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„Snažte se dělat věci nejlépe na světě
a svět si vyšlape cestičku k Vašim dveřím.“

Tomáš Baťa

DRIVE YOUR KNOWLEDGE BE A SCIENTIST

23-24/4/2015

MANAGEMENT

TOP MANAGEMENT TEAM NATIONAL DIVERSITY AND FIRM PERFORMANCE

Elina Bakhtieva

Abstract

Ongoing processes of internationalisation and globalisation have shown the need to understand the role of nationality in business performance. The main global players are multinational companies managed by multinational teams. Although top management team (TMT) diversity is widely discussed in different studies, the majority of them are focused on the impact of internationalisation on firm performance, whereas the impact of national diversity on individual (top management) level remains relatively unexplored. One of the main reasons for that is the high controversy of the study results on this topic. The aim of this paper is to provide a theoretical overview of the previous research on national diversity of TMT. It identifies a problem of definition of TMT and suggests narrowing the term down to the level of management which influences the strategic development of a firm. This paper defines the main directions and problems of the analysed area. Cultural heterogeneity describes differences in values, language and other non-materialistic concepts. Ethnicity as a concept is wider than culture and represents a group's distinctive identity, which can be passed from one generation to the next. National heterogeneity involves additional analysis of state features, e.g. legal or industrial characteristics. Therefore it is important to analyse TMT based on the national heterogeneity, which covers not only cultural aspects, but also social, economical and political factors. As a conclusion this paper will present some ideas of possible empirical development of the current theoretical research.

Keywords: TMT, national diversity, culture, TMT heterogeneity

1 INTRODUCTION

Ongoing processes of internationalisation and globalisation have shown the need to understand the role of nationality in business performance. The main global players are multinational companies managed by multinational teams. Although top management team (TMT) diversity is widely discussed in different studies, the majority of them are focused on the impact of internationalisation on firm performance, whereas the impact of national diversity on individual (top management) level remains relatively unexplored. One of the main reasons for that is the high controversy of the study results on this topic. The findings vary from positive impact of TMT national diversity (e.g. Carpenter, 2002; Cox & Blake, 1991; De Jong & Van Houten, 2014; Greening & Johnson, 1996), through non-significant (Ferrier 2001; West & Schwenk, 1996) to negative (e.g. Michel & Hambrick 1992; Umans, 2013).

This paper has a purpose to provide a clear picture of TMT's national diversity and identify the main gaps, as well as to prepare a theoretical background for a future research. First of all I would like to discuss the problematic of a level of management to be included in the definition. Thereafter I would like to cover the aspects, which the term "national diversity" covers. Within this topic I would like to find an answer to the question whether is any difference between terms "culture", "nationality" and "ethic" within the analysed topic, and if these three definitions are interchangeable. In the end I would like to provide a theoretical

perspective of the influence of the national diversity of TMT on a firm performance. As a conclusion I will present some ideas of possible empirical development of the current theoretical research.

2 LITERATURE REVIEW

2.1 Definition of TMT

There are a lot of studies which address TMT as the main unit of analysis; however, there is no widely approved definition of TMT. The scholars range their definitions from a broader "set of position holders", including different levels of management, such as board of directors, executive committees or TMTs (Pettingrew, 1992) to a limited group of "the most influential executives at the apex of organisation" (Hambrick & Mason, 1984) (Nielsen, 2010).

Although theories dealing with TMT exist no longer than 40 years (Boal & Hooijberg, 2001), the importance of the role of top management has been mentioned already in 1938 by Barnard (Finkelstein & Hambrick, 1990). This concept became widely discussed in the 70es – beginning of the 80es. After a short break it has undergone both a rejuvenation and a metamorphosis (Boal & Hooijberg, 2001) and have led to the development of the Upper Echelon Theory and the study of TMTs (Boal & Hooijberg, 2001), which today are covered within a concept of Strategic Leadership (Daily & Schwenk, 1996).

Usually upper echelon represents the formal top positions in a company (Finkelstein & Hambrick, 1996). Therefore, as a rule, upper echelon refers to a top management team and/or the board of directors (Higgins & Dillon, 2007). Existing research of this topic focuses on different levels of top management: TMT, Board of Directors and/or chief executive officers (CEOs). Although the majority of studies fall into two main streams: some scholars analyse TMT (e.g. Nielsen, 2010), whereas the others pay attention to board executives (e.g. Finkestein & Hambrick, 1996) (Nielsen, 2010). There are also studies, which analyse simultaneously the role of TMTs and CEOs (e.g. Hambrick & Mason, 1984) by defining the importance of individual and team-level influence on the outcomes (Nielsen, 2010). Daily & Schwenk (1996) have provided an analysis of existing research on strategic leadership in late 90es and came to the conclusion that these three management teams are analysed parallel due to their equal importance.

The current paper is focused on TMT as the unit of analysis and based on the summarised definition made by Nielson (2010), who specifies TMT as a limited group of top executives who have a direct influence on the formulation of a firm's strategy. However Nielsen (2010) in her research does not provide a clear answer whether Board of Directors refers to the top executive team, her definition shows clear mediation between the role of the TMT and a firm's performance.

2.2 National diversity: problem of definition

The roots of the theory defining an explicit role of top management for business outcome lay in the behaviour theory, which argues that top managers are first of all human beings and therefore in their decisions not always follow rational motives (Nielsen, 2010). Continuing this approach, modern scholars emphasize the role of the background, experience and values of top managers in their decisions (Finkelstein & Hambrick, 1990).

As Nielsen and Nielsen (2013) mentioned in their study, that compared to international experience and functional diversity, which can be diminished with the time, national diversity is rooted in individuals and cannot be eliminated easily and even may increase its impact on a

firm. As a TMT is selected to manage a firm, decisions of its members reflect the beliefs and values of their personality and therefore are influenced by national aspects (Nielsen, 2010). If TMT defines a decision-making process of a firm, national background of TMT can influence a firm performance (Marimuthu & Kolandaisamy, 2009; Nielsen, 2010).

In the field of diversity analysis the researchers use mainly two terms – cultural diversity (Coz & Blake, 1991; De Jong & Van Houten, 2014) and national diversity (e.g. Hambrick, Sue, Snell & Snow, 1998.) (Nielsen & Nielsen (2010) use the term "nationality diversity"). Another aspect will be introduced within the current paper – ethnicity.

Hence, the answer to the question what level of identity should be analysed by heterogeneity of TMT narrows to the question if cultural, ethnic or national difference should be analysed.

These three terms are much interconnected and sometimes interchangeable (e.g. ethnicity and nationality for Smith (1999).

Hofstede (1994) defines culture as "the collective programming of the mind which distinguishes the members of one category of people from another". Culture helps people to adapt faster to the environmental changes and help people to shape their values and interests.

Ethnicity refers to culture and reflects cultural differences between groups. Ethnicity provides the shape of person's identity – one get it on birth as a set of biologically given or deeply rooted and historically rigid conventions, - whereas culture fills this identity with the cultural features – art, music, norms, believes, etc. (Fearon, 2003; Nagel, 1994). If ethnic prerequisites are done as it is, the cultural features can be changed – one uses some type of culture, discard others and add new ones. Ethnicity answers the question "Who are we?" and culture – "What are we?" (Nagel, 1994).

Nation collect shared memories, symbols, myths, traditions and values, inhabit, which are attached to historic territories or "homelands" (Fearon, 2003; Wan & Vanderwerf, 2010). Concerning the definition of nation Llobera (1999) points out that state always plays a leading role in the formation of a nation. Nation affects several aspects of life of an individual: values, cognitive schema, demeanour, language (Hambrick et al., 1998). As it was experimentally found out, 30 to 45 % of values reflect national characteristics. Moreover nation influences the process of getting knowledge and form the cognitive schema of an individual. Customs and cultural traditions form demeanour, e.g. difference in eye contact or punctuality. This aspect plays an important role in the process of forming stereotypes about nation(alitie)s.

Benefits of national diversity

Majority of the studies showed a positive impact on firm productivity (Carpenter, 2002; Greening & Johnson, 1996), which can be divided into two groups: impact on personal skills of the members of culturally diverse teams and impact on organisational flexibility.

Nielsen & Nielsen (2013) found that national diversity has a positive impact on firm performance, especially in longer tenure teams and companies with high internationalisation levels and in munificent environment.

Personal skills development

Intercultural environment by itself impacts personal skills of team members. Team members learn from each other and therefore pool their individual skills (De Jonge & Van Heuten, 2014; Nooteboom, 2000). The development of one's soft skills increases the quality of performing tasks and decisions (Maznevski, 1994; Ochieng & Price, 2010). Due to the possibility to learn (from) different culture and routines, one further develops his/her skills

and learns different ways of problem solving. As s result, this helps to deal with complex operations.

Moreover, several studies of national diversity suggested that a heterogeneous team impacts the effectiveness within an organisation, develops creativity, brings new ideas and new ways of solving problems (Distefano & Maznevski, 2000; Hambrick et al., 1998; Michael & Hambrick, 1992; Ochieng & Price, 2010; Robinson & Dechant, 1997).

Increasing organisational flexibility

Another group of scholars pays attention to the increasing organisational flexibility under the influence of national diversity (Marimathu & Kolandaisamy, 2009). Earley and Mosakowski (2000) identified that communication between members of culturally heterogeneous groups' increases.

Heterogeneous teams assemble the energy and synergy of team members (Marquardt & Hovarth, 2001) and, due to assess to different cultural backgrounds and experience, quicker identify problems (Jackson, 1992) and often provide non-standard decisions.

TMT's diversity may have different impact – positive and negative - within different steps of a task development. For example, on a stage of strategy formulation national heterogeneity may lead to the generation of several alternatives, and therefore increases the success of the task. On the stage of strategy implementation different backgrounds may decrease team cohesion and negatively influence a firm performance.

Heterogeneous groups help to solve complex and novel problems – due to diversity of opinion and experience, which creates several alternatives (Robinson & Dechant, 1997). On the other hand, routine problems can be solved effectively by homogeneous teams (Hambrick & Mason, 1984). Following this point of view, as strategically decisions refer to complex issues, the importance of having heterogeneous TMTs seems to be logical.

Some studies have found a direct positive impact on a firm's performance (Cox & Blake, 1991; Marimathu & Kolandaisamy, 2009; Nooteboom, 2000). Cox and Blake (1991), for example, show that firm's costs are reduced because of lower turnover. Additionally the number of lawsuits decreases (Marimuthu & Kolandaisamy, 2009).

2.3 Negative impact of national diversity

Culture identifies the basic attributes and values of its members. Each nation develops a set of behaviours and values under which to operate (Distefano & Maznevski, 2000). When these members come to a group where they need to work together, they already have a pre-defined understanding about how they and other team members should proceed (Distefano & Maznevski, 2000). The difficulties are coming when this pre-defined knowledge of different team members contradict each other. This can provide basis for a deep conflict and misunderstandings. People cannot understand why this or that person behaves this way if his own pre-defined knowledge, on which his values and attributes are based, is different.

Therefore there are several studies defining negative impact of culturally heterogeneous teams on a firm's performance. Among negative aspects of national diversity I can define three main groups: team communication problems, decreased level of knowledge transfer and decreasing team cohesion.

Team communication problems

Marimathu and Kolandaisamy (2009) emphasized, that "group members who differ from the majority tend to have lower levels of psychological commitment and higher level of turnover intent and absenteeism".

The most often used argument for it is a problem of miscommunication (De Jonge & Van Houten, 2014). Because of different cultural backgrounds, experience and language level these problems can range from small misunderstandings to huge problems.

Decreased level of knowledge transfer

Among other problems of multicultural teams are inefficient knowledge and information transfer (Makela, Kalla & Piekkari, 2007), interpersonal friction and conflicts (De Jonge & Van Houten, 2014), and the necessity to tailor oneself to other national cultures (Barkema & Vermeulen, 1998). Increased inter-firm complexity on several levels (Barkema & Vermeulen, 1998) decreases a firm's effectiveness (Li, 2013): prolongs decision wait time (Hambrick et al., 1998; Umans, 2013), increases rework requirement, etc.

Decreasing team cohesion

Value diversity and experience variety which have been mentioned by several studies as a positive issue of culturally heterogeneous groups, can also have a negative impact. Namely, different attitudes and opinions decrease collaborative behaviour (Elron, 1997; Umans, 2013) and prevent a consensus for different visions (Li, 2013; Miller et al., 1998; Umans, 2013). Moreover these strategic contradictions can lead to tension between different opinions (Li, 2013) and respectively increase competition-oriented interactions (Umans, 2013). Hence, these communication problems negatively affect team cohesion (Amason, 1996; Carpenter, 2002; Ochieng & Price, 2010; Smith, Smith, Olian, Sims, Henry Jr., O'Banon, & Scully, 1994; Pelled, Eisenhardt & Xin (1999);). As a result interaction among team members decreases (Umans, 2013) and this facilitates formation of subgroups in teams (Pelled et al., 1999; Umans, 2013), particularly, "separation along cultural lines" (Umans, 2013). Makela et al, 2007 analysed the impact of cultural similarity on a knowledge sharing and comes to the conclusion that team members with the same cultural background tend to share knowledge between colleagues and hinder the information flow between members for the other subgroups. Team polarisation and competition oriented behaviour creates a tendency to reject the ideas from other subgroups (Pelled et al., 1999; Umans, 2013). Hence, team performance is decreasing.

Sometimes positive and negative factors exist simultaneously in a TMT. Some positive factors as creativity or decision-making can be fostered because of different educational and functional background. On the other side, due to different values and attitudes team cohesion decreases (Elron, 1997).

2.4 Multicultural teams vs. Teams with "strong" culture

In order to investigate the impact of TMT on business outcome it is important to identify who is actually involved in the decision-making process (Jackson, 1992). Persons taking decisions not necessarily may be part of upper echelon but include managers and experts from other organisational levels (Nielsen, 2010). Moreover, in the analysis of national diversity it is important to distinguish between multicultural groups with no dominant culture and

heterogeneous teams with so called “strong” or dominating culture. An example of a team with strong culture can be a board team with the majority of members from headquarters’ culture. Presence of a strong culture may force several additional problems within a team. Yilmaz, Alpkan, & Ergun (2005) define some of them: discourage the search for new ideas, limitation of the variety and opinions, and organisational inflexibility.

3 SUGGESTIONS FOR DATA ANALYSIS

The main argument of this research was that national diversity of TMT affects firm performance.

Independent variable

In order to analyse cultural difference within TMT it is important to define how great cultural distance within a team is. This can be defined by using Hofstede characteristics of each representative of a team and weighted cultural distance for a team.

Another way of analysing degree of nationality diversity in a top management team can be a method by using a Blau Index (Nielsen, 2010; West & Schwenk, 1996). The Blau index captures can be determined by the dispersion of team members across all different nationalities represented on the top management team (Nielsen 2010).

Blau index is represented by the following formula:

$$B = [1 - \Sigma(p_i)^2]$$

where *p* is the proportion of members in a category, *i* represents different categories (i.e. different nationalities (West & Schwenk, 1996; Nielsen, 2010). The higher the value of *B*, the greater is the heterogeneity.

Dependent variables

Based on the researches made by different scholars, e.g. by Crossland & Hambrick (2007), several accounting-based and market-based measures reflecting a firm financial performance, can be identified:

- return on assets (ROA: net income divided by total assets),
- return on sales (ROS: net income divided by sales),
- sales growth (sales in year i minus sales in year $i - 1$, divided by sales in year $i - 1$),
- market-to-book (MTB: market value divided by book value of common equity).

Control variables

The control variables are TMT size, firm total assets and a firm age. TMT size can be determined by the total number of TMT, firm total asset refers to a firm size and firm age refers to number of years of business operations (Miramuthu, 2009). The total number of firm employees was used to control for firm size. (Nelsen 2010)

4 CONCLUSION AND DISCUSSIONS

This paper provides a theoretical overview of the previous research on national diversity of TMT and its influence on a firm performance. It defines a problematic of definition of TMT regarding the level of involvement a management team and narrows it down to the level of management which influences the strategic development of a firm.

Moreover it specifies the heterogeneity of the team which influences a firm performance. The current paper defines the main directions and problematic of the analysed area. Cultural heterogeneity describes differences in values, language and other non-materialistic concepts. Ethnicity as a concept is wider as culture and represents a group's distinctive identity, which can be passed from one generation to the next (Wan & Vanderwerf (2010)). National heterogeneity involves additional analysis of state features, e.g. legal or industrial characteristics. Therefore it is important to analyse TMT based on the national heterogeneity, which covers not only cultural aspects but also social, economical and political factors.

The impact of national heterogeneity of TMT on firm performance is summarised in the Table 1.

Table 1. Impact of TMT's national diversity on firm performance: Source: Personal evaluation

Positive	**Negative**
Personal skills development • Opportunity to learn from each other and therefore pool individual skills • Quality of performing tasks and decisions increases • Cross-cultural learning and developing creativity bring new ideas and new ways of solving problems, this helps to deal with complex (strategic) operations. • Effectiveness within an organisation increases	**Team communication problems** • psychological commitment decreases and turnover intent and absenteeism increases • problem of miscommunication • interpersonal friction and conflicts
Increasing organizational flexibility • communication within members increases • assemble the energy and synergy of team members • quicker identification of problems • non-standard decisions • complex and novel problems are easy to solve • firm's costs are reduced because of lower turnover and decreased number of lawsuits	**Decreased level of knowledge transfer** • necessity to tailor oneself to other national cultures • decision wait time is prolonging • rework requirement are increasing **Decreasing Team cohesion**

5 LIMITATIONS

There are some limitations of this paper. Differences due to regional or family's factors, social classes, age or sex should be excluded. I agree that all these differences do exist within a culture, but for better analysis I pay attention only on the aspects that are common for all (or majority) national population.

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MERIT AND DEMERIT OF FAMILY INVOLVEMENT IN BUSINESSES: A STUDY OF FAMILY BUSINESSES IN SRI LANKA

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Abstract

A number of family business researches affirm benefits of family involvement to the business and family while some of other studies assure only detriment of family involvement. When comparative studies on family businesses begin to surface on the family involvement in business, there is that irritating question on what effect is brought about by family involvement in the business. Therefore, the purpose of this study is to explore the merit and demerit of family involvement in family businesses in Sri Lanka. The present study attempted to address the above knowledge gap, using the qualitative research approach and multiple case studies as the strategy of inquiry. Purposive sampling technique was used to select both cases and respondents. Privately held, successfully conducted four family businesses which each firm has at least 25 years of business history were selected as cases. From each case, existing business owner and one family related manager who has at least five years of experience in the business were taken as respondents. Data was collected mainly via semi-structured, in depth interviews, observations, and secondary documents. Interview guide was partially modified during the different rounds of data collection to better reflect the emerging themes. Interviews were conducted during the period of January to April 2013. Data collection from interviews consisted of 15 interviews with 09 different people from four cases. Before the data analysis, coding and categorization of respondents' views from interviews helped to identify common patterns and themes from both within the case and across cases. The analysis was carried out in the light of Agency theory and resulted in a rich understanding of merit and demerit of family involvement in businesses in Sri Lanka. The findings of this study indicated that the agency cost is created not only on business matters but also on family matters. Further, findings revealed that agency benefit also can be obtained by family business by handling the family matters carefully in line with business matters. And some of agency benefits to the business by family managers are also found to be stable to the business.

Keywords: *family business, family involvement, merit, demerit and Sri Lanka*

1 Introduction

Families and businesses have always, to large extent, existed in a cycle and it has been argued that this cyclical existence has benefited both the family and businesses (Morck & Yeung, 2002; Narva, 2001). At the same time, some other researchers are also in a view that cyclical existence of families and business does not always provide benefits to the business (Chua et al, 2006). Moreover after 1990s the field of family business emerged as a separate discipline and called for more research in the world (Dharmadasa, 2009). Yet, no commonly agreed definition of family business can be found in family business literature either locally or globally. Different studies have defined family business differently in par with their study purposes. This study treats the family business as unique, inseparable, synergistic resources and capabilities arising from family involvement and interactions (Habbershon, Williams, & MacMillan, 2003). In the meantime, the business world of Asia is strongly linked to family and family run businesses has been popular in many South Asian communities (Khana &

Yafeh, 2007). As a South Asian country, Sri Lankan indigenous management and business practices developed in a rich cultural heritage across 2500 years and has been take care of largely by teachings of the Buddha, a great philosopher and a social reformer (Ranasinghe, 2011). The Buddhist values of business and management such as commitment, responsibility, autonomy, mutual respect, tolerance and team work is embossed in local practices. Some have concluded that traditional Sinhalese Buddhism bears some responsibility for retarding economic development through merit-making practices (Nanayakkara, 2004). Over generations, these values have influenced the thinking and actions of the people and their participation in collective effort like performing businesses. This business life has been subjected to turbulent changes during the last couple of decades. However, because of the rich history and tradition of strong family ties, family businesses have long been considered as a part of the culture. The Sri Lankan family, under ideal condition, is limited to members of a single extended multi-generational family. Through the family relationship, members of a family share economic and social physiological security as well as the conflicts & anxieties of other members (Jayawardena, 2000). Yet, the private sector of Sri Lanka has inherited its business tradition from mercantilist functions of the colonial private entrepreneur. They centered the business on three major plantation crops with a bias toward trade, commerce, and services (Jayawardena, 2000). Majority of such firms which were preliminary based on family ownership. Managerial positions were largely reserved for technically competent family members and the individual firms' behavior is largely influenced by families (Nanayakkara, 1992). Accordingly, Sri Lankan business culture and its entrepreneurs have become largely family based and rooted predominantly in the merchant capitalist class (Nanayakkara, 2004).

In general Sri Lankan business environment, the substantial involvement of family members in the business can be seen heavily in sole proprietor businesses as well as in partnerships. When it comes to nature of the business, most of them are Small & Medium-sized Enterprises (SMEs). In the same time, the involvement of family has been emphasized by the name of most of businesses like Brothers, Sons and Group of Companies. This is very particular for privately held (none listed, private) businesses. In those local businesses, the business provides income to the family, but at the same time, the family may serve as a critical supply of paid and unpaid labor, as well as contribute additional resources such as money, space, equipment, and other factors of production vital to the business. Although family involvement in a firm distinguishes these firms from others, studies *on the family involvement in businesses are limited and results are mixed. Especially no research has been conducted to examine merit and de-merit of family involvement in the Sri Lankan business context where all* family firms are not alike as they vary significantly, among other aspects, in terms of the extent and mode of family involvement.

2 Research Problem

Studies about family businesses generally emphasize the presence of the family in the business. But those studies seem to be idle in reviewing the real impact created by family members of that business. When comparative studies on family businesses begin to surface on the family involvement in business, there is that irritating question on what effect is brought about by family involvement in the business. In order to explore the phenomena in believing multiple realities in the world, instead of 'what' and 'why' research direction, the research problem of this study remains as, "how does family involvement lead to generate merit and demerit in family owned businesses in Sri Lanka"?

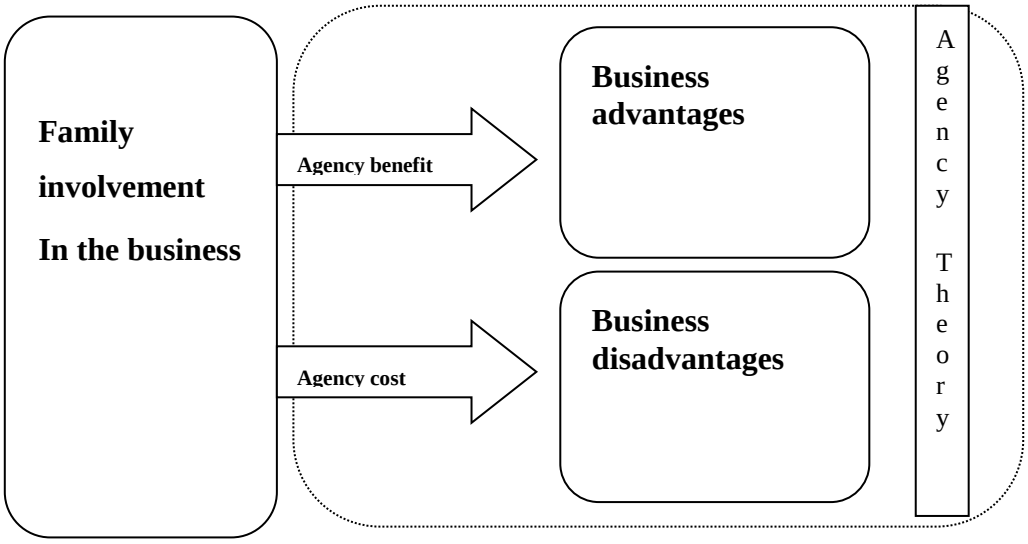
3 Theoretical background

In order to maintain the theoretical rigor to explore the research problem, Agency Theory was employed as theoretical lens of this study. Agency Theory has played a major part in

organizational studies in different parts of the world. Agency theory mainly discusses about intra-organizational processes from an economic perspective and it generally refers to the various ways that agents of a firm can influence the economic and non-economic outcomes and behaviors of the firm (Fama & Jensen, 1983). According to Ross in 1973 and Eisenhardt in 1989 Agency theory refers to the conflicts of interest between an agent who act as a representative of a principal and owner of the principal. The basic assumption underlying agency theory is that agents tend to be opportunists who, unless monitored effectively, will exploit owner-principals. It happens because of composition of a node of contracts. As a consequence, Agency Theory is applicable to all contractual relationships in the firm (Grabk & Mejia, 2002). However, it focuses strongly on top managers because they are responsible for strategic level decision making. (Sanders & Carpenter, 1998). At the same time, Agency theory is based on fundamental of economics and its main behavioral assumptions reflects; (1) agents and principals are rational, (2) agents and principals are self-interested and (3) agents are more risk-averse than principals . In one hand, one of the main sub segments of this theory is agency cost. In business firms, shareholders do not mostly have time, interest, capacity or incentive to be involved in day-to-day management activities. As a consequence, shareholders (principals) delegate decision making to a smaller group, namely, management (agents). Inevitably, this leads to opportunity costs, also called 'agency costs' which concern the cost to the principals to monitor the behavior of an agent to minimize agent opportunism (Bainbridge, 2005). On the hand, Agency theory proposes that the contract between principal and agent is the main instrument for decreasing agency costs. This contract may include the development of a monitoring system to ensure that behaviors and outcomes do not deviate from the owners' interests. It might also include the establishment of an incentive system that intends to reward the agent for outcomes that are important to the principal (e.g., profitability, share price). Based on the literature and theoretical reviews, following concept indicator model (Figure 01) was developed by the researcher.

Figure 01.

Concept Indicator Model



Source: Researcher's original construction

4 Research Methodology

In the process of exploring merit and demerit of family involvement in business, the philosophical stance for this research remained qualitative. The researcher worked within this

paradigm believing that reality is subjective and it is mentally constructed by individuals. In order to understand the complex phenomena like merit and demerit of family involvement in business which is very significant to the context of the business, the case study method was selected for this research. At the same time, the merit and demerit of involvement in business by family members differ from context to context in various aspects and it would not be generalized at any point. Because of this, understanding the reality of generating merit and demerit of family involvement in business, considering the features in family business over non family business, the multiple case study approach was used. It permitted the researcher to strive towards understanding the phenomenon of interest by using several independent instrumental case studies to get an insight into the study area. Purposive sampling was used to select both cases and respondents. Privately held, successfully conducted 04 family businesses which each firm has at least 25 years of business history were selected as cases. These selected family businesses are located in three different districts in Sri Lanka. From each case, existing business owner and one family related manager who has at least 05 years of experience in the business were considered as respondents. Data was collected mainly via semi-structured, in depth interviews, observations, and secondary documents. Interview guide was partially modified during the different rounds of data collection to better reflect the emerging themes. Interviews were conducted during the period of January to April 2013. Data collection from interviews consisted of 15 interviews with 09 different people from four cases. All the interviews were recorded and transcribed. Eleven out of fifteen interviews were conducted in English. The rest was conducted in their mother tongue (Sinhala) and translated into English by the researcher. Before the data analysis, coding and categorization of respondents' views from interviews helped to identify common patterns and themes from both within-case and across-case analyses. While the main data analysis strategy was pattern matching, the unit of analysis of the study was a single case. The analysis was carried out in the light of Agency Theory and resulted in a rich understanding of nature of family involvement in businesses in Sri Lanka. The quality of the research was maintained by demonstrating internal and external validity of the study.

5 Results and discussion

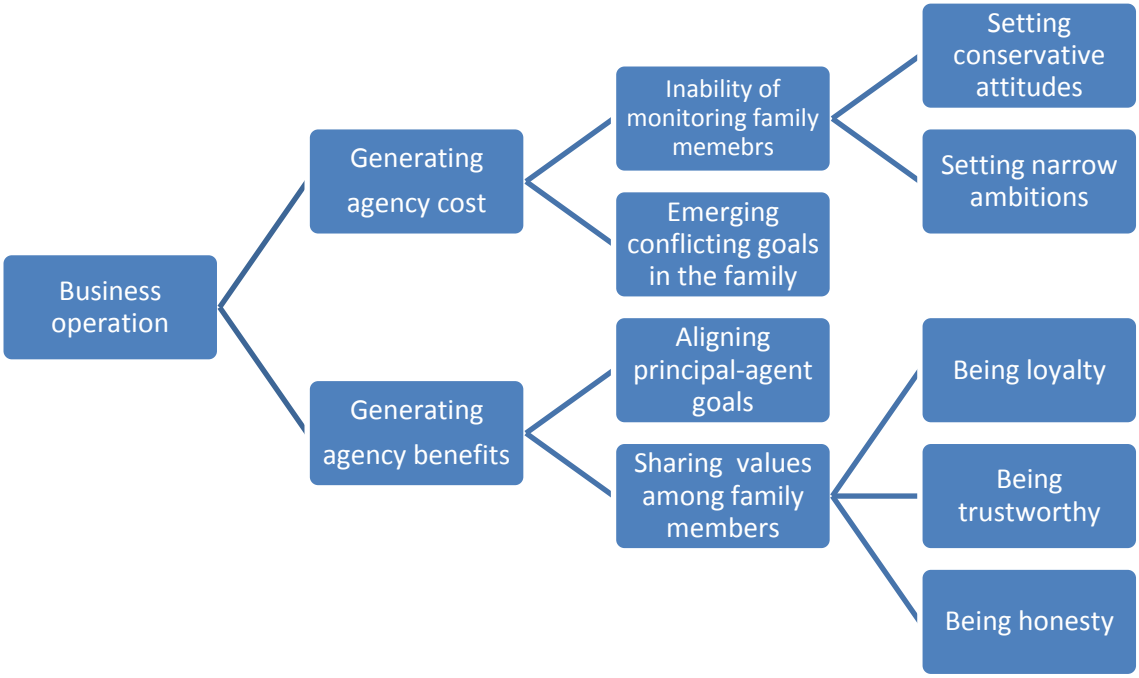
In the analysis of merit and demerit generated by family involvement in business in Sri Lanka, the results show that agency benefits (merit) of family business under categories of aligning principal agent goals and sharing values among family members that many leaders and executives aspire for higher purposes in their jobs as they are not simply self-serving economic individuals, but often act unselfishly for the benefit of the organization and its stakeholders. This satisfies the findings of the research study by Habbershon, Williams, & MacMillan in 2003. The main theme emerged in the analysis is family members are intrinsically motivated by higher level needs to act for the collective work of their firms. They identify with the organization and embrace its objectives; they are committed to make it succeed, even to the extent of personal sacrifice. These attitudes would be especially prevalent among family businesses in which leaders / managers are either family members or emotionally linked with the family. Such executives often commit deeply to the mission of the business, treasure its employees and stakeholders, and feel motivated to do their best for the owning family and the organization collectively (Miller & Isabelle, 2005). But according to respondent's views, it could be that not all kinds of family businesses are likely to breed such relationship in owners or their agents. Despite advantages, the analysis views about some disadvantages (demerit) of having family members in the family businesses. When disadvantages of family involvement are concerned under the categories of failure in monitoring family members and emerging complicating goals in the family, more than anything, the motive of the family member who is engaged in the business is a great concern

According to the respondents view, the interplay between the family and the business may become critical in some situations when family members much affiliated to the business. Conditions that may intensify problems like role ambiguity, communication difficulties among family members, and business decisions which negatively affect families. According to the agency theory, monitoring activities need agency cost. Agency costs arise when the interest of the managers are not aligned with that of owners and take form of preference for the job perks, shrinking, and making self-centered and entrenched decisions that reduce the shareholder wealth (Habbershon, Williams, & MacMillan, 2003).

The researcher experience in the interview process, the respondents of cases were reluctant to express their ideas directly. Either it could be advantageous or disadvantageous, respondents wanted to show their togetherness and business success which was tightened by family involvement. But, according to the respondents' views and case analysis, business advantages created by family involvement were identified through the concept of agency benefits and disadvantages were identified by agency cost. To sum up, according to the respondents' views, categories of merits and demerits of family involvement in businesses in Sri Lanka can be shown as given in Figure 02.

Figure 02.

