, the development of consumer prices, the offer and availability of products on the market in relation to the distribution network, advertising, promotion, health education, dermatological development and trends in the surrounding countries.

In 2017, the share of domestic food on the counters of Slovak stores continues to stagnate. The representation of agri-food products produced in Slovakia in trade chains reached 36.50 percent. According to the Slovak Agricultural and Food Chamber (SAFC), domestic farmers would be able to produce by themselves about 60 percent of agri-food products imported from abroad (Trend.sk, 2017).

Cultivation of grapevine on the slopes of Small Carpathians from Bratislava to Pezinok and Horné Orešany has nearly 3000 year tradition. Ideal conditions for cultivation in this small-carpathian vineyard region underline clay-sandy, skeleton and light soils, typical for Záhorie region, which easily absorb the sun's heat. An average temperature during the vegetation period is 16.8 degrees of Celsius, thanks to which, the wines of this region are characterized by a decent scent and a full, sour taste. 12 vineyards create this area with the most important producers like, Wine-Masaryk in Skalica, Wine Matyšák and Pavelka & Sobolič in Pezinok, Ladislav Šebo in Šenkvice and Mrva & Stanko from Trnava.

South-Slovak vineyard region is created by eight vineyards that are located on the lowlands of Danubian Plain. Among the six vineyard regions of Slovakia it is the warmest with dry climate and mild winters (Figure 1). Excellent climatic conditions, for the cultivation of grapevine, give it a high sugar content. In this area, the largest quantity of selected wines with the attribute is produced. Soils are clayish, light sandy, medium-heavy and skeletonless. The total area of registered vineyards in ha is shown in Table no. 1, resp. Figure no. 2. The most significant are South-Slovak rulants, tramins and cabernets. The best-known winemakers are Miroslav Petrech (Chatěau Belá) or the Association of Agribusinessmen and the association Dvory nad Žitavou.

In 1135, the first written records of grapevine from the Central-Slovak vineyard region are registered, which is particularly distinctive by the mixture of aromas of grape varieties of Riesling Welsh or Veltliner Green. There are seven vineyard regions (107 vineyard municipalities) in an average altitude of 180 m above sea level in the Central-Slovak region. Typical temperatures for this area are about 16.2 degrees during vegetation. The northern part has harsher and cooler climatic conditions, the southern is warm with mild summers and winters. Soils are nutritious, medium-heavy and heavy. The main cultivated white varieties are: MüllerThurgau, Burgundy white, Riesling rhine and Welsh.

Vineyard region of Nitra can be found on the southern, southwestern and southeast slopes of Tribeč Mountains, which continue through the northern border of Danube Lowland to Považský Inovec. This includes nine vineyard regions and 159 municipalities. Grapevine is grown here to an altitude of 240 m above sea level with a total rainfall average of 333 mm during the vegetation period and provides quality wines with a distinctive character. They provide a wide range of flavour, quiet and sparkling, young or mature, less scented and decently aromatic. The most famous producers are Wine Nitra, Vinanza Vráble and Winery in Topoľčianky.

East-Slovak vineyard region consists of four vineyard regions and 100 vineyard municipalities. Vineyard tracks reach an altitude of 180 m above sea level with heavy clay soils. During vegetation, average temperatures reach 16.6 degrees of Celsius and total rainfall is 373 mm. In particular, the production of fine wines like Burgundy white, Chardonnay and Burgundy blue is the most dominant. However, obsolete technology hampers innovations in wine production, which is a great deal of damage to the potential of this area. Wine-VIN Slovakia is one of the most significant producers in this area.

Tokay vineyard region is one of our warmest climatic regions with volcanic soils with shallow arable land which have been formed on the basis of tuffs and andesites. Favourable geological and climatic conditions (an average air temperature reaches 16.8 degrees of Celsius), predestinating this area to the category of the best quality vineyards in Slovakia. It reaches Slovakia from Hungary and with an area of 907 square meters, it represents not only the smallest vineyard region of Slovakia, but even the smallest in the world. Tokay vineyard hunts can only be used as vineyards and only recognized varieties of wines can be planted: Lipovina, Furmint, Yellow muscat and Zeta. To the most famous producers belong: J&J Ostrožovič, Tokaj Macik Winery, Tokaj & Co., belonging to the Tokay wine association of winemakers and winegrowers of Tokay vineyard region (Hronský, 2001).

According to Taliga (2000), for each area there are typical natural conditions that significantly influence the production of grapes and the quality of wine itself. A negative factor affecting Slovak viniculture is the decline of vineyards, which is causing unfavourable economic results. This process is also conditioned by the unfavourable situation in agriresort as a whole.

The accession of the Slovak Republic into the European Union in 2004 meant a process of deregulation of trade barriers, thanks to which, the cheap, but not high quality foreign wines began to penetrate to the Slovak market. Domestic producers are not able to compete with the price, therefore they focus on more expensive and better quality products. At present, it is possible to follow innovative tendencies of the Slovak viniculture, by the use of new technologies, as well as the measures and regulations of the European Union. Our winemakers concentrate mainly on the production of quality wines that underline the typical features and specifics of the concrete vineyard region.

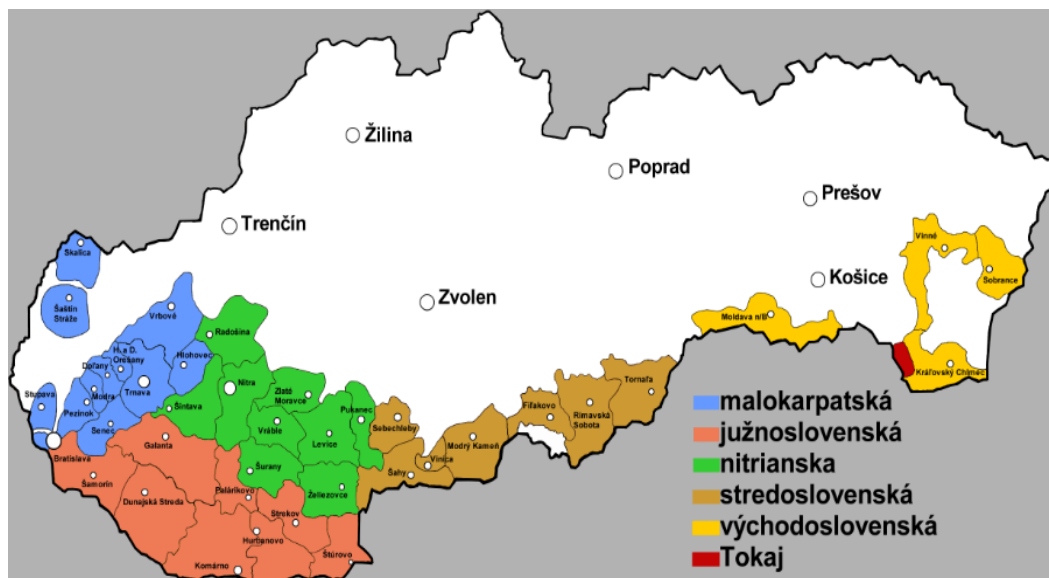


Fig. 1. Map of vineyard regions in Slovakia in 2016 (Source: Central, control and testing institute of agriculture (CCTIA))

Table 1. Areas of registered vineyards according to vineyard regions to 31.12.2016 (ha)

Vineyard region	Area (ha)	Share (%)
Small Carpathian	5 004	28.4
South-Slovak	5 031	28.6
Nitra region	3 182	18.1
Central-Slovak	2 163	12.3
East-Slovak	1 132	6.4
Tokay	1 086	6.2
SR total	17 598	100.0

Source: CCTIA

3 Current state of the wine market in Europe, Slovakia and in the world

The basic concept of viniculture is regulated by Act No. 313/2009 Coll. as a summary of the activities for the cultivation of grapevine, for the cultivation of grapevine rootstock, the production of the scraps of grapevine rootstock, the scions, the grapevine seedlings, the planting and treatment of vineyard areas, as well as the grape harvesting. The definition of viniculture analyzes the summary of activities aimed at processing of grapes to wine, its treatment, working with it and placing it on the market. Viniculture is the oldest specialized branch of agriculture, it deals with grapevine cultivation and grape processing (National Council of the SR, 2009).

3.1 Situation in Europe

Grapevine is cultivated on 8.2 million hectares in 50 countries on both hemispheres of the Earth and around 60 million tonnes of grapes is processed. Europe has the largest vineyards in the world, about 7.76 million hectares, which is about 75-80% of the world's total area of vineyards. "There are currently 3.75 million hectares of vineyards in the EU and almost 80 percent specializes in quality wine. In 2015, 2.4 million farms in the European Union (EU) have cultivated 3.2 million hectares (ha) of vineyards. An average area per enterprise is 1.3 ha, but it is different in each member state. 2.5 mil. hectares (78%) of it cover vineyards intended for the production of grapes from which quality wine is produced. Quality wine is covered by the protected designation of origin

(2.1 million hectares or 83% of the total area of vineyards in the EU) and the protected geographical indication (0.4 million hectares or 17%). Eurostat has the latest results of the survey about the structure of vineyards. Every five years the survey explores the market with grape and wine products and production potential of the EU's vineyards (Eurostat, 2017).

„The largest wine consumption, up to 80% of the world total production is in Europe, with 60% of the European Union. About 80% of the world wine consumption is produced by European wineries. Approximately 92% of the EU wine is produced by five countries: France, Italy, Spain, Germany and Portugal. New member states: the Czech republic, Slovakia, Slovenia, Hungary and Cyprus produce less than 4% of EU wine. Europe has a special position in winery world not only because it is the main wine producer and exporter, but also by the fact that most of the most spread grape varieties come from Europe and produce the largest assortment of wine varieties. European wine is produced under stricter phenological rules than generally valid rules in the world.“ (Belan, R., Belan, M., 2016)

International Organization for grapevine and wine (OIV) estimates the wine production in 2017 at 259 million hectoliters, that is a decrease of 5% compared to 2016. Wine production in 2017 is the lowest in the last 20 years. Italy (48.8 million hectoliters) confirms the status of a leading world wine producer, followed by France (41.9 million hectoliters) and Spain (37.8 million hectoliters). After two years of non-crop, Romania returned to a good level of wine production (4.8 million hectoliters). It is probable that global wine production, with the exception of juices and musts, will reach 259.5 million hectoliters, representing 5% decrease compared to 2016. According to preliminary OIV estimations, it ranks between the weakest three years since 2000. In the European Union (EU) countries, wine production is estimated at 158.5 million hectoliters in 2017 (with the exception of grape juice and must), that is a significant decrease of 7.7 million hectoliters compared to 2016 (166.2 million hectoliters). Italy recorded 2% reduction in production (48.8 million hectoliters) and France recorded the largest decrease of 12% (42.2 million hectoliters). Only Spain has a slight increase of + 1% compared to 2016. Production of wine in Germany and Portugal is decreasing by 5.6 million hectoliters (- 4% and - 20%) in line with this decreasing trend. In Romania (4.8 million hectoliters) and Greece (2.6 million hectoliters), production increased (+ 37% and + 2%). In Bulgaria, the production level is in line with the potential of the country's wine industry, 1.3 million hectoliters. According to this forecast, production in Austria and Hungary indicates a decrease in wine production compared to 2016 at - 21% and - 6% (Slovak association of exporters and importers, SAEI, 2016).

Three quarters of EU vineyards are in Spain, France and Italy. In 2015 Spain had the largest area for grapevine cultivation, with almost one million hectares (941,000 ha, that is, 30% of the total area of the EU's vineyards). Then it is followed by France (803 000 ha or 25%) and Italy (610 000 ha or 19% in 2010). They were followed by Portugal (199 000 ha or 6%), Romania (184 000 ha or 6%), Greece and Germany (in both cases approximately 103 000 ha or 3%). The region with the largest area of vineyards in 2015 was Castilla-La Mancha in Spain (434 000 ha, or almost 14% of the total area of the EU's vineyards), before French regions, Languedoc-Roussillon (239 000 ha or 7%) and Aquitaine (144 000 ha or 5%). More than a third of all vineyard farms is in Romania. The ranking is sharply changing for the number of vineyard farms, most of which are registered in Romania (855 000, that is, 36% of the total number in the EU), in Spain (518 000 or 22%), in Italy (299 000 farms in 2010 or 12%), in Portugal (212 000 or 9%) and in Greece (189 000, that is 8%). The largest vineyard enterprises are in France. They had the highest average area in 2015 (10.5 hectares). These were followed by Luxembourg (4.0 ha), Austria (3.2 ha), the United Kingdom (3.1 ha), Germany (2.4 ha), Italy, Slovakia (both countries 2.0 ha), Spain and Hungary (1.8 ha). On the contrary, the average area under 1 ha per enterprise was recorded in Romania (0.2 ha), Malta (0.3 ha), Croatia (0.4 ha), Greece, Cyprus, Slovenia (0.5 ha) and Portugal (0.9 ha) (Eurostat, 2017).

Farkaš (2016) claims that the EU Common Market Organization for Wine entered into force in Slovakia on the day of Slovakia's accession to the European Union (1 May 2004). The main

problem of European and world wine-making at present is the annual overproduction of wine. The market equilibrium maintains a system based on the limits of member states' wine production and measures to reduce surpluses. However, EU wine consumption is currently decreasing and its import is growing significantly more than stagnant export to countries outside the European Union. If this trend continued, it would be produced about 15-20% more wine a year. And the European Union would unnecessarily spend 500 million euros of subsidies for inefficient elimination of wine surpluses, especially table wine, by distillation into ethanol, used for food or technical purposes. The European Union has adopted a complex reform of the Common Market Organization for Wine. The aim of the reform is, among other things, to reduce the area of vineyards by 10%. Australia, on the other hand, increased its vineyard area by 18% year-on-year to 130 thousand ha and along with America, they are increasing wine export to Europe. The overall situation regarding vineyards in member states is documented in Table No. 2.

Table 2. Main data about vineyards in EU member states in 2015

Štate	Area (ha)	Largest regions (according to share of total area)	Number of vineyard enterprises	Average area per enterprise (ha)
EÚ*	3 190 459	Castilla-La Mancha (13.6 %)	2 404 968	1.3
Belgium	—	—	—	—
Bulgaria	59 991	Yugoiztochen (33.2 %)	45 179	1.3
Czech rep.	17 689	South-east (94.4 %)	18 216	1.0
Denmark	—	—	—	—
Germany	102 581	Rheinessen-Pfalz (48.6 %)	43 389	2.4
Estonia	—	—	—	—
Ireland	—	—	—	—
Greece	103 298	Peloponnisos (24.8 %)	188 896	0.5
Spain	941 154	Castilla-La Mancha (46.1 %)	517 615	1.8
France	802 896	Languedoc-Roussillon (29.7 %)	76 453	10.5
Croatia	20 393	Kontinentalna Hrvatska (51.9 %)	46 068	0.4
Italy **	610 291	Sicily (16.8 %)	299 191	2.0
Cyprus	7 781	—	14 202	0.5
Latvia	—	—	—	—
Lithuania	—	—	—	—
Luxemburg	1 295	—	326	4.0
Hungary	65 049	Dél-Alföld (33.2 %)	35 741	1.8
Malta ***	618	—	1 955	0.3
Netherlands	—	—	—	—
Austria	45 574	Lower Austria (61.9 %)	14 133	3.2
Poland	—	—	—	—
Portugal	198 586	Norte (41.4 %)	212 128	0.9
Romania	183 717	Sud-Est (41.5 %)	854 766	0.2
Slovenia	15 806	Vyhodna Slovenija (59.0 %)	30 224	0.5
Slovakia	12 054	Western Slovakia (62.5 %)	5 933	2.0
Finland	—	—	—	—
Sweden	—	—	—	—
UK	1 687	:	553	3.1

Source: CCTIA, 2015.

By comparing the shares of individual countries on the total area of vineyards (Figure 2), we can see that the largest shares the European countries have headed by Italy with 13%, followed by

China with 11% and third place belongs to France with 10%. Overall, we can say that up to 50% of the world's vineyards are among the world's five largest producers.

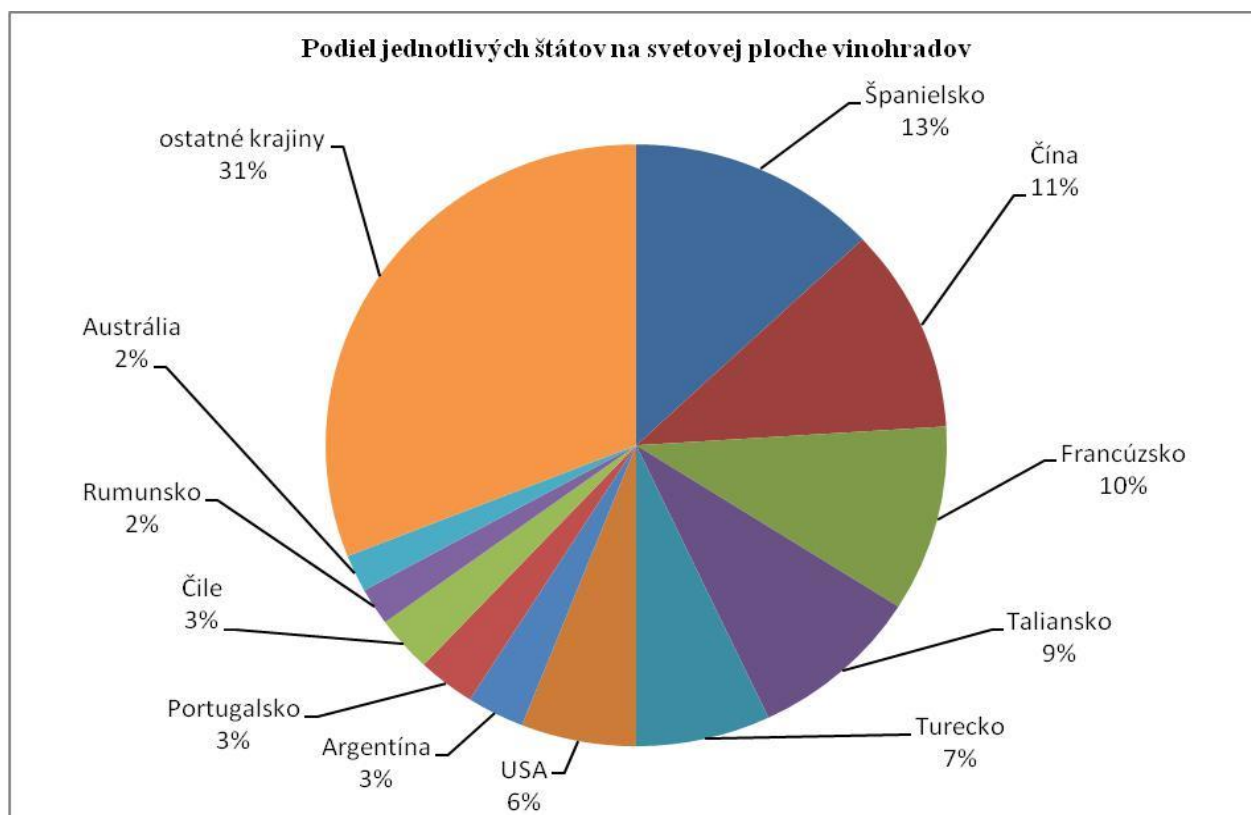


Fig. 2. Share of individual states on the world's area of vineyards (Source: Situational and forward-looking report Grapevine and wine)

3.2 Situation in Slovakia

After 1989, cooperative mass production of grapes and wine industry gradually disappeared. Agricultural cooperatives have either collapsed or separated to particular types of agricultural production. Only viticulture remained a part of agricultural cooperatives. Wineries also disappeared, they were privatized or joint-stock companies were formed from them. As a result of this situation, there has been a sharp decline of viticulture and wine-making in Slovakia. At present, there are almost 300 different wineries, vineyard organizations (joint-stock companies, limited companies, private companies, family businesses and others) that cultivate grapes and produce wine. In 2008, two new large wine companies In Vino in Modra and Vinidi in Báb near Nitra began to produce wine. These companies have planted new vineyards and built processing enterprises with the latest wine production technology. They will produce quality premium wines (Richter, 2014).

At the end of 1989 the area of vineyards in Slovakia was about 38,000 ha. As a result of restitutions, aging of vineyards, their uprooting and utilization of the area acquired for the cultivation of other crops, possibly for housing and other construction, the area decreased to 13 954 ha of registered vineyards (2013). Currently only about 9000 hectares are vineyards producing fruit, and the remaining 4000 ha are young, not producing fruit vineyards and further vineyards need to be revitalized. According to data of the Statistical Office of the SR, the total area of vineyards increased by 85% (+0.8%), the area of not producing fruit vineyards increased by 151 ha (+7.1%). On the contrary, the area of vineyards producing fruit decreased by 66 ha (-0.7%). Vineyards producing fruit occupy 79.5% of the total area of the vineyards, which represents a decrease

compared to 2014 by 1.21 p. b. After nine years of decline, the total area of vineyards grew by 85 ha (+0.8%) in 2015. Data on vineyards producing fruit (Table 3) relates to vineyards over four years of age (Poláček Š., Poláček, M., 2010).

Table 3. Total area of vineyards

Year	Vineyards together	Vineyards producing fruit	Vineyards not producing fruit
2004	15 831	12 248	3 583
2005	16 772	13 429	3 343
2006	16 262	12 145	4 118
2007	15 903	11 844	4 059
2008	15 722	9 980	5 742
2009	14 876	9 594	5 282
2010	14 475	9 225	5 249
2011	13 954	10 226	3 727
2012	12 616	10 612	2 003
2013	11 773	10 341	1 432
2014	11 074	8 939	2 135
2015	11 159	8 873	2 286

According to data of the Statistical Office of the SR in 2015, the average grape harvest per hectare reached the highest value since 1990, namely 5.70 t. As a result, the grape production grew more markedly, by 11 708 t (+30.4%), with a 46-hectare (+0.5%) increase in grape harvest. The area of grape harvest decreased by 33 ha (-0.4%), its production increased by 11 473 t (+30.0%). Of the total grape production, grape must created 99.0%. The production of table grapes was 498 t, which is 235 t more than in 2014. In 2014, the consumption of grape wine increased significantly in Slovakia. Total consumption increased year on year to 100 967 liters, which is 27 838 liters more than in 2013 (+38.1%). Consumption of wine per capita fell by 2.9 liters year on year (-15.6%) in 2015. The average price of grape must in 2015 reached 510.52 €/ t, a year on year increase of 14.97 €/ t, (+3.0%). The average price of table grapes increased year on- ear by 93.77 € / t (+14.7%).

Import of grape must in the wine year 2015/16 decreased year on year by 956 t (-41.2%). Export declined almost twelve times, by 3 776 t. The negative balance reached -689 thousand €. Table grapes was imported in the volume of 14 641 t, year on year increase was 1 637 t (+ 12.6%) and exported in the volume of 786 t, that is 112 t less (-12.5%). The negative balance increased by 4.204 € (+ 25.8%). Total wine export in the wine year 2015/16 decreased year on year by 6.3% to 208 775 hl and import fell by 28.6% to 740 292 hl. The negative balance decreased by 27.2% to -42 389 thousand € (NATIONAL AGRICULTURAL AND FOOD CENTER, 2017).

Table 4. Production of wine in the EU

Country	2012/13	2013/14	2014/15	estimation 2015/16	2015/16 to 2014/15
Bulgaria	1 337	1 755	833	1 538	84,6
Czech republic	487	650	536	750	39,9
Germany	9 021	8 409	9 202	8 788	-4,5
Greece	3 115	3 343	2 800	2 650	-5,4
Spain	34 241	52 460	44 080	42 000	-4,7
France	41 365	41 491	47 094	47 700	1,3
Croatia	1 293	1 248	842	943	12,0
Italy	45 616	54 029	44 739	50 369	12,6
Cyprus	112	108	94	91	-3,2
Luxembourg	85	101	125	120	-4,0
Hungary	1 818	2 666	2 773	2 500	-9,8
Austria	2 155	2 392	1 999	2 501	25,1
Portugal	6 305	6 238	6 202	6 703	8,1
Romania	3 606	5 242	3 842	4 069	5,9
Slovenia	684	770	708	857	21,0
Slovakia	325	373	294	380	29,3
Great Britain (UK)	25	33	47	40	-14,9
Other countries of EU	27	29	31	43	38,7
EU total	151 606	181 186	166 232	172 100	3,5

Source: Situational and forward-looking report Grapevine and wine

When comparing wine production in Slovakia and Europe (Table 4), we must state that we are on the place 16. Our neighbours, including the Czech Republic, Austria and Hungary, also took place in front of us.

3.3 Situation in the world

Global wine production declined last year. The reason was bad weather in several regions. The steepest drop in production in terms of volume was recorded in Argentina (in Europe it was France). Mainly Argentina, which is the ninth in the ranks of the world's largest producers, cut its production by 3.9 million hectoliters last year. Even higher production levels were recorded in the United States (22.5 million hectoliters). So in South America, the production declined in Argentina (8.8 million hectoliters), Chile (10.1 million hectoliters) and Brazil (1.4 million hectoliters). Australian production (12.5 million hectoliters) and production in New Zealand (3.1 million hectoliters) was on the rise. After computing to percentage, the steepest drop of wine production was in Brazil last year, that is 55% year on year and in Hungary 38%. South Africa has also had a bad year. The drought has destroyed part of the crop and wine production in the country has fallen by 6% last year. Global vineyard area did not change last year. According to OIV data, the vineyards spread to an area of 7.5 million hectares. In 2016, China expanded its total vineyards, but also reduced its area in Turkey and Portugal. World wine consumption slightly increased last year to 242 million hectoliters, but still lagging behind the level reached before global financial crisis (Databases and statistics, 2016).

4 Conclusion

Wine is a very important product on the market, with which the Slovak Republic trades every year and always belongs to basic export products. Slovak winegrowers have been producing wine for many years not only as their export product, but mainly as a continuation of the history and traditions of Slovak ancestors. With their small vineyards they often stand against large

multinational corporations, but thanks to their quality, long-term brand and price they find their customers not only at home but also abroad. From the perspective of the future, it is expected that Slovak wines will continue to be among the top in Europe.

On the European scale, it is also expected that French and Italian wines will be the top and clearly distinguished by their quality, type, prestige and assortment in Europe in the future. France can do well thanks to its generous European support, but also thanks to strong protectionist effects from French government, which has long supported French farmers and winegrowers.

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EVOLUTION OF B2B MARKETING COMMUNICATION AND ITS CURRENT CHALLENGES

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Abstract

Despite the dynamic development of B2B marketing theories, we are still basically at an early stage of its development. We are facing new opportunities in marketing communications in B2B markets. Content marketing and marketing automation are most often mentioned. However, their implementation often encounters problems in B2B organizations. In B2B markets, we are currently in a very turbulent environment. The starting point should be to understand the direction and adaptation to the new conditions. The aim of this paper is to describe the development of B2B marketing to the present and to specify the current opportunities and the greatest challenges. The theory of B2B marketing will be described from its beginnings, through the theory of exchange and behavioral marketing to industrial marketing and its current conception. We look at B2B marketing both globally and technically. The output should then be recommendations for current scientific research.

Keywords

B2B marketing, Marketing automation, On-line marketing.

JEL classification

M10, M31.

1 Introduction

Although the practice of B2B marketing as such has been known for thousands of years, the first study of the field has only been theoretically about thirty years ago (LaPlaca, 2009; Sheth & Parvatiyar, 1995; Wilkie and Moore, 2003). Historical development has brought new knowledge of B2B marketing, which benefits not only academics and B2B marketers, but also other marketing sectors. Over the last 24 years, Industrial Marketing Management has published about 900 articles to show that the number of articles on B2B marketing has grown. They dominate topics such as market segmentation or sales management.

The aim of this paper is to describe the development of B2B marketing to the present and to specify the current opportunities and the greatest challenges. The theory of B2B marketing will be described from its beginnings, through the theory of exchange and behavioral marketing to industrial marketing and its current conception. In addition, the essentials of the most extensive research of current B2B marketing under the leadership of Fred Wieserma will focus on current opportunities and challenges for current academic research.

2 Origins of B2B marketing

Despite the dynamic development of B2B marketing theories, we are still basically at an early stage of its development. Nevertheless, some predecessors of today's theoreticians can be traced in a more distant past. Specifically, at the end of the 19th century, John Wannamaker was studying relations between traders and customers. The subsequent application of his insights into business philosophy fundamentally altered the behavior of his suppliers and customers.

3 John Wanamaker, B2B marketing pioneer

Already in 1899 Wannamaker claimed that for most traders the goal is not customer satisfaction but own profit. And he decided to go against this stream. Encouraging repeat purchases, building mutual relationships between the different elements of the chain, that's what it started to work for. His radical approach, a few decades later, has become the cornerstone of many B2B marketing theorists.

According to Gibbon (1926), Wannamaker argued that without the expectation of such behavior that would benefit both sides, a good business relationship could never be established. His "honest, homely and friendly style" brought him recognition in the local community. At about the time John Wannamaker began to change his view of business relationships, marketing began as an academic discipline. But the path to research of its sub-sector, B2B marketing, was still long.

Sheth and Parvatiyar (1995a) divide the development of marketing into three phases: the pre-industrial, industrial and post-invasive era, and the development of B2B marketing is linked to these three phases. Wilkie and Moore (2003) argue that marketing has evolved into five periods: a) pre-marketing (before 1900), b) foundation layout (1900-1920), c) formalization (1920-1950)) shift of the paradigm (1950-1980) and e) increasing the intensity of these shifts (1980-present). But marketing theory can also be seen with the emphasis on differences between exchange theory (transactional marketing) and behavioral theory (relational marketing).

4 B2B marketing and exchange theory

Early marketing theories have emerged through the direct application of economic theories. It was easier to increase sales and profits than to consider matters as preference or quality. Business relationships, however, are based on a combination of economic factors with social ones. And as soon as they became connected with membership in various social clubs and family ties, they had to start changing.

According to W. J. Reilly (1929) with the first methods of exploring retail marketing. Alderson and Cox (1948) followed up with the first studies that opposed previously prevailing economic principles. The authors highlighted the transition from marketing to orientation to the individual level (micro), the shift from economic ties to behavioral, and the emphasis on the theories and explanations at the expense of austere description and classification.

Alderson and Cox thus laid the foundations for a gradual transformation of marketing thinking from an economic approach to behavioral. Foregrounds such as emotions, motivation, and irrationality come to the fore and researchers are beginning to incorporate concepts such as social stratification, social class or reference group into their studies. It did not take long to create concepts such as market segmentation or marketing mix. In the 1960s McCarthy and then Kotler and his 4P model arrived. Of course, this transition was not linear and did not happen around the world at the same time. In Germany, for example, some B2B theorists prefer the economic approach to this day.

5 Behavioral Theories and Industrial Marketing

The first publications on industrial or B2B marketing were published in the 1930s (for example, *Industrial Marketing* - J. H. Fredrick's *Marketing and Fundamentals of Industrial Marketing* by R. Eldera). Nevertheless, to date, relatively few have been created. The *Journal of Marketing* reports statistics that, between 1936 and 2006, only 6.8% of all articles were focused on industrial marketing. Their number has been rising since the 1980s, when the periodicals directly oriented to the B2B market began to emerge.

One of the first contributions to behavioral theories of B2B marketing was brought by Hudson (1971) in a study focusing on better integration of business-to-business partnerships, and two years later Mattson (1973) in dealing with hardware and software from a single merchant point of view. At the time, both theorists mentioned the importance of mutual satisfaction for a good business relationship. In relation to social, technological and economic factors, there is a weakening of traditional marketing tools such as advertising, promotion, and the price that has so far been determined in marketing theories.

As the forerunner of B2B marketing, as we know it today, we can see the so-called industrial marketing described by Webster (1978). He focused on transactions taking place in particular in the timber, oil and iron ore trade. Over the coming years, production and technology have begun to take the lead, which has gradually replaced the term industrial marketing with the new, B2B marketing

term. Ford (1980) identified five phases of the relationship between the seller and the buyer. In his work, he emphasizes the importance of B2B relationships at the expense of transactions and pricing.

B2B includes relationships between manufacturers and retailers, among farmers and agribusinesses, or between pharmaceutical companies and hospitals or doctors, in short, all relationships other than those that arise between business and consumer (B2C). The differences between the two areas can also be related to buying processes. In B2C, the end client is an individual or a group of individuals (eg a family), in B2B, then an organization employing dozens of different people. The B2B area is so much more heterogeneous, and that's why the purchasing processes in the two industries are different.

6 B2B Marketing Changes: Present and Challenges to the Future

Business-to-business marketing, as well as various other sectors of human activity, is changing. The Institute for the Study of Business Markets (ISBM), which brings together 75 member firms and hundreds of academics, has been exploring the patterns of the B2B market for over thirty years. According to Wieserma's (2013) research, B2B marketing is not getting the same attention as it should - many conferences, researches, and academic studies still focus on the B2C market. A number of different marketing research results are applicable to a wide range of areas, excluding the B2B sector.

Companies call for transformation. They find that the workload of marketing staff has long exceeded the writing of brochures. However, there is a lack of case studies and inspirational stories to understand their current functioning. However, the issue of B2B marketing transformation can be viewed from a different angle. The industry is still growing and has not yet reached its "maturity". Therefore, it is not possible to precisely determine what all B2B today means and what it is developing.