Merit and demerit of family involvement in businesses in Sri Lanka



Source: Researcher's original construction

By looking in detail at the merit and demerit of each category of the analysis, some interesting themes related to family involvement emerged when research question is looked through Agency theory. One of the emerging insider themes which can be considered as a key finding of this study are agency cost is created not simply because of business matters but because of family matters. At the same time, the management/ governance of the family business are not based on contemporary management /governance practices and they are more connected to family relation. Agency benefit also can be obtained by family business by handling the family matters carefully than handling the business matters. Some of agency benefits to the business by family managers are tend to be by default. The whole analysis of merits and demerits of family involvement in business is compatible with one theme provided that the

weight of these merits and demerits can vary sharply according to business type or industry. Both advantages and disadvantages generated by family involvement depend on the motive of individual family member. The broad term motive in this case can narrow down as business goal (common / family goal) and individual goal because for both goals, family members are motivated to be involved in business matters. The main theme that surfaced through this analysis is that when a family member who involves in the business having individual goals which deviate from the business goal results in demerit (agency cost) to the business. At the same time, when a family member involved in the business having business goals than individual goals result in merit (agency benefit) to the business.

6 Conclusion

The study indicated that the family business should be in line with monitoring managers frequently to assure that they work towards achieving the objectives of the firm. The requirement of identification of business objectives and family objectives separately would become such important factor in the process of governance of family business. As kinship is greatly affected on employing a person as a manager in the family business, it is advisable for owners of the business to implement contemporary management practices in the business. At the same time family members can strengthen their family ties to achieve financial objectives of the business efficiently. Accordingly, this analysis becomes more valid as it is usually expected that family members have more freedom to intervene in business issues than the intervening of non-family members. Yet, this freedom may lead to abuse of business by family members and even if family members show goodwill in their actions, the business may be worse off.

7 Direction for future research

The researcher is in a view based on the lateral findings of this study that there should be more empirical research in the area of management and governance practices of family businesses in Sri Lanka where most of family businesses are running as SMEs. Further research would more appropriate to focus on hypothesis testing of knowledge sharing initiatives among employees in family businesses. Empirical findings of this type of research study may assist to manage a family business efficiently and effectively.

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EMPLOYING PART-TIME WORKERS IN CZECH REPUBLIC. ITS ADVANTAGES AND DISADVANTAGES FROM POINT OF VIEW OF EMPLOYER AND EMPLOYEE

Ivana Němcová, Vojtěch Malátek

Abstract

This paper focuses on the evaluation the possibility of using part-time jobs in the Czech Republic. The article aims to describe the current state of using of the concept of part-time in the Czech Republic and to identify the main advantages, disadvantages and opportunities for their using. Therefore, in the introductory part we can find the legislative definition of flexible forms of work. The following section focuses on the evaluation of the situation of part-time employment in Czech labor market. The final section is devoted defining the advantages and disadvantages of the using part-time work from employers and employees view.

Keywords: Czech Republic, part-time job

1. INTRODUCTION

Part-time jobs have become the phenomenon in many western countries. Some companies understand and know the advantages of part-time employment and now it is one of their key factors in "fight with competition". In the background of this phenomenon, there is the need to retain the position of the company, but there is also the mass entry of women into the labour markets. Also pressures of balancing family/personal and professional life are still growing strong. Part-time employment refers to work that takes place for less than a standard number of hours per week. In Australia and the United States, part-time workers are those who work fewer than 35 hours per week. In other countries, the threshold may be different. For example, in New Zealand, part-time employment is defined as working fewer than 30 hours per week, in Canada and the United Kingdom 30 hours is normally used as the cut-off point (Bardoel, Morgan & Santos, 2007).

Differences in part-time employment we can see among European countries. For example in Germany part-time means less than 36 hours, in France part-time is defined as at least 20 per cent below below the statutory level of working hours. "Other examples of less than full-time employment are various forms of short-time work, including the zero-hour contract in the United Kingdom, Italy and Spain where workers are hired for a few hours a day. In contrast, part-time employment in Japan is explicitly linked to status within the firm and not to workhours." (ILO, 2014)

1.1. Methodology and literature review

In this paper is used mainly analysis of data from statistical databases. Furthermore analysis was used to identify advantages, disadvantages and some opportunities and threats of using part –time job. Other relevant sources include legislative documents, alternatively the study prepared by the International Labour Organization (In search of good quality part-time employment). This report also provides a synthesis of the international evidence on developments in part-time work and the situation of part-time workers and assesses the current employment conditions of part-time workers in comparison with those of comparable full-time workers across a range of countries.

Among sources, from which this article is composed, belong: „*Flexibilní formy práce ve vybraných zemích EU“* written by Kotíková, Kotrusová & Vychová. The aim of this monograph was to analyze application and regulation of flexible forms of employment in selected EU member states and possibility of implementation of European countries´ approaches in the Czech Republic. Study of the application of flexible forms of employment in selected EU countries showed, compared with the Czech Republic there are not significant differences in terms of the existence of different types of flexible work. As desirable it rather seems to focus on increasing the range of use of already existing flexible forms of employment.

Haberlová, V. & Kyzlinková, R. „*Rodinné potřeby zaměstnanců*“. This study describes main features of opinions and attitudes of representatives of firms and organizations concerning the conflicting relations between the family and employment as well as the role of employers in the creation of conditions for alleviation of this conflict. Besides opinions and attitudes expressing the general employers' approach to the given topic the study also inquires into particular measures that firms and organisations offer, and into the employers' perception of their effectiveness (Haberlová, Kyzlinková, 2009).

Association of Small and Medium-Sized Enterprises Czech Republic (2010). „*Názory podnikatelů k politice zaměstnanosti a pracovnímu právu”* and Confederation of industry of the Czech republic. (2009). „*Flexibilní formy práce aneb jak to vidí zaměstnavatelé”*. These reports provide information about the views of the entrepreneurs on part-time work and on the possibilities of using flexible working arrangements in the Czech Republic.

2. FLEXIBLE WORKING ARRANGEMENT AND PART-TIME JOB IN THE CZECH REPUBLIC

Flexible forms of employment in the Czech Republic are regulated by the Labour Code (Law no. 262/2006 Coll., as amended). We can distinguish forms of employment, which the table no. 1 shows. Flexible work arrangements are shown in table no. 2. These "nonstandard" forms are not used much In the Czech Republic. Some companies use flexible working hours, but part-time or work from home allows exceptionally.

Tab. 1 - Flexible forms of employment by the Labour Code in the Czech Republic Source: Labour code, Law no. 262/2006 Coll., as amended

Form of work	**Paragraph**
Temporary work	§39
Agreement to complete a job	§75
Agreement to perform work	§76
Part-time work	§79, §80
Shift work	§82, §83, §84
Flexible working hours	§85
Working hours account	§86, §87

Tab. 2 - Division of flexible working arrangements. Source: (Chovanec & Matyášová 2013)

Flexible arrangements from the point of view of length and arrangement of working time.	Overtime work, shift work, work in unsocial working hours, part-time work, flexible working time,
Flexible arrangements from the point of view of type of contractual relationship	Temporary work, self employment, agency employment,
Spatially flexible jobs	Home office, teleworking

2.1. Part-time work

Part-time jobs are considered among the most widespread alternative forms of employment.The International Labour Organization (ILO) defines "part-time work" as hours of work that are shorter than those for comparable full-time work (in the country, sector, and occupation) (ILO, 2014).

We can meet with three types of part-time jobs. One type is a reduced number of working hours to the range of 30-39 hours. These are usually transient (or temporary) working relationships, and they are realized at the request of the employee. This type of working arrangements is usually counted into statistics among full-time jobs. The second type of part-time has about 15-29 hours. (Blossfeld & Hakim, 1997). The difference between first and second type is that second type is based primarily on the needs of the employer and has a permanent character. The last type is very short-time work (also called marginal work). It is a job which is often exempt from taxes and mandatory contributions, with a time range from 10 to 15 hours. This type is not counted in the statistics.

Another definition shows that part-time employee is an employee whose normal working hours (which is calculated on a weekly basis or on average over a period of employment) is shorter than the normal working hours of a comparable full-time employee. (Kučina, 2007).

The part-time working arranged between employer and employee in Czech Republic. The lowest range of working hours is not defined.

The employer is not always obliged to provide to employee an alternative form of working arrangement. However, according to § 241 par. 2 Act no. 262/2006 Coll., The Labour Code, if "employee taking care of a child who is under 15 years of age or a pregnant female employee, or an employee who proves that he or she, mostly on his or her own, takes long-term care of a person who, is considered as a person being dependent on another individual's assistance and such dependency is classified by grade II (dependency of medium seriousness), grade III (serious dependency) or grade IV (full dependency), and this employee requests to work only part-time or requests some other suitable adjustment to her or his weekly working hours, the employer is obliged to couly with such request unless this is prevented by serious operational reasons." However, the law doesn't specify these serious operational reasons closer. Here employer records law when part-time employees / employee wants to provide and makes conjectures and speculations about the real reasons unabridged harness. However, the law these serious operational reasons doesn't specify closer.

The Czech Republic is as concerns the use of part-time work and other alternative forms of work far behind compared to other countries in Europe, but also to other transoceanic countries (see USA, Australia). In 2013, employees working in this way formed only 5.8 % (2013) of all employees (see Table. 3). There is a noticeable slight trend of a gradual increase in part-time jobs (in 2013, the share of part-time workers in total employment was highest in the last 10 years), but it is necessary to change the overall approach to achieve at least the EU average (19.5 %). (Němcová, 2014)

Tab. 3 - The proportion of part-time employees in selected EU countries (in %).
Source:Adapted by Eurostat, data for 2014 are not available yet

Country/Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU (28)	16,7	17,2	17,5	17,5	17,5	18,1	18,5	18,8	19,2	19,5
Belgium	21,5	21,7	22,0	21,9	22,4	23,2	23,7	24,7	24,7	24,3
Czech Rep.	**4,4**	**4,4**	**4,4**	**4,4**	**4,3**	**4,8**	**5,1**	**4,7**	**5,0**	**5,8**
Germany	21,9	23,4	25,2	25,4	25,1	25,3	25,5	25,7	25,7	26,2
Greece	4,5	4,8	5,5	5,4	5,4	5,8	6,2	6,6	7,6	8,2
France	16,9	17,1	17,1	17,2	16,8	17,2	17,6	17,6	17,7	18,1
Netherlands	45,2	45,7	45,8	46,3	46,8	47,7	48,3	48,5	49,2	50,0
Austria	20,0	20,8	21,3	21,8	22,6	23,7	24,3	24,3	24,9	25,7
Poland	9,6	9,8	8,9	8,5	7,7	7,7	7,7	7,3	7,2	7,1
Slovakia	2,5	2,4	2,7	2,5	2,5	3,4	3,8	4,0	4,0	4,5
Finland	12,8	13,3	13,5	13,4	12,7	13,3	13,9	14,1	14,1	14,0
Sweden	23,1	24,0	24,3	24,2	25,7	26,0	25,8	25,2	25,0	24,7
UK	25,1	24,2	24,3	24,2	24,2	25,0	25,7	25,5	25,9	25,5
Norway	29,1	27,7	28,1	27,5	27,4	27,8	27,6	27,3	27,2	27,0
Switzerland	32,0	32,2	32,4	32,5	33,3	33,7	34,1	33,9	34,5	35,1

Part-time jobs in the Czech Republic are not very widespread. Part-time jobs are more used by women (10 % of the total share of employed women in 2013) than men (2.5 % in 2013). The comparison with Slovakia and Netherlands can see in Fig. 1 below (Eurostat, 2015).

In terms of number of hours actually worked in the Czech Republic are part-time rather longer. Women who are part-timers spent in the workplace in average 28 hours per week). Most of them say that they are employed half-time (50 %) and lower. So they worked probably more hours than they have in the employment contract (probably through overtime).

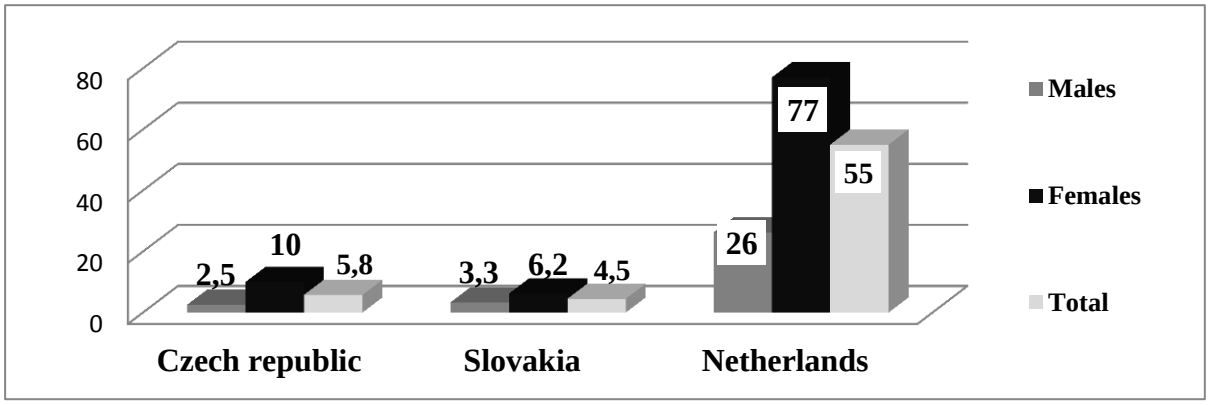

Fig.1- Percentage of total workers who are part-time employees by sex. Source: Adapted by authors from Eurostat data, data for 2014 are not available yet

About 11 % of women who care for children under 3 years of age expressed interest to work part-time (the most popular choice is "stay on parental leave"). More interested in part-time jobs are mothers of children aged 3-6 years. 36 % of them wish to work part-time (26.3 % would like to work full time). In reality, however, only about 5% of mothers of children fewer than three years of age and 13.5 % of mothers of children over three years work part-time (Formánková, Dudová & Vohlídalová 2011).

The reasons for unfulfilled demand are following: poor availability of public childcare and barriers on the side of employers (barriers will be discussed in the next section of the paper) (Haberlová & Kyzlinková, 2009). Most women and men is currently still employed full-time, because people do not perceive a part-time jobs as available, despite the fact that employers claim, that they use part time.

On part-time (twenty hours in a week and less) work 3.8% of all working people (6.4 % of women and 1.5 % of men), half-time work and more is rare (2.1 % of all workers, 3.7 % of women, 0.8 % of men). These data refer to how time is officially defined in the employment contract, not the real number of worked hours (ILO, 2014).

Another characteristic to which the analysis focuses is education. The influence of education has proved to be statistically significant only in the group of women. Share of part- time jobs among people decreases with increasing education. While women with higher education are only around 8.5 % of part-time employees, the group of women with secondary education works 10.6% part-time. And among women with basic education was part-time share about 17,5 % (Haberlová & Kyzlinková, 2009).

We can say that part-time works in the Czech Republic are used in the sense positive work flexibility, which primarily use women to combine working life with the care about their small children. On the other hand, part-time work is concentrated mainly among people who belong to vulnerable groups in the labor market - among people with lower education and workers over 60 years of age. A large proportion of part-time work is involuntary (48 % of women surveyed and around 31 % of men working part-time) (Formánková, Dudová & Vohlídalová 2011).

Part-time work represents a form of employment that is common especially among people (and especially among women) over the age of 60 in Czech Republic. Part-time is a popular choice for women - mothers with small children: especially children under the age of three years. With increasing age of the child is the proportion of women working part-time decreases. Occurrence of part-time jobs is related with the job position: the biggest extension of part-time jobs is in group of unqualified workers and also in services. On managerial positions part-time has minimal extension (Formánková, Dudová & Vohlídalová 2011).

Almost 40 % of people, who currently work part time, said they had no choice, because full-time were not offered (48 % of women and around 31 % of men). This supports the assumption that part-time work in the Czech Republic represents negative form of flexibility too. This way firm is trying, especially in times of economic crisis, to reduce their costs. (Eurostat, 2015) Among another reasons, why people use part-time jobs especially among women, belongs tak care of children and diseased members of family. Men mostly work on part-time beacouse of health.

3. REASONS OF THE LOW RATE OF PART-TIME EMPLOYMENT IN CZECH REPUBLIC

There are several main reasons why the rate of part-time employment is so low in Czech Republic. Part-time jobs don't bring only disadvantages, but some possibilities, or even benefits. We can distinguish these pros and cons from the employer's and employee's view.

3.1. ADVANTAGES, DISADVANTAGES AND BARRIERS FROM EMPLOYEE'S VIEW

In assessing the pros and cons of part-time jobs, we must also consider the fact, that not everyone employee, who working part-time, wants to work part-time. It happens that the employee has no choice if he does not want to lose a job. For this type of employee may be work on involuntary part-time work very disadvantageous. Brožíková (2011) notes that "labor supply is divided by increasing flexibility into a group of people who take advantage the benefits of the labour market, and a group of people who are forced to work for an unreasonably low remuneration for their work".

It is also correct to note that what appears to one as the benefit, can also mean for second man as disadvantage. Table no. 4 shows possible benefits and disadvantages of part-time work.

Tab. 4 – Advantages and disadvantages of part-time work from the employee's view
Source: Created by authors

Advantages	Disadvantages
The possibility to coordinate working life with private life (especially for women in maternity leave)	Part-time jobs cannot be apply on all profession
Securing income (for families with children this can be a welcome help)	Higher economic burden in specific situations *
Possibility to regulate the number of hours worked (after consultation with the employer)	The need to observe working discipline
Easier termination of employment	Uncertainty about future income, job security
Time flexibility	Uncertainity about the sudden call to employment, or regarding interferencework shift (in the case of on-call work) **
Keeping in touch with the company and with the workers	The amount of work that the employee has to do during part-time, is not reduced in proportion to the number of hours worked
Development of knowledge and skills in new technologies, workflows	Reduced possibility to career rise and access to education
Part-time employee has the same entitled to the leave of absence as full-time employee	Limited access to corporate benefitiate.

Social status (The society views unemployment people as parasites. Be employed, even for a part-time is better than be unemployed)	The social system (in some cases may be inactivity profitable than be in working relationship. A person in working relationship (part-time too loses all unemployment benefits)
Saving transport costs (in case that the employee does not travel to work every day, or he works from home)	Transport costs are same as for a full-time (in case that employee has to travel to work every day)
part-time jobs are useful for college students (they can gain experience and earn some money)	

Notes:* Higher economic burden is primarily due to payments of health insurance, which is based on the minimum wage. (The minimum wage is set by the minimum employee earnings base. If the gross wage of part-time employees is less than 9200 CZK, the employee must pay the supplement to the minimum (which is 9200 CZK).

** In the long term the uncertainty may induce to employee frustration and the feeling that he it is not a fully-fledged member of the company.

3.2. Barriers and obstacles of the wider use of part-time

Traditions

One of them is the tradition of full-time employment. Other reasons are the lack of part-time work, poor economic conditions after the global economic crisis, low wages. „Of course, the preferences of Czech women themselves also play an important role. In their value hierarchy, employment occupies a relatively high position and it is one of the priorities in life." (Vohlídalová, 2008).

„The share of part-time jobs in the Czech Republic is one of the lowest. In 2012, according to results of the Labour Force Sample Survey (LFSS), this share accounted for mere five per cent in the age group 15-64 years, while the EU27 average was 19.2 %. This is the main reason why the usual average number of hours worked per week in the main job i in the Czech Republic substantially higher than in a vast majority of the EU countries (40.9 hours compared to 37.3 hours in the EU27)". (Czech Statistical Office, 2014)

Low number of institutions for children under 3 years

„The Czech Ministry of Labour and Social Affairs in past tried to promote greater support for part-time work. For these purpose the goverment proposed introduced tax incentives for creating part-time work. But the larger question of why mothers with young children experience relatively high levels of unemployment is ignored. One simple and practical answer to this question is that when women have children they drop out of the labour force for relatively long periods.In the Czech Republic is a great lack of "creches". Creches are the institutions caring for children less than 3 years old. Creches follow on family care and also take care of the child's overall development. During the 90s of the last century there was a significant decrease in the number of creches. Currently in the Czech Republic are only 45 creches with 1,425 places for child. Moreover creches are distributed very unevenly (eg. In Karlovy Vary and Liberec region, is located no one of these institutions) and they are concentrated mainly in large cities (Svobodová & Barvíková, 2014). As a result, women lose their competitive edge within the labour market. Furthermore, if mothers with young children would like to work they find it difficult to secure affordable childcare facilities." (Vohlídalová, 2008)

Quality of part-time job

Part-time work represents the typical form of employment flexibility, which has contradictory effects on workers. E.g. hourly wage of part-time workers is lower than full-time workers (Němcová 2014; Kalleberg 2000; McGinnity & McManus 2007; Hirsch 2005).

„The quality of part-time employment also varies among firms. The amount and quality of job depends largely upon the way employers use part-time working in their personnel and working-time policies, within the context of national policy frameworks. Where part-time employment is marginalized as a secondary form of employment, penalties are incurred in the form of lower hourly pay rates and inferior social protection or opportunities for progression over a working life. Conversely, it can be considered as integrated alongside full-time employment when the difference is simply that of reduced hours of work. It is this latter scenario of integration that usually offers the greater prospect of opportunities for good quality part-time work. "(ILO, 2014)

Certainty employment, the possibility of career rise, autonomy of work, flexible work hours, possibility of personal and professional development and education are the factors, which influence the job quality. These factors influence the employers, their style (method) of management and treatment with employees.

Part-time work may be associated with lower job certainty and stability. In a large proportion of cases, part-time job represents work with low pay and with no chance of any career building and with limited access to employee benefits. In the Czech Republic is any legislation prohibiting unequal treatment of part-time workers (in terms of financial remuneration, skills, and career development or benefits). Furthermore there is no guarantee by law to return to full-time, (after the period, when the employee worked part-time). The power to hire employees belongs to the employer. (Němcová, 2014)

The research (Formánková, Dudová & Vohlídalová 2011) made a comparison of European countries and identified 3 groups of countries with similar quality of part-time work.

1. **Countries with subjectively perceived high quality of part-time jobs** (Denmark, Switzerland, Belgium (Flanders), the western part of Germany, Ireland, UK, Norway, Finland and Sweden)
2. **Countries with subjectively perceived middle quality of part-time jobs** (Czech Republic, Hungary, East Germany France and Slovenia).

   In these countries is felt by the people working part time in a slightly lower employment security than in the first group of countries. They have less possibility of career advancement, lower availability of flexible working hours, but a higher level of working autonomy.

   The proportion of women in these countries, which would have preferred this type of job, is (except in France) significantly lower than in the first group of countries, ranging mostly between 22% and 31%. Extension of part-time jobs in these countries is significantly lower than in the first group of countries too.
3. **Countries with subjectively perceived very low quality of part-time jobs** (Latvia, Spain, Portugal and Bulgaria) (Formánková, Dudová & Vohlídalová 2011).

3.3. Advantages, disadvantages and barriers from employer's view

Some of so far published studies argue that for the employer are part-time jobs unpleasant things, mainly because employer has to deal with a number of barriers and negative effects. Table no. 5 shows the most important.

Tab. 5 – Advantages and disadvantages of part-time work from the employer's view Source: Created by atuhors

Advantages	Disadvantages
Higher productivity of employees on part-time work (Nelen, De Grip, Fouarge 2011)	It is necessary to pre-determine and agree on conditions for part-time with employee
Satisfied employee (in the case of voluntary part-time employment)	dissatisfied employee (in the case of involuntary part-time employment)
New expiriences with managing of part-time employees	It is necessary to modify the organization of work and management practices.
Reducing labor costs *	Higher costs for workplace (space, office equipment) and communication
Employer has Available workers to Handle Extra Workloads	Part-time jobs cannot be implemented in all types of businesses and in all profesions.
Reduced costs within compensation to employee when the working relationship is terminated for employer‘s organizational reasons **	Increased administrative costs (accounting and administration for a higher number of employees)
Tool for keeping valuable employees. Part-time employees could bring in specialized skills.	Very valuable employees could require an above average compensation
Increased staff loyalty and a better image of company	Reduced loyalty if the employee works part-time in several companies
Part-time work can enhance employee motivation	Too many workers in the enterprise can lead to uncontrollable chaos in organization od work and complicate the work efficiency
Holidays for part-time workers may be cheaper ***	

*When the working hours of an employee make for instance 20 hours per week, but this employee does 22 hours of work weekly, it is not concerned as a work overtime. In this case, only the wage or salary without premium for overtime is due to the employee, and compensatory time off is not due to him as well.

** Severance pay is determined by the average wage. This one is calculated from the gross income of the employee from so called a relevant period. Although the general dismissal costs of an employee are, on average, in the Czech republic, at least twice lower than in the West, the conditions for termination are stricter.

*** Part-time employees are entitled to four weeks (in non-business sector to five weeks) on annual base. While for the full-time employees, 4 weeks represent 4 times 5 day, i. e. 20 days a year, for part-time employees , working for example 3 day a week, it represents only 4 times 3 days, i. e. twelve days of funden vacation a year. That means that an employee who draws two weeks of holiday on the whole, is entitled to compensation for six days, i. e. only for the time when his or her shift was cancelled.

Barriers and negatives on the side of employer are the most crucial, because the employer is the one, who usually decides about arrangement of work and makes an agreement about working contract. The list of negative effects for employer also is not short, but it's important to think of weight mentioned advantages and disadvantages. Most of these disadvantages can be compensated by a suitable composition of the workforce and a system of measures to support persons working part-time.

3.4. Barriers and selected problems of employers with employing people on part- time

Opinions of employers on part-time work in the Czech Republic

The survey (organized by Association of Small and Medium-Sized Enterprises and Crafts of the Czech Republic in 2010) was conducted among more than five hundreds enterprises of different sizes and different number of employees and was aimed to identify the opinions and experiences from the area of employment policy and labour law among representatives of enterprises.

The results showed that the majority (58 %) of respondents does not use the opportunity to employ part-time workers (Association of Small and Medium-Sized Enterprises and Crafts of the Czech Republic, 2010). This finding was confirmed by researchers from Confederation of industry of the Czech Republic (2009), which claims that the part-time does not use more than 50 % of businesses.

The answers, that relate the reasons why companies do not introduce part-time jobs in the enterprises, are interesting too. Most respondents felt that introducing part-time can't be possible, because characteristic of the work doesn't allow that (62.8 %), the second most frequent reason was the fear of failure of the employee's duties (49.1 %). Among other frequent answers was the necessity to divide the work among more employees (28.1 %), fear of reduced employee performance (21.2 %) and the lack an overview about company activities from the employee's side (26.1 %) (Association of Small and Medium-Sized Enterprises and Crafts of the Czech Republic, 2010).

Opinions of the representatives of companies may stem from prejudices that still remain regarding part-time job, in our society. But it is necessary to ask why we really can't find the way of introducing part-time job even in company, where it may appears less complicated. It is clear, that easier way is refuse employee, but it is confirmed, that part-time workers are one of the most executive, because they can concentrate better on doing theid work in limited time. Therefore, we believe that in these cases some employers and managers are acting rashly and more employers are afraid of failure. Because of it we can say that many employers see in employing people part-time rather disadvantages and this is the main reason of why they will not try to employ people on part-time.

Questionnaire clearly showed that wider use of part-time work would be necessary to support by the financial motivation of employers. 81.4 % of representatives of companies marked the isurance discount as the most useful idea (Association of Small and Medium-Sized Enterprises and Crafts of the Czech Republic, 2010).

Fear of the unknown

About 47 % of business representatives and top managers believe that if they employed people part-time, they would have to change the style and organization work and style of management. Fear of changes is big factor and barrier of expansion of part-time jobs. (Confederation of industry of the Czech Republic, 2009)

Confused Loyalty

Since your part-time employees could be juggling between 2 or 3 different jobs, they might not be as enthusiastic about working for your company as your fulltime employees are. This could leave your part-time employees with less energy or inclination to work as hard as your other employees, leading to discontent among your entire staff.

3.5. CONCLUSION

The article deals with the benefits and disadvantages of part-time employment in the Czech Republic. An analysis of available sources revealed that the Czech Republic uses part-time jobs significantly less than other states of (mainly western) Europe. A considerable part on the low participation of part-time job makes employers, historical tradition and the quality of part-time jobs.

From a legislative perspective part-time work is available for selected group of employees. If employee taking care of a child who is under 15 years of age or a pregnant female employee, or an employee who proves that he or she, mostly on his or her own, takes long-term care of a dependent person, request about part-time, the employer is obligated to comply with employee request. However, the law does not remember for return to full-time.

The biggest pros for employees are the ability to balance between work and personal life, securing some income (especially for woman in maternity leave). Part-time job is better than any job (social status). Conversely, the disadvantages are lower income than full-time, quality of part-time work and especially the fact that part-time jobs can not be apply to all profession.

For employer are the biggest advantages higher productivity of employees on part-time work and satisfied employees (in case of voluntary part-time employment). Employer has available workers to handle extra workloads too.

On the other side it is necessary to change some habits and remove prejudices about part-time employees. In some cases can threaten to firms higher costs for workplace (space, office equipment) and worse communication among employees.

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JOB SATISFACTION OF KOREAN LOCAL MANAGERS (KLM) IN RELATION TO THEIR LEVEL OF CZECH COMMUNICATION SKILLS

Minwoo Park

Abstract

The purpose of this study is to study examine the causal correlation between Czech communication skills in Korean local managers (KLM) and their level of job satisfaction.

The cultural differences between Korea and the Czech Republic according to Hofstede were used in this study as well as the communication differences according to Edward Hall. In order to verify the hypothesis based on the research model, a survey among 75% of all Korean local managers who work in Korean companies in the Czech Republic was carried out. According to the results of survey, it can be said that level of job satisfaction and the Czech communication skills of KLM are in direct proportion, within the private sector.

In the present study the dimensions of job satisfaction of KLM consists of six facets: work Itself, pay, promotion, relations with expatriates, relations with coworkers, and relations with subordinates. The Czech communication skills of KLM can be divided into two groups - one being high communication skills and the other low communication skills. High communication skills mean that the employee can communicate in Czech fully or fairly competently in any given situation. Low communication skills mean that employee cannot communicate in Czech at all or only on a very basic level.

The study suggests how to manage human resources in order to increase job satisfaction, to increase communication skills and to create a more harmonious global company culture.

Keywords: Czech Republic, South Korea, company culture, culture management, job satisfaction, Czech communication skills

1 INTRODUCTION

Global competition among companies is becoming more intense. In order for companies to survive the cut-throat global competition, attaining a competitive foothold in terms of quality, brand, and price is crucial. It is important for companies to create a global company culture in order to attain this competitive foothold. Global company culture consists of globalization and localization.

The FDI of Korean companies has increased and many have begun build factories in the Czech Republic since 2004 when the Czech Republic joined with EU. Some non-Czech managers are managing local employees meaning that many cultural conflicts and communication problems have occurred.

Around 57 Korean companies have entered the Czech Republic and they are creating a new company ethos mixing global and local culture. Korean companies have recruited Korean local managers (KLM) in order to overcome the culture gap. These KLM are similar to Czech local managers (CLM) in that they must follow the guidelines of Czech employment law, but are similar to Korean expatriates (KE) in that the Korean language is their mother tongue and both of them have Korean nationality. KLM usually work as coordinators or middle managers between CLM and KE. Their position is very important in supporting KE and in managing or co-working with Czech employees. KLM can be divided into two groups. One group prefers

speaking English over Czech whilst the other prefers speaking Czech over English. The second group is more likely to be familiar with Czech culture, as well as being more able to understand their Czech colleagues' behavior.

The purpose of this study is to study examine the causal correlation between Czech communication skills in KLM and their level of job satisfaction. The cultural differences between Korea and Czech Republic according to Hofstede were used as well as the communication differences according to Edward Hall. In order to verify the hypothesis based on the research model, a survey among Korean managers who work in Korean companies in the Czech Republic was carried out. Seventy-five percent of participants in the study consisted of Korean local managers from Korean companies located in the Czech Republic. According to the results of survey, it can be said that level of job satisfaction and the Czech communication skills of KLM are in direct proportion within the private sector.

In the present study the dimensions of job satisfaction of KLM consists of six facets: work Itself, pay, promotion, relations with expatriates, relations with coworkers, and relations with subordinates. The Czech communication skills of KLM can be divided into two groups - one being high communication skills and the other low communication skills. High communication skills mean that the employee can communicate in Czech fully or fairly competently in any given situation. Low communication skills mean that employee cannot communicate in Czech at all or only on a very basic level. According to the results of the survey, the Czech communication skills of 40% of KLM are at a low level, with the other 60% able to communicate at a high level. The study suggests how to manage human resources in order to increase job satisfaction, to increase communication skills and to create a more harmonious global company culture.

2 COMPARISON BETWEEN CULTURES THE REPUBLIC OF KOREA- THE CZECH REPUBLIC

2.1 Cultural Determinants

Culture is an integral part of all human societies [1]. According to Fleury (2009) the concept of culture refers to the values and meanings that influence human behavior and organizational practices [16]. The complexity of contemporary societies increases with the roles in which they are interpreted. These roles are determined by cultural influences. Each company defines its own standards and methods in which they are implemented. It can be said that culture is a structure that gives form of behavior, and sets the framework for exchanges between people within this group. If we know the culture of the company and the country, so it will be easier to understand the behavior of people and co-workers from that country. It will then, in turn, become easier to overcome cultural differences and conflicts.

2.2 Cultural differences by Professor Hofstede

By looking at the Research of Professor Hofstede we can observe the typical cultural features within Czech and Korean companies and demonstrate a series of examples.