7 Marketing processes in time changes

The development of B2B marketing is fast and unpredictable. Economic conditions are changing and with them the market and marketing. Marketing departments in companies have previously played a secondary role, now they are in the forefront of interest. The biggest obstacle in the transformation of marketing can be people who can not spend enough time on this transformation. The global market plays an overwhelming role in these changes. According to Wieserma (2013), the B2B market is waiting for a demand explosion, to which many of the established companies are far from ready. Customers' behavior is also increasingly affecting social media and other trends. Wieserm's research on marketing automation has been surprising. Only a small part of the respondents mentioned this subject. But it can be because the respondents simply did not remember them.

Those who referred to automation in the replies most often complained about the complex adaptation of CRM systems. According to them, automation can not yet be a fully-fledged tool. Another obstacle often encountered by questioners is the B2B application limits for working with large volumes of data. Enabling better work with large databases, and more to penetrate into customer thinking, is one of the challenges for the future of B2B marketing. This will also ensure the aforementioned gradual transition of B2B companies from market orientation to customer orientation.

According to Wieser (2013), the direction of companies often relies on marketing functions, while the direction is perceived as an expedition, not as a one-day trip. Leaders of B2B companies expect their concept to transform marketing dynamics. Changing leadership thinking is such a major challenge. Companies should focus on building strong marketing processes: training people and using the right tools in the right places. They should seek and expand working practices that have proven themselves and can be applied in other areas of their work. The key role will be not only customer relationships, but also links between account managers and marketers. And all of them have to keep in mind the basics, such as the sales funnel.

8 B2B marketing in the global world

Unlike B2C, where customer preferences vary considerably depending on latitude and crops, B2B marketing is the goal - to solve the requirement - unchanging. Yet there are also issues that B2B faces. According to Wiersema (2013), Markets and academics agree that the B2B market is in a state of fierce change that has not yet been. For example, it is important to involve customers in the product innovation process. It is also appropriate to include marketing components in the same process. Thanks to this, the sales and the sophistication of the retailers are growing. Of course, new technological possibilities also have an impact on the process. Smart phones or even 3D printers significantly change the face of marketing.

According to Woodside & Baxter (2012), B2B marketing has long been seen as a field with very little or no customer data. Times change, however, and B2B vendors are in the forefront. Intermediaries, that is, consultants, agencies and marketing marketing companies, are here for profit. No one can deny this goal, and it is not in the power of anyone to change it. However, if the academics work with them, either at conferences or in joint case studies or articles, both sides will benefit.

9 Overcoming deficiencies in B2B marketing knowledge

According to Griffin (2012), qualitative and case-based case studies based on areas such as anthropology or sociology, in the theoretical work on B2B marketing, are more useful and appropriate than those commonly used in B2C research. However, it appears that collecting data for B2B research is far more demanding than collecting data for customer behavior surveys. This was one of the driving engines for the establishment of the Penn State Institute for the Study of Business Markets (ISBM), whose mission is to link B2B marketing theorists with organizations interested in research. These collaborations greatly facilitate the collection of primary data.

Although, compared to B2C marketing, B2B research is devoted to a substantially smaller part of the academic world, according to Lilien (1990), the efforts of B2B academics can not be viewed from above. The methods used to explore the B2B area are different from those used for B2C research, so the whole research sphere needs specialists. Of course, education and knowledge of necessary theories is of course important, but it also shows that without any personal experience with B2B sales, no specialist will be able to do so.

10 Conclusion

The aim of this paper was to describe the development of B2B marketing to the present and to specify the current opportunities and the biggest challenges. The theory of B2B marketing has been described from its beginnings, through the theory of exchange and behavioral marketing to industrial marketing and its current conception.

B2C and B2B marketing, despite their differences, have, of course, over the years been avoided comparing each other. As a result, both disciplines are very similar. However, as far as academic research is concerned, the B2B marketing area has a small share of academics compared to B2C marketing today. They influence the direction of business, and B2B marketing is becoming a sector with an increasing emphasis on strategy. B2B marketing has to step out of its shadow - stop focusing on its own work and focus on the overall performance of the company. The most up-to-date B2B marketing opportunities therefore include:

a) Link marketing and sales department

Marketing and sales are two sides of the same coin. Marketers can not perform well without sales and vice versa. It is important that neither department does not work in a vacuum to give its staff experience. Creating deeper relationships with key customers should be a common goal of both departments.

b) Accept innovations

New technologies mean new possibilities. Innovation can (and are) a catalyst for successful business. B2B companies should certainly not avoid changes, however crucial. These innovations include customer orientation and greater involvement in subsequent marketing activities. If customers themselves participate, for example, in a new, improved version of the product, then they are more likely to buy the resulting product. It is also vital to find the right relationship between centralized and decentralized marketing activities.

c) Get more detailed customer and market information

Nowadays, successful marketing defines customer knowledge and its value. Just understanding customer behavior is a strong weapon for every marketer. In the B2B world, the effort to understand the customer should not be voluntary but mandatory. Shopping habits change and they need to be approached accordingly. Marketers must perceive these changes and incorporate them into their day-to-day activities.

The global market creates unexpected challenges that both academics and practitioners need to take on an individual approach. There is a need to educate in new areas (customer behavior, social media, etc.). Companies need to adapt to market changes. There are changes from the focus on business operations as such in a customer-oriented approach. In order to understand the current role of B2B marketing, it will be necessary to link it more closely with other departments in companies and to make more extensive use of customer and market knowledge.

Marketing theoreticians are, of course, private customers, as well as consumers, and are thus exposed to everyday shopping challenges. Academic education and technology knowledge are appropriate, but only a personal experience with B2B sales and purchases leads to a full understanding of the rules of B2B marketing. Perhaps that is why there is far less competition in B2B research than B2C. In order for the results of B2B marketing research to be relevant, it is necessary for academics to be able to reflect on the complex development of their business, not only in relation to the behavior of B2B parties, but also in terms of technology. An important role in the research itself will be played by so-called B2B brokers, consultants, agencies or marketing research companies.

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MANAGEMENT PROCESSES OF AUTHORITIES ON REGIONAL FIELD OF GOVERNMENT IN THE PREVENTION OF CRISIS EVENTS

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Abstract

Decisions of authorities of crisis management in prevention of crisis event have impact on the entire region or its territorial area and population. This article pointing to barriers in management processes in the prevention of crisis event. The decision making process at the local government level involves risk assessment and evaluation and taking preventive measures to reduce the level of unacceptable risks. This area and established practices of prevention crisis events can be improved by optimizing decision-making processes in regional field of government. The article include the proposal of algorithm the decision making process applicable in local government condition to make the management more effective in process of crisis prevention. Also there are summarized using some of kvalitative and kvantitative methods for optimalization of decisions of crisis managers.

Keywords

Decision-making process, Prevention, Crisis management, Optimization.

JEL classification

Z18, Z19.

1 Introduction

Competencies and the role of crisis management in government are associated with the importance of crisis management in the state, regional or municipal management system. The article focuses on the issue of decision-making processes of crisis management at local government in the period prior to the formation of the crisis events. Author of this article solve this issue in her dissertation's thesis. The article summarizes results of the analysis of decision making process compiled within processing of dissertation thesis. As part of the prevention process, the management and control activities of the local state administration authorities are carried out. These are performed through managerial functions with the primary objective of protecting residents, property and the living environment from the negative effects of crisis phenomenon. From this point of view, local government and entities incorporated into the crisis management structure are of essential importance in the process of increasing the level of security of society as a whole.

Given the significant increase in undesirable events that have arisen in recent years, particularly as a result of climate change, prevention of formation of crisis events has got a big importance. The Slovak Republic is a country that is exposed to a whole range of natural hazards and social threats that can threaten its security. Extraordinary events of a natural character or caused by anthropogenic activity endanger the life, health and property of their inhabitants by their negative effects. Entities participating in the implementation of territorial analyzes, based on the characteristics and specifications of the area, identify the potential risks of occurrence of extraordinary events and then they assess them. On this basis, preventive actions can be prepared and developed. However, with regard to the adoption of preventive actions at local government level, it is necessary to optimize the management process itself (Valášková, 2017a). For this optimization, it is possible to use a series of qualitative as well as quantitative methods that can be applied at different stages of the decision making process.

2 Current Concepts of Prevention in the Crisis Management System

Prevention is one of the phases of the crisis management cycle, which is focused on the preparation of administrative, organizational, personnel, technical and legislative measures to prevent the occurrence of crisis events. In the case of their occurrence role of prevention is to minimize negative consequences of crisis events. In the foreign literature, the prevention process is associated, in addition to the term of prevention, with the term mitigation. The Federal Emergency Management Agency (FEMA) defines prevention as the actions and measures needed to avoid the immediate threat. This includes activities related to the identification of risk factors. It emphasizes the importance of securing early and relevant information and its coordination not only in crisis management section but also in the population. The term mitigation is understood as taking measures to reduce risks and threats to minimize negative impacts on life and property (National Preparedness Goal, 2011). According to the United Nations International Strategy for Disaster Reduction (UNISDR), prevention is a concept of beforehand accepted measures to completely prevent the potential adverse impact of crisis events. Since the risks of developing crisis events can not be completely avoided, the role of prevention is transformed into a mitigation that reduces or limits the adverse effects of negative events. According to Šimák, prevention is part of crisis management and can be seen as a process whose primary objective is to minimize the possibility of crisis events formation based on the adoption of adequate preventive measures (Šimák, 2015). The activities in the crisis prevention process are activities mainly aimed at:

- risk assessment,
- treat risk,
- control activity,
- selection and continuous training of workers,
- other activities.

Risk assessment

Crisis management authorities identify the risks and threats that threatening the protected interests of society. The risk assessment includes the risks of natural factors as well as risks from anthropogenic activity. In identifying the sources of risk, it is most important to divide the assessed area into narrower parts and aspects according to the classification of risks. In Slovak Republic, at the level of the local state administration, the territory is judged from the point of view of possibility of occurrence of an extraordinary event, which are divided according to Law no. 42/1994. Selection of methods and tools to identify sources of risk is very important and, on the other hand, also information resources to identify them correctly within individual entities. The risk analysis makes it possible to determine the likelihood of occurrence of the crisis phenomenon and the magnitude of the consequences, the analysis itself is influenced by the criteria for risk assessment and their subjective perception and assessment by specific workers. Empirical approach, an analytical or intuitive approach is used to assess the acceptability and non-acceptability of risks as well as an overall assessment of the possibility of occurrence of extraordinary events. These approaches make it possible to identify and look for the match of identified indicators of the decision-making problem with similar problems in the past, possibly also based on workers' experience. In practice, decisions are made based on an estimate of a specific situation and experience.

Treat risk

The risk assessment is followed with the reduction of risks by adopting appropriate preventive measures. This is also done through the implementation of an appropriate security strategy structure, administrative measures, such as issuing appropriate laws, notices and other legal norms, assessing external and internal security conditions and taking them into account in decision-making processes. At the local government level, preventive measures are taken to address the risks in which they may be likely to occur. As it is necessary to define criteria in the risk assessment, it is also necessary to define the criteria (taking into account the results of the risk assessment, specification of the particular

area, object) according to which it will be decided to adopt the most appropriate precautionary measure for the specific risks of the formation of crisis events. On the other hand, risks can also be reduced by using specific methods, such as reducing risk, generating state material reserves, permanently clarifying information, and optimizing processes.

Control activity

The control function is another crucial role of crisis management at the level of local government. In the context of prevention, local government authorities in the field of crisis management have an obligation to carry out control of activities in the field of civil protection, economic mobilization and defense of the state. The principle of subsidiarity applies to this activity. The lower level of public administration has certain decision-making powers, for example it decides what preventive measures it will accept and performs both prevention and civil protection as well as defense. But higher level must manage it, coordinate and, ultimately, carry out control activities.

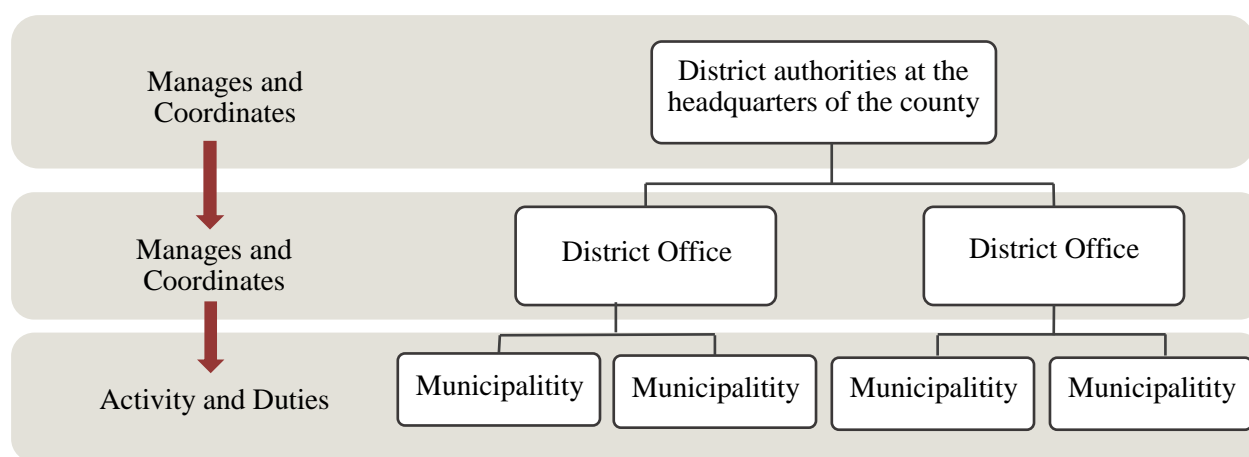


Fig. 1. Competencies at local government level

Local government authorities must also take decisions on how to carry out controls, decide on sanctions on the basis of identified deficiencies, ensure and coordinate the activities of competent subjects during prevention. In the field of civil protection it is, for example, the control and fulfillment of duties, implementation of tasks and measures of municipalities and legal and physical persons in this area, control of the management of civil protection material. In the field of defense of the state, the control activities are aimed at taking the necessary measures for defense, control aimed on the fulfillment of these tasks by the municipalities and checking the suitability of the technical capability of real estate and assets in the framework of fulfilling the tasks of economic mobilization. The mechanism of controlling the local level of state administration towards municipalities does not work according to the requirements of the legislation. The functional and professional competence of municipalities in this mechanism fails. This issue is the subject of my doctoral study.

Selection and continuous training of workers

Workers are the most important component of the crisis management system. The activities carried out are largely dependent on the professional preparedness and cognitive abilities of the crisis managers. The effectiveness of preventive measures can be increased by appropriate management activities. At the local government level, staff are regularly trained. The problem is that despite the training seminars, as part of the crisis management for municipalities, the overall "crisis" awareness of the mayors of the municipalities and the inhabitants is not sufficient. This is due to the low participation of local authorities. This creates a problem when performing the necessary actions and taking precautionary measures. For this reason, professional leadership, coordination and control have their own importance. When considering this problem from a system perspective where one of the important elements is a person, an imperfect system can be considered. It is therefore appropriate to reduce this imperfection by appropriate support and methods in the management activity. One

option is, for example, to optimize control activity. Training is also required to use information technology in crisis management and interaction between institutions and crisis management authorities at regional level (Šimák, 2015; 2006).

2.1 Classification of precautionary measures

In Slovak Republic, as part of the prevention activities, the responsibility of the crisis management authorities is to carry out an analysis of the territory in terms of possible extraordinary events. This analysis and the resulting document is updated annually, if necessary. An analysis of possible extraordinary events shall be prepared for:

- the second local level (LAU 2) - is formed by the cities and municipalities,
- the first local level (LAU 1) - is formed by the districts authorities at the headquarters of the county,
- the first regional level (NUTS 1) - represents the whole territory of the Slovak Republic and document is prepared by the office Ministry of the Interior of the Slovak Republic.

Subjects involved in the implementation of territorial risk assessment, based on the characteristics and specificities of the area. They identify the potential risks of occurrence of extraordinary events and then evaluate them. On this basis, preventive measures can be prepared and developed.

Preventive measures can be classified into different groups following the types of crisis events and forms of prevention. Under crisis management conditions, preventive measures can be classified by instruments. Šimák distributes them to: increasing the resistance to crisis phenomena influence (increase the resistance of systems, objects and their elements) and prevent the formation of crisis phenomena by correcting dangerous activities, forces and substances (Šimák, 2015). The individual activities carried out under the different types of preventive measures are shown in Table 1.

Table 1. Prevention activities according to the used tools

Type of preventive measures	Activities realized in scope preventive measures
Correction of dangerous activities, forces and substances	<ul style="list-style-type: none"> - adoption of technical and technological measures - the adoption of organizational measures - reducing tensions in social processes - the application of protective and restrictive measures in the context of security threats
Improving the resistance to crisis phenomena	<ul style="list-style-type: none"> - construction of resistant buildings and construction of protective structures creating an independent information system - observance of safety principles at work - training and education of crisis management personnel - preparation of rescue units - Evaluating the monitoring of risk factors and informing competent workers and the population about the situation - solving social security issues during crisis events

Source: Šimák, 2015.

As part of prevention activities, it is inescapable to consider internal and external communication (consultation) in the crisis management prevention phase and feed back too. In practice, external communications are often underestimated. From the information provided by the author of the article to structured interviews with crisis management officials, it is possible to consider the feedback as the biggest problem in communication. Than the consequence is the subsequent insufficient

implementation of basic activities to prevent the emergence of crisis events and the design of preventive measures at municipal level.

The Terminology Dictionary Terminology on Disaster Risk Reduction (2009) divides measures into:

- Structural measures - or otherwise called construction measures to reduce risks. They consist of building resistance and building measures for specific crisis events such as flood barriers, slope consolidation, evacuation centers, and so on. These measures are taken to reduce or prevent the possible consequences of natural crisis events.
- Non-structural measures - these are risk reduction measures, in particular through laws, regulations and planning documents, raising public awareness, training for competent workers.

Similarly, the precautionary measures are divided in Terminology dictionary of crisis management, population protection, environmental security and state defense planning (2016).

2.2 Subjects involved in the preparation of preventive measures

Preventive measures and their associated activities differ on each level of crisis management. At the first regional level of government, activities are focused on:

- to continuously monitor, analyze and evaluate the potential risks of formation of crisis events in the Slovak Republic and abroad in cooperation with NATO member states, the European Union and the partner countries,
- managing and controlling the activities of crisis management subjects at lower levels of government,
- keeping records of the sources of risks that can cause crises, performing risk analysis and taking action to remove their causes,
- creating conditions for the securing the crisis management information system.

At the first and second local level of government, the activities are focused on:

- monitoring, analyzing and assessing the security situation within the territorial jurisdiction (the district authority has a decisive role in the identification of risk sources and their assessment);
- preparation of preventive measures as well as recommendations for drawing up a plan for the protection of the population.

Subjects, both at the first regional level and at the local level of the state administration and on the territory of the local self-government incorporated into the crisis management system, must:

- respond in a timely manner to the identified risks,
- take appropriate measures to eliminate the risks,
- Review the implementation of preventive measures (Risk assessment of the Slovak Republic, 2016).

These measures are implemented by the crisis management authorities, including:

- at the first regional level of state administration:
 - the Government of the Slovak Republic,
 - The Security Council of the Slovak Republic,
 - Crisis Management Authorities of the central state administration subjects and other central state administration bodies.
- at first and second local government level:
 - the district office at the headquarters of the county,
 - the Regional Security Council,
 - the district office,
 - the district security council, the town (Law no. 387/2002 Z. z.).

The quality of preparation and the creation of preventive measures as well as other activities are influenced, on the one hand, by the organizational structure of the competent crisis management authorities and, on the other hand, by training within the competences allocated to decision-makers.

3 Management and decision-making processes

Management is a multifaced activity in a particular organization that is carried out through managerial functions. Its purpose is to ensure the effective execution of activities aimed at achieving the stated goal.

Planning define the essence of each management through which the basic objectives are set. The particularities of this function in crisis management consist in planning variants and planning from the point of view of preventive measures as well as from the perspective of addressing the negative consequences of crisis events.

The *organize* function contain definition of competencies and accountability of people in the organization of crisis management organization as well as the clear definition of competences and responsibilities for managing risks in the management duties of employees (Šimák, 2015). The organization's goal is to create the optimal conditions for conducting activities and their coordination related to risk detection and the design of preventive measures within the hierarchical structure.

The *leadership* function guides, co-ordinates and motivates workers in the process of achieving the goals of their work (Míka a kol., 2009). Prior to coordinating the activities of management objects, it is important to ensure the distribution of the necessary information that expresses the specific content of the elements and their characteristics, context and purpose.

An important factor is the personality and professional qualifications of the employees on the individual job positions. Employees in a crisis management system have the character of civil servants, and the requirements for performing tasks are regulated by law (Šimák, 2015). *Personnel Work* function consist selection and recruitment of skilled workers with the necessary knowledge and experience.

The *control* allows the assessing of the level of fulfillment of the employee's functional obligations. It is a form of feedback that can track, compare, regularly monitor individual processes and approaches of past and current issues, and this feature allows managers to better control the future (Míka a kol., 2009). During the control, emphasis is placed on regularly obtaining and evaluating information on the progress of the processes leading to the set goal. The importance of this managerial function base in the fact that it allows to reduce managerial uncertainty and risks in decision making (Šimák, 2015; Bělohávek, 2001).

The *analyse* function in crisis management conditions, it is possible to examine, assess and evaluate the elements, features and links of the external and internal environment of the systems and to perform an analysis of the state of the environment, to thoroughly assess the risks and possibilities of formation of crisis phenomena. It allows you to comprehensively assess the necessary resources, facilities and powers. On the basis of a comprehensive analysis, documents are produced to ensure the state's external and internal security. A thorough analysis allows us to prepare the necessary background for crisis planning.

Managerial *decision-making* includes activities related to the process of designing and choosing to solve the problem (Míka a kol., 2009), and enables the decision-making process to be prepared and implemented in detail through the use of different methods in order to minimize the risks of incorrect decisions (Šimák, 2015). For decision-making associated with a certain performance of a function, terms such as the authority and responsibility of the managing and subordinate staff, the functional place of the manager etc., are important. Decision-making can be understood from a procedural page that defines objectives, criteria, decision-making variants and their implications, external and internal environmental conditions as well as a way of algorithmizing decision-making.

Implementation or realisation is the gradual introduction of a decision taken into practice. In the period of prevention, measures are in place to reduce risks, improve crisis planning and increase resistance (Šimák, 2015).

3.1 Decision-making process at local government level

Based on the management activities, it can be stated that the decision making process, in a general perception, means the reaction of the managers or the organization to the problems encountered (Donnelly, Gibson, Ivancevich, 1997).

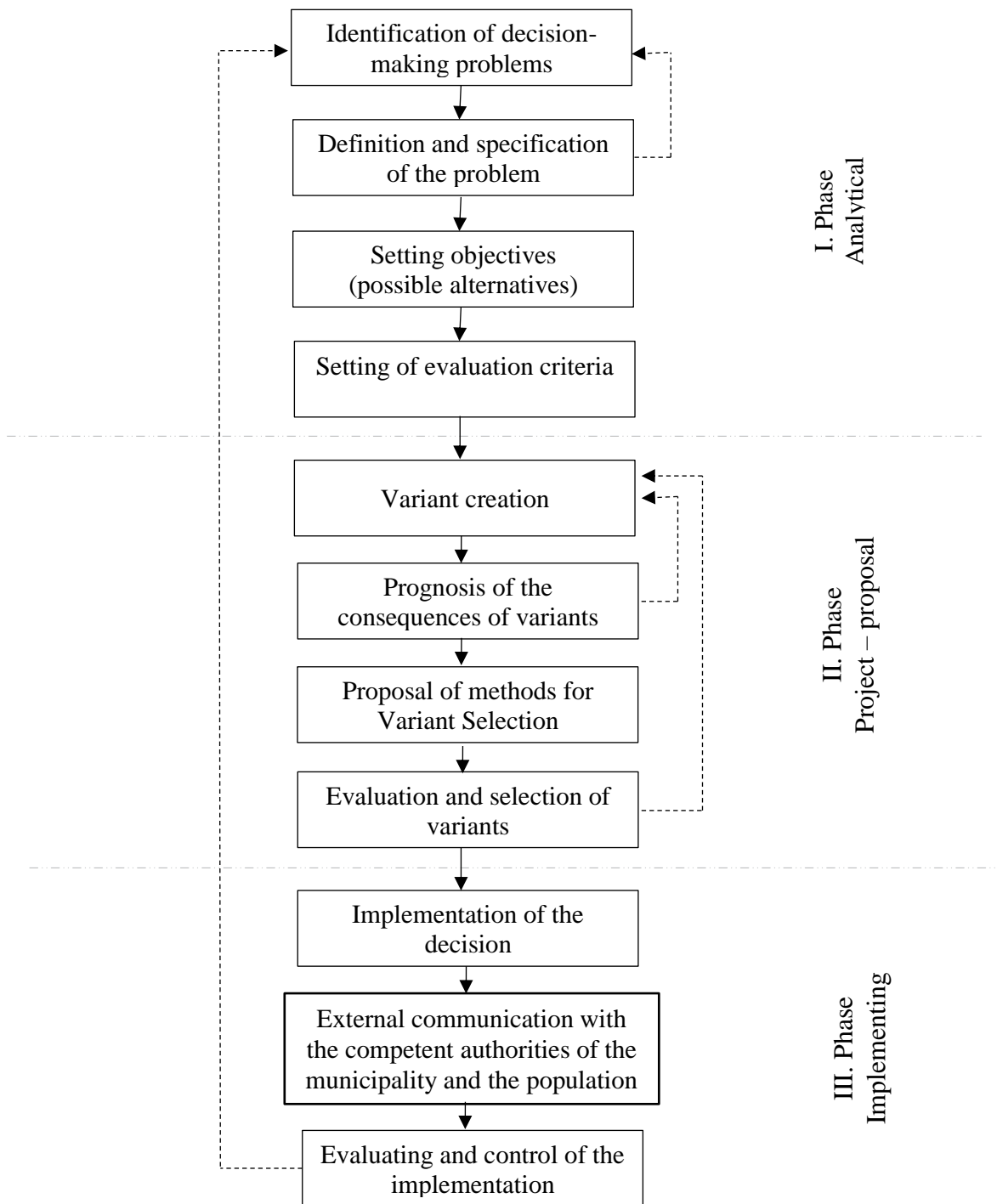


Fig. 2. Structure of the decision-making process

The decision process is the process of preparing and choosing the right solution for a specific problem. It is influenced by a number of factors. These include decision-makers themselves, managers with their knowledge and understandings, environmental conditions as well as decision-making issues, their structure, severity and others. The decision-making process can be divided into several phases depending on the type of problem. The stages of the decision-making process are interrelated and follow-up actions. Most authors divide the decision process into four to eight phases while the basic principles of the decision-making process are preserved.

Since the process of decision-making, like any manager's activity, must respect individual ongoing management functions (Grasseová, 2013), the decision-making process can be divided into analysis (analytical part), decision-making (project part) and implementation (implementation part). Various management methods can be used at each stage of the decision process. Figure 8 illustrates the decision-making process of structured and unstructured problems typical for the middle management level.

Author of article proposed the structure of the decision-making processes on the basis of a number of publications (Šimák, 2006; Fotr, Švecová a kol., 2010; Donnelly, Gibson, Ivancevich, 1997; Míka a kol., 2009; Mohelská, Pitra, 2012; Grasseová, 2013). The structure of the decision-making process is designed to be applicable in local government conditions to make the management more effective in the process of crisis prevention. The decision-making process also includes external communications with competent authorities of municipality and the population. As mentioned above, this area is in practice underestimated. As part of prevention activities, it is inescapable to consider internal and external communication (consultation) in the crisis management prevention phase and feed back too. In practice, external communications are often underestimated. From the informations provided to the author of the article by way of structured interviews with crisis management officials, it is possible to consider the feedback as the biggest problem in communication. Than the consequence is the subsequent insufficient implementation of basic activities to prevent the emergence of crisis events and the design of preventive measures at municipal level. But this problem requires system changes.

3.2 Methods usable to optimize decision-making processes

It is possible to optimize management in the process of prevention of the formation of crisis phenomena by various methods. The choice of method must respect the complexity of the problem being solved, the character of the decisional problem, the importance of its solution and the practical applicability of the method in its solution, as well as the situational framework, such as time restrictions, workers and so on. In the following subchapters, the summarized methods are applicable in the various steps of the decision-making process by the local state administration.

3.2.1 Analytical phase

At this phase emphasis is placed on the quality of the required information. An incorrect judgment of the problem at this stage may negatively affect its further solution (Míka a kol., 2009). This phase can be divided into the following steps:

Identification of decision-making problems the objective is to identify the problems needed to be solved and, if found, to determine the approach for the solution according to priorities (Fotr, Švecová a kol., 2010). In terms of identifying problem areas in the context of crisis prevention, it is necessary to look for answers to questions about the risks in the environment. It should be known what changes can be expected, or what plans or measures are to be implemented. By thoroughly analyzing the environment you can find answers to these questions. Methods that can be used at this stage include internal and external environment analysis, such as Check List Analysis, What if method, Security Audit, McKinsey method. It is also possible to use different case studies based on information gathering methods such as observation, structured interviews, and so on (Valášková, 2015).

Definition and specification of the problem - the aim is to identify the basic elements of the problem of finding answers to questions Where, When, How much and How serious. Based on the Kepner-Tregoe methodology, it is possible to determine the causes of the problem and to understand the interrelationships of a particular decision-making problem (Fotr, Švecová a kol., 2010). The decision trees, statistical methods (correlation analysis, regression analysis), operational analysis methods, Pareto analysis, inflection diagrams, or brainstorming can also be used to find the causes and specifications of the decision-making problem.

Setting objectives (possible alternatives) - in defining goals it is necessary to define the final decisions that need to be fulfilled and clearly define the objectives (solution variants). Non-quantifiable variants are subjective in nature and therefore it is recommended to set targets based on:

- Processing a list of significant but also minor interests that may be affected by the decision.
- Transform the list of interests into brief and concise goals.
- Define the resulting objectives (variants) from the partial targets to achieve them. Based on the resulting goals, it will be possible to evaluate the variants of the problem being solved.
- Identify the purpose of each goal in decision making and its relative meaning (Fotr, Švecová a kol., 2010; Mohelská, Pitra, 2012).

Among the methods that can be used in this step are interviews, Delphic technique, questionnaires, brainstorming and expert assessment.

The setting of evaluation criteria - derives from the set objectives. The evaluation criteria must take into account the restrictive conditions in relation to the decision-making problem.

The whole process of the analytical phase is the focus on data acquisition. Information is needed to identify the problem. They can be expressed quantitatively, qualitatively, or in terms of time, source, dependance, and others.

3.2.2 Project (proposal) phase

The second phase of the decision-making process requires the cognitive abilities of the management subjects (workers) and the choice of the appropriate decision-making technique according to the specification of the situation. This phase can be divided into:

Variant creation - this is one of the most important steps in the decision making process (Fotr, Švecová a kol., 2010) , which requires all the necessary information from the environment to determine the real variants (Donnelly, Gibson, Ivancevich, 1997) . Because decision trees are designed to determine the optimal strategy and are based on currently available information on the future development of decision-making elements (Fotr, Švecová a kol., 2010), decision tree methods can be used in this step. Other useful methods include morphological analysis, brainstorming.

Determination and prognosis of the consequences of variants - may take place in the previous step or separately. Determination of the consequences of variants is possible through statistical methods, operational analysis methods, model experimental methods, brainstorming, panel discussion, expert evaluation, modeling and process simulation (Šimák, 2006).

Proposal of methods for Variant Selection - this step focuses on the appropriate choice of method for evaluating variants. From the methods, it is possible to apply evaluation tables, methods of multi-criteria evaluation, Saaty's method, sensitivity analysis, decision tree methods.

Evaluation and selection of variants - at this step, the most appropriate variation of the decision-making problem is chosen based on the goal set. Variant evaluations are based on available real-world information and variants. After identifying all the important elements for decision-making and their mutual causal relations, as well as the character of the decision situation, there may be three decision-making situations, which according to the decision-making techniques are divided into deterministic (under certainty conditions), stochastic (during the risk) and fuzzy (uncertainty) decision-making (Donnelly, Gibson, Ivancevich, 1997); Mohelská, Pitra, 2012).

3.2.3 Implementing phase

At the final stage of the decision-making process, it is necessary to create the conditions for the decision to be put into practice. The authors of the publication Management report that implementation of the decision is in many cases more important than the choice of the right option (Donelly, Gibson, Ivancevich, 1997) . This phase can be divided into two steps:

Implementation of the decision - in the process of implementing the decision in practice, it is important to ensure the participation of professionally competent staff with the personal responsibility of the decision-maker subject on the outcome of the accepted decision (Mohelská, Pitra, 2012).

Evaluating and monitoring of the implementation - evaluates the level of achievement of the goal. Even during the implementation of the decision, the original target can be reconsidered, and it is therefore necessary to revise the decision-making process from the first stage (Donelly, Gibson, Ivancevich, 1997) . For this reason, the control is also carried out at the start of the decision-making process in the definition step and specification of the decision-making problem as well as in the determination of the consequences of the variants and the evaluation and selection of the appropriate variant.

4 Conclusion

Based on the done analysis can be to label follow barriers in field of crisis management. The main of barrier is poor set-up of competencies at district level as well as municipal level. Others are coordinating and controlling function. As mentioned above in this article, the mechanism of controlling the local level of state administration towards municipalities does not work according to the requirements of the legislation. The functional and professional competence of municipalities in this mechanism fails.