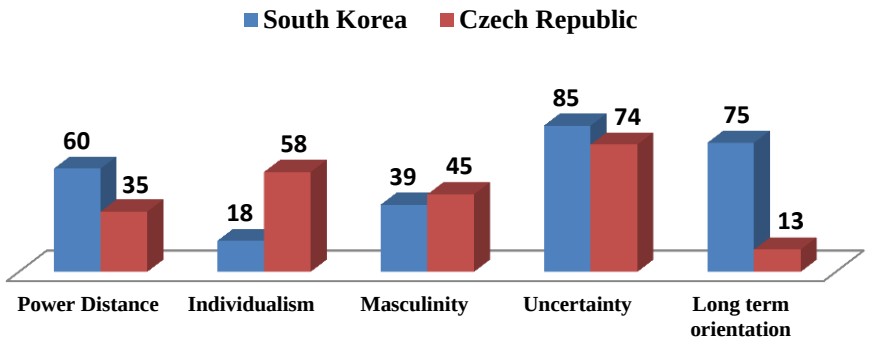

Fig. 1 – Cultural differences between the Czech Republic and the Republic of Korea Source: *Based on G. Hofstede a Gert Jan Hofstede, "Kultury a organizace: Software lidske mysli. Linde (Praha) 2007, pp. 43-163"* [6]

As follows from the above graph, Korea is a hierarchical, collectivist and long-term oriented society. The Czech Republic is, on the contrary, an independent, individualistic society with equal rights for all, and short-term oriented culture.

PDI: Power distance

This dimension deals with the fact that all individuals in societies are not equal – it expresses the attitude of the culture towards these inequalities amongst us. Power distance is defined as the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally. In high power distance cultures, employees expect to receive commands from their superiors, and conflicts are resolved through formal rules and authority. In contrast, participative management is preferred in low power distance cultures, and conflicts are resolved more through personal networks and coalitions. [17]

IDV: Individualism – collectivism

The fundamental issue addressed by this dimension is the degree of interdependence a society maintains among its members. It has to do with whether people´s self-image is defined in terms of "I" or "We". In Individualist societies people are supposed to look after themselves and their direct family only. In Collectivist societies people belong to 'in groups' that take care of them in exchange for loyalty [7]**.**

MAS: Masculinity – Femininity

A high score (masculine) on this dimension indicates that the society will be driven by competition, achievement and success, with success being defined by the winner / best in field – a value system that starts in school and continues throughout organizational behavior. A low score (feminine) on the dimension means that the dominant values in society are caring for others and quality of life. A feminine society is one where quality of life is the sign of success and standing out from the crowd is not admirable. The fundamental issue here is what motivates people, wanting to be the best (masculine) or liking what you do (feminine) [8].

UAI: Uncertainty avoidance

Uncertainty avoidance is the degree to which people tolerate ambiguity or feel threatened by ambiguity and uncertainty. This ambiguity brings with it anxiety and different cultures have learnt to deal with this anxiety in different ways. Employees with high uncertainty avoidance value structured situations where rules of conduct and decision making are clearly

documented. They prefer direct rather than indirect or ambiguous communications. But High power distance makes it less appropriate to speak forthrightly to those with higher status. The collectivist culture discourages direct communication, which can potentially disrupt harmonious relations within the group [18].

LTO: Long term orientation

The long term orientation dimension is closely related to the teachings of Confucius and can be interpreted as dealing with society's search for virtue, the extent to which a society shows a pragmatic future-oriented perspective rather than a conventional historical short-term point of view [10].

Tab. 1 – Cultural differences between the Czech Republic and the Republic of Korea Source: own

	Korea	**Czech Republic**
PDI	1. The Korean employees avoid explaining their opinions to managers naturally. When having a meeting, employees do not express their opinion, but accept results with little conflict. 2. Although Korean employees have finished work, they do not go home. The manager goes home first, followed by subordinate staff.	1. Czech employees communicate with each other fully and subordinate staff members express their opinions freely to managers.
IDV	1. The principle of seniority is a very important in Korean companies and society. 2. Salary depends on the time spent in the company not on the experience of staff.	1. Czechs have two mobiles phones - one is for work and another is for private life. After work they turn off their work phone. Czechs can usually distinguish between work and private life.
MAS	1. It is important to be regarded as successful and to reach goals. 2. People work hard to achieve a high living standard and to be able to "show their achievements". 3. Long working hours and dedication to work are needed in order to achieve this.	1. In Czech conflicts are resolved by compromise and negotiation. 2. Incentives such as free time and flexibility are favored. 3. Focus is on well-being, and status is not shown. 4. An effective manager is a supportive one, and decision making is achieved through involvement.

UAI	1. One of the most uncertainty avoiding countries in the world [9]. 2. There is an emotional need for rules, time is money, people have an inner urge to be busy and work hard 3. 'Hurry Hurry' culture, high suicide rate, and high consumption of alcohol	1. High preference for avoiding uncertainty 2. Precision and punctuality are the norm, innovation may be resisted, and security is an important element in individual motivation. 3. High consumption of alcohol, and high crime rate
LTO	1. The long term oriented societies 2. Fast growth of Korean economy from 1970 to 2000 3. Priority given to steady growth of profit over a 10 year period, rather than to quarterly profits [11].	1. Short term oriented culture. 2. Free time is important. 3. Importance of profit over a 1 year period. 4. Freedom, law, performance and individual opinion are the main working values.

1 COMMUNICATION DIFFERENCE BETWEEN THE REPUBLIC OF KOREA – THE CZECH REPUBLIC

2.3 Definition of Communication

Culture and communication are inextricably linked. Cultural background plays a large role when you are communicating both with international colleagues and with culturally diverse colleagues in the CR.

The definition of communication is: a process which takes place between a sender and a receiver, in which both parties play an active part. It involves expectation on the part of the sender, in which these expectations need to be determined prior to communication itself. It is result-oriented: that is, there is an action required on the receiver's side.

Communication is initiated behavior that can be accomplished either through oral or written language, by non-verbal language (actions) or by silence, where no language is involved [2].

Communication can flow vertically or laterally. The vertical dimension can then be further divided into downward and upward directions. Communication that flows from one level of a group or organization to a lower level is a downward communication. Upward communication flows to a higher level in the group or organization. When communication takes place amongst members of the same working group, among members of working groups at the same level, among managers at the same level, or among any horizontally equivalent personnel, we describe it as lateral communication [19].

2.4 Communication Difference

Cultural context is the pattern of physical cues, environmental stimuli, and implicit understanding that convey meaning between members of the same culture. However from culture to culture, people convey contextual meaning differently. In fact, correct social

behavior and effective communication can be defined by how much a culture depends on contextual cues.

According to Edward Hall's definitions, in a high-context culture such as South Korea, China or Japan people rely less on verbal communication and more on the context of nonverbal actions and environmental setting to convey meaning.

In a low-context culture such as the Czech Republic or Germany people rely more on verbal communication and less on circumstances and cues to convey meaning. Contextual differences are apparent in the way cultures approach situations such as negotiating, decision making, and problem solving [12].

In such intercultural communication, the Korean concept of 'nunch'i' may play an important role. In Korean, 'nunch'i' means „eye measured". 'Nunch'i' can be described as as a sort of code of conduct which Koreans live their lives by that stems from the Korean desire not to offend others and to maintain harmonious relationships. An example of this would be the rule that older individuals must always settle the bill after a meal, for example, whereas this is not usually the case in Europe. In Korea, 'nunch'i' is a critical variable in the maintenance of social relationships [13]. Miscommunication between Czech and Korean professionals can occur because Koreans have 'nunch'i' and expect Czechs to have it too, or because Czechs do not have 'nunch'i', do not know what it is, and do not even know that anyone else expects them to have it.

2 LOCAL MANAGERS IN KOREAN COMPANIES

2.5 Human resources in Korean companies in the Czech Republic

Human resources consist of Korean Expatriates (KE), Local Managers (LM), Local Employees (LE), and Third Country Employees (TCE). KE tend to be upper managers or executives of companies in the Czech Republic whilst LE and TCE are often in lower positions. LM are in middle positions. KE are experienced in their role and familiar with the culture and system of HQ, helping the local branch follow the purpose and policy of HQ. KE have opportunities for promotion thanks to international experiences and receive financial benefits such as educational support for children etc [21]. LM are experienced of the limitation of promotion, communication problems with KE, avoidance of authoritarian style of management etc meaning that they are more likely to change jobs [22]. LE and TCE usually belong to the lower position in organization chart. They are likely to expect salary and welfare conditions that are lower than that of KE and LM. They are more likely to be familiar with local employees and more learned in the local environment than KE.

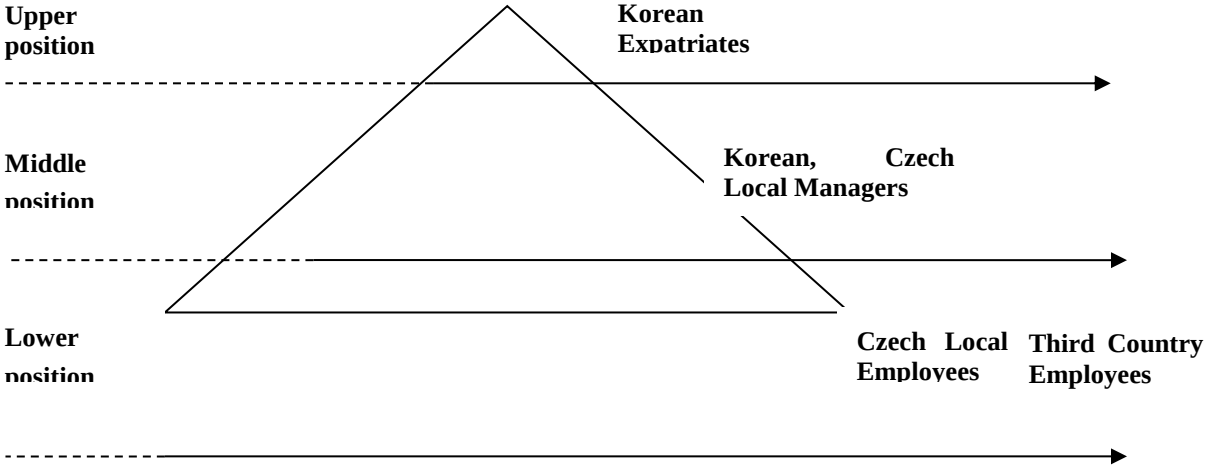

Fig. 2 – Organization chart in Korean Companies in CR Source: own

2.6 Definition of Local Managers

Local Managers work in local branches and must follow the guidelines of Czech employment law. Local Managers can divided into two groups - with one being Czech Local Managers (CLM) and another being Korean Local Managers (KLM). These KLM are similar to CLM in that they must follow the guidelines of Czech employment law, but are similar to KE in that the Korean language is their mother tongue and both of them have Korean nationality.

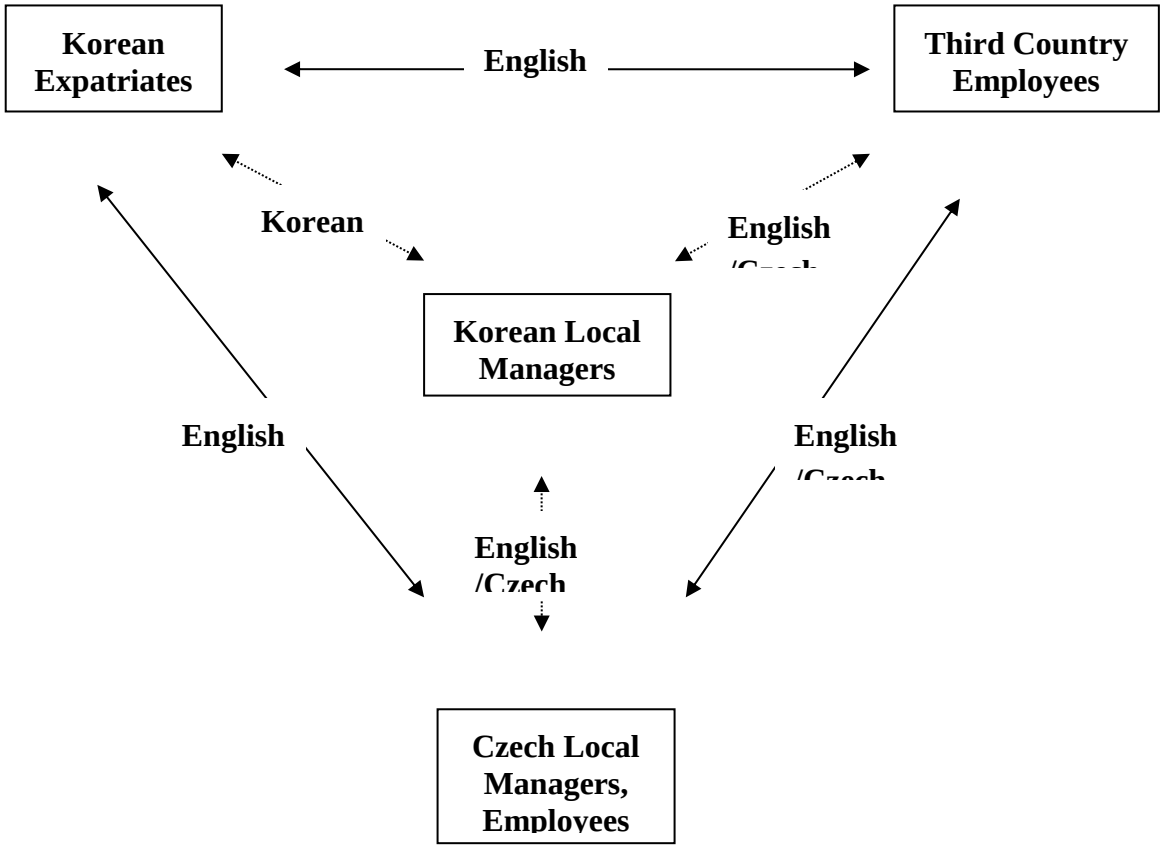

Fig. 3– Communication in Korean Companies in CR Source: own

2.7 Role and importance of Korean Local Managers

Korean companies have recruited KLM in order to overcome communication problems and cultural gaps amongst staff. KLM support KE and co-work with CLM and CLE. They can shorten the power distance between KE and CLM and CLE.

Tab. 2– Strong and weak points of Korean local managers Source: Based on Dowling, Welch, and Schuler(1999) [3].

Korean local managers	Strong points	1. removal of obstacles such as language barrier 2. reduced cost of salary 3. possibility of familiarity with local environment 4. bridges the gap between KE and CLM, LE 5.opportunity for global experience
	Weak points	1. Possibility that they will expect welfare condition like KE. 2. limited work experience (only in local branches) 3. Possibility of high staff turnover which negatively affects Business Continuity Management. 4. There are not many Koreans who speak the Czech language

3 JOB SATISFACTION OF KOREAN LOCAL MANAGERS

2.8 Definition of Job Satisfaction

A positive attitude toward one's work is called 'job satisfaction'. In general, people experience this attitude when their work matches their needs and interests, when working conditions and rewards are satisfactory, when they like their co-workers, and when they have positive relationships with supervisors [20].

Locke(1976) defines job satisfaction as a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences [4] or as a 'collection of attitudes about specific facets of the job'. After considering all the above, we can consider job satisfaction to be an emotional attitude to work instead of behavior or activity. In this study I want to define job satisfaction as personal emotional attitude to relations between members and organizational culture.

Locke (1976) describes the common factors contributing to job satisfaction as „work, pay, promotions, recognition, benefits, working conditions, supervision, coworkers, company and management [5].

Job satisfaction consists of a variety of satisfaction facets involving workers' feelings toward various aspects of the work environment. The most common and most important facets of job satisfaction are the characteristics of the work itself, the amount of work, the physical working conditions, co-workers, supervision, compensation, promotional opportunities, and organizational policies and practices [14].

The purpose of this study is to study examine the causal correlation between Czech communication skills in KLM and their level of job satisfaction. In order to verify the

hypothesis based on the research model, a survey among Korean managers who work in Korean companies in the Czech Republic was carried out. Seventy-five percent of participants in the study consisted of Korean local managers from Korean companies located in the Czech Republic.

In the present study the dimensions of job satisfaction of Korean local managers consists of six facets: work Itself, pay, promotion, relations with expatriates, relations with coworkers, relations with subordinates. Questions were adapted from other similar questionnaires relating to Job Satisfaction, such as "Effects of the Internal Communication among the Corporate Employees on Job Satisfaction (Kim, Kyung-Ho, Chung-Ang University, 2007) [15] ".

The questionnaire included an 18-item scale to measure six specific satisfactions: work Itself (items 1, 2, 3), pay (items 4, 5, 6), promotions (items 7, 8, 9), relations with expatriates (items 10, 11, 12), relations with coworkers (items 13, 14, 15), relations with subordinate (items 16, 17, 18). The scale uses a five-point rating scale with 5 = strongly agree; 4 = agree; 3 = neither agree nor disagree; 2 = disagree; and 1 = strongly disagree.

2.9 Job satisfaction of Korean local managers (KLM)

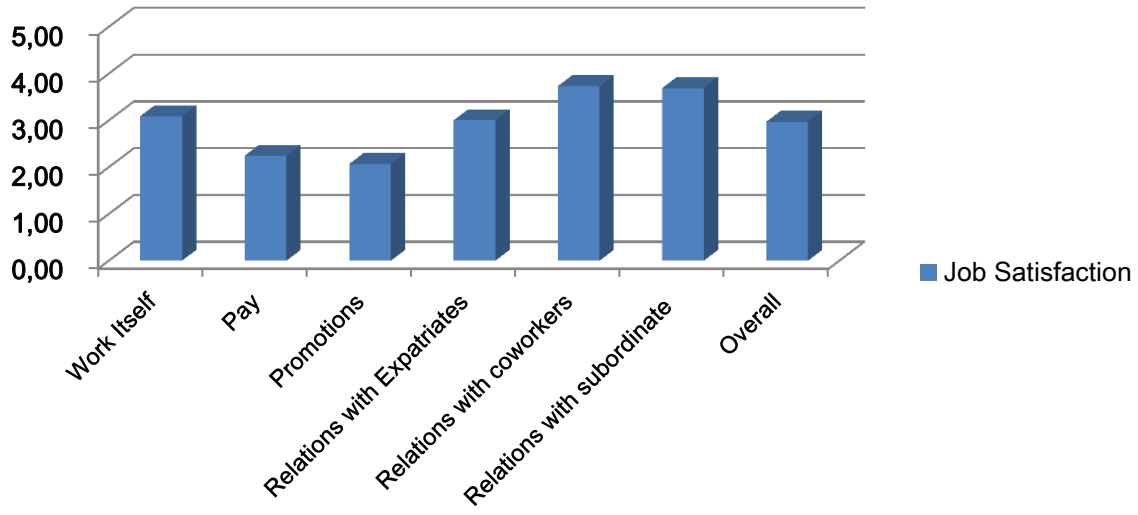

Fig. 4– Job satisfaction of Korean local managers (KLM) in Korean Companies Source: own

According to the results of the questionnaire, job satisfaction in the case of relations with coworkers, subordinates, relations and KE, satisfaction with one's role at work is higher than other facets but job satisfaction in terms of pay and promotions is lower. Job satisfaction in the case of relations with staff, coworkers and subordinates is higher than relations with KE who only speak Korean and English.

We can expect KLM to share their opinions more with co workers or subordinates than KE. The company should focus on the relations between KE and KLM rather than relations between KLM and their Czech subordinates in order to increase job satisfaction of Korean local employees. Similarly, the company should consider the relationship between KE and CLM, as this is also quite weak. Job satisfaction relating to promotions is the lowest amongst all facets. It means that Korean local managers have limited prospects of promotion due to KE. KLM are likely to consider receiving lower wage than KE even though they are dealing with the same task.

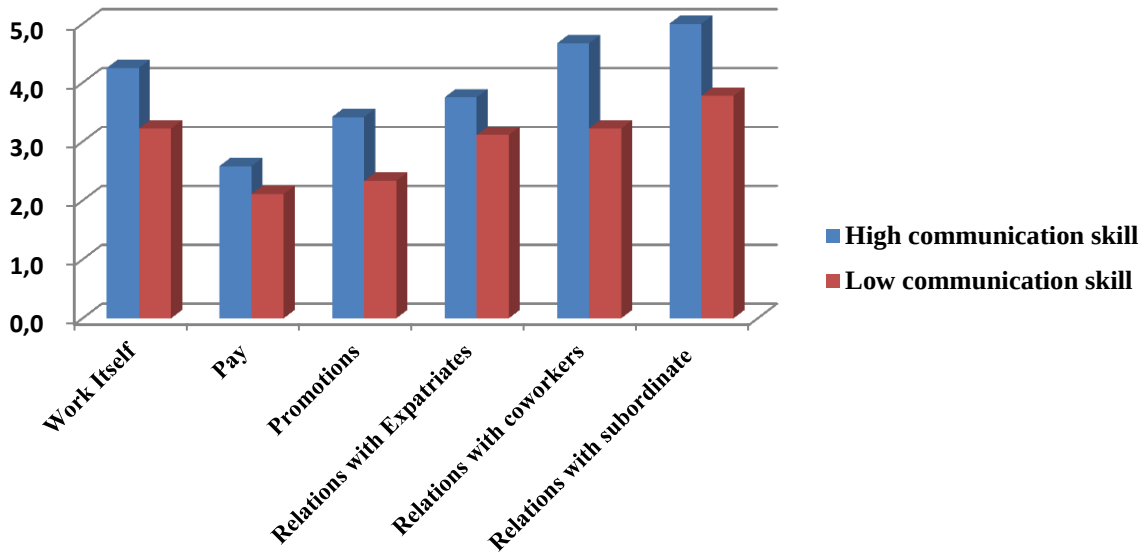

Fig. 5 Job satisfaction of Korean local managers (KLM) according to their Czech communication level in the Private Sector. Source: own

According to the results of survey, job satisfaction and the Czech communication skills of KLM are direct proportion within the Private Sector.

The Czech communication skills of KLM can be divided into two groups - one being high communication skills and the other low communication skills. High communication skills mean that the employee can communicate in Czech fully or fairly competently in any given situation. Low communication skills mean that employee cannot communicate in Czech at all or only on a very basic level.

KLM who speak Czech well have higher job satisfaction in all facets (role at work, pay, promotions, relations with KE, relations with coworkers, relations with subordinates) unlike other employees who cannot speak Czech well or can speak a little. Pay comes out as a negative aspect of job satisfaction for of managers who took the survey. It means that KLM regardless of communication skills are likely to consider receiving a lower salary than KE. According to the results of the survey, promotion of KLM depends on their Czech communication skills. We can expect that KLM in high positions can speak Czech better than those in lower positions.

Managers who have high Czech communication skills tend to have the best relations with their subordinates and coworkers. KLM have lower relations with KE than with their coworkers and subordinates. Managers who have low Czech communication skills have lower relations with KE and coworkers than subordinates. It means that they are closer to subordinates than other staff and share their opinions more with them. KLM have low job satisfaction in the area of relations with KE even though they are the same nationality.

It can then be said that managers who have high Czech communication skills have higher job satisfaction in all facets than those with low Czech communication skills, so they are likely to work longer within the same company than others.

4 CONCLUSION

The purpose of this study was to examine the causal correlation between Czech communication skills in KLM and their level of job satisfaction.

By taking all of the aforementioned into account, it can be said that Korean local managers in private sectors who speak Czech well have higher job satisfaction in all facets(work, pay, promotions, relations with expatriates, relations with coworkers, relations with subordinate) than other managers who cannot speak Czech well or can only speak a little. It can be assumed that managers who have high communication skills have higher job satisfaction in all facets than others so that they are likely to work in the same company for longer than others. KLM, regardless of Czech communication skills, have low relations with KE even though they speak Korean and their nationalities are the same, possibly due to resentment created by their differing working conditions

How can Korean companies manage human resources in order to increase job satisfaction, increase Czech communication skills and create a more harmonious global company culture?

The Private Sector needs to consider the following facts.

First, KLM and KE should try to build on their Czech communication skills and learn about Czech culture. Also, if CLM increase their level of Korean communication skills, their job satisfaction too should increase. Therefore, Korean companies should provide Czech language courses for Korean managers and Korean language courses for Czech managers. Second, Korean companies should consider changing their organization chart. Korean companies should reduce the number of KE in the long term and promote local managers to the high positions instead so that satisfaction relating to promotions can be increased for KLM. Third, Korean companies should improve the labour conditions of KLM. KLM are likely to consider receiving lower wages and less staff benefits than KE even though they are dealing with the similar tasks. Fourth, KE should focus on increasing the relations with KLM. Even though KE and KLM speak the same language and can understand each other fully, relations between KE and KLM are the lowest amongst staff. Fifth, Korean companies should give opportunities to KLM and CLM to work in HQ in Korea so that local employees can better understand the culture of HQ.

It is also necessary to consolidate the public diplomacy policy for harmonious global company culture. The public sector should open a Korean Culture Center in the Czech Republic to spread the awareness on the Korean culture even more extensively. The public sector should promote Korean popular culture, for example by broadcasting Korean movies or soap operas on Czech TV and make events like K-pop contests, sports days, or Korean speech contests often so that Korean and Czech can enjoy together.

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ASSESSMENT OF CORPORATE SOCIAL RESPONSIBILITY BASED ON AHP METHOD AND GROUP DECISION MAKING

Štěpánka Staňková, Hana Pechová

Abstract

Business activities, trading and permanent competing have become an essential component of a human society. Since the end of the Second World War availability of products, overall consumption of limited natural sources as well as customer preferences and needs have been developing and changing dynamically. Generally, the CSR concept could be understood as a voluntary commitment of various organizations to follow the principles of a responsible behaviour, sustainability and social engagement. A broad thematic range of the CSR concept interconnecting a large quantity of scientific fields and expert opinions lead to a terminological disunity resulting in many various definitions. Nowadays, an exact measurement is a very questionable and difficult task. The main goal of this paper is connected with the application of the Analytic Hierarchy Process method (AHP) in a complex CSR assessment of selected telecommunication organizations operating in the Czech Republic. To overcome a subjectivity following from an individual expert´s opinion a group of academics and non-academic was asked to participate in a preferences appraisal of criteria and sub-criteria of a hierarchically structured decision-making task based on Saaty´s Pairwise Comparison method. Group decision making was analysed by computations of Consistency Ratio (CR), Geometric Consistency Index (GCI) and AHP Consensus Indicator. Obtained results were described with respect to a distributive mode synthesis and an ideal mode synthesis. Both syntheses bring the same ranking of the organizations within the sample. Organization *Vodafone Czech Republic, a.s.* achieves the best scores and it is considered to be the ideal in 6 sub-criteria. Company *O2 Czech Republic, a.s.* takes a second place and it achieves the ideal values in 3 sub-criteria. Finally, *T-mobile Czech Republic, a.s.* is placed in the third position. It is shown that the AHP could be used as a helpful managerial tool providing reliable sources for a suitable CSR evaluation together with CSR benchmarking.

Keywords: Corporate Social Responsibility, Analytic Hierarchy Process, Group decision making, Geometric Consistency Index, AHP Consensus Indicator

1 INTRODUCTION

In 1953 the American economist Howard R. Bowen (Putnová & Seknička, 2007) introduced his book named Social Responsibilities of Businessman that served as a source of inspiration for the title of the special study named Corporate Social Responsibility (in short CSR). Specialized research centers focusing on the exploration of this dynamically developing field have gradually emerged. Moreover, organizations supporting and promoting the sustainable and responsible entrepreneurship have been established worldwide.

Due to a spontaneous development of the CSR study integrating a plenty of scientific disciplines and expert opinions, a diverse terminology relating to various measurement methods causes difficulties connected with different interpretations of CSR results and performance. The main goal of this paper is focused on the complex evaluation of CSR approaches of the three leading organizations operating in the Czech telecommunication market by applying the AHP method together with group decision making. A theoretic part of this paper is focused on more detailed characteristic of the CSR concept and contemporary

possibilities of CSR measurement. The AHP method and group decision making analyses are described in the methodological section. Finally, the obtained results and the other methods that could possibly be used in this research are discussed and summarized.

2 THEORETICAL BACKGROUND OF CORPORATE SOCIAL RESPONSIBILITY AND ITS ASSESSMENT

In connection with the development of various definitions and characteristics of the CSR concept it is important to mention two most elaborated and quoted theories that, in fact, polarize opinions on these issues. *The stockholder theory* states that there is the only one social responsibility: to use resources to support profit maximizing business activities but without breaking the law, deceptions or frauds. On the other hand, every business organization should respect ethical conventions and encourage beneficial social results. This theory was introduced by Milton Friedman in 1970 (Putnová & Seknička, 2007) and represents a narrow conception of CSR that is focused on the owners as investors who carry a risk of a lack of success. Owners are the ones who make key decisions but they also have to entrust their managers with the power to support profit maximization (Horrigan, 2010).

In 1984 Richard Edward Freeman presented *the stakeholder theory* as his critical reaction to Friedman´s work. It claims that diverse interests of all stakeholders: employees, customers, suppliers, trade unions, local communities etc. should be taken into consideration, as well. The stakeholders could include individuals or they could form groups that are positively or negatively influenced by the business activities. The stakeholders, however, could similarly affect organizations and their goals (Coombs & Holladay, 2012).

According to Kunz (2012) a long-term orientation, a systematic approach and voluntariness together with unlimited possibilities of a practical application are considered to be characteristic features of the CSR definitions. Authors such as Coombs and Holladay (2012), Horrigan (2010), Pavlík and Bělčík (2010) are familiar with a triple-bottom-line concept presented also by the European Union that includes three basic areas of interest: Profit, Planet and People. A responsible organization conducts business transparently, respects Corporate Governance rules, ethical marketing policies and ethical codes, pays attention to quality, innovations or safety and is universally beneficial to its community (Profit). An environmentally sustainable organization uses environment-friendly technologies, supports their development and reduces its environmental impacts (Planet). A responsible organization also fully respects human rights, occupational health standards and is fair in relation to its stakeholders (People).

The level of a systematic assessment of CSR activities in organizations is dependent on individual understanding of the CSR principles by owners, managers and employees, together with their internal explanations of the necessity of a permanent implementation, monitoring and a regular evaluation of this above-standard commitment. Publicly presented CSR results could be considered as an opportunity to gain a competitive advantage, however, especially small organizations operating regionally take a responsible conduct of business for granted. There are several possibilities to evaluate CSR activities: a special audit, a certification or a quality mark. All these tools used for measurement of the CSR performance differ in their methodologies, complexity and range of a suitable application in various business sectors or organization structures. Nowadays, socially responsible investing is considered to be an emerging trend, represented by diverse sustainability indices. Their main deficiency is connected with the fact that only the world´s largest companies whose stocks are marketable in global stock markets are tracked. A separate category of evaluation tools is represented by non-financial reporting initiatives based on a regular publication of CSR reports that could be used as a communication medium informing about the CSR progress as well as managerial

instrument providing a survey of CSR results (for detailed information, see Pavlík & Bělčík, 2010; White, 2009). Regardless of the legal form of the organizations it is possible to apply a content analysis to evaluate or mutually compare CSR activities mentioned in CSR reports, internet pages and presentations. Practical examples of CSR evaluation possibilities and tools are given in Tab. 1.

Tab. 1 – Summary of CSR evaluation tools and methods. Source: own adaptation according to Forum Ethibel, 2014; Global Reporting Initiative, 2015; ISO, 2014; S&P Dow Jones Indices, 2014)

Certification/ Guidance	**Specialization**	**Organization**
AA 1000	Evaluation of CSR principles application	*AccountAbility*
ISO 14001, ISO 14004	Environmental management system	*International Organization for Standardization*
ISO 26000	Guidance on reliable CSR strategy	*International Organization for Standardization*
Quality Label	Appraisal of CSR strategy complexity from stakeholders´ point of view	*Forum Ethibel*
CSR Evaluation Methodology	**Specialization**	**Organization**
International Standard for Measuring Corporate Community Investment	Corporate community investment	*London Benchmarking Group*
Sustainability Indices	**Specialization**	**Organization**
Ethibel Sustainability Index	CSR performance evaluation of the world´s largest companies whose stocks are marketable in global stock markets	*Forum Ethibel*
Dow Jones Sustainability Indices		*S&P Dow Jones Indices*
FTSE4Good		*London Stock Exchange Group*
Non-financial Reporting	**Specialization**	**Organization**
G4 Guidelines	CSR reporting methodology and forms	*Global Reporting Initiative*

3 RESEARCH METHODOLOGY

The Analytic Hierarchy Process (AHP) was first introduced by its author Thomas L. Saaty at the beginning of 1970s. The AHP is a multi-criteria decision making method (MCDM) that uses pairwise comparison of components forming a hierarchy. It means that a chosen problem is decomposed into smaller constituent parts (Ishizaka & Labib, 2011). In the field of CSR the AHP could be used in decision-making processes resulting in a selection of the optimal way of reaction or behavioral pattern (for examples, see Beno, Drieniková, Nano, and Sakal,

2012). Chen and Fan (2011) recommend combining the AHP with a fuzzy set modelling in order to measure the CSR performance.