The report on the security of the Slovak Republic for 2016 pronounce the finding shortcomings in the crisis management, point to coordination and control activities of the district authorities towards the municipalities too. The municipalities has a legal duty to fulfill the assigned tasks in the field of economic mobilization, civil protection and defense. Therefore, we consider it to be up to date in the future to deal in detail with the question in how big extent is the carried management activity (which also includes control) towards the municipalities within the territorial jurisdiction of the district in the context of the risk assessment and the preparation of preventive measures. As part of the propose of organizational measures, coordination activities can be optimized by the better setting of competences at all levels of crisis management with an emphasis on competence at municipal level. When examining this problem area, it shuld be usefull use exact methods. For example, network analysis can be used to optimize the timing of partial, interdependent activities. Network analysis methods allow to analyze or optimize different networks of interconnected and related elements that have some dependency (Máca, Leitner, 1998).

The regional security reports for 2016 also show insufficient staffing of district crisis management departments following the roles of the law governing the area of crisis management (Report on the Security of the Slovak Republic, 2016). To analyze and optimally allocate specific tasks to individual workers, it is intend to use the assignment role. Restrictive conditions in this case may be the requirements for workers from a minimum or a fixed number in each crisis management unit. It is also possible to use method for organizing and coordinating activities to optimize the servicing process so that it is possible, based on the theory of probability, to determine the load strength of the service units, to calculate their optimal number and to predict the values of time related to the service process. In the case of a crisis management system at the local government level, in this case the implementation of specific tasks by the personnel of the crisis management department, is the servicing process. As a result, the elements of the crisis management system can be arranged so that the service (activities to protect the population, property and the environment) are provided in the

given conditions in the most efficient way (Valášková, 2017b). In general the structure of crisis management in Slovakia is intricate and it is a long-standing problem requiring system's changes.

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DIFFERENCES IN BEHAVIOUR OF ENTERPRISES WITH RESPECT TO THEIR OWNERSHIP

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Abstract

This paper deals with enterprises as the largest creator and contributor of gross value added at the national level. More precisely sector of non-financial corporations with respect to their ownership. The main aim is to evaluate differences in behaviour between national private non-financial corporations and foreign controlled non-financial corporations. Selected indicators of sector analysis are employed gross profit share, gross return on capital employed (before taxes) and net return on equity (after taxes) in the Czech Republic during the period 1993-2014. By means of analysis of variance was found that differences between indicators are significant.

Keywords

capital profitability, gross value added, non-financial corporations.

JEL classification

C43, E01, E22.

1 Introduction

In a market economy, there is quite common that domestic and foreign capital work side by side. The foreign capital generally inflows to host country through foreign direct investment. Modern economies are interconnected through capital flows. In general, they are foreign direct investment, portfolio investment and other investment.

As a part of foreign direct investment (FDI) flows, the Czech Republic is not only an importer but also an exporter. According to Blažek and Drážilová (2013) import exceeds export of FDI in the Czech Republic as well as in the other new European Union countries. Germany is the first largest export economy within the European Union (EU) followed by Finland and Netherlands.

The main aim of the paper is to find out if there are statistically significant differences in behaviour between national private and foreign controlled non-financial corporations.

The remaining part of the paper is structured as follows. Section two briefly presents foreign direct investment and dual economy effect, section three describes national economy and non-financial corporations, section four presents indicators and analyse of variance, section five shows empirical results.

2 Foreign direct investment and dual economy effect

At first, we will say, what does it mean foreign direct invest. “*Foreign direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy*” (IMF, 2017).

Foreign direct investment (hereinafter FDI) brings several positive and negative effects into host country (Benáček, 2000). Dual (or parallel) economy is one of these positive effects. According to Benáček (2000) or Zamrazilová (2007) it is an economy with advanced foreign companies and backward domestic companies. Blažek and Drážilová (2013) say that the division into two sectors takes place in the host country. One involves efficient enterprises under foreign control; the other involves less efficient domestic enterprises. There is little or no cooperation between the two groups of companies, which can lead to reorientation of domestic companies into less developed markets, backwardness or stop doing business.

The differences among domestic and foreign controlled companies are quite natural in the short-term. However, domestic companies should establish productive and business relationship with foreign controlled companies in the long-term. The next step for domestic companies could be so-called crowding-out effect (Zamrazilová, 2007).

3 National economy and non-financial corporations

A lot of information relating to the entire economy as well as some other entities, e.g. sectors, branches or industries is recorded in the national accounts database.

The economy of a country is an outcome of activities of a very large number of units, which carry out numerous transactions of various kinds for the purpose of production, finance, insurance, redistribution and consumption. The national economy is defined as the sum of resident institutional units (European Commission, 2013).

Institutional units, which have a similar type of economic behaviour, are grouped into sectors or subsectors. The national economy consists of five resident institutional sectors:

- non-financial corporations,
- financial corporations,
- general government,
- households,
- non-profit institutions serving households.

Non-financial corporations comprise all private and public companies that produce goods or provide non-financial services to the market (European Commission, 2013).

Fundamentally, the sector of non-financial corporations includes the public and private enterprises, companies of all industries of the national economy except the financial, insurance or non-market services (Hronová, Hindls, 2012), or in other words the joint-stock companies, the limited liability companies, and the limited partnership and general partnership companies (private or public) that produce goods or provide non-financial services to the market.

According to ownership the non-financial corporations sector is divided into three subsectors:

- public non-financial corporations,
- national private non-financial corporations,
- foreign controlled non-financial corporations.

Public non-financial corporations are controlled by government units; national private non-financial corporations are producers that are not controlled by government or by non-resident institutional units. Subsector of foreign controlled non-financial corporations consists of producers that are controlled by non-resident institutional units. (European Commission, 2013)

4 Monitoring and evaluating methods

Srholec (2004) evaluates the effect of dual economy in the Czech Republic by means of a comparison of labour productivity, investment activity or export orientation. Zamrazilová (2007) used the labour productivity and export orientation as well or return on costs.

This paper employs gross value added share and some profitability ratios which are explained in the following paragraphs. Indicators are based on data from national accounts database and are used in the sector analysis. Then the analyse of variance is briefly described.

4.1 Profitability indicators

The main purpose of the sector analysis is to provide comprehensible and brief data comparable in time and cross-section relating to the economic behaviour of the institutional sector (i.e. non-financial corporations in this case). (Hronová, Fischer, Hindls, Sixta, 2009).

The financial analysis and its indicators may be used for the companies or the enterprises at microeconomic level, while the sector analysis and its indicators may be used for non-financial corporations (macroeconomic level). The standard indicators are:

- absolute indicators (e.g. gross value added, investment, saving, profit, or debt),
- relative indicators (e.g. investment rate, saving rate, profit share, debt rate),

which are described e.g. in (Hronová, Fischer, Hindls, Sixta, 2009) or (Hronová, Hindls, 1997).

There are many other indicators, e. g. those known from the microeconomic financial analysis which can be used to describe and analyze the behaviour of non-financial corporations. These indicators can be found at Eurostat Metadata (Eurostat, 2016). Eurostat defines a few share indicators to evaluate the profitability of non-financial corporations. These are rather similar to the microeconomic indicators.

The profitability ratios measure the degree of success or failure of a given company during a given period of time (Kieso, Weygandt and Warfield, 2013).

The following text presents and describes the indicators that evaluate the profitability of non-financial corporations, which are based on microeconomic indicators (Eurostat, 2016)¹:

- gross profit share (*GPS*),
- gross return on capital employed, before taxes, (*GROCE*),
- net return on equity, after taxes, (*NROE*).

Gross profit share (*GPS*) relates to return on sales (*ROS*) at microeconomic level². *GPS* can be formulated as (1):

$$GPS = \frac{GOS}{GVA} \quad (1)$$

where *GOS* denotes gross operating surplus (i.e. EBIT at microeconomic level), which is the portion of income derived from the production of non-financial corporations. *GVA* denotes gross value added, i.e. sales in the company.

Gross operating surplus includes all that remains in the sector of non-financial corporations after paying all costs related to its productive activities. Gross profit share is the main indicator for the assessment of the performance of the non-financial corporations and an ability to generate the profit from the production, i.e. how much profit is generated by non-financial corporations by one unit of gross value added. (Hronová, et al., 2009)

Gross return on capital employed, before taxes, (*GROCE*) relates to return on capital employed (*ROCE*) at the microeconomic level. *GROCE* can be formulated as (2):

$$GROCE = \frac{GOS}{MFL} \quad (2)$$

where *GOS* denotes gross operating surplus (i.e. EBIT at microeconomic level), and *MFL* main financial liabilities (i.e. invested capital at microeconomic level). *MFL* contains: deposits, debt securities, loans, equity and investment fund shares (Eurostat, 2016).

The characteristic of *GROCE* is similar to *ROCE*, i.e. it comprehensively evaluates the efficiency of the non-financial corporations and states how much profit is generated by non-financial corporations by one unit of capital employed. *GROCE* is applied to compare the profitability based on the amount of used capital. (Kislingerová et al., 2007) or (Růčková, 2015)

Net return on equity, after taxes, (*NROE*) relates to return on equity (*ROE*) at the microeconomic level. *NROE* can be formulated as (3):

¹ In line with the European System of Accounts (ESA 2010) some values are expressed in gross or net terms, i.e. with or without consumption of fixed capital. Thus the terms gross or net are not the same at macro or microeconomic level.

² Microeconomic description is in line with Higgins (2012), Kislingerová et al. (2007), Růčková (2015) or Synek et al. (2009).

$$NROE = \frac{NOS - CTI}{E} \quad (3)$$

where *NOS* stands for net operational surplus (i.e. EBIT at microeconomic level), *CTI* denotes current taxes on income and wealth, the numerator relates to EAT at microeconomic level. *E* means equity and investment fund shares (Eurostat, 2016).

The characteristic of *NROE* is similar to *ROE*. It expresses the return on capital invested by shareholders or owners and states how much net profit is generated by non-financial corporations by one unit of capital invested. (Kislingerová et al., 2007) or (Růčková, 2015)

NROE expressed in per cents should be higher than the interest rate of lower risk bonds, e.g. government bonds. The difference should be called the risk premium. (Růčková, 2015)

Just as with the microeconomic indicators, it is also evident that a higher value indicates a higher profitability and appreciation of the invested capital. All the values can be multiplied by one hundred and expressed in percent.

4.2 Analyse of variance

Referring to the aim of the paper, there is a need to find out if the differences in behaviour of enterprises (non-financial corporations) with respect to their ownership are statistically significant. The analyse of variance (ANOVA) is employed for this purpose.

ANOVA tests whether or not the means of several groups are equal. Null Hypothesis (H_0) states that the means of groups are equal, i.e. the origin of capital (domestic or foreign) does not affect behaviour of non-financial corporations. (Hendl, 2012)

5 Empirical results

The behaviour of sub-sectors of non-financial corporations is evaluated in this section by means of the mentioned share indicators.

The dominant share of non-financial corporations' gross value added to gross value added the entire economy is evident as you can see in Fig. 1. At the beginning of the 1990s, there was a reduction in the share of public non-financial corporations and, on the contrary, an increase in the share of foreign controlled non-financial corporations related to transformation process.

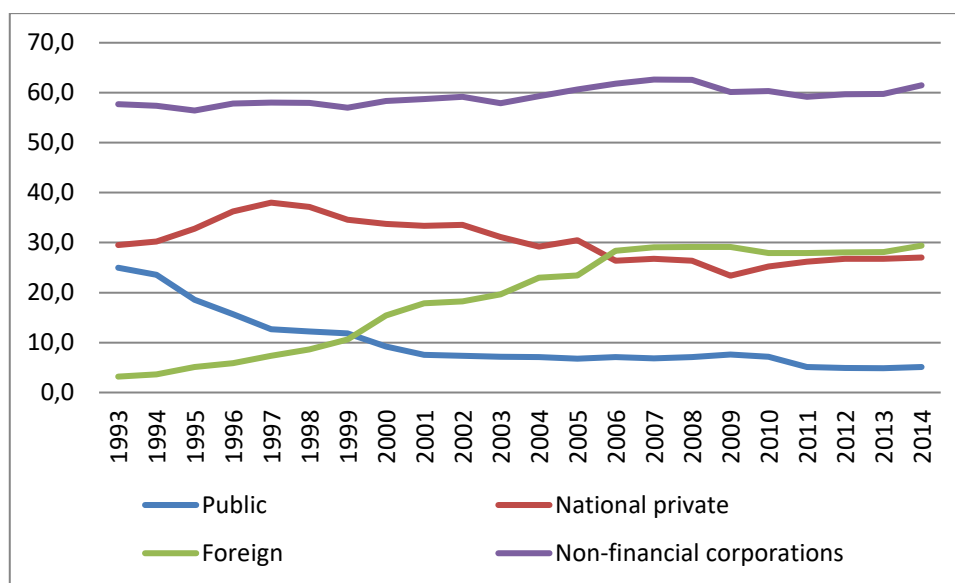


Fig. 1. GVA share to GVA ČR in % (Source: ČSÚ)

Related to the aim of the paper indicators of national private and foreign controlled non-financial corporations are evaluated.

Average values of *gross profit share* are showed in Fig. 2 (in per cent). Sector of non-financial corporations demonstrates the average value 49.3%, i.e. sector generates about 0.5 CZK of profit by one CZK of gross value added. Foreign controlled non-financial corporations gain the average profitability at 55.5% against 45.1% of national private non-financial corporations.

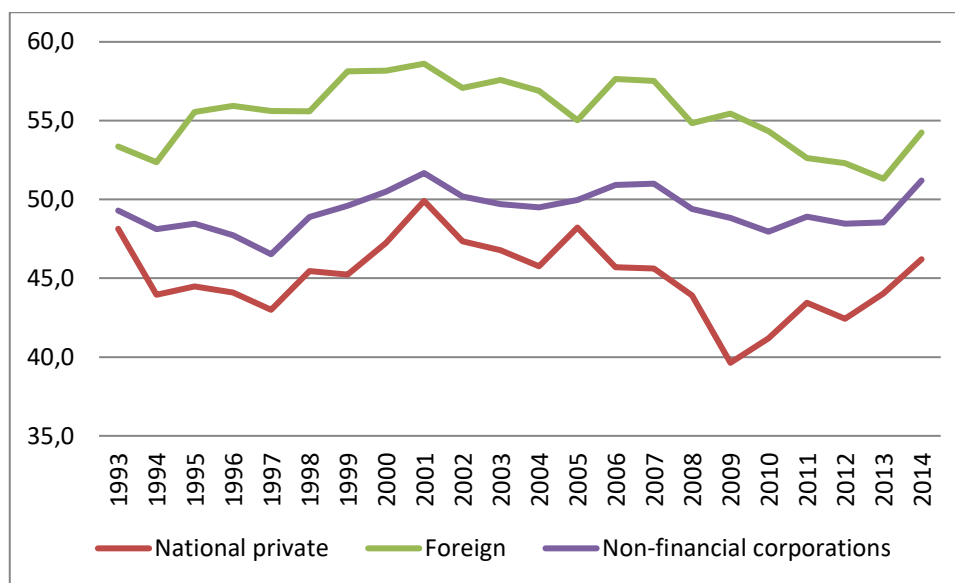


Fig. 2. Gross profit share (Source: ČSÚ)

Average values of *gross return on capital employed (before taxes)* in per cent are showed in Fig. 3. Sector of non-financial corporations demonstrates the average value 17.5%, i.e. sector generates about 0.18 CZK of profit by one CZK of capital employed. Foreign controlled non-financial corporations gain the average profitability at 28.1% against 14.9% of national private non-financial corporations.

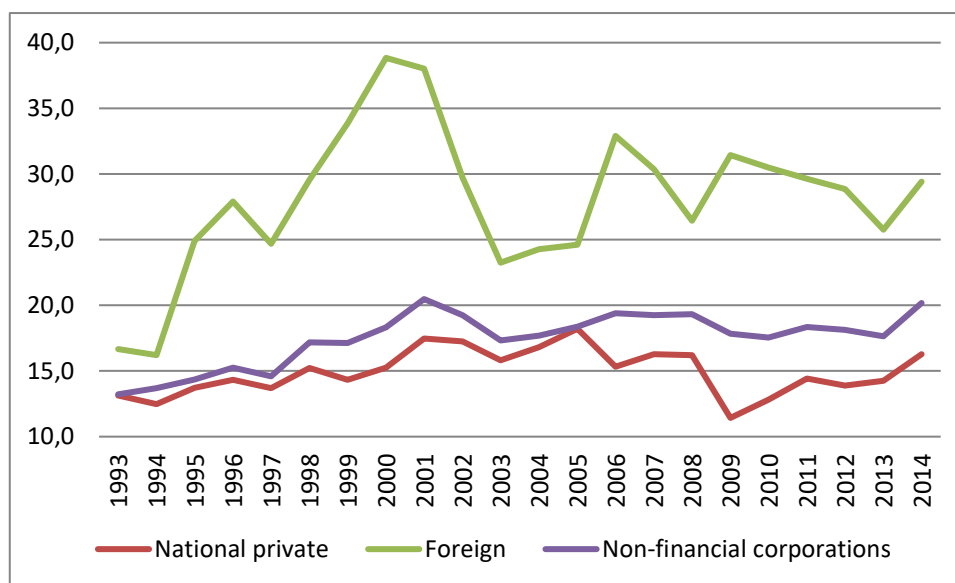


Fig. 3. Gross return on capital employed, before taxes, in % (Source: ČSÚ)

Average values of *net return on equity (after taxes)* in per cent are showed in Fig. 4. Sector of non-financial corporations demonstrates the average value 10.4%, i.e. sector generates about 0.10 CZK of net profit by one CZK of capital invested. Foreign controlled non-financial corporations gain the average profitability at 20.0% against 9.6% of national private non-financial corporations.

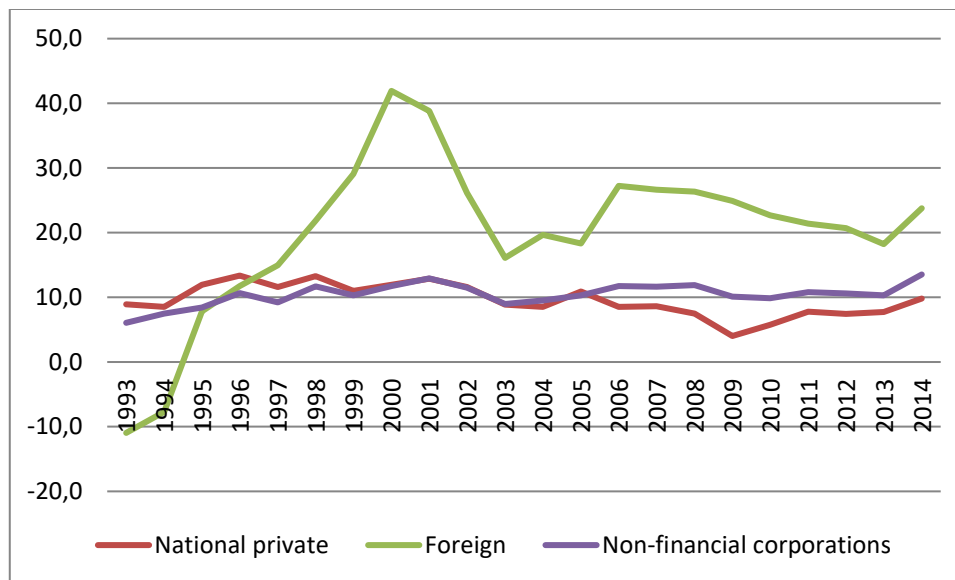


Fig. 4. Net return on equity, after taxes, in % (Source: ČSÚ)

As you can see, there are differences between national private and foreign controlled non-financial corporations. But are they statistically significant? Does the origin of capital affect behaviour of non-financial corporations?

According to ANOVA results H_0 were rejected in all three cases. This means there is statistically significant difference between groups of indicators and origin of capital affect behaviour of non-financial corporations. Thus, Czech economy can be treated as a dual economy. Benáček (2000) confirms this result, whereas according to Zamrazilová (2007) there occurs gradual convergence, on the contrary, Blažek and Drášilová (2013) notice to gradual divergence due to higher labour productivity of foreign controlled non-financial corporations.

6 Conclusion

The main aim of the paper was to find out if there are statistically significant differences in behaviour between national private and foreign controlled non-financial corporations. Behaviour were investigated by means of sector analysis indicators: gross value added share, gross profit ratio, gross return on capital employed (before taxes) and net return on equity (after taxes) in the Czech Republic during the period 1993-2014. By means of analysis of variance was found that differences between indicators are significant.

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APPLICATION AND BENEFITS OF COMPETENCE MODELS AS A EFFECTIVE TOOL OF COMPANY MANAGEMENT

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Abstract

The scientific objective of this study is to create an adequate theoretical basis for research in the field of managerial competencies. The paper was created on the basis of extensive research of competency-oriented publications, published predominantly in the last 15 years. Current scientific approaches to competence research, their composition and classification are described. Considerable attention is paid to the possibilities of applying competence models in managerial and personnel work. The contribution of the presented study is an analysis of key concepts in the area of competency models and stakeholder identification (HR, managers, employees and company as a whole), including their relationship to the application of the Competence Approach. The study will serve as the theoretical basis for anticipated research into the managerial competencies of large industrial companies.

Keywords

Manager, Managerial Competencies, Competency Model, Personnel Management.

JEL classification

M12, H12.

1 Introduction

Almost every company today is aware that its employees are those, who creates its value. Based on this is the process-oriented company with clearly defined processes also aware that every one employee must have strictly defined role and responsibility within the process. In addition to their responsibilities are their competencies, assumptions, knowledge and skills very important as well (Wang and Haggerty, 2011).

Each job in company's hierarchy should have clearly defined competencies, which are necessary to perform the job. Defined model of competencies is currently very common in many firms. They chose general competency model for all positions in the firm or very specific models for a job position only. Competency model allows to precisely define the professional and personal requirements for work performance and it create great tool for selecting, evaluating and it determine the development process of knowledge and skills. Moreover, it eliminates specific gaps between employee's competencies (Hroník et al., 2008).

Even it sounds very same, there is a difference between competency and competence. On the other hand the researcher are differing in explanation of those two words. To compare the meanings we can say the definition of competency as knowledge, skills, mindsets, thought patterns, and the like used whether singularly or in various combinations, result in successful performance and on the other side the competence is a function of worthy performance, which is a function of the ratio of valuable accomplishments to costly behavior. (Teodorescu, 2006) Broadly speaking, competence reflects a

person's cognitive approach to a task, encompassing the multiple attributes of knowledge, skills and attitudes whereas competency highlights a person's ability to perform those tasks within the defined context of professional practice (Leung et al., 2016).

Models of competencies are tools, which companies could use as a support by filling positions and selecting suitable candidates. But they could also help them to self-develop and approach to the defined target, goal or vision. Using of these methods could be discovered and developed the talents which can appear after a certain period in society. As a part of competence politics used to be a evaluating of certain indicators. With analysis of the evaluation can be revealed various opportunities or threats and it could lead to continuous improvement of company (Kubeš et al., 2004).

2 Research approaches

Managerial competencies have been studied for more than 30 years, mainly within two main streams. The first describes competences as certain features, ie motivation, features, skills, defining a social role or self-presentation, or as the amount of knowledge required to perform the work (Boyatzis, 1982; Sandberg, 2000). Boyatzis (1982) uses competence to define individual characteristics that affect high performance.

The research of 150 case studies from North America and it is based on article written by David C. McClelland in 1973. Analysis of the case studies has shown that this theory begun to be applied in an inductive way – based on scientific methods and in-depth analysis. Later, however the theory has gradually evolved into application in deducting way – using prerequisite competence dictionaries that solve some specific cases. Both approaches are different but, on the other hand, they have the same goal – to create a list of key competencies (6-20) that perfectly describes the job position and form the human resources department in the selection, training and career development of employees. Currently it is also a hybrid approach in use, which combines highlights of positive attributes of both approaches and applies it in practice (Bouteiller and Gilbert, 2016).

Woodruffe (1993) describes competence as observable work performance, which, according to Cardy and Selvarajan (2006), may include traditional knowledge, skills and skills but also motivation. According to Bouteiller and Gilbert (2016) is recommended to select employees not only based on competency test, but also use an intelligence test.

The second stream is a newer approach to competency research, which is called an interpretative approach. This approach considers competence as a condition that is defined by the situation in which the person is located or the work that is expected to be performed by the person. In other words, the way in which work is conceptualized enables a worker to organize specific knowledge and skills into different performance competencies (Sandberg, 2000). This conceptualization is then what enables the worker to perceive as an average, experienced or expert in the area (Rogers et al., 2015).

Since competence is a perceptual matter, it depends on the context that is observed, given the different requirements of knowledge, abilities and skills (Bassellier et al., 2003; Marcolin et al., 2000). Therefore, a person who is considered an expert within a certain context may not be considered an expert in the context of another. To be perceived as a competent person, it is necessary that the knowledge, skills and abilities, was able to express in a joint work. In the course of cooperation with others, others can see and perceive competence or lack of competence in the corresponding context. It is therefore likely that those who demonstrate competence will perform better work performance than those who do not show competence (Wang and Haggerty, 2011).

3 Composition and classification of the manager's competence

„According to Prusak (2016) human capital is combination of knowledge, innovativeness, abilities, experience, creativity, social and personal skills and characteristics(physical, mental, intellectual and moral) created by predispositions an internal motivation of people permanently connected with society, with which they are able to cooperate. At the same time, the authors emphasize the complex

structure of human capital by pointing to the following components: competence (knowledge and skills), motivation to use the potential and intellectual properties.

According to Kovács (2009) we can divide the manager's competence into several elements which shapes his role (refer with Fig. 1). However, these components are not interchangeable – lack of certain value cannot be replaced with the surplus of other value.

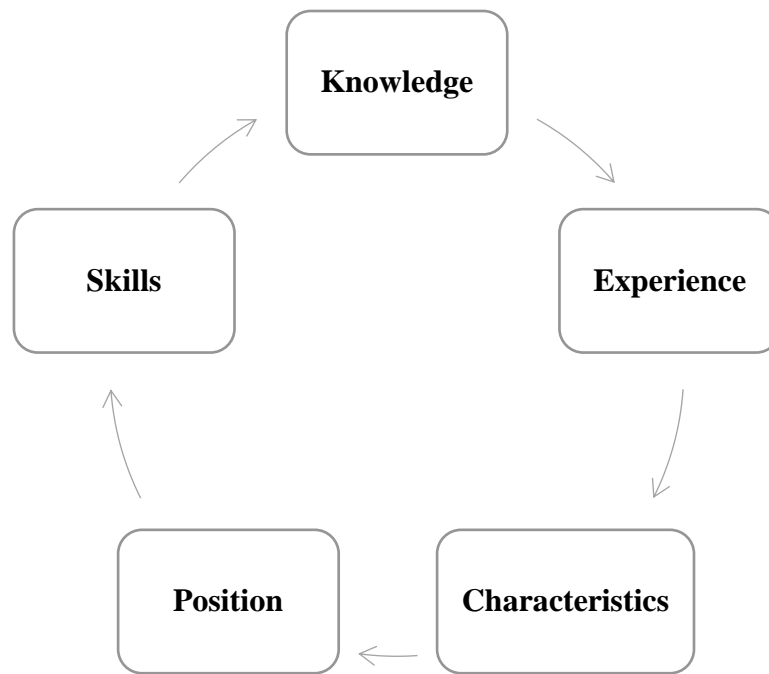


Fig. 1. Components of competence (Source: Kovács, 2009)

As well as approaches to definitions of competence there exists several ways how to structure the competences depending on each author. One of the way of structuring is defined by Armstrong and Stephens (2015), who recognize 3 main groups of competences:

- Behavioral and personal – competencies of personality that individuals bring to their work.
- Competencies based on work's character – influenced by job deployment and expected performance in specific roles.
- Specific competencies – this category defines competencies according to certain professions regardless of the particular company or with regard on specific job positions within one company. They may be universal, general or specific depending on the role.

Another possible view on division of competencies defines 2 main groups of competencies (Prokopenko and Kubr, 1996):

- Technical competencies – competencies with technical character with regards to attitudes, abilities or even the talent. They are related to the economic, technical, financial, procedural and structural aspects of the work.
- Behavior and act – this category includes all competencies contacted to working with people. They affect the communication of individuals inside or outside of company.

Heijke et al. (2002) distinguish three groups of competencies: those acquired in school, which are of direct use in later work; those acquired in school, which facilitate acquisition of new competencies after graduation from school; and those acquired mainly in a working context. A well-known classification of competencies is Becker's distinction between general and firm-specific competencies, which Nordhaug (1993) refined and extended by distinguishing between competencies

specific to firms (firm-specificity), tasks (task-specificity), and economic sectors (industry-specificity)(García-Aracil and Velden, 2008).

Kuijpers (2000) adopts an even broader perspective and proposes a typology of competencies which consists of three levels:

- General working competencies, which she defines as competencies required for different working situations and at different time periods.
- Learning competencies, which consist of a bundle of competencies which facilitate the development of working competencies.
- Career related competencies, which are defined to manage working and learning competencies within a personal career path.

Various dimensions of the measurement debate are articulated in the literature: specifically, the lack of a universal model of competence and a universal understanding of the phenomena of competence. Many contributions have sought to present classifications or typologies of competency, moreover specific measurement and classification issues emerge (García-Aracil and Velden, 2008).

4 Models of competencies

Model of competencies can be marked as the set of competencies needed to perform a defined job position. The model accentuates on managerial competencies with an impact and focus on organizational success. Because of this fact, the models have recently become an inherent part of companies and organizations. This provides a detailed description of the model as a descriptive tool for identifying the skills and behaviours needed to effectively fulfil a role in the organization in addition with aiming to meeting strategic goals. It is possible to achieve the potential to meet the needs of all stakeholders by combining the necessary with required competencies of the company through competency modelling, the development of training and improvement programs (Naquin, 2006).

The most common results of managerial competency programs have led to higher employee performance, higher flexibility and improved skills of the workforce and higher quality and customer levels of the products provided. However, factors that will lead the management of competences to successful implementation are:

- high level of support and management co-operation
- significant involvement of staff to their inputs
- allocating adequate financial resources
- clear definition of goals (Pickett, 1998).

The most successful companies are using so called - Leadership competency model. It determines the key skills and behaviour, which are required by their managers and executives. For this approach and for the being effective it is necessary to establish links between competence and performance, and determine the appropriate number of core competencies that are actually required. It is recommended to focus on 3-5 competencies that can be improved from "good" to "excellent" what leads to the development of the overall personality development of leadership and thus to benefit for society as well. There is no perfect leader and everyone has their weaknesses. For this reason, it is better to focus on the naturally strong competencies and develop them so then the weaknesses have the least impact on its overall performance. It is advisable to use competency models and isolate key competencies the chief executive can focus on and develop them for the benefit of all stakeholders. Of course, in this case is necessary to create an evaluation system to monitor the process. However, it must be focused on evaluating the achievement of performance and goals, not on evaluating of individual competencies. Only in this way is it possible to monitor the progress of the sensuality and the intelligence of the executives (Clemmer, 2014).

In today's competitive and constantly changing business environment, competency can help human resource professionals to improve the set of skills and efficiency level of their workforce to match changing market trends in order to face competitive business challenges. A competency model refers to a group of competencies required in a particular job (usually 7-9 competencies) depending upon the nature and complexity of work along with the culture and values of the organization in which the work takes place, which can be developing for specific jobs, job groups, organizations, occupations or industries (Bozkurt, 2011). The competency model is useful to identify capabilities and attributes needed to meet current or future staffing needs of global managers and to eliminate the gap between requested and available capabilities. Moreover, it would enable managers to perform more effectively, and lead to develop the dimensions of effective management and leadership behavior (Wu and Lee, 2007). According Hogan and Kaiser (2005) every existing competency model can be captured with the following domain model:

Table 1. The Domain Model of Competencies

Domain	Definition of competencies
Intrapersonal	Internalized standards of performance; able to control emotions and behavior (courage and willingness to take a stand; career ambition and perseverance; integrity, ethics, and values; core self-esteem and emotional stability; patience; tolerance of ambiguity)
Interpersonal	Social skill role-taking and role-playing ability; talent for building and maintaining relationships (political savoir faire, peer and boss relations, self-presentation and impression management, listening and negotiating, oral and written communications, customer focus, approachability)
Business	Abilities and technical knowledge needed to plan, budget, coordinate, and monitor organizational activity (business acumen, quality decision making, intellectual horsepower, functional/technical skills, organizing ability, priority setting, developing effective business strategy)
Leadership	Influence and team-building skills (providing direction, support, and standards for accomplishment; communicating a compelling vision; caring about, developing, and challenging direct reports; hiring and staffing strategically; motivating others; building effective teams; managing diversity)

Source: Hogan and Warrenfeltz (2003).

In brief, this model identifies four broad classes of managerial competencies with 3 main properties: developmental (Intrapersonal skills develop first leadership skills as last); hierarchy of increasing trainability (intrapersonal skills are hard to train and leadership skills easiest to train); model is comprehensive (every existing competency model can be organized in terms of these four domains) (Hogan and Kaiser, 2005).

5 Application of competency model

Kubeš et al. (2004) argues that only a few companies are really ready for the future, although are many projects running concerning the future. Competency models can significantly align the view on what will be needed in the future, what behaviour organization should promote, develop and reward. Based on a series of questions, Kubeš et al. (2004) and Hroník et al. (2008) provide possible areas where the competency model can be used to improve processes in the organization (refer with Fig. 2).