The AHP application covering this paper is consisted of following steps: 1) a hierarchy compilation with respect to a main goal that is connected with the evaluation of CSR activities of the three selected organizations operating in the Czech telecommunications sector; 2) a collection of experts´ opinions on preferences distribution among criteria and sub-criteria of a decision-making task; 3) computations of local and global weights of the criteria and sub-criteria and an examination of a required level of consistency; 4) a comparison of CSR activities practiced in chosen companies.

For evaluating the importance (preference) of the criteria, there are several proposed scales that can be used (Ishizaka & Labib, 2011), the linear scale with parameters 1-9 was chosen (Saaty, 2000). Value 1 corresponds with an equal importance (indifference), number 3 means "moderately more", number 5 "strongly more", number 7 "very strongly more" and number 9 "extremely more". The values 2, 4, 6 and 8 are used to express a compromise or an intermediate stage of the ratio scale. Numerical results of pairwise comparisons are written in a Saaty matrix (symbolically marked by **S**). The matrix is reciprocal which means that its elements, marked $s_{i,j}$, which are symmetric with respect to the diagonal, are inverses of one another, $s_{i,j} = 1/s_{j,i}$. Moreover, the elements on the diagonal express equality and are assigned to the value 1 (Saaty, 2000; Zmeškal 2012).

Once all paired comparisons on every hierarchical level are made a computation of normalized local weights w_i, representing a contribution to the parent node in the level immediately above, follows. Local weights w_i could be calculated for example by using geometric mean of rows of Saaty´s matrix **S** according to a mathematic formula (1), where N represents the order of Saaty´s matrix **S** with elements $s_{i,j} \in [1/9; 9]$.

$$w_i = \frac{v_i}{\sum_i^N v_i} = \frac{\left[\prod_j^N s_{i,j}\right]^{\frac{1}{N}}}{\sum_i^N \left[\prod_j^N s_{i,j}\right]^{\frac{1}{N}}}. \quad (1)$$

The AHP method is based on a principle of utility maximization that is why the option with the highest sum of the global weights is chosen. This method is called a distributive mode synthesis. Another solution of this task could be brought by an ideal mode synthesis that is connected with a relative expression of the global weights, while an ideal value is represented by 100 % (Saaty, 2000).

A requirement of meeting the transitivity condition resulting in the demanded consistency of Saaty´s matrices is necessary to obtain a high-quality evaluation and reliable results.We were interested in consistency of the experts´ views. For verification of this assumption two indices described in sub-chapters 3.1 and 3.2 were calculated and then compared with proposed values. What´s more, the AHP Consensus Indicator (see Sub-chapter 3.3) that measures a level of experts´ agreement was computed.

3.1 Consistency Ratio

This index checking the consistency was designed by Saaty (2000). The value of Consistency Ratio must definitely meet a condition: $CR \leq 0{,}1$. The Consistency Ratio is calculated by the formula:

$$CR = \frac{CI}{RI} = \frac{\frac{\lambda_{max} - N}{N-1}}{RI}, \quad (2)$$

where λ_{max} is maximum eigenvalue and can be calculated as follows:

$$\lambda_{max} = \frac{1}{N}\sum_{i}^{N}(S.w)_i / w_i \,, \quad (3)$$

where w symbolizes an eigenvector of weights w_i and $(S \cdot w)_i$ stands for i-th element of vector w. The random index (RI) values are determined in Tab. 2.

Tab. 2 - Random index. Source: Saaty (2000)

N	1	2	3	4	5	6	7	8	9	10
RI	0,00	0,00	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49

3.2 Geometric Consistency Index

To verify the consistency of the experts´ views the Geometric Consistency Index (GCI) that is more precise than CR can be used either. Given a *(n x n)* pairwise comparison matrix **S** = (s_{ij}) with the vector of priorities, ω, obtained by the Row Geometric Mean Method (RGMM), GCI is defined as:

$$GCI = \frac{2}{(n-1)(n-2)}\sum_{i<j} \ln^2 e_{ij} \,, \quad (4)$$

where $e_{ij} = s_{ij}w_j/w_i$ is the error obtained when the ratio ω_i/ω_j is approximated by s_{ij}. Assuming the usual value of the CR = 10 %, thresholds of the GCI are: GCI = 0,31 for N = 3; GCI = 0,35 for N = 4 and GCI = 0,37 for N > 4. For further details, see Aguarón and Moreno-Jiménez (2003).

3.3 AHP Consensus Indicator

AHP Consensus Indicator (S^*) compares the rank of criteria from the experts' point of views. Interpretation of this indicator is dependent on the user and his/her conception of consensus needs and requirements within a group. The result shows the level of consensus among experts from 0 to 100 %. Calculation procedure of S^* is based on a methodology of Shannon Entropy H (see Shannon, 1948) and a concept of Alpha and Beta Diversity (see Jost, 2007). S^* for group decisions is computed as follows:

$$S^* = \left[M - \exp(H_{\alpha\,min})/\exp\left(H_{\gamma\,max}\right)\right]/\left[1 - \exp(H_{\alpha\,min})/\exp\left(H_{\gamma\,max}\right)\right], \quad (5)$$

where $M = 1/\exp(H_\beta)$. $H_{\alpha,\beta,\gamma}$ is the α, β, γ Shannon entropy for the priorities of all K experts:

$$H_\alpha = \frac{1}{K}\sum_{j=1}^{K}\sum_{i=1}^{N} -p_{ij}\ln p_{ij}, \quad (6)$$

$$H_\gamma = \sum_{j=1}^{K} -\overline{p_j}\ln\overline{p_j}, \quad (7)$$

where $\overline{p_j} = \frac{1}{N}\sum_{i=1}^{N} p_{ij}$ and

$$H_\beta = H_\gamma - H_\alpha. \quad (8)$$

Further we need to adjust for the maximum score c_{max} of the AHP scale used and

$$H_{\alpha\,min} = -\frac{c_{max}}{N+c_{max}-1}\ln\left(\frac{c_{max}}{N+c_{max}-1}\right) - (N-1)\frac{1}{N+c_{max}-1}\ln\frac{1}{N+c_{max}-1}, \quad (9)$$

$$H_{\gamma\,max} = (N-K)\left(-\frac{1}{c_{max}+N-1}\right)\ln\left(\frac{1}{c_{max}+N-1}\right) - \left(\frac{K+c_{max}-1}{N+c_{max}-1}\right)\ln\left(\frac{1}{K}.\frac{K+c_{max}-1}{N+c_{max}-1}\right), \quad (10)$$

where N is number of criteria, K is number of experts (for further information, see Goepel, 2013).

4 APPLYING AHP AND GROUP DECISION MAKING WITHIN CSR AND RESULTS

Firstly, the hierarchic structure was designed. The graphic representation of the hierarchy is shown in Fig. 1. First line defines the goal that is connected with the complex CSR assessment of chosen companies. The second line is represented by three fundamental groups of criteria in CSR assessment – economic field, environmental field, social field. Each group contains further specific sub-criteria. Each component of the second and third line is chosen according to the triple-bottom-line definition of CSR (see Chapter 2). The fourth line is consisted of options represented by 3 selected organizations.

In second step, the importance (preference) appraisal of criteria and sub-criteria was accomplished by 4 experts. Each expert was supposed to fill in Saaty matrices individually. To verify the consistency of experts' views several consistency and consensus indices were computed (CR, GCI, S^*). The computed values of CR and GCI did not exceed the recommended threshold. According to the results given in Tab. 3, the group of 4 experts is considered to be consistent.

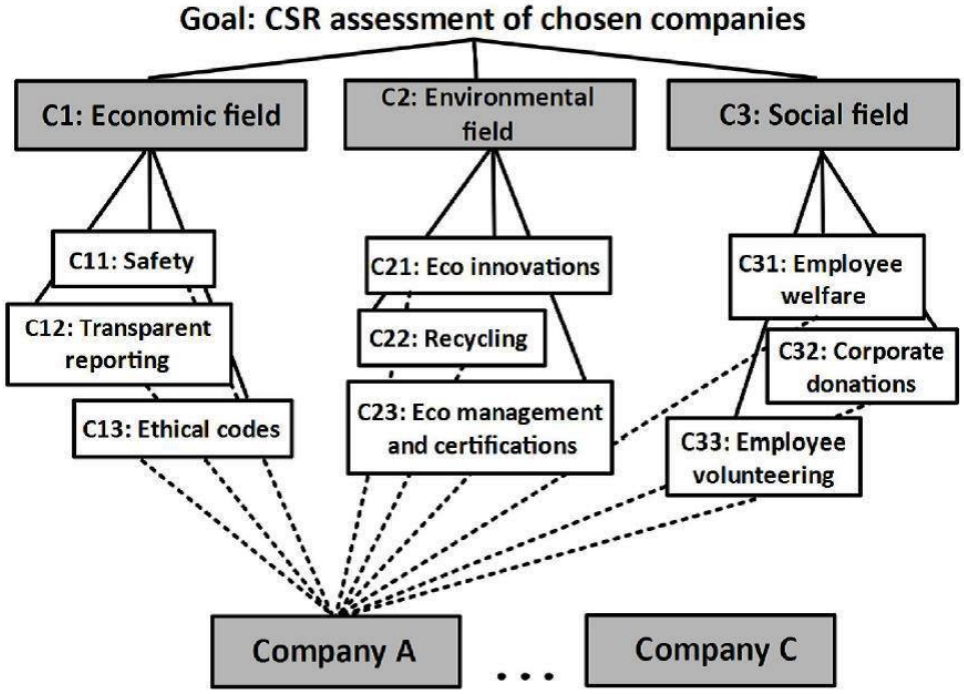

Fig. 1 – Hierarchic decomposition of decision-making task. Source: Own adaptation according to the CSR definitions (Pavlík & Bělčík, 2010)

For consensus appraisal based on S^*, a threshold value of 80 % was set. Experts agreed on preferences distribution among the CSR fields and sub-criteria included in the economic and social field. However, they opinions differed in the environmental field. In this field there were compared criteria such as ecological innovations, recycling and ecological management and certifications. Each expert seemed to prefer different criterion so in this case none of these criteria can be considered as more important than the remaining ones (see Tab. 3).

Tab. 3 – Results of consistency and consensus indices. Source: Own computation

Comparison	CR ≤ 0,1	GCI ≤ 0,31	S^* 80-100 %
Among fields (C1-C3)	0,033	0,115	85,7%
Economic field (C11-C13)	0,050	0,174	87,8%
Environmental field (C21-C23)	0,022	0,077	76,3%
Social field (C31-C33)	0,004	0,012	88,5%

Thirdly, local and global weights were calculated. In Tab. 4 the results of AHP are shown. In accordance to experts' opinions, the environmental field (C2; 41,35 %) is regarded to be the most important field of CSR activities. The economic field (C1; 30,71 %) follows and social field (C3; 27,94 %) is the least preferred one.

The sub-criteria dealing with ecological innovations (C21) and recycling (C22) are considered the most important in CSR activities (global weights > 15 %). Subsequently, sub-criteria connected with corporate donations (C32), employee welfare (C31) and safety (C11) follow (global weights > 12 %). Ecological management and certifications (C23), transparent reporting (C12), ethical codes (C13) are less important (global weights ≤ 10 %). Finally, employee volunteering (C33; 3 %) is the least important criterion.

Tab. 4 - Overview of local and global weights. Source: Own computation

Field	Sub-criterion	Local weights	Global weights
Economic field (30,71 %)	Safety	39,30%	12,07%
	Transparent reporting	31,95%	9,81%
	Ethical codes	28,75%	8,83%
Environmental field (41,35 %)	Eco innovations	38,38%	15,87%
	Recycling	37,41%	15,47%
	Eco management and certifications	24,21%	10,01%
Social field (27,94 %)	Employee welfare	44,38%	12,40%
	Corporate donations	44,76%	12,51%
	Employee volunteering	10,86%	3,03%

Fourthly, the CSR evaluation of chosen companies was accomplished. A CSR performance of three telecommunication organizations was appraised by authors´ opinions based on information got from a content analysis of current internet presentations, CSR reports and other available publications and surveys. *T-mobile Czech Republic, a.s.* is marked with the expression "Organization A", *Vodafone Czech Republic, a.s.* is "Organization B" and finally *O2 Czech Republic, a.s.* is "Organization C". According to the results of the Czech Top 100 Most Admired Firms survey held in 2014 all of these organizations are considered to be an essential part of the Czech telecommunication sector.

The final results required for the complex evaluation of the CSR approach of the selected organizations are obtained by using a distributive mode synthesis based on calculations of global weights reflecting organization scores in each sub-criterion. Detailed overview of computed global weights is given in Tab. 5. *Vodafone Czech Republic, a.s.* (Organization B) is considered to be the most successful firm from the sample because it achieved approx. 49 %. *O2 Czech Republic, a.s.* (Organization C) scored nearly 31 % while *T-mobile Czech Republic, a.s*. (Organization A) accomplished nearly 20 %.

Tab. 5 – Results of distributive mode synthesis. Source: Own computation

Sub-criteria	C11	C12	C13	C21	C22	C23	C31	C32	C33	Sum
Organization A	1,69 %	1,15 %	2,03 %	3,97 %	3,49 %	3,20 %	2,70 %	1,31 %	0,35 %	**19,88 %**
Organization B	4,01 %	6,71 %	5,72 %	10,39 %	10,42 %	5,59 %	1,13 %	3,23 %	2,07 %	**49,28 %**
Organization C	6,37 %	1,96 %	1,08 %	1,51 %	1,56 %	1,22 %	8,57 %	7,97 %	0,61 %	**30,84 %**

Σ = 100 %

It is possible to carry out the CSR evaluation according to an ideal mode synthesis based on a determination of maximum values within organization global weights. Ideal scores represent 100 % and remaining values are expressed as a relative part of each ideal. Results of this procedure that serves as another way of an interpretation are shown in Tab. 6. *Vodafone Czech Republic, a.s.* (Organization B; 77 %) was considered to be the ideal in 6 sub-criteria. *O2 Czech Republic, a.s.* (Organization C; 49 %) achieved the best values in 3 sub-criteria but it should improve CSR performance in the environmental field. *T-mobile Czech Republic, a.s*. (Organization A; 31 %) accomplished relatively good results in the environmental section but it should extend a range of economic and social activities.

Tab. 6 – Results of ideal mode synthesis. Source: Own computation

Sub-criteria	C11	C12	C13	C21	C22	C23	C31	C32	C33	Sum
Organization A	3,19 %	1,68 %	3,13 %	6,06 %	5,18 %	5,73 %	3,91 %	2,06 %	0,52 %	**31,44 %**
Organization B	7,60 %	9,81 %	8,83 %	15,87 %	15,47 %	10,01 %	1,64 %	5,07 %	3,03 %	**77,34 %**
Organization C	12,07 %	2,87 %	1,66 %	2,31 %	2,31 %	2,19 %	12,40 %	12,51 %	0,89 %	**49,20 %**

5 CONCLUSIONS

The main goal of this paper is connected with the evaluation of CSR activities in the selected telecommunication organizations by using the AHP method together with group decision making analysis based on computations of Consistency Ratio (CR), Geometric Consistency Index (GCI) and AHP Consensus Indicator (S^*). Nowadays, various methods such as external audits, certifications, quality marks, sustainability indices or non-financial reporting initiatives could be appropriately used for a systematic CSR assessment but they differ in a complexity and are focused on specific areas where the special requirements have to be met. A solution of multiple-criteria decision-making tasks based on hierarchical decompositions and paired comparisons should be a helpful managerial tool for decision making or benchmarking and bring reliable sources for suitable CSR evaluation procedures.

The application of the AHP method in CSR evaluation topics is demonstrated on a sample consisted of the three organizations: *T-mobile Czech Republic, a.s*. (Organization A),

Vodafone Czech Republic, a.s. (Organization B) and *O2 Czech Republic, a.s.* (Organization C). According to the results of the Czech Top 100 Most Admired Firms survey held in 2014 all of these organizations are considered to be an essential part of the Czech telecommunication sector. Preferences of the criteria and the sub-criteria included in that multiple-criteria decision-making task are appraised by 4 experts, while the CSR performance of each organization was considered by the authors´ opinions based on information got from a content analysis of current internet presentations, CSR reports and other available publications and surveys. Based on computed values of CR and GCI the group of experts is considered to be consistent. The highest consensus S^* with 88,5 % was obtained in the social field while the lowest consensus index S^* was identified in the environmental field. According to the distributive mode synthesis *Vodafone Czech Republic, a.s.,* representing a firm promoting a successful responsible approach, achieved the best results within the sample. *O2 Czech Republic, a.s.* took a second place and *T-mobile Czech Republic, a.s.* was third. According to the ideal mode synthesis *Vodafone Czech Republic, a.s.* was considered to be the ideal in 6 sub-criteria. *O2 Czech Republic, a.s.* achieved the best values in 3 sub-criteria. These results should be also appropriately used for a subsequent determination of strengths and weaknesses of every CSR strategy of various organizations all over the world. It is assumed that preferences distribution might be different for other business sectors (e.g. for banking, educational or industrial organizations different weights might by computed). For a further analysis it is recommended to explore differences between business sectors in the Czech Republic and the other countries as well.

On the other hand, the AHP method is connected with a restraint based on a limited number of included options that result in a significant difficulty of paired comparisons. The fact that final results and a determination of ideal values are dependent on a choice of organizations included in a sample has to be taken into consideration. In the CSR evaluation field the Analytic Network Process (ANP) method or DEMATEL working with dependence and feedback among all the elements involved in a decision could be used for a decision-making problem solution as well.

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THE APPLICATION OF NETWORK ANALYSIS IN PROJECT MANAGEMENT

Vladimír Bolek, František Korček

Abstract

Project management is becoming a driving force for the businesses without further specification. It is associated with the word project that is understood as activities aimed to achieve a stated objective. Project management is seen as a summary of tools and methods assisting the meeting the project objectives. It is crucial to realize that a successful project brings innovation and furtherly, a change as well. With the correct project management the enterprises get the maximum out of their inputs. Through the correct application of methodology, successful management and implementation of well-directed projects, positive business and organisational results are achieved. Project management methods constitute verified and well described procedures controlling the project activities. Their purpose is to ensure efficient management of the activity set, in order to achieve the expected results and benefits. The contribution presents selected methods of network analysis appropriated for project management. The research part of the contribution provides results of the application of network analysis in the project of e-commerce introduction. E-commerce is the part of e-business which represents hierarchically the highest level of business activities performed by information and communication technologies. Considering trade and manufacturing, e-business includes the activities related to commerce and production as well as the activities necessary for integration, support and management of both of these groups linked to achieve the main objective that is to provide services to customers. Using methods of network analysis, the design and the implementation of the project introducing e-commerce provide a comprehensive overview of the critical and non-critical project activities, which are capable of optimization in terms of the demand for time or resources.

Keywords: network analysis, network diagram, time analysis, project, e-commerce, project management

1 INTRODUCTION

Project management is now becoming a common part of the processes in current enterprises. Enterprises that possess a better adjustment of business processes are being more competitive (Bolek & Gubová, 2014). The implementation of innovative projects that are always unique and bring positive change, increase the competitiveness of enterprises as well. Project management offers a variety of methods and tools for effective planning, management and completion of projects of different focus. Project management has two meanings. It is understood either as a summary of methods and tools that help to achieve the objectives of the project (Svozilová, 2011) or as a strategy of business management (Němec, 2002).

Currently, there are no tools to manage projects instead of us. Some of them help us to determine the steps to proceed and support the decision-making process in projects, such as network analysis and network diagrams. Network analysis is primarily used in the preliminary or the planning phase of project management. It is intended to analyze the time or the resource allocation. Moreover, network analysis identifies the critical path and plans the project duration. Consequently, it is possible to optimise the project deadlines and time estimates of each project activity by the critical path analysis.

The main objective of the paper is the application of network analysis methods for the time planning of a particular project of introducing e-commerce in the enterprise. Because it is necessary to combine the operations of electronic trade with the business processes, the e-commerce introduction always brings change and it is unique for every enterprise. Therefore, the project management tools are used and the project is initiated. The main objective of the paper consists of several partial objectives: analysis and comparison of knowledge excerption from domestic and foreign literature on the selected subject, the project proposal of e-commerce introduction in the enterprise, identification of critical and non-critical activities and time optimisation by the network analysis application. The main objective and the partial objectives are supported by adequate methods, methodology and Microsoft Project software. Using network analysis, the time estimates of project activities are calculated, a critical path is determined and a network diagram is created. Critical path analysis optimises the project in terms of project duration and deadlines.

2 PROJECT PLANNING

A project is formed by gradual development. Projects are broadly defined at the beginning. But as time goes by, the details are being clearer. Therefore, the projects are developed incrementally. During their processing, resources such as people, materials, facilities, hardware, software, and other assets are used. Because it is difficult to define its goals, to accurately estimate how much it takes to complete the project and to determine its price, there is some uncertainty in each project (Schwalbe, 2011). The first step to the successful project is through its planning.

A project plan is a model that helps us determine the progress of the project. By its definition, it is usually not exact because it predicts the future state of the project. Therefore, there is a portion of uncertainty and it is needed to invervene the plan by suitable management. However, the goal of project management is not to accomplish all the different tasks, but to achieve its objectives (Dvořák, 2008). Project planning gives us a specific idea of the objectives, total and partial outputs and of each step of the project execution.

When describing project objectives, three fundamental terms that define the project are always presented. It is scope, time and resources. The terms represent „The Project Management Triangle". Its purpose is to balance these three dimensions that are all intertwined. If one of them is changed and the other remains the same, the third dimension has to be changed correspondingly (Doležal, Máchal, Lacko, 2012). The success is to achieve all of the independent dimensions simultaneously. Moreover, it is important to maximise results in the shortest period of time using minimal resources. Network analysis is helpful either in time planning and optimisation or resource allocation.

Plans are processed for all dimensions of the triangle. The plan objectives and identification of necessary activities refer to the scope dimension. The time dimension represents time schedule, network diagrams and bar graphs, a list of milestones, etc. The resource dimension includes financial plans, budgets, equipment analysis and workforce scheduling. The most significant elements of any good plan are (Řeháček, 2013):

- Project objectives and corresponding key requirements,
- Determination of the project,
- Main outputs of the project,
- Essential resources,
- Project schedule and milestones.

3 NETWORK ANALYSIS AS A MANAGEMENT TOOL

Network analysis represents a general method based on graph theory and probability theory. Such methods are applied to the planning, coordination and monitoring of complex tasks in various spheres of economic activities. The basis of network analysis is a network diagram indicating a model of the project. It represents the relationships between the project activities (Rais & Dostál, 2007).

3.1 Network diagram

A network diagram constitutes a type of mathematical summary model of technologically and organisationally following activities. It is a central concept of network analysis (Trávnik & Vlach, 1974). It is the oldest and the simplest form of process representation developed in the late 1950s. Filanová (2014) defines the network diagram as activities and transitions (flows) between the activities. It is a directed diagram so the direction of information flow remains definite, and rather acyclic, because cycles make the subsequent simulation of the modeled process difficult. A network diagram is any of several graphic representation that interconnects project activities and events to show their interdependence. Any activity or event has mutual links with preceding, following and parallel activities or events (Rosenau, 2007). This kind of coherent, acyclic, directed and „activity on node" or „activity on arrow" diagram contributes to better organisation of different project activities. Their valuation allows to monitor time, costs and other demands of the project.

Activity represents a specific, predefined part of the project. Activities are the base of the network diagram that emphasize the time or resources. Activity has certain duration. It is a specific work that begins and ends at some point. Activities are numbered for simple identification and must be carried out in mutual dependence, because one may only begin when the previous ends (Šulc, 1975). The connections between activities must be formed in a way to make the project effective.

There are two types of network diagrams. The first is defined as the „activity on node" diagram and has the following elements:

- Activities are expressed as nodes, nodes are valued,
- Activity relations are expressed as oriented edges.

The second type is the „activity on arrow" diagram. Its elements are:

- Activities are expressed as oriented edges, edges are valued,
- Nodes are events indicating the beginning or the end of activities, nodes tend to be valued as well.

A situation of two or more activities having the same starting and finishing node cannot happen in such diagram. In such case, a fictional activity marked by a dashed line is introduced (Trávnik & Vlach, 1974).

3.2 Time analysis

The management of any project needs particular time data about its actual and planned progress. These are, for example, terms of start and expected finish of the project and time data of each activity. Time data are based on the technological structure of the project, the deployment of relevant resources on activities and the overall project organisation. Changes in technology and organisation make a difference in the total duration of the project. The role of time analysis is not to alter the project organisation and technology, but to seek the most appropriate time parameters of the project. Time analysis of a network diagram provides information about the time progress of the project on the basis of its technological and

organisational structure (Trávnik & Vlach, 1974). An alternative to the time analysis of a network diagram is the utilisation of Gantt charts.

Time management of the project includes all activities needed to complete the project. The core processes of time management are as follows (Schwalbe, 2011):

- Defining the project activities,
- Sorting activities,
- Estimating the resources required for each activity,
- Estimating the duration of each activity,
- Creating a schedule,
- Checking the schedule.

3.3 Milestones

Milestone is another important term of network analysis. At least each phase of the project has to be terminated by a milestone. Milestones are activities with zero duration, but play a crucial role from the perspective of management. They act as a gate to verify the achieved outputs of the phase. After verification of results, it is possible to (Dvořák, 2008):

- Continue in project implementation by the next phase if the check does not reveal shortcomings,
- Fix the results of the previous phase if the problems are avoidable,
- Stop the project implementation if the exposed problems are insoluble.

4 METHODS OF NETWORK ANALYSIS

Methods for analysing the edge or node oriented and valuated network diagrams are called network analysis methods. These methods are used as a tool for management of complex processes because they are simple and easy to understand, extremely flexible and able to process large amounts of information (Trávnik & Vlach, 1974). Because of such features, network analysis became a part of project management as it helps in various ways to analyze activities and their relations in the project. It deals with the time estimates and displays the overall project model in the diagram while assisting the project execution.

The main advantages of network analysis introduction are (Rais & Dostál, 2007):

- Graphical representation of the project progression,
- Recounting deadlines and activity start and finish times,
- Overview of the project scope in network diagrams,
- Possibility to valuate resources,
- Possibility to manage and supervise implementation works of the project,
- Application support by information technology.

4.1 CPM method

The most common method of network analysis is a Critical Path Method (CPM). It calculates project duration using deterministic valuation of activities and uses „activity on arrow" network diagrams. It is a deterministic method because of the exact determination of activity duration. CPM sets means of project activity planning in order to achieve the target date and identifies the critical project activities that affect the overall project duration (Doskočil, 2013).

CPM calculates time consumption of the project, determines the float and identifies and analyzes the critical path. The basic rule is that the shortest project duration is equal to the longest path between the input and the output node of the network diagram. It is possible to

obtain and observe the following essential characteristics shown in Figure 1 at the level of activities in the network diagram (Rais & Doskočil, 2011):

- i – starting node of the activity,
- j – finishing node of the activity,
- y_{ij} – normal duration time of activity (i,j),
- ES_{ij} – the early start time of the activity (i,j),
- EF_{ij} – the early finish time of the activity (i,j), $EF_{ij} = ES_{ij} + y_{ij}$,
- LF_{ij} – the late finish time of the activity (i,j),
- LS_{ij} – the late start time of the activity (i,j), $LS_{ij} = LF_{ij} - y_{ij}$,
- F_{ij} – the float, the total time reserve of the activity (i,j), $F_{ij} = DL_j - DE_i - y_{ij} \geq 0$.

Characteristics related to the nodes of the network diagram are (Doskočil, 2013):

- DE_j – the early date of the node (j), $DE_j = \max (EF_{ij})$,
- DL_i – the late date of the node (i), $DL_i = \min (LS_{ij})$.

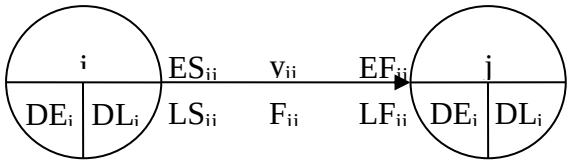

Fig. 1 – Legend of the „activity on arrow" network diagram. Source: Doskočil, 2013, p. 42

Each activity is defined by the early start time and the late finish time. The space between those times is a time span of project activity execution. The total time reserve (the float) identifies critical activities of the project. The float of critical activities is equal to zero. Critical activities form a critical path between input and output of the network. Such activities decide on the project duration because any delay of the critical activity causes a date prolongation of the project closure (Fiala, 2008).

4.2 PERT method

Program Evaluation and Review Technique (PERT) represents time analysis of the project with stochastic valuation of activity duration. Network diagrams of PERT method are used wherever activities are unrepeatable and their duration cannot be measured in advance (Rais & Doskočil 2011). Activity duration y_{ij} is a random variable having a β-distribution as we see in Figure 2. It is defined on the basis of three time estimates (Fiala, 2008):

- The optimistic time estimate – a_{ij}, the shortest possible activity (i,j) duration assuming particularly favourable conditions for the activity (i,j) execution,
- The most likely (modal) time estimate – m_{ij}, the best estimate of the activity (i,j) duration assuming normal conditions for the activity (i,j) execution,
- The pessimistic time estimate - b_{ij}, the longest possible activity (i,j) duration assuming extremely unfavourable conditions for the activity (i,j) implementation.

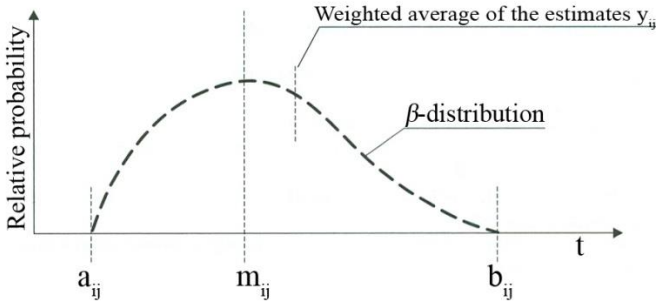

Fig. 2 – Beta distribution. Source: Doležal et al., 2012, p. 183

Subsequently, numerical characteristics are calculated after the necessary time estimation (Fiala, 2008):

- Weighted average of the estimates (the activity expected duration):

$$(1)\ y_{ij} = \frac{a_{ij}+4m_{ij}+b_{ij}}{6}$$

- Variance:

$$(2)\ \sigma_{ij}^2 = \frac{(b_{ij}-a_{ij})^2}{36}$$

- Standard deviation:

$$(3)\ \sigma_{ij} = \frac{b_{ij}-a_{ij}}{6}$$

The time analysis is performed using the same method as CPM when the weighted average of activity duration is estimated. Afterwards, the critical path and its duration is calculated, which determines the shortest possible project dates and duration. Subsequently, the probability of meeting these deadlines might be estimated, as well as the date in which the project will be implemented with the given probability. In this case, the values of variance and standard deviation are utilised.

4.3 MPM method

Representative of the time analysis in the „activity on node" network diagram is a Metra Potential Method (MPM). Unlike CPM, MPM uses all kinds of relations between activities and thus provides many opportunities to express activity dependence. A node in the diagram represents the project activity. Its shape is quadrilateral and the left edge is the start time and the right edge is the finish time of activity.

Calculation of the time estimates is needed for the node-based network diagram as well. The procedure copies CPM, but MPM also calculates the time distance between two events of activities. The event is either the start time or the finish time of the activity. The maximum time distance is the maximum time that must elapse between the two events. From another point of view, the minimum time distance corresponds to the minimum time that must elapse between two events connected by the arrow. MPM time analysis is complicated when manually calculated. Therefore, the software tools are commonly used, such as Microsoft Project. The software analyses project duration, costs and resources (Doskočil, 2013). MPM uses these three types of relations (Doskočil, 2011):

- Finish – Start; FS – connecting the finish time of the predecessor with the start time of the next activity means that such activity begins after the predecessor,
- Start – Finish; SF – connecting the start times of both activities means that the activity execution begins at the same time for both of them,
- Finish – Finish; FF – connecting the finish times of both activities means that the activity execution ends at the same time for both of them.

5 APPLICATION OF NETWORK ANALYSIS

Project of e-commerce introduction under the conditions of a particular enterprise is specific and unique because the enterprise trades with building materials. The most significant reason for the project planning and implementation is a need for change in the process of the building material sale in the enterprise. At the same time, the successful project execution leads to increase in market share and to reach new customer segments. If the business conditions are well designed, e-commerce will guarantee fast payment for the goods. This results in liquidity and solvency improvement accompanied by growth in sales. E-commerce ensures improvement in marketing and a better overview of the enterprise services and price ranges when viewing the online catalogue.

The exact scope, duration and resources are examined by project management methods in the project of e-commerce introduction. Above all, this research paper focuses on time analysis of the project. To determine its deadlines, CPM is used because of its simplicity, clarity and speed of calculation. The network diagram is illustrated in Microsoft Project using MPM method. The expected duration of each activity is calculated by PERT method.

5.1 Activity duration

The project is divided into different activities with their durations and links. Because this is a unique project, the activity duration consists of the optimistic (a_{ij}), the most likely (m_{ij}) and the pessimistic time estimate (b_{ij}). These are the inputs for the time analysis of a network diagram. The proposed project activities have never been executed in the past and their duration cannot be measured in advance. The activity duration is therefore planned by PERT method. In Table 1, the activity time estimates and the immediately preceding activities (predecessors) that serve to construct the network diagram are provided.

Tab. 1 – Activity durations and relations. Source: Own data

Activity	Popis	Predecessor	a_{ij} [day]	m_{ij} [day]	b_{ij} [day]
1	Contacting convenient e-commerce developers	–	3	5	6
2	Requirement definition	1	1	2	3
3	Information collection	2	1	2	5
4	Price offer calculation	3	2	3	5
5	Contract signing	4	0,5	2	3
6	Invoicing	5	0,5	1	2
7	Creating graphical variants	5	2	4	5
8	Making choice of graphical variants	7	0,5	1	3
9	E-commerce design processing	8	2	3	7
10	Designing system functions	5	2	5	7
11	E-commerce system introduction	10	0,5	1	2
12	Error modification and elimination	11	2	4	5
13	Programming	9, 12	5	7	12
14	Final e-commerce introduction	13	0,5	1	2
15	Loading goods to e-commerce system	14	5	6	10

16	Pricing goods	14	5	7	12
17	Staff training	15, 16	1	2	3
18	Web site and e-commerce personalisation	17	1	2	3
19	Functional testing	6, 18, 26, 32, 36,42	2	3	4
20	E-commerce startup	19	0,5	1	2
21	Contacting business IS supplier	1	2	3	4
22	Defining IS change requirements	21	0,5	1	2
23	Price offer calculation of IS changes	22	1	2	3
24	Programming and implementation	23	12	15	25
25	Settlement with IS supplier	24	1	2	4
26	Staff training for IS changes	25, 28	1	2	3
27	New warehouse creation in business IS	22	1	2	5
28	Creating solutions for orders in business IS	27	8	10	20
29	Contacting goods carriers	2	3	5	6
30	Creating conditions for cooperation	29	4	5	10
31	Pricing transport and handling	30	4	5	7
32	Contract signing with carriers	31	3	5	6
33	Selecting marketing methods	2	3	4	7
34	Creating contracts with marketing suppliers	33	3	5	6
35	Design and implementation of advertising	34	6	10	17
36	Settlement with marketing suppliers	35	1	3	4
37	Creating general conditions	2	6	8	12
38	Creating return policy	37	3	5	8
39	Creating conditions for returnable packages	38	1	2	5
40	Definition of changes in business processes	37	0,5	1	2
41	Choosing a new employee	40	20	25	30
42	Staff training about changes in processes	39, 41	1	2	3

5.2 Time analysis of the network diagram

Time analysis further determines the duration of project implementation. In Table 2, the weighted average of the estimates and the variances are calculated for each activity using PERT method and the time characteristics with the float are calculated by CPM. The calculations use the data from Table 1. The weighted averages of the estimates are transferred to Microsoft Project environment that automatically constructs the network diagram. Network diagram shows arrangement and deadlines of project activities in a way to express actual succession of activities during project execution.

Tab. 2 – Time analysis of the network diagram. Source: Own data

Activity	Node [i, j]		Duration	Variance	Time estimates				Float
			y [day]	σ^2 [day^2]	ES	EF	LS	LF	F
1	1	2	4,8	0,25	0	4,8	0	4,8	**0**
2	2	4	2,0	0,11	4,8	6,8	4,8	6,8	**0**
3	4	6	2,3	0,44	6,8	9,1	6,8	9,1	**0**
4	6	12	3,2	0,25	9,1	12,3	9,1	12,3	**0**
5	12	18	1,9	0,17	12,3	14,2	12,3	14,2	**0**
6	18	33	1,1	0,06	14,2	15,3	42.9	44	28,7
7	18	23	3,8	0,25	14,2	18	14,2	19,1	1,1
8	23	25	1,3	0,17	18	19,3	19,1	20,4	1,1
9	25	27	3,5	0,69	19,3	22,8	20,4	23,9	1,1
10	18	24	4,8	0,69	14,2	19	14,2	19	**0**
11	24	26	1,1	0,06	19	20,1	19	20,1	**0**
12	26	27	3,8	0,25	20,1	23,9	20,1	23,9	**0**
13	27	28	7,5	1,36	23,9	31,4	23,9	31,4	**0**
14	28	29	1,1	0,06	31,4	32,5	31,4	32,5	**0**
15	29	31	6,5	0,69	32,5	39	33,5	40	1
16	29	30	7,5	1,36	32,5	40	32,5	40	**0**
17	31	32	2,0	0,11	40	42	40	42	**0**
18	32	33	2,0	0,11	42	44	42	44	**0**
19	33	34	3,0	0,11	44	47	44	47	**0**
20	34	35	1,1	0,06	47	48,1	47	48,1	**0**
21	2	3	3,0	0,11	4,8	7,8	18,5	20,5	12,7
22	3	5	1,1	0,06	7,8	8,9	20,5	21,6	12,7
23	5	10	2,0	0,11	8,9	10,9	21,6	23,6	12,7
24	10	17	16,2	4,69	10,9	27,1	23,6	39,8	12,7
25	17	22	2,2	0,25	27,1	29,3	39,8	42	12,7
26	22	33	2,0	0,11	29,3	31,3	42	44	12,7
27	5	11	2,3	0,44	8,9	11,2	28,4	30,7	19,5
28	11	22	11,3	4,00	11,2	22,5	30,7	42	19,5
29	4	7	4,8	0,25	6,8	11,6	23,5	28,3	16,7
30	7	13	5,7	1,00	11,6	17,3	28,3	34	16,7
31	13	19	5,2	0,25	17,3	22,5	34	39,2	16,7

32	19	33	4,8	0,25	22,5	27,3	39,2	44	16,7
33	4	8	4,3	0,44	6,8	11,1	21,6	25,9	14,8
34	8	14	4,8	0,25	11,1	15,9	25,9	30,7	14,8
35	14	20	10,5	3,36	15,9	26,4	30,7	41,2	14,8
36	20	33	2,8	0,25	26,4	29,2	41,2	44	14,8
37	4	9	8,3	1,00	6,8	15,1	7,6	15,9	0,8
38	9	15	5,2	0,69	15,1	20,3	34,5	39,7	19,4
39	15	21	2,3	0,44	20,3	22,6	39,7	42	19,4
40	9	16	1,1	0,06	15,1	16,2	15,9	17	0,8
41	16	21	25,0	2,78	16,2	41,2	17	42	0,8
42	21	33	2,0	0,11	41,2	43,2	42	44	0,8

The actual implementation of the project was originally scheduled from 2.9.2014 to 30.12.2014, which represented the assumption of four month duration. After subtracting public holidays and weekends at the assumed period, there were 81 available working days, during which the employees and project team members had to perform their assigned activities. The office hours are fixed from 7:30 to 15:30, one working day corresponds to 8 hours. The working week consists of 5 working days. However, due to limited funding opportunities of the enterprise, the project execution phase is postponed to autumn 2015.

In Table 2, the time analysis indicates that it is possible to implement the project in 48,1 working days at a given succession and the activity expected duration. The final activity is a number 20. The longest path from the starting node to the finishing node of the diagram takes exactly 48 days and 48 minutes. It is the shortest possible project duration to complete. When beginning on 2.9., the project might be already completed on 10.11. This date is more than a month less than the scheduled project deadline, 30.12. But this scenario would only happen if all the activities were covered by necessary material, cost and labour resources. Because the project activities will be performed by 9 employees and each employee must also ensure the normal operation of the enterprise, a resource overloading is possible. After resource balancing, it is likely to shift the project completion deadline. The 33 day float might be depleted when the activity time reserves are not as long to cover the overloaded activities.

5.3 Critical path analysis

Critical activities are highlighted and shaded in Table 2. Logically, they have zero float. When the duration of any of these activities extends, the project implementation extends as well. In this case, the deadlines of the schedule could not be met. These activities are labeled 1,2,3,4,5,10,11,12,13,14,16,17,18,19 and 20. In the diagram shown in Figure 3 and created in Microsoft Project, the critical path is highlighted in red. The network diagram shows the critical path with the final arrangement of activities and the dates of milestone execution. The nodes contain the activity identification number, duration in days and expected date of activity initiation.

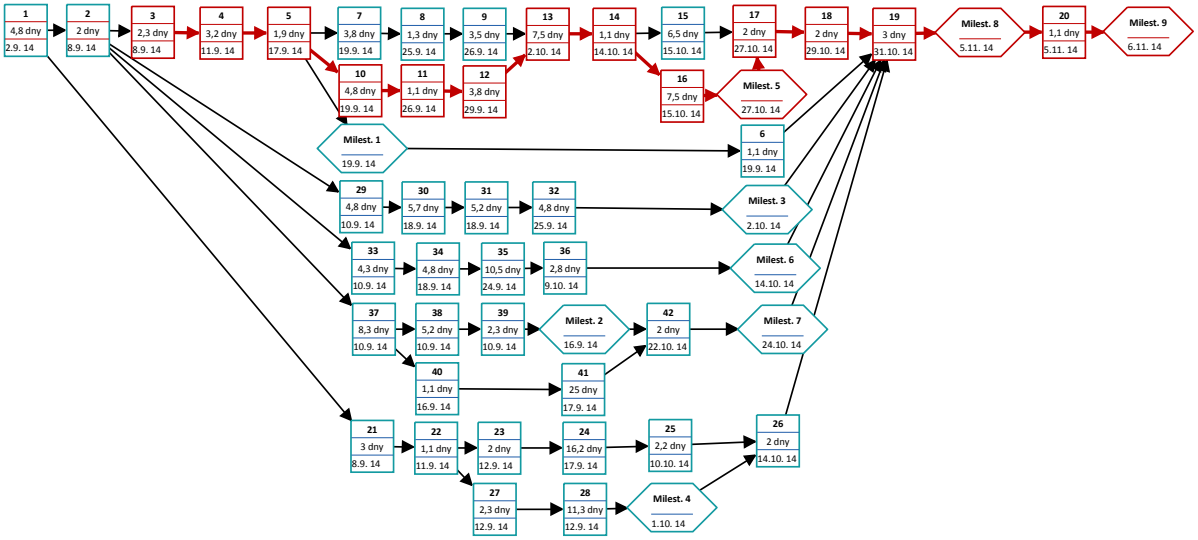

Fig. 3 – Network diagram of the project. Source: Own data

The critical path consists of 15 critical activities. As the number of all activities is 42, the percentage of criticality is relatively high, it represents 15/42*100 ≈ 35.7%. Approximately a third of all activities is critical. Because the critical activities cannot be excluded, it is possible to reschedule some of them next to each other.

The „Information collection" activity is rescheduled beside „Requirement definition", because the requirements for e-commerce system might be defined while collecting information of processes by the expert. The activity „Creating solutions for orders in business IS" is possible to run with „New warehouse creation in business IS" if there are enough labour resources. The activity „Pricing transport and handling" may be implemented simultaneously with the „Creating conditions for cooperation" activity.

Although these adjustments in the time plan did not reduce the number of critical activities, they managed to shift the final deadline of the project to 6.11. It represents 46,1 working days and additional 2 working days as a time reserve compared to the original time schedule. To decrease the project criticality, it is appropriate to concentrate available resources on critical activities and to use the total float. When using the maximum available resources, the time analysis of a network diagram indicates that the project might be implemented in 46.1 working days in the planned period from 2.9. to 6.11.

6 CONCLUSION

The network analysis methods are tools that received a significant position in project management, especially in the planning and execution phase. The determination of the project duration is crucial to many stakeholders, particularly for managers when setting the project schedule. Using the network diagram, an overview of the time characteristics of each activity, start and finish times and their logical arrangement is easily visible. The importance of the network analysis applied in the project of e-commerce introduction in the business is based on the identification of critical and non-critical activities, time optimisation and on getting a concept of the total project duration of such a unique project. Another possible step in the application of network analysis is to optimise the resource allocation in project activities. The main objective of the contribution is fulfilled by the application of the listed methods in the project of e-commerce introduction in the enterprise.

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INTERPRETATION OF THE PERFORMED RESEARCH OF NEW MANAGERIAL APPROACHES IN COMPANY MANAGEMENT

Dagmar Burdová

Abstract

This article describes the results of the performed research of new managerial approaches in company management. With regard to the extent of the article I present only some of the outputs that were discovered via questionnaires. First I briefly describe the new external environment of a company where the new managerial approaches emerge. Subsequently, I describe the new managerial approaches, and separately also the new approaches of crisis management. The biggest part of the articles deals with the results of the performed research with charts and graphs. In conclusion I briefly summarize the outputs and provide recommendations for company management in the current new business environment.

Keywords: company, company management, crisis management, managerial approaches

1 NEW EXTERNAL ENVIRONMENT OF COMPANIES

The current business environment is characterized above all by globalization and turbulences. Tomek and Vávrová (2014) state that globalization – among other things – affects also creation of new approaches towards the behaviour among individual market operators. Development of the economic reality is also typical for its unusual dynamics when the new economics is highly turbulent and characterized by many changes. Turbulence at the same time always means an increase of the risks and uncertainty the companies must face. As Váchal, Vochozka et al. (2013) mention, nothing in the current business environment is steady and predictable. A company must not only respond flexibly to a change in the environment but it is also important to understand how and where the company environment constantly changes. The current era is thus challenging above all from the point of view of assessing increased risks and uncertainties.

2 NEW MANAGERIAL APPROACHES

Authors variously interpret and deal with the new managerial approaches. Hučka, Kislingerová and Malý (2011) describe the predictions of directions of organizational structures including the decentralization of the structures and the outsourcing. Among the new directions of corporate strategies they also count the knowledge and innovation-based strategy, modern approaches to the internal business, open innovation strategies, strategies of new markets and formation of the future. Trump and Kiyosaki (2012), Hamel (2008), and Slater (2007) further describe innovations in management, a new type of businessmen and new managerial approaches essential for the current challenging and turbulent business environment. According to Fotr et al. (2012), a complex approach also ranks among the new approaches. Košturiak (2014) characterizes the future of changes in many companies, the most important of which are – from the point of view of this article – early warning systems and quick response systems. Slater (2007) recommends the companies to implement new approaches consisting namely in constant introduction and implementation of changes and improvement methods, streamlining of the company, reduction of costs and quick actions. Kislingerová (2011), Kotler and Caslione (2009), or Roubini and Mihm (2010) point out to the highly risky and critical environment of the companies that will have a growing tendency in the future. Hope and Player (2012) draw the attention to the fact that in the currently

quickly changing external environment, the importance of leaders, strategic planning, lean cost management and clarification and evaluation of company performance is on the increase. In their concept of the new management, Vodáček and Vodáčková (2013), describe namely the business strategies, processes, re-engineering and leadership. Kotter (2012) further stresses out that the today's external environment of companies requires a new concept of the decision-making processes when in the world of fast changes only the teams made up of the correct people and with high degree of trust can actually work. According to the latest Annual Global CEO Survey (PwC, 2015), the total of 71% of the respondents are going to cut down the costs, 51% plan to establish a strategic alliance or enter a joint venture, 31% of them intends to outsource some processes or functions, and 29% are about to finalize a home fusion or an acquisition. In this respect it is obvious that within the new managerial approaches, it is the approaches that lead to streamlining of companies and increase in company performance that gain more and more significance in the world.

Fotr et al. (2012), Antušák (2013), Váchal, Vochozka et al. (2013) and Veber emphasize the importance of crisis management as an essential part of strategic management. In case of the crisis management it is necessary to apply a systematic approach as Řezáč (2009) or Lednický et al. (2012) recommend. According to Antušák (2009, 2013), the company crisis in its time development undergoes four stages within a well-managed crisis: the stage of symptoms, the acute stage, the chronic stage and the stage of crisis settlement. Zuzák and Könige vá (2009) describe individual stages of the crisis: a potential crisis, a latent crisis, an acute crisis and an uncontrollable crisis. The new concept of the crisis is based on the combination of the risk management and crisis management and on the realization of both the risks and the crisis as opportunities and their use within the business strategy. At the same time it proceeds from the constantly growing need of companies for crisis preparedness. Kruliš (2011), Antušák (2013) or Marchesani (2014) in particular draw the attention to the fact that companies simply must be prepared for a crisis situation. New approaches that contribute to the better understanding of the risks in broader sense as threats but also as opportunities are also mentioned by Veber (2009), Hillson and Simon (2012), or Smejkal and Rais (2013). As regards the companies, they most frequently understand the crisis as their worst period and yet there is now quite often an opinion that a crisis may actually serve as an opportunity for the respective company. Lednický et al. (2012, pg. 109-110) accentuates a whole series of benefits that it offers to companies who survive a crisis. According to Smejkal, Rais (2013), the challenge arising from a company crisis lies in the analysis of company processes and subsequent restructuring of the company resulting thereof while the period of the crisis offers better environment for introduction of changes than the period of relative stability of the company. In order to be able to identify the first symptoms of crisis in time the companies need to have systems of early warning. It is recommended that through them the company management should be able to discover any crisis symptoms already in the latent stage of the crisis.

A whole series of performed researches and studies show that lean management influences company performance and competitiveness. Companies still strongly focus on the increase of their performance whereas the new external environment more and more exerts pressure on creating instability within the company. And instability within a company is, at the same time, the first symptom of a company crisis that may – if not managed properly – develop into another relatively more difficult stage. Unfortunately, companies do not deal much with crisis management in the form of preventing the risks, as results from the results of current studies. It opens up space for the question whether the companies in the Czech Republic actually sufficiently apply all necessary new approaches in their company management. Are the lean companies also healthier and less susceptible to financial diseases, i.e. do they truly show less symptoms of the potential and latent crisis? Do the production companies perceive a crisis as

an opportunity? Do the production companies have sufficiently set up the systems of early warning?

3 RESEARCH OBJECTIVE

The objective of the research carried out in the form of a questionnaire was to: verify whether and to what extent the production companies in the Czech republic introduce new managerial approaches; verify whether the lean management of companies truly results in less symptoms of the potential and latent company crisis; find out what attitude the production companies have towards crisis management; verify whether and to what extent the production companies perceive crisis as an opportunity.

As regards the questionnaire, I elaborated a set of questions through which I tried to find out whether and how the production companies: approach innovations; approach the cost management; whether and to what extent they apply selected approaches of strategic management and human resources management; whether and to what extent they apply lean management approaches; what methods and tools of lean management they use most; whether and to what extent such companies approach changes; what risks they perceive most; what problems they face presently; what measures they took in order to reduce the impact of company crisis; what tools of crisis prevention such companies use, whether and to what extent the company crisis meant an opportunity for the respective company; and how the respondents perceive selected statements from the sphere of crisis management.

The subject of research included production companies in the Czech Republic (business companies with more than 10 employees) who made the basic set for the research. Of the total of 14,620 addressed companies, I received 441 completed questionnaires where after eliminating all incomplete or irrelevant questionnaires I got the total of 413 questionnaires eligible for evaluation.

4 RESULTS OF THE PERFORMED RESEARCH

4.1 Strategic Management Approaches

The Figure 1 clearly shows that at present most companies introduce risk management approaches (52 companies, i.e. 12.6%), crisis management approaches (43 companies, i.e. 10.4%) and TQM (43 companies, i.e. 10.4%). They have mostly introduced flat organizational structures (209 companies, i.e. 50.6%), then the risk management approaches (165 companies, i.e. 40%), benchmarking (146 companies, i.e. 35.4%), TQM (134 companies, i.e. 32.4%) and least they introduced crisis management (108 companies, i.e. 26.2%).

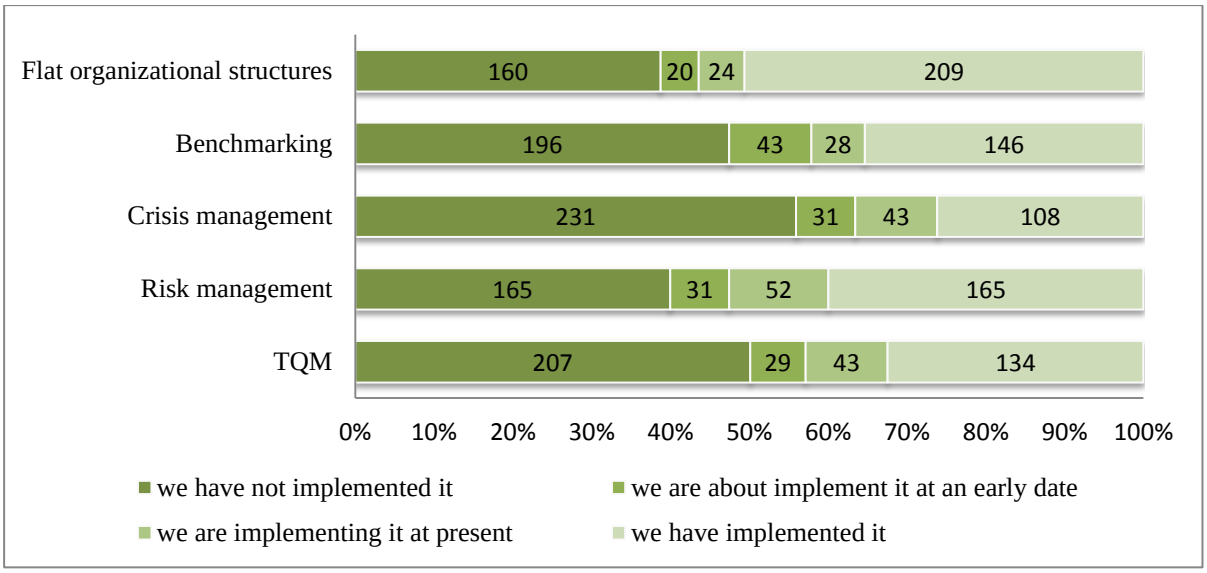

Fig. 1 – Strategic Management Approaches. Source: Own elaboration

4.2 HR Management Approaches

Respondents commented on the methods: team approach, coaching, improvement of the soft skills of managers, management and evaluation of job performance and a complex concept of education. It is apparent from the Figure 2 that the addressed companies most introduced the following approaches: a team approach (284 companies, i.e. 68.8%), management and evaluation of job performance (263 companies, i.e. 63.7%), then improvement of managers' soft skills (144 companies, i.e. 34.9%), a complex concept of education (143 companies, i.e. 34.6%) and least they introduced the coaching approach (120 companies, i.e. 29.1%). Presently, the companies most introduce the complex concept of education (80 companies, i.e. 19.4%), improvement of soft skills of the managers (49 companies, i.e. 11.9%), the team approach (42 companies, i.e. 10.2%), coaching (41 companies, i.e. 9.9%) a least they introduce management and evaluation of job performance (40 companies, i.e. 9.7%). Results are shown in Figure 2.

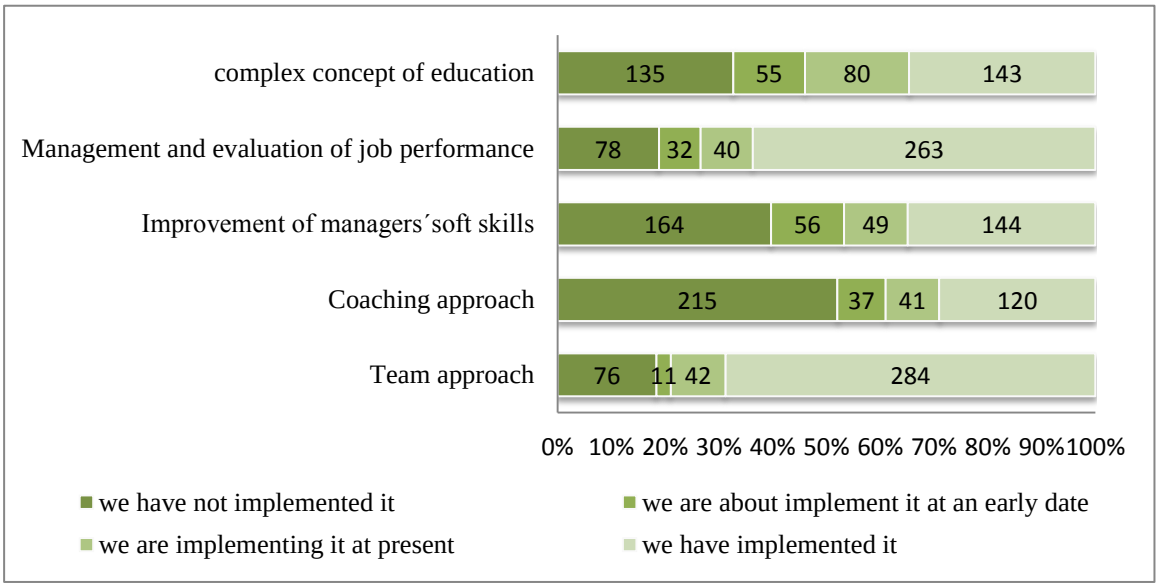

Fig. 2 – HR Management Approaches. Source: Own elaboration

4.3 Cost Management Approaches

In the sphere of cost management, the companies in most cases introduced controlling (290 companies, i.e. 70.2%), outsourcing (284 companies, i.e. 68.8%) and least they applied cost cutting (109 companies, i.e. 26.4%). Presently they most introduce cost cutting (53 companies, i.e. 12.8%), then controlling (33 companies, i.e. 8%) and least outsourcing (9 companies, i.e. 2.2%). Very soon they also plan to introduce mostly cost cutting (50 companies, i.e. 12.1%), less of controlling (27 companies, i.e. 6.5%) and least outsourcing (10 companies, i.e. 2.4%). Figure 3 reflects the results.

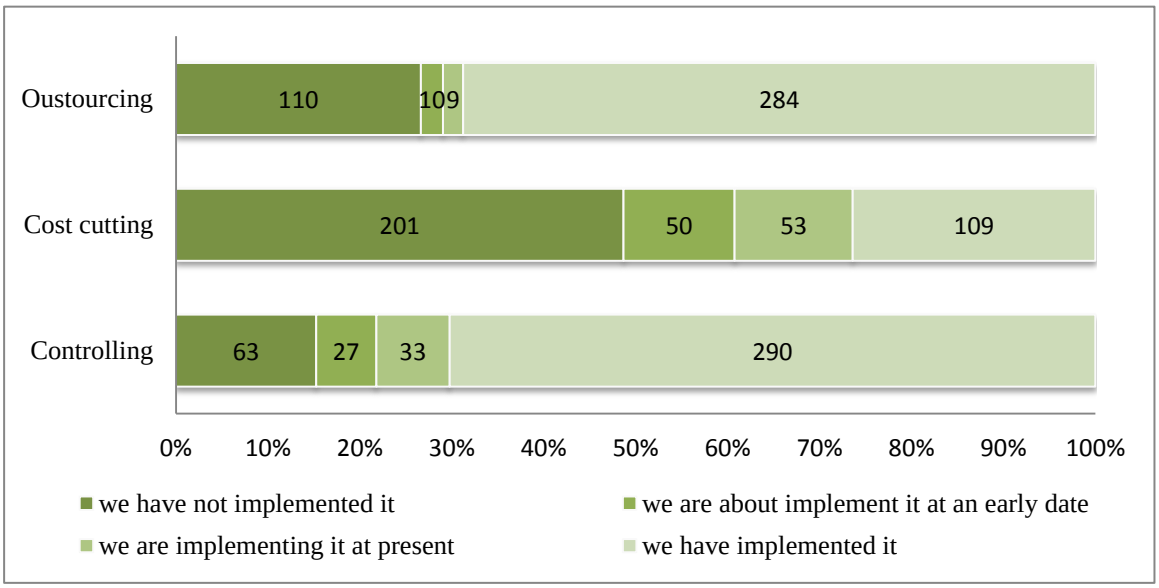

Fig. 3 – Cost Management Approaches. Source: Own elaboration

4.4 Lean Management Approaches

The responses of respondents show (see Figure 4) that in 42% the companies do not have introduced any lean production, and they do not even intend to do so (171 companies), 19% of companies stated they have introduced lean production (80 companies), 14% of companies stated that are currently introducing this approach (57 companies), 14% companies stated they intend to introduced lean production at an early date (59 companies) and least of them, i.e. 11% of companies stated they have already got the lean production introduced and at present they pursue its continuous improvement (46 companies).

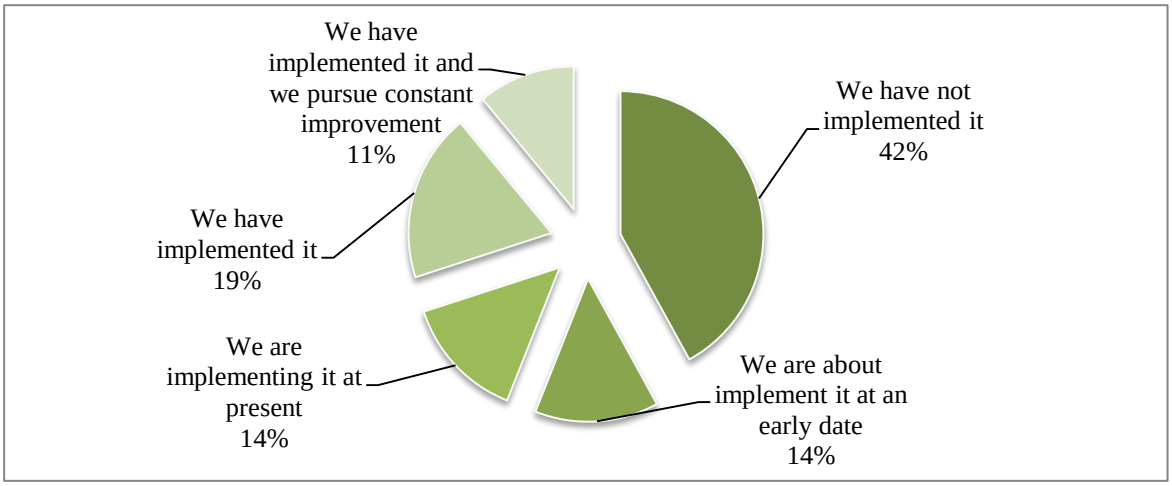

Fig. 4 – Lean Management Approaches. Source: Own elaboration

In the next analyses I looked into the degree of streamlining of the companies. For that purpose it as necessary to stipulate the level of streamlining using the method at all companies involved in the research while I needed to obtain quantitative variables as the output of the degree of streamlining. I proposed my own definition of assessing the degree of streamlining of a company when the company streamlining is construed as "*such level of internal arrangement of the streamlining within a company within which we can on a bigger scale assess the company approaches towards wasting and innovations, and further to a lesser extent also the company approaches to introducing flat organizational structures and to quality management, team approach and approach to outsourcing"*. The degree of streamlining of a company was thus calculated based on the following own formula:

$$Streamlining = 0{,}3 \cdot \overline{x_1} + 0{,}3 \cdot \overline{x_2} + 0{,}1 \cdot x_3 + 0{,}1 \cdot x_4 + 0{,}1 \cdot x_5 + 0{,}1 \cdot x_6 \qquad (1)$$

- Where: $\overline{x_1}$ represents the average approach of a company towards elimination of wasting;
- $\overline{x_2}$ represents the average approach of a company towards innovations;
- x_3 represents the value of company approach towards introducing flat organizational structures;
- x_4 represents the value of company approach towards introducing the TQM;
- x_5 represents the value of company approach towards the team approach;
- x_6 represents the value of company approach towards outsourcing.

All variables take the values from 0 to 1, and in order to calculate the degree of company streamlining I applied weights of importance determined on grounds of analysis of secondary resources and on grounds of my own recommendation regarding the perception of degree of a lean company. The weights of importance were applied as follows:

- 0.3 for the company approach towards elimination of wasting as well as towards innovations;
- 0.1 for company approaches towards: flat organizational structures, TQM, team approach, outsourcing.

The resulting value of company streamlining thus achieves the values from 0 to 1, where 0 represents the lowest value of streamlining degree of a company, and 1 represents the highest value of streamlining degree of a company.

4.5 Tools of Crisis Prevention and Minimization

As the Figure 5 shows, most companies, i.e. 294 (71.2%) stated they use monitoring and risk analysis. Companies also to a large extent use various crisis plans in order to minimize the already identified risks (216 companies, i.e. 52.3%), an effective crisis communication (192 companies, i.e. 46.5%) and modelling of crisis situations (164 companies, i.e. 39.7%). Only 94 companies (i.e. 22.8%) have drawn up detailed crisis manuals, and only 86 companies (i.e. 20.8%) have a permanently set-up crisis team.