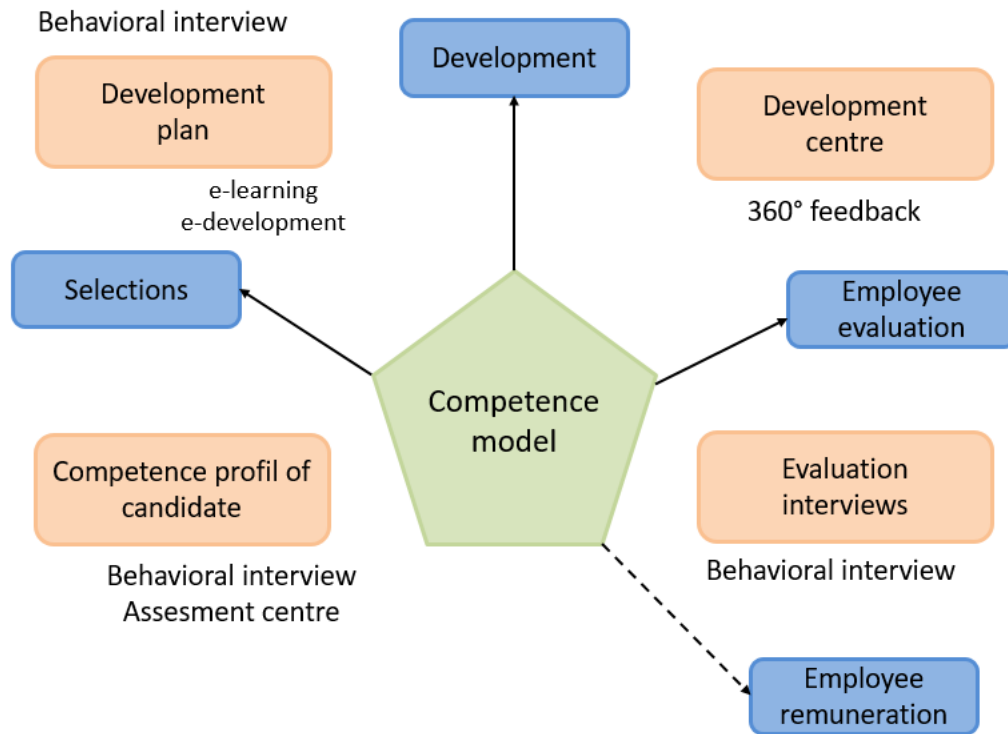


Fig. 2. Context of competency model application (Source: Hronik et al., 2008)

5.1 Staffing

The competence approach chosen in the area of personnel selection is based on a validated competence model. The most common used method is the interview, respectively competency based interview (CBI). Employee selection based on competency approach can be well used in the following situations:

- Low power or productivity,
- High fluctuation,
- Process planning,
- Job demand for the duration of the training,
- Organization change.

5.2 Staff development

Competence concept in this area is characterized especially by the communication between the employee and his superior. The supervisor becomes information not only from simple filled-in forms but also collects, analyses and then documents all the progress and failures of his subordinate workers. Staff development from the competence approach point of view is based on the assumption, where each job requires the employee's ability to have certain competencies which are developed at a high level. Next development is about balance of differences between the current and the ideal state.

5.3 Evaluating and remuneration

The main motivation factor for using of a competence approach in the staff evaluation is primarily the issue of subjective evaluation and subsequent remuneration of workers. Other circumstances within the staff evaluation system such as:

- impossible comparison of goals difficulty in different positions,

- impossibility of fully controlling the results for which a worker is evaluated,
- failure to comply with company strategy and market requirements,
- contribute to the development of a competence approach in this area.

5.4 Career growth

This area is concerned with the previous points, as a possible career path is being proposed for the new employee by hiring. Based on a level of competencies comparison from timed development point of view of certain worker, it is possible to determine whether the employee's competency is linked to higher position or whether the level of competence is linked to the current position (Kubeš et al. 2004, Hroník et al. 2006).

6 Conclusion

Currently the large companies focus on teamwork rather than on individuals. However, it is very important for everyone to have the right competencies for their work and they are further developed in accordance with the working environment and the content of the job position. Competence models therefore occupy an important role in larger businesses that are aware of the importance of their employees' competencies. The article defines the basic terms and puts them in context. Competencies constitute the intellectual property of companies and are an important factor in strategic decision making and selection of suitable staff for leadership. They reflect the basic skills of the experiences and behavioural patterns that are crucial to the performance of the function.

If we consider the benefits of using a functional competency model, these benefits can be summarized in four areas according to Hroník et al. (2008). In the individual areas from the organizational, managerial, employee and human resource management point of view (refer with Table. 3):

Table 3. Benefits of functional competency model

HRM	Managers	Company	Staff
The basic tool of the HRM interconnecting the selection, evaluation and development of staff.	Efficient and simple performance management tool	Link to company strategy	Understanding of company needs
More aimed communication with client/managers	Clear content of feedback	Unity of management and common language	Clear statement of expected behaviour
Higher professionalism and interconnection with business	Increasing of performance naturally	Benchmarking and organizational development	Recommendations for individual development

Source: Hroník et al., (2008).

Using competency models, it is possible to define key competencies and set the form of their development for the overall benefit of the company and its growth. A Competency Model can help companies to decide on a particular level of governance and a specific structure of employee positions. By using a model of competence as a general or a specific work position, it is possible to use it not only within a single company but also in the same position within the industry. By creating a model, it is possible to discover the differences between what companies expect from their managers or employees and what they really require and need.

These models include complexes formed by different combinations of competences and characteristics needed to fulfil certain tasks. The specific combination and complexity of each model is determined directly by the company and it depends on the character of the position and the job

description. For integrated human resource management, competency models are an inseparable part. (Mikušová and Čopíková, 2015)

Plamínek and Fišer (2015) claim that there is a connection between all the successes and failures of an organization and competencies of its employees. For this reason all problems can be resolved through competencies (so-called competency rule) and then we can say that leadership and management of organizations that is based on competencies (Lišková and Tomšík, 2013).

The way to optimal business performance is building a positive working environment, which is largely made by work satisfaction. This can be set as a performance indicator. Work satisfaction can be defined as the level of happiness of a worker within his / her work position and is therefore considered to be a lucrative area of interest in various studies and scientific work, although it does not have a uniform definition in the literature.

Khan et al. (2015) describes the link between work satisfaction and competencies, which later turns towards overall work performance. From this we can conclude that competence can be defined as a predisposition to work satisfaction and thus to work performance. We can also add emotional intelligence to this claim as a predisposition to work satisfaction and even a scientifically proven correlation in between.

Our next research steps will be based on the empirical research of managerial competencies. This anticipated research will result into the creation of competency models for each of the managerial level in the large industrial companies. Contribution is expected predominantly in the context of HR work with managers as suggested in the chapter 5 (selection, development, evaluation and remuneration based on the competency model).

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CHANGES IN STRATEGY DURING STARTUPS' BUSINESS MODEL DEVELOPMENT

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Abstract

The strategy offers an explanation and understanding of companies' behaviour as it is a specific plan how to achieve the companies' goals accounting for the behaviour of other subjects. This paper is based on the results of our research on business models and strategies of startups where we studied the development of startups using in-person interviews with startups' founders. Here we focused on attributes of strategy in startups and how they change during the development of the business model. After statistical analysis, we considered the results as statistically significant if the p-value was at least ≤ 0.05 . We found statistically significant difference in segmentation and costs level in the two presented and analysed research rounds of companies' development.

Keywords

Startup, Strategy, Business model, Development.

JEL classification

M13, M10, L10.

1 Introduction

In present times defined by rising technology level, the topic of startups is very interesting especially as it is currently not researched enough and the theory of this field is still developing.

In this paper, we will deal with changes of strategy with respect to startups' development in time. We were interested in the level of flexibility of strategy in startups, in what extent are startups changing their strategy while developing their business model. We will capture and describe this change further in this paper.

Startup is a young business that is still in search for a viable business model. The difference to a traditional newly founded company is in the business concept, that is new and so has unpredictable future. Another characteristic sign is scalability. Startups should be able to serve exponentially growing demand without a proportional increase of costs. The exponential growth possibility is also typical feature of startups.

Strategy explains the behavior of companies; it is a specific type of plan that covers the goal and the way how to achieve it with respect to other subjects interacting with it.

Osterwalder and Pigneur (2011) define a business model as a fundamental principle of creating, capturing, and offering the value to customers.

Slávik and Hanák (2017) studied the relationship between business model and strategy. The most interesting findings were that more differentiated business model would result in better market position what is accentuating the importance of business models for companies.

Bednár and Tarišková (2016) stated that the foundation of every business is the creation of cash flow. Cash flows are very different in startups compared to traditional businesses what they argue is caused by startups maneuvering in blue oceans. According to Kim and Mauborgne (2009), blue ocean emerges if a new market space is created. This market space is not claimed by other competitors and a new demand must be formed. The competition can be considered as irrelevant.

Ljudvigová (2016) considers the inability of startups' leaders to create a high-quality team as one of the main reasons for startups' failure. While the founder is responsible for the business idea and vision, for the implementation a quality team is necessary.

Procházková (2016) studied factors influencing stability and competitiveness of startups. She stated that the most important factors are a simple and scalable product, brand value, and the right and diversified source of financing.

Porter (1996) claims that a company can achieve competitive advantage either through operational effectiveness or strategic positioning. As operational effectiveness that leads to low costs is easily mimicked, the strategic positioning is held for the true source of sustainable competitive advantage while it leads to differentiation. In his work, he mentions three principles of strategic positioning: unique position, trade-offs, and compatibility. As Porter (1980) previously studied the competitive strategies; he concluded that any of three basic strategic positions (cost leadership, differentiation, specialization) can lead a company to a viable outcome. Further, he describes a situation called “stuck in the middle” where a company is not able to develop a distinctive strategy and evaluates it as an extremely bad situation.

Geissdoerfer, Savaget, and Evans (2016) wrote that companies understand the need not only for new technologies but also for business model innovation so they will be able to sustain their business. That is why the business model innovation is also objective and drive in new tools and techniques development. There are a lot of new business models that create promising business opportunities. However, only a small fraction can be successfully implemented. Here in the introduction of new business models, we see the opportunity for startup companies as a vehicle for change.

Lubik and Garnsey (2016) studied the early development of business models based on science like biotechnologies, green technologies or advanced material. They wrote that a lot of commonly used strategies and resulting business models do not fit to businesses in the early phase of development. These companies must invest a significant portion of their finance while searching for investors from the early beginning. Based on research and empirical evidence they claim that the reason why the in literature recommended business models and strategies are not suitable and successful in case of young technology-driven startups is that business model that is created in advance without experiencing learning concept is constrained by the complexity and uncertainty of the environment. Their conclusion is not aligned with traditional recommendations as they recommend to technological startups to focus on the mass market rather than on niche market. They explain that with the argument that substantial resources that are needed to fund the business and then to create and capture the value can be obtained only by a great difficulty in the case of a niche market.

The business model is not impacted by the competitive environment only, it is influenced by the support and higher objectives of government that can have a significant impact on outcome whether the business model is successful or not. How the different regions and different governments suit the different business models explain Gabriel and Kirkwood (2016).

In our literature research, we found a significant importance of business model and a need for a process of learning and further development of the business model. The startups typically operate in a unique and new environment, and due to their specifics, it is a suitable tool for new business models implementation. That is why for the business model as a representation of strategy is important to reflect changes in strategy during the startup development and so ensure sufficient flexibility.

2 Objectives and methods

The objective of this paper is to find the level of strategy flexibility in startups and to capture this change in time during the business model development. We want to investigate how flexible the strategy of startups is and on the other hand how rigid can it be. This will explain the fundamental approach of business model development and whether it is based on a deep business orientation change or a somewhat superficial business model optimization. In addition to a characteristic of the change, we were asking whether these changes can be captured in such short time between research rounds.

In our research, we studied the business models and strategies in over 70 startups. After processing of last research round, we were still left with 53 startups. We obtained the data in the form of repeating personal one on one interview with startups' founders. Next, we processed the obtained data using MS Excel and PSPP statistical software. We used the method of descriptive and inductive statistics,

mainly ANOVA, t-test and linear regression. We considered the result to be statistically significant if the p-value was at least ≤ 0.05 .

The attributes of strategy studied in this paper were chosen according to Porter's model of competitive strategy. The startups set the values with a qualitative comparison to their competition on a scale of 5. Segmentation could have values from mass market to customization. Costs and price could have values between high and low with respect to competition. The differentiation level could reach from local to global level.

3 Results

In table 1, we describe the research sample. Two-thirds of startups have between 4 and nine team members. One-third of startups offer applications as their main product while two-thirds of them are offering either services or applications. In general, in startups' we see the incline to businesses with lower capital needs. In our sample, we had more than a half of startups in the growth phase.

Regarding the attributes of startups, most of the companies are somewhere in the middle of the range of their segmentation. They do not incline to mass market nor specialized market at the time. The startups chose the way of differentiation; this is shown in that 90 % of them are reaching for international uniqueness. Noteworthy share declared lower costs than their competitors, but the overall level of cost is comparable. Similarly, the price level is comparable with the competition.

Table 1: Description of the research sample of startups

	N	%		N	%
Startups' characteristics			Attributes of strategy		
Number of team members			Segmentation		
1-3	9	17	Mass market	1	2
4-6	19	37	More segments	15	28
7-9	14	27	Few segments	27	51
10 and more	10	19	One segment	6	11
Type of business			Customization	4	8
Manufacture	14	26	Differentiation level		
Service	22	42	Local	1	2
Application	17	32	National	5	9
Phase of business idea development			Central European	13	25
Idea	0	0	European	13	25
Developmental	0	0	Global	21	40
Prototype	9	17	Costs		
First revenues	16	30	High	1	2
Growing revenues	28	53	Higher	11	21
			Comparable	13	25
			Lower	21	40
			Low	7	13
			Price		
			Low	4	8
			Lower	13	25
			Comparable	23	44
			Higher	11	21
			High	1	2

Source: own research

Based on our results we argue following. Studied startups are small companies what helps to keep lower personal costs while drawing benefits from their flexibility. A significant share is focusing on business in the field of services or its special branch, applications. Both services and application are in general less demanding on the initial investment. In our research we differentiate between services and applications because applications are well scalable meanwhile traditional services do bear proportional costs increase with volume. Startups are trying to differentiate themselves from the competitors by doing things differently and offering other values. However, the costs and serving segments are rather not well defined. Under segment, we understand the interpretation of Armstrong and Kotler (2003). They define segmentation as dividing the market into separate groups different in their needs, character, and behavior. These groups can be influenced by different marketing mix.

In table 2, we show the analysis of strategic attributes changes between the research rounds using the paired t-test. We identified a significant change in segmentation on at a p-value of $p \leq 0,05$ and in the case of costs at $* p \leq 0,01$. In case of segmentation the startups' became more specialized, and in case of costs, they became lower. The price and differentiation remained similar.

Table 2: Analysis of changes in strategy between research rounds

	1 st round		2 nd round		t-test
	M	SD	M	SD	
Differentiation	4,02	1,16	3,90	1,12	1,52
Segmentation	2,59	1,12	2,94	0,88	-2,48 *
Costs	3,08	1,00	3,37	1,02	-3,00 **
Price	3,00	0,81	2,88	0,90	1,23

* $p \leq 0,05$ ** $p \leq 0,01$

Source: own research

4 Discussion

As we showed in results, the studied startups are transitioning from less to more specialized segmentation between the phases of their business model development. That means that they give up on the effort to serve a greater number of segments and focus more on the segments that meet their requirements. While the business economics seems to create a natural limitation for startups to address the mass market. This is because they do not have enough required financial and reputational resources. However, in the beginning they try to define their customers very broadly so they serve as many segments as possible allowing them to find their ultimate customers.

In the results, we also observed a significant decrease in costs during the development. The causes of this decrease should be closely investigated in the future. Meanwhile, we assume following explanations. First, as a startup is developing it is learning and improving. Considering the tools a startup has available (pivot, trial, and error) it is expected or rather desirable to make errors. If a startup is then able to learn from those errors and improve the results could be a decrease of costs because lack of errors means higher efficiency. Our next possible explanation of cost decrease is that segmentation and costs are closely connected. With an increased specialization on fewer segments, the number of overall segments is decreasing and so do the costs as the startup is getting rid of not desired markets with not optimal reward. As we have enough data to prove this hypothesis we did it at this place. Using the linear regression method we tested whether the cost is driven by the segmentation level. We calculated simple linear regression, expecting that the dependent variable costs will change under the influence of segmentation. Resulting regression was inconclusive ($F(1,51)=0,90$, $p=0,346$, $R^2=0,02$). The coefficient was 0,15 with a standard error of 0,15. The hypothesis was not confirmed, so we stay by the nil hypothesis, that there is not an obvious general connection between the level of costs and segmentation.

The differentiation level decreased a little but not significantly. Startups probably realized during their development, as they studied and interacted with competition, that their product is not as unique as they previously thought and so they lowered its value.