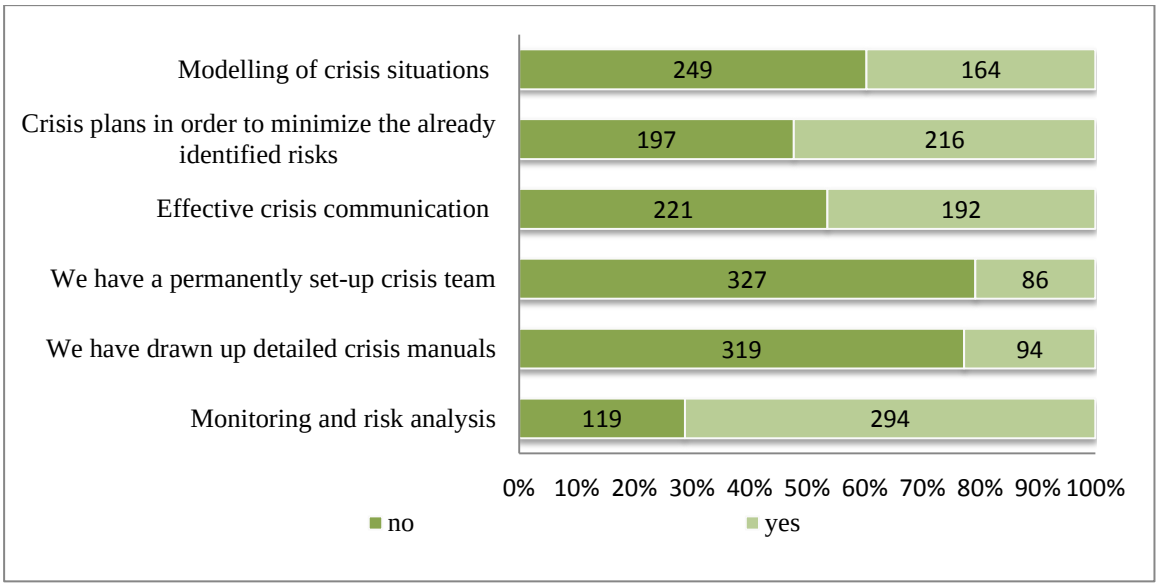

Fig. 5 – Tools of Crisis Prevention and Minimization. Source: Own elaboration

4.6 Problems in Companies

The division of problems to symptoms of potential and latent crisis was carried out on grounds of the description of those types of crisis as done by Zuzák and Könige (2009), while assignment of the problems to the growth crisis was carried out on grounds of the Griner's model as stated for instance by Srpová and Řehoř (2010).

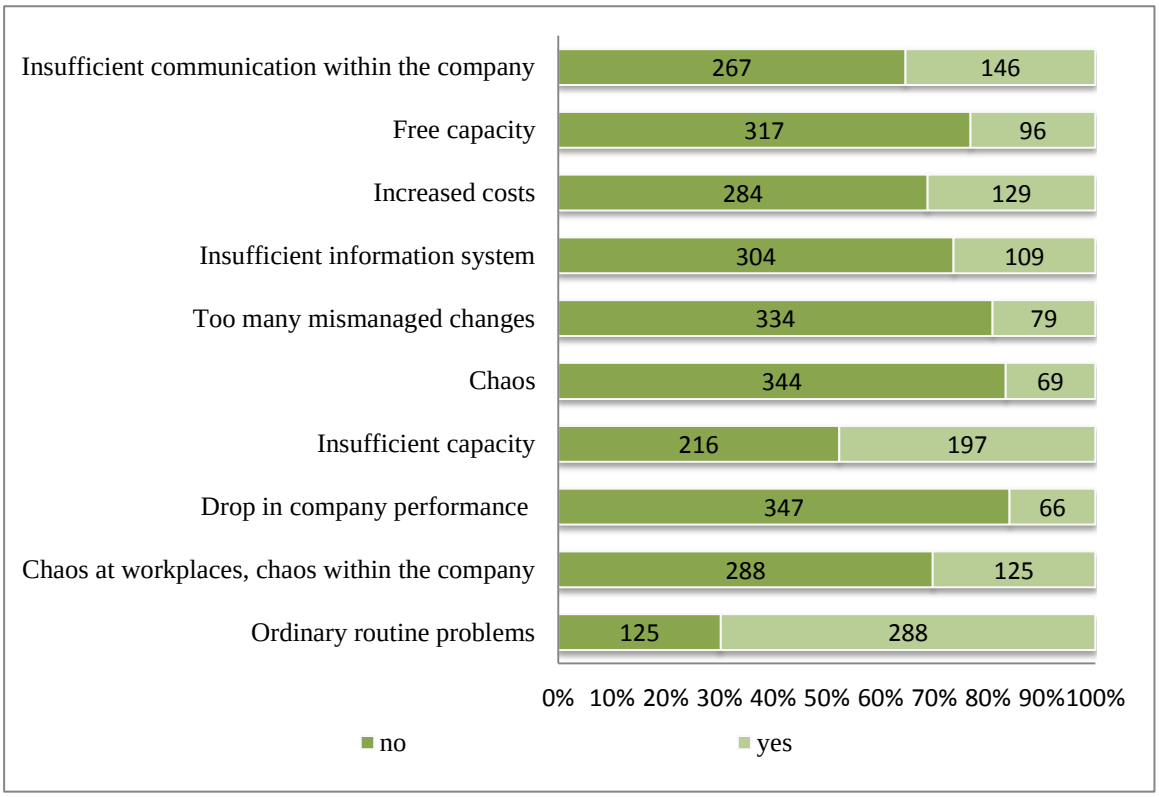

Fig. 6 – Problems in Companies. Source: Own elaboration

For the sake of better arrangement I included the list of responses in Figure 6. I also assumed that the companies that admitted "ordinary routine problems" show symptoms of a potential crisis, companies that admitted "insufficient communication within the company, free

capacity, chaos, chaos at workplaces, chaos within the company, drop in company performance or increased costs" already show symptoms of latent crisis. The following problems were assigned to the symptoms of the growth crisis: "insufficient capacity, insufficient information system, too many mismanaged changes". From what was stated I established the following results: the total of 288 companies, i.e. 70% of respondents show symptoms of a potential crisis, and 282 companies, i.e. 68.3% of respondents show ate least one symptom of a latent crisis. And 248 companies, i.e. 60% respondents show at least one symptom of the growth crisis.

In total 231 companies do not have introduced and implemented any crisis management (already stated in Figure 1), of which there are, however, up to 160 companies (69.3%) who failed to introduce a crisis management and who show symptoms of a potential crisis, and 154 companies (66.7%) who failed to introduce the crisis management and who already show symptoms of the latent crisis. 135 companies (58.4%) do not have implemented the crisis management and show symptoms of the growth crisis. As it was already mentioned in connection with question number 6, 165 companies in total do not have introduced any risk management. Of this number, however, up to 116 companies (70.3%) with no risk management already show symptoms of potential crisis, 109 companies (66.1%) with no risk management show symptoms of latent crisis, and 98 companies (59.4%) with no risk management show symptoms of the growth crisis. A rather low percentage of companies who show the symptoms of the potential or latent crisis are about to introduce the crisis and risk management at an early date. Only 26 companies (9%) of the total number of 288 companies who show symptoms of the potential crisis are about to introduce the crisis management as soon as possible, and 23 companies (8.2%) are going to set up the risk management. Of the total number of 248 companies who show at least one of the symptoms of the growth crisis, only 25 companies (10.1%) are about to set up crisis management as soon as possible, and 26 companies (10.5%) plan to introduce the risk management very soon. For the sake of better arrangement I recorded the results in Table 1.

Tab. 1 – Crisis and risk management. Source: Own elaboration

Implementation of the crisis and risk management within the company management	Symptoms of crisis					
	Potential crisis		Latent crisis		Growth crisis	
	Crisis manag.	Risk manag.	Crisis manag.	Risk manag.	Crisis manag.	Risk manag.
We are implementing it at present	37	46	31	43	34	38
We have implemented it	65	98	71	107	54	86
We are about implement it at an early date	26	28	26	23	25	26
We have not implemented it	160	116	154	109	135	98
Total	**288**	**288**	**282**	**282**	**248**	**248**
We are implementing it at present	12,8%	16,0%	11,0%	15,2%	13,7%	15,3%
We have implemented it	22,6%	34,0%	25,2%	37,9%	21,8%	34,7%
We are about implement it at an early date	9,0%	9,7%	9,2%	8,2%	10,1%	10,5%
We have not implemented it	55,6%	40,3%	54,6%	38,7%	54,4%	39,5%

Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

4.7 Company Experiences with a Company Crisis

As regards the question of experiences of the companies with company crises, most of the respondents replied that their company currently shows no symptoms of instability. 215 companies in total (52%) stated that they have a previous experience with company instability, however, recently they have not shown any symptoms of it. 103 companies (25%) then stated that they have not yet experienced any company instability, and not even now they show any signs of instability within their company. 95 companies (23%) then stated that at present they show signs of company instability, and 76 of them (18%) have already past experience with company instability. 19 companies (5%) then confirmed they did not experience company instability in the past, however now they show symptoms of it. All results are included in Table 2.

Tab. 2 – Experiences with company crises. Source: Own elaboration

We had a company crisis in the past	We now show signs of company crisis		Total
	Yes	No	
Yes	76 (Yes-Yes)	215 (Yes-No)	291
No	19 (No-Yes)	103 (No-No)	122
Total	95	318	413

This question was subsequently compared with replies to the question where the test was performed and what type of problems the companies currently experience. All results are shown in Table 3.

Tab. 3 – Problems and latent crisis. Source: Own elaboration

	No-No	Yes-Yes	Yes-No	No-Yes	Total
Latent crisis no	52	9	66	4	131
Latent crisis yes	**51**	**67**	**149**	**15**	**282**
1 from 6 problems	30	14	71	3	118
2 from 6 problems	11	13	41	7	72
3 from 6 problems	5	12	17	2	36
4 from 6 problems	3	11	11	1	26
5 from 6 problems		14	8	1	23
6 from 6 problems	2	3	1	1	7
Total	103	76	215	19	413

The results show that of the 103 companies that stated that they had never encounter any company instability, and now they do not show any instability, 51 companies actually in total marked at least one of the six problems they now experience and that can be classified as symptoms of the latent crisis. Of the total number of 215 companies who admitted they experienced company instability in the past and now do not show any symptoms of it, the total of 149 companies marked at least one of the six problems they now have that can be classified as a latent crisis. The above mentioned facts indicate that in case of the question

whether the companies experience any company crisis nowadays, the respondents did not want (or perhaps did not know how) to provide a truthful response, or they simply do not perceive the current issues which can be classified as symptoms of the latent crisis as the symptoms of company instability.

4.8 Measures to Reduce Impacts of the Crisis

To the questions regarding measures the company took in order to reduce impacts of the crisis, I received replies only from those respondents who in the previous question stated that their company had already experienced a company crisis (in the past or at present). Thus there were 310 respondents in total, i.e. 75.4%. As it is obvious from the Figure no. 7, the companies most often adopted measures in the form of keeping their key employees and managers (262 companies, i.e. 84.5%), better management and improvement of company processes (248 companies, i.e. 80%), increase in the quality of products and services (244 companies, i.e. 78.7%), and better communication within the company (237 companies, i.e. 76.5%). Further they implemented measures to reduce the costs significantly (216 companies, i.e. 69.7%), and to lay off some employees (175 companies, i.e. 56.4%). And least often they applied changes in the company management or its part (170 companies, i.e. 54.8%).

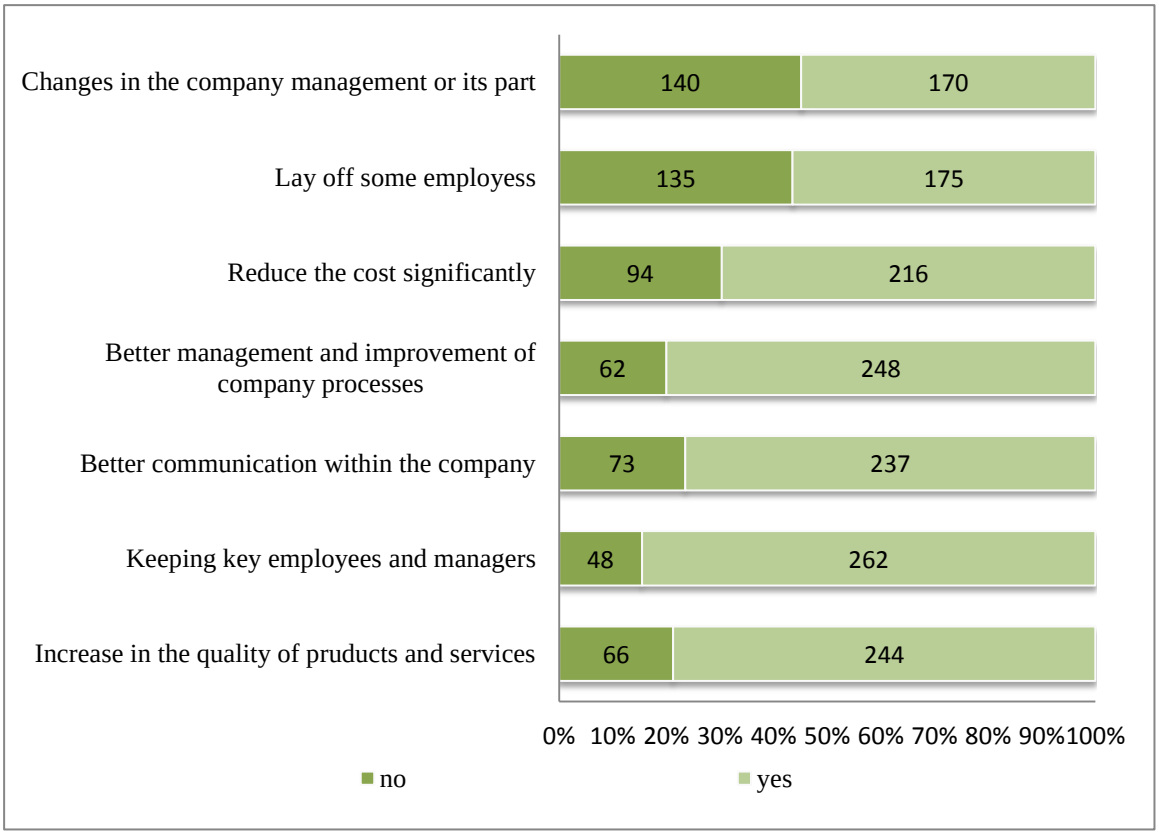

Fig. 7 – Measures to Reduce Impacts of the Crisis. Source: Own elaboration

4.9 Opportunities Resulting from a Crisis

To the question regarding the opportunities resulting from the crisis, I again received replies from the total of 310 respondents. The results show (see Figure 8) that the companies significantly often experience a company crisis. Respondents could choose from the following opportunities: we streamlined the company, we began to focus only on the key activities of the company, we effectively reduced human resources within the company, we introduced faster and more effective reporting, and we introduced a flat organizational structure. For this purpose they could use a four-level scale where 1 = absolutely no; 2 = rather no; 3 = rather

yes; 4 = absolutely yes. Individual opportunities that the company crisis could provoke to the companies were on average evaluated as follows:

- We streamlined the company – 2.76 on average.
- We began to focus only on the key activities of the company – 2.76 on average.
- We effectively reduced human resources within the company – 2.70 on average.
- We introduced faster and more effective reporting – 2.60 on average.
- We introduced a flat organizational structure – 2.53 on average.

Fig. 8 – Opportunities Resulting from a Crisis. Source: Own elaboration

4.10 Early Warning Systems

As the individual tools of the early warning systems, the respondents mentioned: internal audits, expert methods, analysis of competitors, SWOT analysis, change analysis, forecasting, finance analysis and trend analysis. The individual early warning systems are applied as follows:

- Internal audit as the early warning system tool is applied in the total of 303 companies (73.4%), and not applied at all in 110 companies (26.6%).
- Expert methods as the early warning system tool are applied in the total of only 114 companies (27.6%), and not applied at all in 299 companies (72.4%).
- Analysis of competitors and the SWOT analysis as the early warning system tools are applied in the total of 248 companies (60%), and not applied at all in 165 companies (40%).

- Identification, analysis and evaluation of changes as the early warning system tool is applied in the total of 275 companies (66.6%), and not applied at all in 138 companies (33.4%).
- Forecasting as the early warning system tool is applied in the total of 216 companies (52.3%), and not applied at all in 197 companies (47.7%).
- Finance analysis as the early warning system tool is applied in the total of 290 companies (70.2%), and not applied at all in 123 companies (29.8%).
- Tends analysis as the early warning system tool is applied in the total of 228 companies (55.2%), and not applied at all in 185 companies (44.8%).

The above provided results of the research serve as the basis for the conclusion that mostly applied tools of the early warning systems are the internal audit, the finance analysis and the identification, analysis and evaluation of changes. The least applied tools are the expert methods. For the sake of better arrangement of application of the early warning systems by the size of the company I created a summary of positive responses shown in Figure 9.

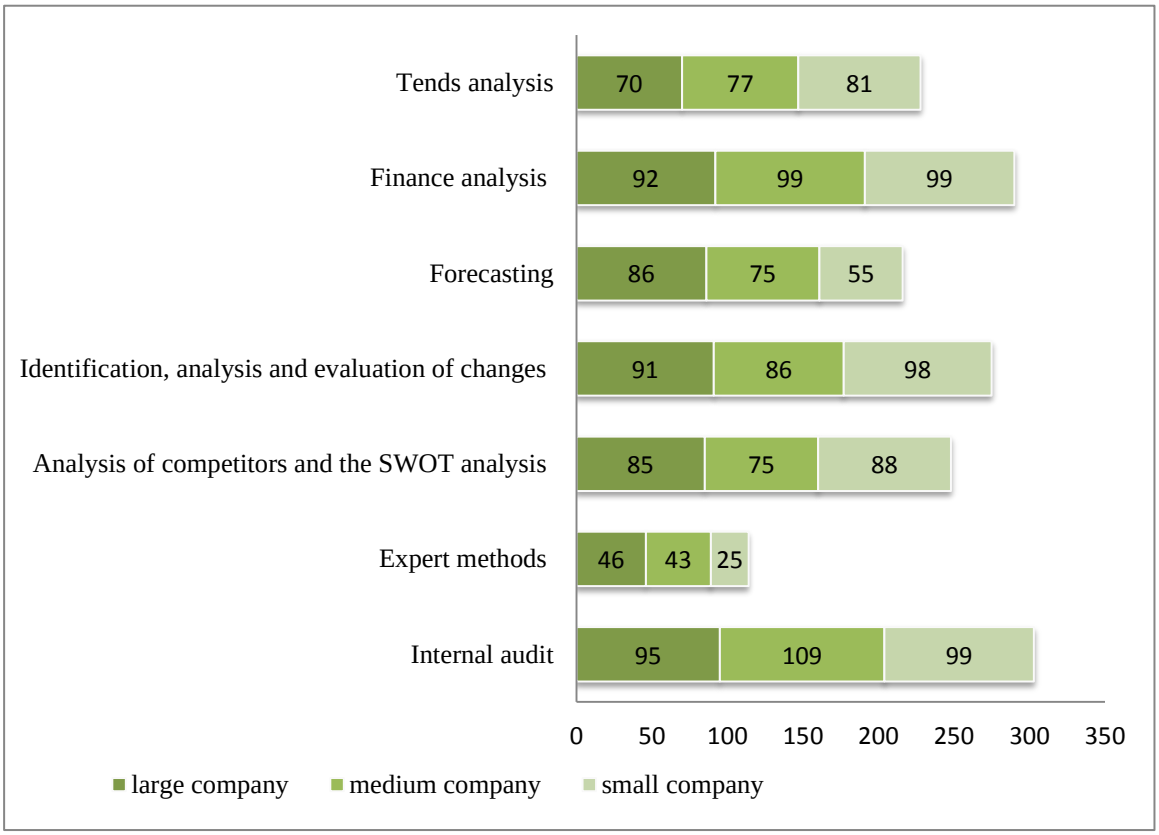

Fig. 9 – Early Warning Systems. Source: Own elaboration

5 SUMMARY OF RESEARCH RESULTS, RECOMMENDATIONS

The results of the research clearly show that production companies in the Czech Republic more frequently applied the approaches leading to reduction of costs and more effective performance management than to the approaches dealing with the crisis management. At the same it was found out that leaner companies do not show less symptoms of potential crisis, and only some symptoms of the latent crisis can be linked to the dependence of the company streamlining and lower emergence of problems attributable to the latent crisis. At the same time it was identified that a significant number of the companies show signs of the potential or even latent crisis despite they state they do not currently show any symptoms of instability

(company crisis). The results also indicated that a significant number of companies who state they have not introduced any crisis or risk management, already show first symptoms of crisis. The research results also point out to the insufficient systems of early warning in the companies. The companies admit that crisis has brought them many opportunities, nevertheless only those companies that identify the crisis in time and start control it effectively by means of the crisis management tool can actually use it as an opportunity.

Within the framework of the new external environment, it is important for the companies to implement in their company management new innovative approaches, approaches leading to the increase of performance, continuous improvement, increase in quality, reduction of costs and overall streamlining. The mentioned approaches should be then implemented in their corporate strategy. I recommend the companies to adopt the new ideas. They should also significantly more deal with innovations including the innovations in management, described by Hučka, Kislingerová, Nový (2011, pg. 102) as the "peak of the imaginary pyramid of innovations".

Company managers should far more realize all risks affecting the company from the external environment, and implement risk and crisis management tools into their company management, or more precisely as part of the their strategic management. I would recommend the companies to see the risks and threats more as opportunities that offer a new approach to the risk management. The research results also indicate that the companies do not admit they show symptoms of company crisis despite they face problems that are attributable to the potential or even latent crisis. Further, I would recommend them not to underestimate any issues the company faces and solve them as soon as they reach the next stage of the crisis development.

At the same time, the companies should focus more on company management so that they did not at all reach the crisis situation. If we accept the idea that one of the basic prerequisites for seeing the crisis as an opportunity is its timely discovery, the companies should focus more on the early warning systems. Based on the results of the research, they, however, are not sufficiently implemented in the researched production companies in the Czech Republic. As described by Zuzák, Könige vá (2009), in terms of the early warning systems, it is not advisable to focus only on the financial analysis that is based on historical data. Companies thus learn of the imminent crisis too late. The research discovered that companies very often and to a large extent use the financial analysis as the tool of the early warning systems. Instead I would recommend them applying more the methods of forecasting and constant monitoring of all changes, especially when taking into account the new external environment of the companies, and I would advise them to prepare for potential threats and risks that might threaten the companies in their stability. As the companies cannot influence the constantly changing and risky external environment, they should thus focus more on application and transformation of all changes, risk and crisis into effective opportunities.

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QUANTITATIVE AND QUALITATIVE ASPECTS OF PROJECT EVALUATION

Éva Ligetvári

Abstract

Managing projects aim to support the strategic vision of the company. Related to the selection of the proper project portfolio includes uncertainties because foreseeing the future is limited. Not all emerging risks are to quantify. Of course, a company has to manage project as a part of its financial (investment) portfolio because each project (investment) has the own content, cost-need, professional and financial risks etc. and that has effects on corporate level. Additionally, project management competency, cultural background, staff knowledge and legal environment must be considered. Risk management literature shows a great number of methods for risk assessment. Most of them can only be used if there are historical data available as they rely on statistical analysis to assess risks. However, many times there is no daily database to use for assessing most risks.

The information need and the possibilities may be various depending on the corporate characteristics. E.g. a small company cannot use a complex evaluation system for selecting the elements of its portfolio but for large ones it may be important in order to satisfy the investors' needs. The paper gives a general overview about the possibilities.

Keywords: project management, portfolio management, project evaluation, risk management

1 INTRODUCTION

Managing project is a difficult challenge because the related tasks are diverse. Next to the professional content of the project, being a successful project manager requires competencies of human resource management, finance, quality management, management organization etc. There are project management guidelines that organize the necessary processes and knowledge areas into a comprehensive structure, but the result often seems to be overcomplicated. The tasks of project management are multiplied in case of running several projects of an organization that predicts the need for managing complexity as well (Berényi, 2013). The Project Management Institute highlights that in today's complex world, organizational preparation is necessary to facilitate the successful execution of programs and projects. High-performing organizations recognize that, regardless of the degree of complexity, standardized project management practices, effective communications, and a strong talent base and leadership skills are necessary for project success (PMI, 2014).

The judgment on the performance of the projects and portfolios depends not only on their products or internal cost-efficiency. This means that the evaluation process shall include the relations with the owner organization. Communication, team-work, time-management, individual and group level of competences give one side of this task. Another aspect is the financial evaluation that tries to quantify the possibilities and risks specifically in monetary units. The two aspects would be great to be evaluated at the same time but the practice show that it is almost impossible. Unfortunately an impressive project idea can be rejected in case of weak financial contribution or excessive expectations.

Related to the quantitative evaluation I can suggest to adapt capital rationing models. Capital rationing is the process of regulating the capital expenditure when capital is scarce. In

business terms, company may have many different investment options and all of them are so favorable that company wants to invest in all of them. But due to limited supply of capital either for short term or long term, management may have to control the investment decisions by imposing conditions. At this point the capital rationing links to the project management, closely portfolio management.

2 CONNECTION BETWEEN PROJECTS AND PORTFOLIOS

2.1 Projects and portfolios

A project is a time-limited effort for creating individual products, services or other outputs. A project is a complex task, it is one-time, unrepeatable, resource-consuming and risky. A project aims new features and determined objectives. Of course a project is not for its own, it is subordinated to the goals of an organization or society. It should be noted that built on each other and parallel more projects may run that needs the synchronization between them (portfolios and also programs). The difference between project management and portfolio management can be shown by an airplane metaphor: project management ensures a smooth landing at the end of the route; the responsibility of portfolio management is choosing the right airport for landing (Darits, 2010).

Project management is a management activity initiated by corporate strategy in order to perform individual and complex tasks (Görög, 2003). In another approach project management means the application of knowledge, skills, tools and techniques to project activities to meet the project requirements. A special issue of project management is project portfolio management.

A portfolio refers to a collection of projects or programs and other work that are grouped together to facilitate effective management of the work to meet strategic business objectives (PMI, 2013a). For example, an infrastructure firm that has the strategic objective of maximizing the return on its investments may put together a portfolio that includes mix of projects in oil and gas, power, water, roads, rail and airports. From this mix, the firm may choose the manage-related projects as one program. All of the power projects may be grouped together as a power program (PMI, 2008).

Improving the processes of single projects may have tangible benefits, but a consistent project management model will only be complete when the processes of project portfolio management are also included. Similarly to the logic of managing share/bond portfolios, a systematic approach is required for project portfolio management in selecting, monitoring and supervision. Portfolio management maintains a balance between the limited corporate resources and the strategic goals (Verzuh, 2006).

Portfolio management can be interpreted as selecting the right projects, prioritizing the work, and providing the needed resources. Project management develops and implements plans (PMI, 2013a).

2.2 Strategic dependency

The projects or programs of the portfolio may not necessarily be interdependent or directly related. For example, an infrastructure firm that has the strategic objective of maximizing the return on its investments may put together a portfolio that includes a mix of projects in oil and gas, power, water, roads, rail and airports. From this mix, the firm may choose the related projects as one program. All of the power projects may be grouped together as a power program (PMI, 2013a). The key of success to portfolio management is the systematic process of selecting, supporting and managing the firm's collection of projects.

Both projects and portfolios shall support strategic business goals. Strategy can be briefly defined as the way of realizing the corporate objectives. In content it means the active or passive adjustment of operation to the changing environment. The strategy helps to find the most appropriate ways of achieving the objectives; it seeks for competitive advantages; improves the market position of the company; and provides for the allocation of resources. For the whole company the strategy should harmonize or restructure the corporate portfolio against the background of corporate objectives.

Based on the fact that project and portfolios are subordinated to a higher system, it shall be harmonized with the owner's strategy. In the following I summarize the relations between relevant aspects and management areas. A characteristic of strategic objectives is that they are implemented as projects. Deák (2003) states that the strategy cannot be realized if the wrong projects are launched. It can be concluded the strategic management defines the goals and direction for portfolio management through strategic plans. Portfolio management selects the projects and makes decision on launching projects/programs.

2.3 Handling modifications and feedback

Programs launched are under control and supervision of the project management (or program management). Feedback and intervention are facilitated by continuous monitoring and control. Effects on resources are managed by portfolio management and the process also affects strategic management. Changes in strategy need modification in portfolio management. The results are observed in project management and in the implementation of the projects. A project portfolio can be successful only if it includes the most favorable projects for the company. It must be considered that terminating or suspending a priority project will unlock resources and allow strategic management to start new projects and highlight other priorities. The aim of portfolio management is to facilitate achieving the corporate vision by the effective use of resources. Modification of a strategy and portfolio can be initiated either due to differences and internal feedback or by changes in the macro- and micro-environment. Fast reaction to changes has a key impact from the point of view of corporate competitiveness. It may affect the content of a strategy and portfolio and, as a result, the life-cycle of the project as well.

Finally the feedback after the implementation of projects that is necessary for judging its success shall be mentioned. In a hierarchical view of success it is to be concluded that on the first level the factors of cost, time and quality (output) are highlighted. The second level expressly analyses conformance to strategy and the third level reflects the assessment of external and internal stakeholders.

The probable project-level conflict can be solved if the position of portfolio manager is defined as a stakeholder of the project because the general approach to success of the project means the satisfaction of the stakeholders. Nevertheless, it must be considered that increasing the number of stakeholders may lead to an unmanageable amount of diverse expectations and requirements that makes it impossible to reach their satisfaction.

3 A RISK-BASED APPROACH

3.1 Interpretation of risk management

Corporate management increasingly demands strategic decision support and the use of scientific tools and methods to model uncertainties, thus creating a connection between decisions and their expected outcomes. To put it differently, corporations want to bear the risk of their decisions consciously in order to maximize their profits. That is the reason why risk analysis and risk management are highly topical issues in corporate practice.

The available literature on the specific topic contains a plethora of different tools and methods to carry out risk analysis.

One of the essential particularities during decision making process is the existence of uncertainties. Uncertainty means that the probability of occurrence and consequence of a given future event are not known exactly. Risk mostly means the particular negative or positive consequences while the occurrence itself is uncertain, but its probability can be calculated or estimated (Görög, 2008). Identification of different risk sources and events is the first to do in order to assess the risk.

According to Hillson's approach risk is usually referring to uncertain events that may have negative or positive outcomes (Hillson, 2002). The inherent level of a particular risk is determined by the likelihood and magnitude of associated events (Hopkin, 2012).

There are many methods that are suitable for risk assessment. Most of them can only be used if there are historical data available as they rely on statistical analysis to assess risks (for example Jorion, 1997). If somebody would like to calculate exchange rate or interest rate risk exposure for example, these statistical methods can be used if daily databases are available.

In risk management literature there are different approaches available to assess risks. They can be divided at least into two categories: qualitative and quantitative methods. Qualitative methods can easily be used in practice, but sometimes it is not possible to ensure a reliable assessment. However, with the use of quantitative methods the reliability can be ensured, but that requires a lot of historical data.

3.2 Process of risk management

Risk management can be described as a systematic process of identifying, analyzing, evaluating, responding to and controlling risk (Cooper and Chapmen, 1987; Chapman and Ward, 2003; PMI, 2008). The systematic process includes the proper use of various tools and techniques. This chapter shows a possible approach based on practical experiences made by Fekete (2009, 2012).

An initial point is to identify risk sources and events in a structured form. Several techniques have been proposed for professionals to identify risk sources/events. (Loosmere et al., 2006; Ohtaka and Fukuzawa, 2010).

According to the method in question, a mental creation technology is needed for executing the task. Workshops lasting a few hours or even days, depending on the nature of the task, can also be helpful. The composition of participants is important, since the results are influenced to a great extent by the presence or absence of experts having relevant knowledge.

In case of inappropriate historical data a pre-made database can be helpful to enhance the identification of risk factors (de Bakker et al., 2010; Bannermann, 2008). This database can be customized according to the needs of particular organizations. There are different lists available in risk management literature (see for example Chow and Cao, 2008; Hartman and Ashari, 2002; Lind and Culler, 2011; Summer, 2000).

The next step of the risk management process is to quantify the probability of occurrence and impact of identified risk sources/events. Now we will present how the developed method can help to define input parameters of the Monte-Carlo simulation. (Herz, 1964)

The practical application is presented as an example in the context of an investment project. The simulation can be used for example to calculate the net present value of cash-flow during the evaluation of investment proposals (Brealey & Myers, 1993), as well as to analyze the

risks in a project network diagram created during the realization of the investment (Grey, 1995).

After creating the cash flow model of a given investment and calculating the yearly values of each element of the cash flow paying no attention to risks (target value), the next step is to identify and assign potential risk sources/events to each element of the yearly cash flow calculation. The identification is done by experts at a workshop. The elements of the yearly cash-flow calculation will be the independent probability variables during Monte-Carlo Simulation.

When the identification is completed, maximum four different scenarios (Watchorn, 2007) will be assigned to each identified risk source/event. The next task is to estimate the subjective probability of occurrence and impact of each scenario. This is done by experts at a workshop using their many years' experience. It is important to note that the sum of the subjective probability of occurrence of maximum four scenarios cannot exceed 100%.

Following that, the existence of interrelation, if any, among the different risk sources/events assigned to one cash-flow element (Hunyadi et al., 1993) has to be investigated. The next task is to calculate the expected value and standard deviation of every single cash flow element using the result of scenario analysis. These will be input data for Monte-Carlo Simulation.

The expected value and standard deviation can be used for selecting critical risk sources/events as well. According our understanding not every risk should be treated anyway. This is because the cost of treatment can be higher than the cost incurred from the occurrence of the risk. To ensure the best efficiency of treatment activity it is vital to select the critical risks which should be treated in any way. To do this, a special rule can be used. According to this rule, a risk is critical if the value of relative deviation is higher than predefined threshold value. There is no exact equation to calculate the limit of any threshold value so far. It can only be defined by using the experiences of risk analyst.

If historical data are missing or inappropriate, the way suggested above can help to increase the chance of selecting the best suited probability distribution curve, mean value, standard deviation belonging to it. This is reason to perform scenario analysis first and to run Monte-Carlo Simulation after finishing scenario analysis.

Next task is to select dependent probability variable which can be for example net present value of the cash-flow (cash-flow return).

When all input data are at our disposal, the net present value will be calculated from a large amount of random data from the probability distribution of each cash-flow element by running Monte-Carlo Simulation. Once the predefined number of iterations has been reached, the probability distribution of net present value with all characteristic statistical value (mean value, standard deviation, range, etc.) can be produced. The probability distribution also can contain the target value (size of net present value before risk analysis), so it is possible to compare the results of calculation before and after risk analysis. This can be done with the support of any computer software can be found on the market.

The next step in the risk management process is to formulate and execute risk response actions for critical risk sources/events selected previously. Risk response could have the aim of avoiding, sharing, transferring or accepting a risk by means of defining a risk response program (Haris, 2009).

Risk response actions should be measurable during actualization. In case of an investment project for example it is possible to increase the chance to finish the project on time and within the budget or to ensure the targeted project return. In other words: with the execution

of suggested risk response actions it is possible to come near to target value (value before risk analysis).

It is important to assign a risk owner besides the proposed actions. A risk owner is a person or an organization that is responsible for responding to a risk.

The final step of the risk management process is risk control activity, including:

- Risk management should be considered as a snapshot at a given moment. But it could happen that kind of information that basically influences the results of analysis is found the next day. In this case, it is worth redoing the whole exercise. Of course, now the analysis can be done quickly, since it only consists of the transfer of the results from recording and assessing the new risk arising from new information. It could change the list of critical events that could modify the risk response actions.
- The second element of control activity is to follow the risk execution program, which is based on risk response proposals. This could be considered as classical control activity and in the course of this the following tasks should be solved: overview of situation, impact analysis, modifications based on impact analysis, ordering and publishing the modifications and the execution of modifications.
- The third component of control is performing a plan vs. actual analysis right after the execution of the risk response program. The aim of this analysis is to compare the post-program status with the pre-program status. The plan vs. actual analysis means an input for cost-benefit analysis (Fekete, 2011), which can measure the effectiveness and efficiency of the risk management activity.

3.3 Additions to non-qualitative Evaluation

Finding an effective solution is important not only for the large companies related to non-qualitative aspects of evaluation. Realizing the various EU-proposals generate the same challenges for SMEs or non-profit organizations as well. The Navigating Complexity book of PMI (2014) is a practical guide for project managers. It includes a questionnaire with 48 yes or no questions for self-assessment and also suggested scenarios and actions to the negative responses.

The topics as follows:

- Definition of scope and requirements,
- Conformity to stakeholders,
- Conformity to the sponsor organization,
- Planning and monitoring the tasks,
- Internal and external communication.

In my opinion there are some questions in the list that should be checked before starting any projects.

- Can the project requirements – outcome and quality, time, budget and recourse limits – be clearly defined? Are these realistic?
- Are stakeholders identified?
- Has the project manageable number of components, assemblies and interconnected parts?
- Is there open communication, collaboration and trust among the members of the project team, and among the project manager and the project team and the stakeholders?
- Has the project the right people, with the necessary skills and competencies?

- Does the project manager is right people, for the project, has he got skills to leading the team?
- Does the project have the support from the organization?
- Is there an effective portfolio management process to facilitate strategic alignment?
- Are the deviations to the plan monitored? Are the necessary action taken and effectiveness monitored?

4 CAPITAL RATIONING MODELS

4.1 About the models

A company has to manage project as a part of its financial (investment) portfolio. Each project (investment) has the own content, cost-need, professional and financial risks etc. A small company may not use complex evaluation system for selecting the elements of its portfolio but for large ones it may be important in order to satisfy the investors' needs.

The concept and content of "portfolio" is compatible in finance and project management that allows the adaptation of methodology. Portfolio in finance means a set of assets involves the selection of securities. A combination of assets or securities is called a portfolio. The traditional theory of portfolio postulates that selection of assets should be based on lowest risk, as measured by its standard deviation from the mean of expected returns. The modern theory of portfolio emphasizes the need for maximization of returns through a combination of securities, whose total variability is lower.

Risk can be related to general economic conditions (for example business cycle, inflation rate, exchange rate) that we cannot influence directly. Other risks are firm-specific and can be managed by portfolio diversification. Effect of these belongs to the given company without noticeably effects on other firms.

4.2 Markowitz model

Markowitz (1952, 1959) developed his portfolio-selection technique, which came to be called modern portfolio theory (MPT) (Bodie, Kane, Marcus, 2003). Prior to Markowitz's work investors had constructed security portfolios on the basis of expected return and variance for each individual security. Hence, investors thought of portfolio construction from a single security analysis point of view meaning a portfolio was created using the best bottom up security ideas without regarding security correlation. However, this changed with Markowitz's 'Portfolio Selection' theory in 1952. He laid the foundation for modern portfolio theory by introducing the notion that investors should look at portfolio construction from a diversification point of view and in the process not only look at expected return and variance for single securities but most importantly also take the covariance between the securities into consideration. This is why he introduced the idea that investors could decrease overall portfolio risk by holding a combination of securities that has a correlation of less than one.

Markowitz emphasized that quality of a portfolio will be different from the quality of individual assets within it. Thus, the combined risk of two assets taken separately is not the same risk of two assets together.

Markowitz defined the efficient portfolio which yield the highest return for a given level of risk or yield the lowest risk for a given level of return.

Based on his research, Markowitz has set out guidelines for diversification on the basis of the attitude of investors towards risk and return and on a proper quantification of risk. The investments have different types of risk characteristics, some caused systematic and market related risks and the other called unsystematic or company related risks. Markowitz

diversification involves a proper number of securities, not too few or not too many which have no correlation or negative correlation. The proper choice of companies, securities, or assets whose return are not correlated and whose risks are mutually offsetting to reduce the overall risk.

4.3 Capital Asset Pricing Model

The capital asset pricing model (CAPM) of Sharpe (1964) and Lintner (1965) marks the birth of asset pricing theory (resulting in a Nobel Prize for Sharpe in 1990). The attractiveness of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk.

The CAPM is widely used in applications, such as estimating the cost of capital for firms and evaluating the performance of managed portfolios. The CAPM's empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model.

The CAPM builds on the model of portfolio choice developed by Harry Markowitz (1959). In Markowitz's model, an investor selects a portfolio at time t-1 that produces a stochastic return at t. The model assumes investors are risk averse and, when choosing among portfolios, they care only about the mean and variance of their one-period investment return. As a result, investors choose 'mean-variance-efficient' portfolios, in the sense that the portfolios: 1) minimize the variance of portfolio return, given expected return, and 2) maximize expected return, given variance. Thus, the Markowitz approach is often called a 'mean-variance model.' The portfolio model provides an algebraic condition on asset weights in mean-variance-efficient portfolios. The CAPM turns this algebraic statement into a testable prediction about the relation between risk and expected return by identifying a portfolio that must be efficient if asset prices are to clear the market of all assets (Fama, 2004).

The CAPM is a market model because a security's return is estimated based on its sensitivity to excess returns on the market portfolio. Essentially, the market is the only factor that matters.

Factor models extend the CAPM to consider that a security's return also depends on other economic measures and not just the market portfolio.

One multi-factor model is the Arbitrage Pricing Theory Model (APT). The APT model predicts a security's return based on unexpected changes in economic factors such as inflation, industrial production, bond risk premium, and the term structure of interest rates. Different factors may be relevant depending on the security under analysis.

4.4 The single factor model

The modern portfolio theory is based on two categories of models: normative models and positivists models. The normative model category includes the basic modern portfolio theory models: the Markowitz Model and the Single Index Model of William Sharpe (Stancu at al, 2011).

In 1963, William Sharpe has tried to bring changes to the fundamental portfolio selection model. These changes implicated not only the reduction of the information level needed to set up the portfolio selection model, but also supplemental information regarding diversification as a method to reduce risk.

Sharpe included the market fluctuations in the return and risk of each bond calculations, considering a linear dependency between the bond return and the market index return. So, this model measures the "surprise" return correlated with the "surprise" market index return and

the expected gain under the materialization of the firm specific risks, which can be eliminated through diversification. An important implication is that the need to estimate a huge number of covariance is eliminated.

5 CONCLUSIONS

Based on the idea that projects and portfolios shall support the achievement of the business goals through the strategies, the need for selecting effective ones is reasoned. In order to increase the property incomes the financial viewpoint of planning and controlling has a major role. Capital rationing models give well-established frameworks for evaluation and even for project selection.

According to the paper of Stancu at al (2011) that compares the result of the Markowitz Model and the Single Index Model in the choice of an optimal portfolio on the Romanian capital market. They concluded that, the model Markowitz developed lead to the best results, optimizing the financial placement decision from the risk-return efficiency criterion point of view.

Michailidis at al (2006) examined the validity of the CAPM for the Greek stock market. The study used weekly stock returns from 100 companies listed on the Athens stock exchange from January 1998 to December 2002. The findings of the article are not supportive of the theory's basic hypothesis that higher risk (beta) is associated with a higher level of return. The results obtained lend support to the linear structure of the CAPM equation being a good explanation of security returns. The CAPM's prediction for the intercept is that it should be equal to zero and the slope should equal the excess returns on the market portfolio.

The findings of the study contradict it and indicate evidence against the CAPM. According to the paper's findings the residual risk has no effect on the expected return on portfolios. The lack of strong evidence in favor of CAPM necessitated the study of yearly data to test the validity of the model. Summarizing the tests might provide evidence against the CAPM but that did not necessarily constitute evidence in support of any alternative model.

Overall, a wide variety of selection methods may be appropriate for specific companies and project circumstances. Some projects require sophisticated financial evidence of their viability others may only need to demonstrate no more than an acceptable profile when compared to other options.

However, at first sight the mathematical-financial approach is quite difficult. Exact results require not only the knowledge on the methodology but also the detailed data needs substantiated methodology. There is no question about using them in a large company with high responsibility of management on financial indicators. I believe that these methods must be used in a simplified way for small- and medium sized companies as well. The reason for this is that the absence of well-established decisions (by the lack of quantitative information) may have a more cumulative effect on the future of the business. The losses of one project may take into bankruptcy the whole company.

My recent research activity turns increasingly to the possibilities of non-qualitative aspects. Those are "easier to establish" and more conform to the everyday knowledge. I believe that it is a huge trap: the less established factors of evaluation may mislead the management in critical problems of project management and missing viewpoints show distorted status report. Building up the proper toolset of qualitative and quantitative techniques will have a positive impact in all areas of operation, including improvement profitability, customer satisfaction and internal collaboration.

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USING BEHAVIORAL EXPERIMENTS TO TEACH MANAGEMENT AND TO TEST MANAGERIAL THEORIES: PEDAGOGICAL PLATFORM "GEPARD"

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Abstract

In the paper we present new educational platform for teaching managerial psychology, named "Gepard". The platform integrates three functions: (1) Innovative inspirational teaching. (2). Generates data for scientific research. (3) Provides a feed-back for participating students for their personal development. In this paper we demonstrate the capacity of the Gepard platform to generate data with the aim to analyse relation between economic games dictator and ultimatum and several aspects of ethical decision-making. 184 under-graduate students of business participated in the "Gepard" in-class simulation. Results show that the dictator game works as a statistically significant predictor of the following aspects: preference for a managerial position in the ethically sensitive situation, preference to leave the company with unethical practices and the adherence to the ethical values regardless of the situational context. On the other hand, the ultimatum game did not work as a significant predictor of ethical decision-making.

Keywords

Ethics, Management, Teaching, Behavioral experiments

1 INTRODUCTION

Ethics in managerial and business environment is an important factor of its quality and a condition for keeping stability, proved by a series of ethical scandals since the beginning of 21st century. The fall of company Enron caused by unethical managerial activity and audits significantly affected the whole corporate world. Besides Enron, there were discovered ethical and legal scandals in other corporations, such as WorldCom, Tyco, America Online, Lucent, Vivendi, etc. Reaction to this are new legislative and controlling frameworks from the state and new perspective from companies, which are starting to perceive ethics as a strategic factor of successful business. The meaning of ethical values and attitudes was proven by many studies, e.g. Flynn (1994) found out that when recruiting new administrative workforce, 60% of managers perceive working ethics as the most important factor. Many other studies show a clear relationship between working ethics and work results.

Objective of this article is to analyze capacity of economic games of experimental economics on determining social preferences (dictator and ultimatum). The core prediction is the relationship between managerial activity in ethically sensitive situations and the tendency to lean towards altruism. This article predicts the use of predictors of ethical decision-making in the area of human resource management, especially in the recruitment of leading workforce, especially when the company or organization finds it important to determine the tendencies of the applicants' behavior when deciding in ethically sensitive situations.

2 THEORETICAL FRAMEWORK

2.1 Economic experiments for determining social preferences: dictator and ultimatum

Experimental economics used experimental methods to determine economic principles and phenomenon. A subset of experimental economics is studying social preferences, or how people view the wellbeing of others, in comparison to themselves, what does altruism consist of, economic justice, equality and cooperation. The most frequent experiments used to study social preferences are labeled also as economic games and they consist of: game of dictator and ultimatum, trust game, as well as games about public estate. (Camerer-Thaler, 1995).

Games of dictator and ultimatum can be described as follows: player, also called allocator, has the task of distributing fixed amount of estates (money, body) among himself and other player, acceptor. Acceptor on the other side has an option to decide between accepting and declining the offer. If the acceptor agrees to accept, the offer is realized as suggested by the allocator. If the acceptor declines to accept, both players get a lower amount, discounted by a factor delta, which is also called the power of acceptor. If delta = 0 and the acceptor turns down the offer, both players get nothing. If delta = 1, offer is realized as suggested by the allocator. When delta is 0 and the acceptor has a chance to cancel the offer, the game is called ultimatum. If delta = 1, the acceptor cannot influence the allocator's offer and the game is called dictator. (Suleiman, 1996).

Researches show that with growing power of acceptor, allocator has a tendency of distributing the estate more equally, and the acceptor strategically uses a fair approach to ensure the offer is realized. (Van Dijk et al., 2004). In the game ultimatum, equal distribution of estate includes two factors, pro-society approach on one side and the fear of cancelling the offer on the other side. Researches also show that in the game dictator, more acquisitive individuals, compared to those motivated by fair play, will realize more selfish allocations when the acceptor is without power, and far smaller allocations in the game ultimatum. (Hasselhuhn – Mellers, 2005).

2.2 Behavioral experiments in university teaching as source of research data – platform Gepard

Main contribution of behavioral and economic experiments is their ability to be conducted again and high control of conditions of the experiment, compared to terrain research. Conditions of experiment can be altered according to the needs to assess alternative theories and approaches. It is necessary to follow standard procedure rules, ensure proper motivation of participants and unbiased observation. Similarity to the original economic environment is important to ensure smooth transition to real economic processes (Mikeszová, 2007).

A problem occurring with experimental methods is the question to what extent does the behavior observed in laboratories correspond with reality and if the results from a simplified model will be present in a complex reality. This argument may be valuable when simulating complex societal and institutional phenomenon. However, when stimulating microenvironment of a company, resp. teamwork, with low number of participants and with low-structured tasks, the validity of theoretical conclusions based on experimental results is high, counted that previously mentioned conditions are followed.

Behavioral experiment (or simulating game) in a classroom can, when following appropriate conditions, serve as a source, resp. generator of valuable data for scientific researches in the area of management. Allery (2004) defined stimulating game as a game based on reality, with specific rules and structure, according to which students learn directly and implicitly from the process of playing and not from explicit academic content. Simulation does not have to have competitive element.

As long as the stimulation game is according to the requirements of structured experiment, as defined by e.g. Cooper (2007), it can be a platform for creation and verification of managerial theories. A good-quality experiment tries to capture the most important features of reality in simple, carefully monitored environment and is designed to test concrete hypothesis, derive from economic or managerial theory, or from previous observations in experiments or terrain data.

The core of here suggested approaches is the Kolb's experimental learning, which is based on four phases: 1. activity, 2. reflection of activity, 3. generalization into theoretical framework, 4. enforcement to real life, resp. improvement of own performance in managerial context. Connecting experience activity in a classroom and its following theoretical conceptualization allows for the effect of teaching and transforming the experience into structured ability usable in real life (Young, 2002). A big advantage of this approach is that it allows for a systematic and deep confrontation of what the student experiences in the classroom activity, e.g. within decision-making processes, with theoretical literature and research of quality human behavior (Castilla, 2014).

Pedagogical platform Gepard integrates the above mentioned aspects into one whole. Besides the traditional pedagogical use, it has two other functions. (1) It creates valid research data for testing managerial theories and also for creation of new ones, based one experimental researches. (2) Providing structured and scientifically reasoned feedback for students participating in pedagogical activity about their performance and effectivity in the activity. Pedagogical platform is based on methodology of behavioral experiments with combination of Kolb's experimental learning.

3 OBJECTIVES AND METHODOLOGY

3.1 Objectives and research questions

Objective of this research is testing how the preferences of managerial behavior will change in two different situations, with a group of people with career ambition to become managers and leading workers (students of economic faculty): (a) common situation and (b) ethically sensitive situation. Within the research, following questions were asked:

- Are economic games dictator and ultimatum a predictor of ethical sensitivity?
- Are these economic games a predictor of behavior in organizational context?

3.2 Methodology and experiment description

There were 189 participants in the study, students of second and thirds year of everyday study at the economic faculty in Brno (CZE), at age 21 – 23. Reasons for selecting the group of participants are as follows: (1) By choosing to study, students declared their orientation to become managers, people which will decide about economic values. In other words, concerning values and interests, it is a relatively homogenous group and therefore a relevant objective group for research of behavior in managerial context. (2) Young people are not touched by heterogeneous experiences with different types of business environments. Therefore, they will manifest their primary personal values which are the main subject of this research. (3) Good availability of the group for research enables high number of observances.

Participants were given the following situations: (1) Common situation: "A company producing modern wooden ecological toys will be integrating new information system." (2) Ethically sensitive situation: "A company producing natural ecological furniture will be laying off workers due to high absences because they take care of their small children."

In both situations, students were asked to express their preferences on a four-level Likert scale. 1. I prefer position of manager, 2. I prefer the task of employee, 3. I will perform the task, 4. I will consider leaving the company.

Participants were also given a question about ethical stand (1. Ethical idealism, 2. Ethical absolutism, 3. Ethical relativism) together with theory of coefficient of ethical stand (Forsyth, 1980): 1. Resect and following ethical principles and values is important. 2. Ethical problems are necessary to be solved principally, without taking the specific situation into consideration. 3. Ethical problems are necessary to be solved with respect to the specific situation, interests of company, owners, investors, etc.

Economic game ultimatum and dictator occurred in form of quasi-experiment in that same questionnaire. Participants were asked how they would distribute 1000 monetary units among themselves and other person, which they never met. Subsequently, they were asked the same question with modification that if acceptor will not agree with the distribution, both persons lose the money. Information were then analyzed with help of correlation analysis.

Methodical inspiration for this article was work done by Hilbig and Zettler (2009) which studied relationship between games ultimatum and dictator and personal features "humility and honesty". Linear regression was used for the analysis. This approach will also be used in this article.

4 RESULTS

The capacity of economic games dictator and ultimatum was analyzed by means of the correlation matrix. Table 1 displays correlation coefficients between the aspects of the ethical decision-making and the score in the economic game (dictator and ultimatum). Statistically significant results on the significance level of 5% appear with the values higher than 0,1447 (marked bold).

Tab. 3 Correlation matrix between the scores in the dictator and ultimatum games and the ethical aspects of the decision-making (*5% critical value, two-tailed = 0,1447, N = 184)

Ethical aspects of decision-making in the organization	Score, dictator game	Score, ultimatum game
Ethical values must be respected, regardless of the ethical context	-0,1888*	0,0337
Preference of a managerial position in the ethically sensitive situation	0,1998*	-0,0193
Preference of a managerial position in the situation without an ethical problem	0,0629	-0,0164
Preference to quit the society in the ethically sensitive situation	-0,1516*	-0,0485

Source: authors

Prediction capacity of the preference of the ethical stand-point

On the basis of correlation analysis, following results were discovered. Between preferences of ethical absolutism and score in the game dictator appears a negative correlation. The lower the score of participants, the more they perceive ethical principles as generally valid without taking context into consideration, and therefore we are talking about people with low ethical

absolutism. Score in economic game dictator predicts ethical absolutism (validity of ethical values without looking at situational context. On the other hand, both dictator and ultimatum games d not create statistically significant correlations with other two ethical stands (ethical idealism and ethical relativism, according to Forsyth).

Prediction capacity of the preference of a managerial position in the ethically sensitive situations

The score in game dictator creates statistically significant correlations with preference to be a manager in an ethically sensitive situation. Conversely, correlations with managerial position in situation without ethical problem do not appear. It is then possible to conclude that game dictator acts as a predictor of ethical decision-making in ethically sensitive situations in organizations.

Prediction capacity of the preference to leave the company

The score in game dictator creates statistically significant (negative) correlation with the preference to leave the company in ethically sensitive situations. The lower score the participants got, the more they were prepared to leave the company in an ethically sensitive situation. The game indicator acts as predictor also in this case as well.

One thing to be mentioned is the fact that although the score in game ultimatum is statistically significant, it does not correspond with none of above mentioned behavioral tendencies. It is probably because the participants, which have relatively high scores in game dictator (values from 700 to 1000) have, in the game ultimatum, chosen a fairer value (close to 500) as strategic choice. With that, their score approaches to a score of more altruistically oriented participants, which chose value close to 500 as spontaneous even in the game dictator, where there is no control of the opposite player.

5 DISCUSSION AND CONCLUSIONS

In this article, economic experiments (games for determining social preferences dictator and ultimatum) were innovatively connected with behavioral experiment (in form of stimulating game in a classroom). Meanwhile, ethical decision-making in organizations in ethically sensitive situations was stimulated.

The key discovery was the fact that score in the game dictator is statistically significantly correlated with preferences of ethical stand (ethical absolutism) and also with the spectrum of behavioral preferences in ethically sensitive situations (preference of managerial position, preference to leave the company). If the experiment was conducted differently, score in the game dictator can be considered as relatively good and “broad-spectrum” predictor of ethical decision-making in organizational environment. On the other hand, based on results of the research, the game ultimatum does not show similar results.

Within the discussion framework about validity of results of the experiment, it is important to stress that the validity of this research and level of threshold values is strictly based on the group of participants on which the experiment was conducted. The question is whether the results would be valid for other demographical and socio-professional groups, which would require expanding the research. However, there exists a strong presumption that with respect to the character of predictors, other groups would react in a similar way. Eventually, for the use of this predictor in other socio-professional group, it would be suitable to first create a pilot database of results and then determine the boarder values for this specific group.

To conclude, the results of the research are very encouraging since they proved statistically significant relationships between economic boarders in experimental economics and behavior, resp. tendencies to behavior. Furthermore, it was showed that economic games are also a predictor in ethical sensitivity. Here presented results can found use in human resource management in the future. There is a perspective use of these methods in a pedagogical process.

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CSR AS A CORE BUSINESS: CASE STUDY OF PPH SPOL. S.R.O. COMPANY IN MORAVIAN REGION

Martina Křivánková

Abstract

The aim of this article is the creation of a new corporate social responsibility strategy for the company PPH spol. s r.o.. The goal of the CSR campaign is to offer values, principles and ideals that are important for the current employees of the company in order to create a stable CSR environment within the company, attract more new employees by offering more than just a salary and creating an identity of a socially responsible company. Interviews will done and questionnaires distributed in order to find out the key values and the discovered values will be further used to create a CSR campaign. Because the company offers a chance of employment to disabled people too, it creates a great basis for the new strategy. Since the core idea of business of the company will be connected with their CSR activities, it creates the best possible way of incorporating CSR into the core business of the company.

Keywords: corporate social responsibility, CSR, strategy, core business

1 INTRODUCTION

Corporate social resistibility is inevitably becoming a topic of great interest. Its development over the past years has gained such recognition that the concept itself is among highly discusses topics. While the discussions have started only recently, the idea itself has existed for many years. Economists and experts have mentioned the concept of corporate social responsibility already in the previous century which gave CSR the basis for today's development. In connection with business, corporate social responsibility has become an inseparable notion of business all around the world. However, most think of CSR as a burden rather than an advantage. The efforts that companies oftentimes make may be nevertheless counterproductive as it goes against the concept of social responsibility. Corporations try to fulfill the demands society is putting on them by making donations to good causes in order to comply with the pressure instead of capturing the idea of social responsibility and incorporating it into the key ideas of their core business. Although the notion is gaining on importance and recognition as we speak, many existing approaches do not capture the true meaning behind what it is to be responsible and see it as a way to satisfy the society at minimal costs instead.

Objective of this article is to analyze key corporate social responsibility values that can be further incorporated into a new CSR strategy in a selected company. The key prediction is that strong CSR values presented by the company in form of advertisements and key statements on their company's website will attract new potential workers of high quality who are happy to contribute to the company's CSR strategy and in exchange for good communication and mutual help from the supervisors and in return for other important values.

2 Theoretical framework

Composition of corporate social responsibility is very distinguished and can be divided into different spheres of interest

To be able to give CSR a certain direction and measure the performance, we may divide the concept into three pillars that create the basis for business actions:

- Profit
- People
- Planet

Profit represents an economic sphere that looks at the financial performance of a company and traditionally measures its "profit and loss account" (Hindle, 2008, p. 193). It relates to many different aspects such complying with the terms set in a contract, misuse of confidential information, payment morale, fighting against corruption, bribery and illegal money gaining (Kuldová, 2010).

People represents a social sphere and is meant to measure how socially responsible a corporation is towards the society. It includes philanthropic activities such as employee volunteering, employing disadvantaged and handicapped people, getting involved in local communities, supporting education of employees as well as of other people, employee policy, health and safety precautions towards the employees, equality between men and women and other activities with the employees and society in mind.

Planet represents the environment, protection of natural resources, investing in ecological tools in order to protect the environment, and in general evaluates the environmental actions of the company.

Many companies see corporate social responsibility as an obstacle to doing their business. Partial reason for that is the fact that CSR as a whole is a relatively new concept that has only recently been introduced and that is a topic of current discussion and attention. However, companies should look at the positive side of implementing a CSR strategy and look at the benefits first before making hasty decisions. Hond, Bakker & Neergaard (2007) provided a list of basic benefits that CSR may bring to the company. The benefits are divided into two parts, internal and external benefits. Some of the internal benefits include:

- Development of new services
- Improved staff morale
- Development of managerial and organizational skills
- Systematization and documentation of competencies and processes
- Improved staff recruitment and retention

External benefits include:

- Access to markets that demand CSR
- Compliance with social and environmental regulation
- More responsible supply chain management
- Increased brand value

The key idea behind the inspiration for this article was introduced by Porter and Kramer (2006) in their article *Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility.* The article mentions a direct link between business and society, a concept that is often misunderstood as having nothing to do with each other. However, Porter and Kramer (2006) bring a new viewpoint on the topic and the connection between the two. Their primary idea is based on how are social issues divided and connected

to business. Generally, the simplest way companies choose to contribute to a good cause is donating money to charities or good causes. However, most of the times the main idea behind a given charity is usually far away from the core concept of business.

Many companies see a CSR strategy as one that needs to be interesting for the public and must satisfy the demands of society, however employees play as important role in the creation of socially responsible image of a company as a good report.

The way employees see corporate social responsibility is connected with a few basic psychological needs which are as follows (Bauman and Skitka, 2012):

- security
- self-esteem
- belongingness
- meaningful existence

These values work as a factor based on which the employees value the company and create their opinion on it.

The sense of security and safety comes from the people that individual employees surround themselves with. A positive and competent environment has a rather positive effect on the performance of employees than those working in environment not supportive of their working competence. If a company presents itself as moral and ethical, employees feel like the company is less likely to use them for the corporation's own advantage. Moral acting of a company then brings an element of trust between the employees and their employer and evokes a positive signal among the employees (Gond et al, 2010). Mutual cooperation between both parties assures honest and reliable communication, resulting in mutual trust. Moreover, if the actions performed by the company are in line with their core business, the whole concept of CSR is much stronger and has a positive effect on the employees and how they perceive the company (Porter and Kramer, 2006). The employer seeks loyal and reliable workers while employees job security and good working condition. If the two parties are able to reciprocate the needs of the other, mutual trust and good cooperation starts to form.

Esteem plays an important role in how people value themselves. People long to have a positive self-image to which esteem contributes. One factor that adds to positive self-esteem are the relationships with groups because they bring out pride and value in people. Other factor are the relationships with individual people as they support personal beliefs and values. Both factors serve as a reassurance of self-esteem and self-worth.

The need to belong is partly set by company's approach to their employees. They are responsible for creating stable and equal environment for all employees, which leads to employees' perception of where they find themselves within the organization, as individuals or as part of a group. This creates the feeling of "me" or "us" among the employees.

Need for meaningful existence considers inner personal values that go beyond receiving a paycheck and satisfying material needs. Work can bring out aspects that contribute to quality life and promote a feeling of a satisfaction, hence attracting workers of high qualities who seek sense of fulfillment (Gond et al, 2010). This state appears when the employees feel like they can contribute to well-being within a community or a society (Bauman and Skitka, 2012).Porter and Kramer (2006) divide the way of contributing to corporate social responsibility into three parts depending on how connected is the CSR cause to the business and the parts are generic social issues, value chain social impacts and social dimensions of competitive context.

First category, generic social issues include CSR activities that are outside of the core business idea of a company. They are not important for the company as they do not bring any advantages, but on the other hand, may seem important to society.

Value chain social impacts are meant to raise awareness about a certain social issues related to the business and its usual activities. The business is getting involved in social matters that are somewhat similar to the core business. This approach enables the public to see that the company is engaging in CSR, without having to spend much time on an issue unrelated to the core business.

Last and the most important category are the social dimensions of competitive context. This category is based on the core concept of business. Activities done for the society have great impact on the company's prosperity. Since the undertakings are within the framework of a given business, they are easier to accomplish and to be pursued, having the future benefits in mind. At the same time, CSR serves as a marketing tool that can be used to attract valuable potential employees (Gond et al, 2010).

As Schmeltz (2014) suggests, corporate communication is the result of effective communication between internal and external circle of the company, resulting in creation of its good corporate identity attractive for stakeholders and others.

3 Application part

The company that was selected for this research is called PPH spol. s r.o.. The company focuses on services in the sphere of security in the South Moravian region. Currently, the company's aim is to fulfill the needs of their clients in the best way possible through quick communication and personalized and customized approach. The needs of every customer are different and the company tries to provide the best services and people of high quality. The company gives the opportunity to all the people on the job market, including those with disabilities.

What is important for our study is the fact that the company is focused more on the services they provide rather than the potential employees that seek employment. Furthermore, the company does not offer and socially responsible activities or any CSR strategy. That is the reason why it is a great candidate for a new strategy of corporate social responsibility. Since the company creates job opportunities for disables individuals, it creates a great basis for potential CSR campaign. The opportunity of employment for handicapped people enables them to return back to the work market, giving them new chances to self-realize and gain new self-value. Moreover, the company offers a reliable and good communication between the employees and the supervisors along with good work place and work environment, and an extra amount of money in form of their salary. The new opportunity of employment brings new chances for the people in form of meeting with new people and having constant contact with them, a possibility to renew their language skills through communication with customers of the company, opportunities to educate themselves if they are selected to the Technical Museum, and a good functional team on the workplace. All of these factors create the perfect situation for integrating a new CSR strategy as it would bring new employees to the company and the potential employees will get a new chance to self-realize and gain a new self-value. The core idea of the business would easily accept new CSR strategy as the ideas are the same, and according to Porter, it creates the best possible scenario and leads to a successful CSR scheme.

Another advantage of incorporating corporate social strategy into the business is the fact that it would ease and partly solve the problem of high fluctuations of employees. Many employees come and go and there is a constant need to recruit new workers. Moreover,

recruiting workers of high quality will lead to stable contract and a stable employee, which would lower the employee fluctuation. People who prefer values over salary are those that will enjoy doing their job, will be happy to go to work and are good candidates for long-term working agreement. The new CSR campaign is meant to speak to these kind of potential workers.

Because corporate social responsibility is a relatively new concept and the Czech Republic is only slowly adapting to its principles, many people do not know what is or what it consists of. That is the reason why many people do not see the opportunity to work for the company as a CSR campaign. Internal communication of CSR would be necessary to raise awareness about the topic among the employees and show them the value behind CSR as employees play an important role in communicating good CSR in general. Furthermore, another step would be to present the company as socially responsible one to the public and to the society. It would gain greater importance because social issues are a topic that is broadly discussed and would therefore work towards its improvement. There are people of high qualities on the job market and CSR campaign would be aimed specifically at these people that have something to offer. The new CSR strategy would not only benefit the company as it would attract more new employees with good character and of high quality but at the same time it would offer job opportunities even to those that are disabled, giving them a chance of new start.

4 Objectives, research questions, methodology

4.1 Objectives

Objectives of this article is to suggest a corporate social responsibility strategy for a given company. The first part consisted of finding meaningful and important values for the employees of the company and what makes them satisfied with their job. The main ideas, values and contributions play an important role for this article as they have a further purpose. They served as a basis for creation of an optimal CSR message for internal circle of the company which were the employees. These values led to creation of inner communication within the company, promoting better work performance and job satisfaction.