Greater differentiation along with costs comparable to competitors shows initial opportunity for startups to build a unique position in the market. Such a company can take advantage of its uniqueness and flexibility in meeting the customers' needs while having operational costs on the level of the small company.

5 Conclusion

In this paper, we studied the change in strategy during the development of the startups' business model. In our literature review, we found arguments claiming a significant impact of the business model on the competitiveness of companies while perceiving the business model as a manifestation of strategy. It is expected of startups that they create new market space. Startups are essentially suitable to implement new business models. These early business models, however, do not meet the requirements of praxis as the real world is too complex and need an implemented learning concept to develop a successful business model.

In our research, we studied startups that are small businesses characterized by higher flexibility and innovativeness with comparable costs to competitors. Startups mostly operate in the field of traditional services or applications what allows them to hold the initial investment costs low. In case of startups, we see an undisputed strategic position in differentiation, while the segmentation and cost level is stocked in the middle. We identified a significant shift between the two research rounds in segmentation and costs as well. The startups shifted to more specialized segmentation and to lower costs concept.

The results of our research will find an academic application as it contributes to knowledge base of how startups behave and how their behavior changes during their development. The practice will benefit by realizing how are the startups going through developmental stages. This will allow them to focus on critical places and so be better prepared and fast reacting. Startups can realize from the beginning that they will not serve the whole market and so they can focus on finding the final segment. The investors will be able to estimate better how the startups are going through their developmental stages and what impact will this development have.

In future research, we recommend focusing on finding a deeper explanation for our findings. More, it would be interesting to track the further development of our startups and capture the transition to a traditional business.

6 Acknowledgement

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INCIDENCE OF MIGRAINES IN WORKING PROCESS

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Abstract

In this paper, we are presenting the results of our primary research on migraine among employees. A migraine is a type of disease where a headache can occur in combination with other symptoms like nausea, vomiting, or light sensitivity. A migraine is common and widely spread disease with impact on companies and people's lives. As shown in past studies the economic burden in the form of decreased productivity and increased costs should not be ignored especially nowadays when the strong global competition requires a high level of efficiency. In our research, we found that 72% of respondents suffered from some version of a migraine. We also found that 60% of them declared a workload between high and maximal. We did not find a significant linkage between a migraine and perceived exhaustion. However, we identified a positive impact of sports activities on migraine.

Keywords

Migraine, Headache, Productivity, Workload, Prevention.

JEL classification

I10, M12, M50.

1 Introduction

In this paper, we study migraine, its impact on employees and potential measures to address this problem.

While the problem of a migraine and its impact on productivity is an ongoing issue, the advancement of science and technology enables us to explore it from different perspectives being aware of a new tool that can be used to prevent it.

On a human level, the prevalence of this disability raises a need of exploring it from various perspectives. From an economic point of view, we examine the potential impacts of a migraine on employees as this disease presents a risk of potential reduction of productivity and it is in the best interest of the companies to address this problem and, if possible, to prevent the symptoms of its employees suffering from a migraine. By addressing this problem, companies could mitigate the costs of a migraine resulting from productivity loss and use the full potential of its employees.

According to the National Library of Medicine of the United States of America (Migraine, 2017), migraine is a type of a headache that may occur in combination with nausea, vomiting or light and sound sensitivity. A migraine headache is caused by abnormal brain activity, which can be attributed to various causes. However, the mechanism remains unclear. Generally, it is believed to be caused by changes in blood circulation in the brain and surrounding tissue.

In the developed countries, about 12% of the population suffers from a migraine, in the United States of America, a migraine affects 18% of women and 6% of men. Among the afflicted, 90% have medium or strong headaches; three-quarters report that a migraine hinders their normal routine and one-third must stay in bed during a migraine. Epidemiological profile of a migraine remains stable during last fifteen years. (Lipton et al. 2007)

The incidence of migraines and headaches in Europe was investigated by Steiner et al. (2014). In their research, they identified a significant personal impact of headaches and migraines on individuals and their surroundings. They also revealed a variation in severity of pain, depending on different causes of a headache and an increased incidence of headaches among women. Because of migraines,

17.7% of men and 28% of women lost at least 10% of the productive time. A similar result was also found in our previous research, (Zagoršek et al., 2015), where we have found that women are slightly more prone to suffer from a migraine and stronger relationship between overtime, sleep quality and migraine.

The costs associated with this health problem are not negligible for businesses. Based on extensive epidemiological research in the United States of America, Burton et al. (2002) found that 6% of men and 18% of women are affected by a migraine and that the problem is culminating in the most productive age between 25 and 55 years of age. The negative consequences are not bared only by employees but also by their employers in the form of reduced productivity resulting from the costs of absence and reduced performance of employees during a migraine at work. The authors further estimated that a company with more than 80 000 employees would lose 21.5-24.4 million USD annually as a result of a migraine.

The impact of migraines on the population in the United States was investigated by Stang and Osterhaus (1993). They claim that a migraine is a common health problem that has social and financial implications which need to be examined in detail. Based on their research on 501 employees suffering from a migraine, employers' loss amounted to between 1.4 and 1.9 million USD per year, which is about 2 790 USD to 3 790 USD per employee per year.

The loss of productive time and the cost of pain were examined and Stewart et al. (2003). They found that the most common cause of pain that caused the loss of work productivity was a headache, followed by back pain, arthrosis, and musculoskeletal pain. Workers suffering from a headache lost an average of 3.5 hours of productive time per week. Overall, they estimate that the migraine pain represents 27% of the cost caused by pain and the costs of migraine amount to 61.2 billion USD per year. While research by Alavinia, Molenaar, and Burdorf (2009) shows that non-manual workers are less likely to lose productivity, Stewart et al. (2003) found that they account for the largest share of costs (35.2 billion USD), and we see that regarding costs higher wages significantly outweigh the likelihood of unproductive time among non-manual workers.

Brouwer et al. (2001) argue that the traditional ways of estimating productivity losses are the method of human capital and the friction cost method, both estimating the cost of productivity based on absence. In cases such as a migraine, where productivity is reduced without absence, a method of measuring reduced productivity at work is sometimes used to estimate productivity loss. An interesting finding regarding absence is also that 25% of respondents show a loss in productivity before the disease and 20% of respondents after disease, which reduces productivity by another 16% compared to absence alone.

Brouwer et al. (1999) investigated the impact of disease without the absence on lower productivity. Based on their research, they claim that an average of 7% of employees work with health problems. In the case of a firm, they estimate the productivity loss of 0.93%.

Osterhaus et al. (1992) studied a sample of 648 respondents suffering from a migraine and found that 89% of them showed significantly reduced performance and half of them were absent from work for at least two days a month.

While it is possible to find numerous contributions focusing on the negative impact of migraines, the area of impact may be distinguished. For example, in Jelcic et al. (2000) authors examined the effects of a migraine on cognitive functions by the Letter Digit Substitution Test (LDST) and the Verbal Learning Test (VLT). In their research, they did not find any significant differences between the results during a migraine and in the normal state. This suggests that the affected person can concentrate, if necessary, but it is a pain itself which can physically prevent them from executing the tasks.

Lerner et al. (2003) examined the relationship between reported work constraints of employees and work productivity. As outlined in Fig. 1, the employees identified constraints that can be sorted into three groups: demanding deadlines, physical difficulty, and requirements for outputs. Increasing the requirements by 10% for any of the restrictions resulted in a 4 to 5% reduction in productivity.

This article observes the link between the physical requirements that migraine increases and the negative impact on work productivity.

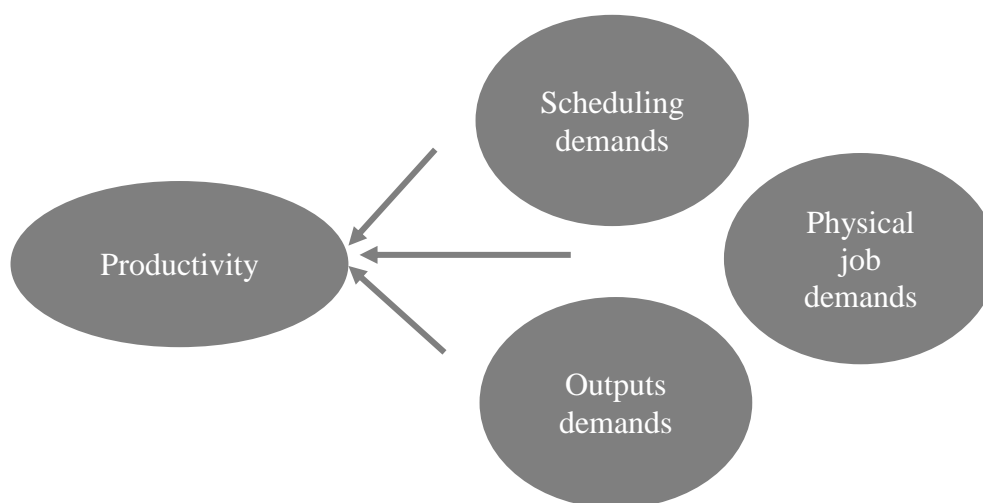


Fig. 1. Work constraints influencing productivity. (Source: Own processing from Lerner et al. (2003))

In addition to reduced productivity, the increased risk of injury is connected to health problems at work. Szarková, Andrejčák, and Matkovčíková (2014) addressed this issue in the context of safety and health at work.

Alavinia, Molenaar, and Burdorf (2009) examined the loss of work productivity due to health issues, demanding tasks and individual characteristics. They claim that there is a significant work productivity loss caused by health problems and their consequences. In their research, they identified a growing loss of labor productivity with the severity of the health problem. However, this relation did not uphold among white-collar workers (managers, office workers).

From the literature review, we have come to the following conclusions. A migraine is a serious health problem that burdens and restricts individuals by various degrees, leaving the economic footprint on businesses in the form of costs. The problem of a migraine is so prevalent in the population that it is of great importance to deal with it in detail. Among the work constraints caused by the pain, migraine is the most common cause. Migraine impacts productivity and the associated costs are influenced by its occurrence in hours and hourly costs per employee.

2 Aim and methods

This paper aims to identify the prevalence of migraines among employees in companies in Slovakia, the relationship between migraines and the perceived workload, and to evaluate factors influencing the incidence of a migraine. We were trying to identify the impact of possible common causes of a migraine on their prevalence while focusing on causes that can be easily influenced by the businesses. Based on our previous research and literature review, we were expecting that the incidence of a migraine will be influenced by the perceived workload, frequency of overtime, sports activities, and the diet as designed in the regression model in table 3.

The primary research presented in this paper was performed in 2016 on a sample of 226 respondents. We collected the data using the questionnaire method. The questionnaire contained 27 questions. Students were asked to collect information from their surroundings. The personal engagement of those who chose to participate resulted in 100 % return rate.

In this research, we further develop the topic of our research project No. I-14-112-00 entitled The Influence of Postindustrial Era on Working Hours and Employees' Performance. We build on the results of this project, enriched by the current literature review on migraine and labor productivity.

For the literature review, we have used the research from ScienceDirect, Springer, and Google Scholar databases.

We have processed the data using the spreadsheet and statistical software. We used methods of descriptive and inductive statistics. Among the methods used were t-test, ANOVA, and linear regression. For statistical significance, we considered results at significance level $p \leq 0.05$ as statistically significant.

The limitations of our data are derived from the subjective way of data obtaining. While the subjective evaluation is a legitimate and common research method, the result can sometimes be skewed and should be verified by future research. The more reliable data that can be obtained by a clinical research are the logical future step. Though, to justify such research, there must be an epidemiological research first.

3 Results and discussion

In this part of the paper, we present the results of our research and present the statistical analysis of the data, which we then interpret in the context of the current state of the theory in this research area.

Table 1 shows the general characteristics of the sample used in our research. In this sample, 72% of respondents suffer from a migraine, with 9% having 6 or more migraines per month, which can be considered a serious problem. However, considering previous research presented in the literature review in the first part of this paper, we can claim that even infrequent cases of a migraine have a significant impact on labor productivity and its associated costs. We also examined the perceived workload, using a modified Borg scale. We found that 60% of respondents felt the high and very high burden, while 8% of the respondents perceived extreme or maximal workload.

Table 1. Sample characteristics (n=226)

	N	%		N	%
Individuals characteristics			Health factors		
Age groups			Migraines per month		
18-24	77	34	0	62	28
25-29	48	21	1-5	139	63
30-39	26	12	6 or more	20	9
40-49	50	22	Illnesses per month		
Over 49	25	11	0-2	146	67
Gender			3-5	61	28
Male	113	50	6 or more	11	5
Female	113	50	Perceived workload		
Size of the company			None or light	16	7
Micro-business	50	22	Moderate	76	34
Small company	51	23	High	78	35
Medium company	55	24	Very high	39	17
Large company	70	31	Extreme or maximal	17	8
Position in the company					
Owner	26	12			
Higher management	6	3			
Middle management	22	10			
Lower management	23	10			
Specialist	97	43			
Manual worker	51	23			

Source: Own calculation

Note: If the sum does not equal 226, there were the invalid answer to the question in the sample.

Using the t-test shown in Table 2, we determined whether there are differences in perceived workload depending on migraine frequency. This is how we tested the chain of events of a migraine – workload - reduced productivity, partially depicted in Fig. 1. The result of our research is that we did not detect statistically significant differences between the perceived workload and the number of migraines. However, our results require further investigation, as we can observe a gradual increase in the workload with the increase in migraine frequency and the high variability of the perceived workload in the case of frequent migraines.

Table 2. Analysis of differences in perceived workload in relation to migraines per month using t-test

Migraines per month	Average	Standard deviation	t-test (p)		
			0	1-5	6 or more
0	8.06	5.99	-	-0.47 (0.64)	-0.98 (0.33)
1-5	8.23	4.87	-	-	-0.88 (0.38)
6 or more	8.68	9.64	-	-	-

Source: Own calculation

Note: ** $p \leq 0.01$, * $p \leq 0.05$

Further, we analyzed the issue of migraines from the opposite perspective, and thus whether it is possible to influence the occurrence of migraines by workload, demanding deadlines, diet, and exercise. For the analysis, we used the linear regression method shown in Table 3. From the results of the analysis, we can conclude that we have not found an unambiguous influence of the perceived workload, the frequency of overtime and the emphasis on a diet on migraine. It should be noted, however, that although we have not affirmed an impact does not mean that the mechanism of a relationship between the variables does not exist on an individual level.

A possible problem in the examination of a migraine may be the nature of a migraine itself. It is possible that a migraine occurs independently of the factors examined, either always or occasionally. In this case, the respondent may not be able to distinguish if a migraine is caused by the studied factors or if these factors add to the intensity of a migraine.

In our analysis, we confirmed the positive impact of sports activities lasting at least 30 minutes on migraine, the more respondents trained, the less they suffered from a migraine. We can explain the mechanism by the study by Gertz et al. (2006) who found that sports activity positively impacts the cardiovascular system, which is one of the possible sources of a migraine. The fact that we have not been able to confirm the positive impact of diet may be interpreted by the fact that not every diet has a positive effect on migraine. However, as current research suggests, migraine has a strong link to epilepsy, and the ketogenic diet has a positive effect on both problems (Stafstrom, and Rho, 2012).

Table 3. Regression analysis of a migraine influencing factors

	Model 1			Model 2		
	B	St.error	β	B	St.error	β
Perceived workload	-0.01	0.12	-0.01			
Frequency of overtime	0.03	0.04	0.05			
Sports activities	-0.24	0.15	-0.12	-0.28	0.13*	-0.14
Diet	0.20	0.23	0.07			
R ² Adjusted, R ²		0.01			0.02	
N		195			216	
F		1.27			4.52	

Source: Own calculation

Note: ** $p \leq 0.01$, * $p \leq 0.05$

4 Conclusion

A migraine is a very unpleasant and widespread health problem. It is important that businesses do not ignore this problem and approach it, as ignoring it leads to higher costs and lower productivity, which in the case of intense competition in the global economy is an unnecessary strategic debt.

In our literature review in the first part of our paper, we examined the magnitude and severity of the spread of a migraine, as well as its economic impact on companies.

In the results, we presented the results of our primary research, which we conducted in 2016 as the third round of the series on a sample of 226 respondents. We were unable to identify the connection between a migraine and the perceived workload. After further analysis, we found the positive effect of sports activity on the occurrence of a migraine. However, our results are of a low significance and explain just a small portion of the compound problem. This is expected as the list of possible causes of a migraine is somewhat limitless in the complex world. So, we should focus on ways how to improve this problem no matter how small the steps are.

Businesses that want to address this problem can apply some of the following measures. Promoting sports activities within the company has a positive impact on the health of employees, and according to our research, four such physical activities can reduce the number of migraines per month and therefore the costs associated with it. While the influence of non-specific diets has not been confirmed, research shows the positive effect of a ketogenic diet on the occurrence of neurological diseases including a migraine, so education about prevention and enhancement of the supply of low-carb meals may result in further improvement.

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