An important part in creation of CSR strategy is the outer circle of interest, which consists of the public and the society. In order to send a message out to the public, an optimal communication strategy was proposed as well. This strategy consisted of work advertisements on different media channels with an aim to attract potential employees and promote high quality potential workers. The advertisements were to convey a mutual cooperation from the side of the employer as well as from the side of employee, emphasizing satisfying work in good working conditions and promoting good interpersonal relationships, leading to satisfying job.

4.2 Methodology

The article constitutes of two main parts, specifically the theoretical framework and the application part. In order to create the theoretical part, study of appropriate literature related to corporate social responsibility and the creation of CSR strategy in a company is necessary. The study of bachelor's degree provided the core information that needed to be acquired in order to successfully develop a bachelor thesis itself, and more recent information helps the already gained knowledge to be up to date with the most current trends which will serve as the foundation for both parts of the thesis.

First step to obtain information that is important for the employees of the company were structured interviews. Structured reviews are one of the methods used in qualitative research. The idea behind this approach is that every interview is done in the same say with every interviewee, with all of the questions presented in the same order. Due to the structure of the

interviews, they are easy to replicate with as many people as possible due to the fixed questions. They are not time consuming and therefore can be done within short time. The questions are prepared before the interview, with a limited set of questions. It is important to keep a consistent structure of the interview with every person in order to obtain answers that can be compared between one another. While the interviewee is asks specific questions, there still exists an element of freedom which enables the interviewed person to contribute with their own thoughts and remarks. The interviewer gives the interview a structure and the rest is upon the interviewee. Further information was collected through form of a questionnaire, which is a quick and efficient way of collecting information from large numbers of people. It is a form of written interview and due to the fact that it is anonymous, respondents do not have to fear of disclosing anything that could hurt their person or endanger their job position (Cohen, 2006, McLeod, 2010).

Overall, the company PPH spol. s r.o. has around 150 employees. The services that the company offers services in three different areas. The biggest one is security of premises, second one is the Technical Museum in Brno and the last ones are dog handlers, which are part of security team. To obtain information from all three sectors, structured interviews were done with two people from each group. The main goal of the interviews was to get an insight on what values are important for the employees of the company which would then be used to create a CSR campaign to attract more potential employees. The interviews were done with the permission of the employer and the questions were as follows:

- How important are interpersonal relationships important for your satisfaction?
- How important is workplace/work environment for your satisfaction?
- How important is the change in your daily regime for you satisfaction?
- How important is the contact and communication with people for your satisfaction?
- How important is salary for your satisfaction?
- What should be in a company advertisement so that it attracts your attention? Which values should be included?
- Why is PPH spol. s r.o. better than the company of your previous employment?

Dog handlers were asked a few specific questions about the benefits that they get:

- Are the benefits that you receive on your dog important for your satisfaction?
- Is it important for you that you can combine your work with your dog?

The asked questions were to provide answers about which values are important for the employees.

5 Results

At the beginning of creating the hypothesis, there were two options on how the research could end. There was a question of whether it is a salary that is more important or the personal communication and satisfying work place. While a general prediction would be that it is the salary that is more important, the results surprisingly showed otherwise. Of course salary played a part in how satisfied the employees were, but good communication between the employee and their supervisor was very important because it allowed for mutual cooperation.

Among the key values important for the employees was good communication with their supervisor and mutual cooperation, contact with people, self-realization, good working hours,

no stressful work, meeting and communication with new people, satisfaction at work, good functional team at workplace, benefits for dogs, appropriate financial evaluation, and fulfilment of basic ethical principles.

In order to attract the most potential employees, a new campaign changes the structure of how the company is presented on the market, what the company is able to offer to the potential employees and what message it communicates to the employees within the company. Previous advertisement of the company did not include any sighs of CSR, it simply offered a job with financial evaluation.

Úřady práce ČR

Zdrojem volných pracovních pozic je Ministerstvo práce a sociálních věcí.

Dozor v muzeu pouze pro ozp

Recepční (42260)

Pracoviště a kontakty

Firma:	PPH spol. s r.o., IČ 25326937
Pracoviště:	PPH spol. s r.o. [1], Wurmova 589/3, 60200 Brno 2

Vlastnosti volného místa

Směnnost:	Turnusové služby
Pracovní úvazek:	Zkrácený
Minimální stupeň vzdelání:	Základní + praktická škola
Pracovní poměr:	od 2015-02-16
Mzdové rozpětí:	od 5000 Kč
Vhodné pro:	Osoby se zdravotním postižením (OZP)
Poznámka k volnému místu:	Pouze pro osoby OZP 1-3 nebo ČID. Vhodné pro muže i ženy. zapisování a hlášení návštěv, obchůzková činnost, drobná administrativní činnost, střežení majetku klienty, dobrý psychocký stav. Denní a noční směny dle dohody, čistý RT. Dozor muzea. Pracovní doby - poloviční úvazek - výše mzdy 5 000,- Kč, 6ti hodinový úvazek - výše mzdy 7 120,- Kč.
Poslední změna:	2015-02-12, ÚP ČR - kontaktní pracoviště Brno-město číslo volného místa: 8122370758
Kontakt	Kontaktní osoba: Krejčí,Horáčková E-mail: poslat životopis

Figure 1: Previous work advertisement of PPH spol. s r.o.

The new campaign would not simply state what conditions need to be fulfilled, but it would emphasize the values that the company is looking for and what it is offering. Also, the newly created advertisement would be based on offering values prior to salary, a thing that most employees find important.

6 Discussion and conclusion

This article was focused on creating a CSR campaign for the company PPH spol. s r.o.. The company offers security services and rather than attracting new potential employees of high quality, it focuses on offering its services to their customers. Since the company gives an opportunity of employment to disables people as well, it creates a good basis for the idea behind CSR. Throughout the research, values important for employees were found through structured interviews and confirmed through form of questionnaires answered by the employees of the company. The values were further used to design an advertisement and a campaign in which these values were emphasized, with an aim to attract new potential

employees, offer good communication with the supervisors, and bring a change of daily routine, possibility of self-realization, satisfying work and salary. At the same time, the campaign was designed to reduce a high employee fluctuation in the company. Bringing new values in form of corporate social responsibility into the company was a good step which added quality and value to the force and created a CSR identity for the company.

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LEADERSHIP AND WORKING ENVIRONMENT IN THE SELECTED TOP INNOVATION COMPANIES: A CASE STUDY APPROACH

Martin Musil

Abstract

The article has for objective to identify key aspects of innovation, leadership, work environment and motivation in two selected companies (ESET and Kentico) analysis and understanding of the system of leadership and working environment in the selected top innovating companies with the global impact and headquarters in the region of East-European region (ESET, based in Bratislava, Kentico based in Brno). The research consists of two parts - the interviews and case studies. Structured interviews were conducted with company managers. For Kentico Zuzana Flaskova (Scrum Master) and ESET Branislav Styk (Product Manager). Based on data obtained from the research was conducted conclusion as effectively innovate and working environment in Czech companies.

Keywords: leadership, innovative companies, motivation, working environment

1 INTRODUCTION

It is necessary for companies to think about innovations in the world full of innovations and development of new Technologies. It will help them to become more successful and they will be able to compete more easily. Companies cannot build on the same model of leadership, which is quite obsolete, and think that they will be still successful. There is a big competition in the market. The same can be applicable to the firm´s environment which is also obsolete in some companies and employees of such companies do not feel comfortable there. It leads to the decrease of the efficiency and dissolution of new ideas of employees. When companies wanted to be successful they have to come up with some "new", or with some "innovative" things that give the company the competitive advantage. One of the approaches of the competitive advantage in the market is to implement the innovative environment and leadership which link different styles of leadership with the aim to influence employees to come up with creative ideas, products, services and solutions.

The aim of this article is to point out the importance to "be different" in the leadership and in the company environment. The main contribution of this article is the creation of an integrated view to this importance of the implementation of leadership and environment to Czech companies.

2 THEORETICAL FRAMEWORK

2.1 Innovation leadership

It could be said that the leadership is consider as the process in which people are expressly influenced in the way that the activity, group or organization would be alleviate, aggregate and directive (Yukl in Procházka, 2013). This assumption stated the classic leadership model. The concept innovative leadership originates by adding the concept *innovātiō* which is derived from the latin word *innovār* which means reconstruct and *novus* which means the new (Rejzek, 2001).

„We do not take the performance of groups as a part of leadership itself, but as an important indicator of that, the process (meaning leadership) is set well.“ (Procházka, 2013, p. 12)

From the research done by acclaimed institutions (The Boston Consulting Group, Prague Leadership Institute etc.) and also from the cognitions of current experiences is obvious that in the case we lead the company by the „classic model“, where the proceeding style of leadership is used by the rule „má dáti - dal“, the company do not achieve effective direction. Some of the mentioned institutions say that only 20 % of the whole work capacity is active in the case of application of classic leadership (Stýblo, 2013).

In the research more than 70% of the top managers said that innovations will be at least one the three biggest driving powers for the development of companies for the next three to five years. Managers almost agree (94%) that people and the corporate culture are the most important power of innovations (Barsh, 2008).

Three structural stones of the innovative leadership:

1. *To integrate innovations to the strategic management agenda* (It could lead not only to the support, but also to the desire to increase which lead the company in the right direction)
2. *To use the existing (often untapped) talented people for the innovation* (To include the leadership theme to the official program in the regular meetings)
3. *To support the innovative culture based on the trust between people* (People will understand that their ideas are reputable in such culture)

2.2 Innovative leader

Innovative leader is creative visionary who has big ideas, and what is the most important, that he is able to motivate people around him in the way they change together their vision to the real appearance. (Baumgartner)

Sometimes identified as leader ,,innovator´´. In other words, it is the man, optimist, who is able to produce creative vision and implement them in the leadership. Innovative leader cannot be directly the person who comes up with the innovative idea. It is the person who often recognizes the great idea which was designed by the subordinate and just shows the way by which the idea will be realized (Sloane, 2007).

The genius of the innovation leader is not as important as the ability to create a compelling vision. Once this vision is created, employees, suppliers and business partners share this idea, and are excited about it and focus to achieve it in the real world. (Baumgartner)

For example Warrena Bennis defines the leader like the human, who do the right things. (Bennis in Covey, 2006, s. 341)

Significance of the leader´s ability increases if and only if the need is still motivated. In practice, such situations are examples of changes, management and control of them. (Stýblo, 2013)

Steve Jobs (CEO Apple), Bill Gates (CEO Microsoft), Larry Page (CEO Google) or Thomas Alva Edison (inventor of telephone message, bulb, etc.) are considered to be innovator among innovative leaders.

2.3 Hierarchy of companies

The hierarchy creates a certain structure, which must be respected. This largely restricts the use of human potential, creativity and interaction. The basic problem of the hierarchy is the inflexibility of it in today's constantly changing world. (Hajzler, 2012)

Flat and steep organizational structure differs from each other by the number of so called degrees (hierarchy / level) of direction. Basically we can say that the greater the number of management levels is (ie. The steeper is the organizational structure), the longer it takes initiation and implementation of changes -> society becomes less flexible. (Zikmund, 2011)

The fact that there is a need to change something in particular, is usually revealed by the lowest levels, namely, the first and second degree of direction. Test case with 3 levels of management is in fact an ideal organizational structure, because the change is co-decided by the one who co-sponsored it. In practice, however, especially in larger companies the number of degrees of direction is often many times higher, which decrease the space for creativity and innovation.

According to (Levy, 2012) hierarchy of the society it is not so important, but mainly depends on the people. If average people are "unleashed" in the company, the company becomes average. However, if only best people will be chosen, the company will have a high status and gets on top. An illustrative example is Google.

2.4 Motivation and inspiration of teams

By formulation of a compelling vision of the whole process of motivation and inspiration begins. Although interesting, attractive or even engrossing vision alone is not enough. (Conversely, some visionary exclamation feels more like a mirage in the desert thirsting). If a company is, for example, a longer period in the red, then obviously vision "get the absolute top position in the market" is more in the area of fevered dreams. "(Stýblo, 2013, p. 91)

"Leaders and managers who want to motivate and inspire others above all, must see the world in front of you positively" (G. Berkeley in Stýblo, 2013, p. 53)

If people want to be active partners in the workforce, they have to know why this or that they do and what they are good at. Indeed expect encouragement from bosses who must be interested in them as a human being. (R. Sutton, The No Asschole Rule in Stýblo, 2013, p. 21)

Companies could inspire at Google corporation. Not only that, that their employees have available working environment that awakens inspiration in them "on every corner", but mainly they have the opportunity in their working hours to use 20% of their working time as they want. Of course it must involve work. According to the studies that have been conducted on Google just over 20% of those incurred by the best projects of employees. (Levy, 2012)

3 OBJECTIVES, RESEARCH QUESTION, METHODOLOGY

3.1 Objectives and research questions

The objective of this research is to analyze key aspects of innovative leadership, working environment and motivation in two selected companies (Eset and Kenitico). The research consists of two parts – interviews and case studies. Key element are structured interviews.

First phase which is of qualitative character is done through interviews and serves as the main part of the research. Interviews are done with two managers in two different companies. The company Kentico is represented by Zuzana Flaskova (Scrum master) and the company ESET is represented by Branislav Styk (Product manager). By asking the managers questions,

they provide an insight on internal information about the company and about their personal stand which helps to understand the run of the company. Following type of questions is used: In what form are teams led? What motivational tools do you use? What organizational structure does your company have? Etc.

Second phase of the research talks about a case study (Imagine a situation where you are the boss and you have a talented leader in your company, which thinks about leaving the company for your competition. You know that you have to keep him in the company at all costs if you don't want to start a "chain" reaction. Not only would the leader leave, but majority of the employees would leave too, following his steps. It would lead to the disruption of functioning of teams and would cause gaps in the structure of the company. How will you react?), which observes the solution to a specific problem.

3.2 Methodology

Structured conversation, also called an interview, proceeds according to questions whose wording and order are given and prepared beforehand. They can be separated into three parts: introduction (making contact, specifying goals, and topics), core interview (own questioning) and conclusion of interview (summary, making propositions for future cooperation). Its results are easier to process, but the answers lack depth and meaning. In a way, the structured approach can lead to obtaining inaccurate and incomplete information. This form of interviews is mostly used in cases if they are to find certain tendencies of researched phenomena (Strauss, 1999).

According to Kerlinger (1972), the absolute basis of every type of interview are the questions. The quality and amount of obtained information depends on the wording, order and choice of questions. The basic requirement of this interview method is to communicate the hypothesis into word stimuli (questions) in such a way that obtained information really verify the hypothesis. It is not simply about gathering facts or opinions of people on certain questions.

Case studies are intensive and usually long-term researches of one person. This intensive research should lead to understanding the inner and oftentimes not repeatable dynamics of the development of an individual, development their interactions with environment, etc. Data about this development is directly gathered by the researcher (direct contact, interviews, etc.), but also through the analysis and study of documents (Skalková, J. et al, 1983).

Discovering and explorative research (Wolman, 1965) are considered to be characteristic for qualitative research. It is also accepted for the study of rarely appearing phenomena where we have no other choice than to study it intensively and explore the phenomena, which appeared in given time at a given place. It is also important to remember that due to its character, minimal control of all variables does not allow to formulate reliable conclusions about dependent variables. Therefore, the formula is a weak point of case studies for the generalization of results on the wider range of population.

4 RESULTS

4.1 Description of the system in the company ESET

The model of control in Slovakian company is based on "classical" or multilevel organizational structure (see figure 1). Multilevel organization consists of many levels between the serial workers and the top management, where every employee in the management has a relatively small number of subordinate employees (narrow span management (Hálek, 2007).

In ESET, they enforce a value that only a satisfied and motivated employee will bring the company added value. Thanks to that, the primary aim of the company in the recent years has been on improving employee relationships and their motivation. Innovative working environment offers many benefits, which are of both financial and nonfinancial character (cultural and sport activities, trainings from global leaders, contribution to means of transport, 3-4% to their pension savings, meal coupons in the amoung of Euro, massages at workplace, etc.). The company tries to oversee every employee individually. It also overlooks their life situation and according to that, benefits are offered.

Teams are made of 50 people. In their A leader of the group leads the team and is communicates with the project manager. Above the project manager is the general director who is responsible for management of the whole branch office in a given country. A global director is above the general director, which manages and controls the whole ESET, which is 5 branch offices in various countries of the world.

Certain principles such as integrity, compatibility and honest must be kept in every team. Communication between team members and the department is informal, which accounts for clothing as well. It is important that during their work, people feel comfortable, just like at their homes. You can even meet the director in shorts and a T-shirt.

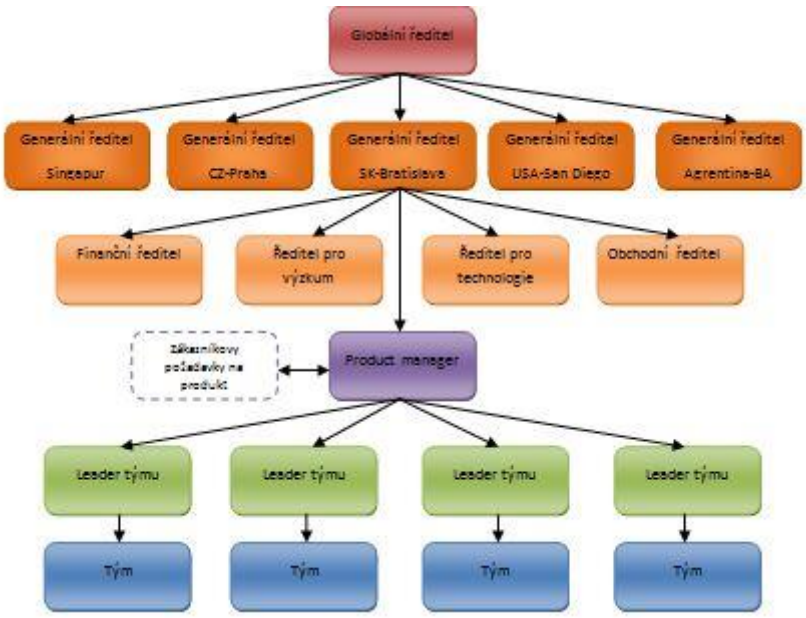

Fig. 1 – Hierarchy of the company ESET. Source: author's own processing

4.2 Description of the system in the company Kentico

Kentico has a different model management than ESET. This is the "flat" organizational structure. Several years ago, the company was inspired by the agile development abroad and came up with it first company in the Czech Republic. More specifically, it is a Scrum - Agile methods for software development. Jirava and Bartůňková (3/2013) describe the methodology of software development as suitable for projects where there is strong pressure on time and where there are often changed the needs and requirements of the customer. Unlike traditional approaches (where there is a relevant preparatory phase of product development), Kentico focuses on fast and efficient product development.

This management methodology is three times more successful than the waterfall model which was previously very popular. In 2012, Mike Cohn (February 13, 2012)

conducted a research which found a 42 % success rate in firms with agile development compared to 14% of companies with waterfall model. The working environment in Kentico is innovative and reminds a bit of Google which has been an inspiration to them. There is a rest area, table football, darts, spaces for exercise, etc. Teams consist of 7 members and have no leader. Instructions for new product development come from the Product Owner. If the customer changes the requirements for the product, it is precisely the Product Owner who later transmits new instructions to the team. Development teams are "controlled" by Scrum Master at regular 14-day intervals. He is in charge of ensuring the smooth functioning of the team, in other words, removing the obstacles that come your way. Above Scrum Master is merely a regional director and global head (see. Figure 2)

The company runs an informal communication between all levels of the hierarchy which allows for better communication. Employees have the perfect conditions to awaken creativity thanks to frequent clashes of opinion. There is a rule of 20% where the employee can do his activity in 20% of the time, "what" he wants and "where" he wants. The only requirement is that the activity in question must be job-related. To team building Kentico uses after work activities which are popular among employees.

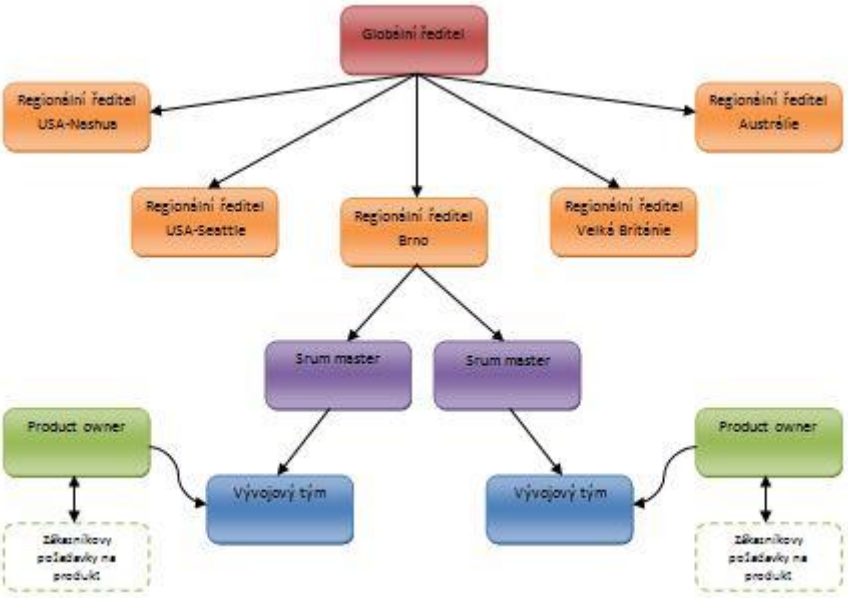

Fig. 2 – Hierarchy of the company Kentico. Source: author's own processing

4.3 Comparison

ESET and Kentico are completely different companies in terms of organizational structure. Kentico relies on a flat organizational structure while ESET to steep. Nowadays, flat hierarchies are more practical, which means that teams do not have a leader. Employees have more freedom, not pressure is exerted on them and they have a greater scope for creating new value. It increases their desire to prove "something". They get a project assignment and it is up to them through what path they reach the target. Teams have about 7-10 people, which contributes to greater cooperation among their members. They can better divide the work according to who is a bigger expert on what and the division is up to them. Nobody is giving them commands.

On the other hand ESET has sophisticated motivation and employee relations, which in Kentico are not so exercised. No wonder that in 2014 ESET became the third most attractive employer in Research "Best Employers 2014". Benefits for employees are enormous.

According to the preference of college students in the Czech Republic, ESET received 10th place in the category of IT in the ranking of the most attractive employers a year later.

ESET also has an advantage in the field of leadership. Company offers training by leaders who are viewed as experts in their fields. It helps to evelop and educate employees in senior management positions, so that they are better leaders.

Both companies, however, have one thing in common and that is innovation. They see a big opportunity in the innovation to improve market position in business. I consider it is the "right" journey that Czech companies should choose if they want to be the top company in the future.

5 DISCUSSION

The disadvantage of my research is the number of responding companies. So far I have cooperated with two firms which is not a lot and therefore the results can be a little bit subjective. It would be appropriate to have at least 10 companies to reach more objective results.

For reasons of time the research was carried out only by the qualitative method which did not give me as much data as I wish. In the future it would be suitable to use the quantitative research as well, especially the questionnaires. The questionnaires would certainly provide me with a huge number of data which would be better to analyze. Therefore the subsequent synthesis would lead to more accurate results.

From the research it is obvious that the stress on the leadership innovation and the working environment in the companies will be constantly increasing. It proves the globally recognized ESET and the innovative Kentico.

The important points leading to the success are:

1. The change of working environment in such a way which would be able to develop creativity and human potential.
2. To incorporate in to the innovations not only the leaders but the employees on all leading levels as well.
3. The complex innovation of leadership.

Speed of innovations.

I have to agree with Steven Levy (2012) who sees the quality human resources as the most important value of the firm. It is essential to apply strict recruitment criteria in the company, for example in such a way like the Google or the Apple applies them. Only thanks to them the firm can employ the best of the best. The company does not create the people, but in the opposite way people create the company. In advance I have to confirm the Barsh´s research (2008) who claimed that in the upcoming tree to five years the innovation would be the companies´ driving force. Barsh was right because in 2015 the innovation and the company´s culture is truly treated as an “engine” of modern firms.

6 CONCLUSSION

The aim of this article was to analyze the key aspects of leadership innovation, working environment and motivation in two chosen companies (ESET and Kentico). The data from ESET and Kentico managers were collected by using the qualitative research. On the base of their result the conclusion is following:

People are very important; they create the company and – not the opposite way. If we additionally create the pleasant working conditions which will positively influence the workers, than their amount of creative ideas will increase and their satisfaction and workload as well. What is more - the capable innovative leader can help the employees with their personal development and enables them to follow the vision. This will lead to the fact where there will be no longer need for the strong motivation from the side of the leader and at the same time the human potential will be maximally exploited. By using the described state Czech firms can effectively innovate the leadership and the working environment. This will increase their prosperity and market position and a decrease the employees´ motivation costs.

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THE EFFECTS OF STRATEGIC ORIENTATIONS AND PERCEIVED ENVIRONMENT ON FIRM PERFORMANCE

Gergely Farkas

Abstract

A survey was conducted among micro, small and medium sized firms of the Southern Great Plain region in Hungary. We examined the effect of entrepreneurial and learning orientation and perceived environment on firm performance. We studied the perception of environment in turbulence and hostility dimensions. In the case of entrepreneurial orientation we examined three dimensions (innovativeness, proactiveness, risk taking). In the case of learning orientation we examined three dimensions (commitment to learning, shared visions, open mindedness) also. We measured the effect of all of the above with path analysis (PLS-SEM) method on firm performance. We split the firm performance into three dimensions: efficiency, growth, profit. Results show it is important to see strategic orientations as multi-dimensional and they have effect on different performance dimensions.

Keywords: entrepreneurial orientation, learning orientation, firm performance, path analysis

1 INTRODUCTION

Entrepreneurial orientation was in focus of the entrepreneurship literature in the last 30 years (Covin-Wales, 2011). Our study goes further on the road of examining the effect of entrepreneurial orientation (EO) on firm performance. We considered the viewpoint of Covin and Wales (2011) about measurement model of EO. We applied the same viewpoint on learning orientation (LO) also. For path analysis we used a statistical method where normal distribution and fits exploratory research better than older techniques. We studied the perception of environment in a regional sample because there are big differences among regions in Hungary. We worked with Filser et al. (2014) before on this field, but we changed many things on the basis of our experience. We turned back to the Covin and Slevin (1989) questionnaires and we used partial least squares based structural equation modelling (PLS-SEM) instead covariance based method (CB-SEM). Our goal with all of the above is to make a new, more complex model where we can examine the effects of EO and LO dimensions and perceived environment on more than one aspect of firm performance.

At first we introduce the examined constructs in this paper. After that we measure the location and strength of connections among them with path analysis. Constructs overview is on Fig. 1. We also took into account the effect of available resources because the trivial effect of capital on possible innovation and business processes. Even this later effect is trivial it is useful to compare it with other path residuals. As we will see money is far from being the only requirement for high firm performance.

Our goal is to understand better the factors of firm performance in the Southern Great Plain Region among micro, small and medium enterprises (MSMEs). Our results can help the local firms to optimize their strategies based on performance goals. The next few years is an important opportunity because of the new EU research center: ELI-ALPS and the science park around it what is under construction now. This will bring hundreds of scientists and many innovative firms in the region. As we will see there are some negative effects on firm performance. But it doesn’t mean we must avoid these situations because as Christensen and

van Bever (2014) shows the positive effects of innovativeness are delayed many times and short-term thinking is not good for growth on the long-term.

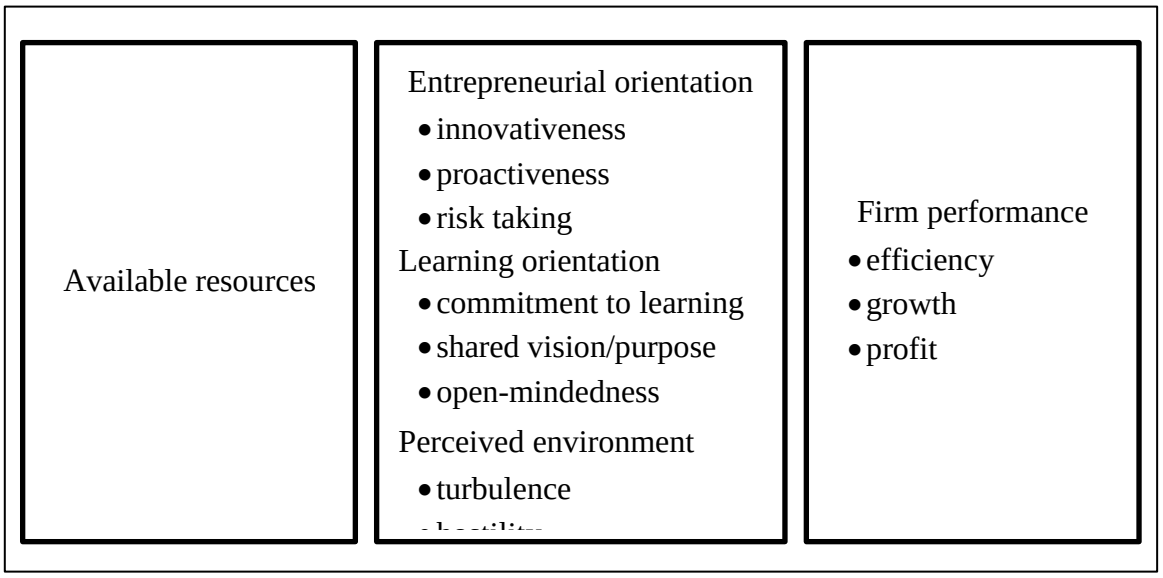


Fig. 1 – The examined dimensions Source: own construction

2 ENTREPRENURIAL ORIENTATION

When Miller (1983) used the EO on firms he didn't look for the creator of innovation in the firm but he tried to describe the entrepreneurial process. He wrote about three dimensions of this process. These kind of firms makes innovation as Schumpeter described it. They want to get in a better position with continuous innovation than their competition. They are willing to take risk in the hope of greater profit. They are proactive, so they are more open to innovative products and/or services than their competition. A firm can get competitive advantage if it prepares for future customer needs (Lumpkin & Dess, 1996).

Covin and Slevin (1989) operationalized EO with three dimensions and his items become widely used. Lumpkin and Dess (1996) added two new dimensions (autonomy, competitive aggressiveness) but we insisted to the first three scale. The correlation of the newer dimensions are generally high with the first three. The adaptation to our sample would be problematic also because of the differences in perception of autonomy and aggressive competititon in east-european transitional economies.

Despite the original survey is more than 30 years old Covin and Wales (2011) state that no significant change happened in research. The scales of Covin and Slevin are widely used, but the additions and modifications are not generally accepted. We accept that solely formative view of EO causes significant loss of information. In our study instead of one value for EO we preserve all three dimensions. We created the dimensions as reflective constructs from EO items, but we used them later as formatives in our modell without a second order, unified EO construct.

3 LEARNING ORIENTATION

Learning has two approach in the organizational literature. Organizational learning focuses on the information distribution processes, as since Argyris and Schön (1978) many kind of learning circles appeared with different numbers and content. Other approach is the so called learning organization what focuses on parts of the culture like shared visions, or mental models like Senge (1990) does. Every organization learns somehow. Gathers information

about itself and it's environment. These information are not always utilized in a way that makes them learning organization by definition. On the long-term organizations must learn at least as fast as their environment changes or their market share will decline. (Sinkula, Baker & Noordewier, 1997). For organizations ability of learning is important not just because the development of the actual paradigm, but as the base of paradigm shifts (Baker & Sinkula, 1999a). These paradigm shifts can be seen as organizational innovations. Baker and Sinkula (1999b) found the effect of learning orientation on innovation and firm performance is greater than the effect of marketing orientation. Marketing orientation in this case focused on satisfying actual customer needs, but excluded innovative or proactive processes.

The features of learning organization as described by Senge (1990) is not easy to operationalize on the level of self-assessment questionnaires. The above mentioned studies (Sinkula et al., 1997, Baker & Sinkula, 1999a, 1999b) point on three dimensions what are common in more descriptive model: commitment to learning, shared vision and open-mindedness. We also used these in our study.

In organizations committed to learning the managers support learning on every level. The organization gathers, evaluates and review information continuously. This behavior is similar to the double loop learning model (Argyl & Schön, 1978), and team learning function of Senge (1990). Where this commitment lacks there will be less learning (Baker & Sinkula, 1999a). The second dimension is about shared visions and purpose of management and employees. Visions based on experience but in the ever changing environment the utility of these visions decrease. Shared vision influence the direction of learning, while the other two dimensions influence the intensity of learning. Tobin (1993) describes this as visible leadership. Without shared visions and purpose the motivation for learning is smaller. Shared visions channel the learning process what makes them more effective. (Baker & Sinkula, 1999a) Open-mindedness helps the relearning what involves the development of new abilities and the forgetting of old and unusable knowledge. Open-mindedness is a proactive thing because it assumes that knowledge isn't permanent and the organization needs constant development.

4 PERCEIVED ENVIRONMENT

Lawrence and Lorsch (1967) found that the different parts of organizations are subjects of different environmental effects. So we rejected the idea of an environmental fit study where scientists study organicity of firms (e.g. Naman & Slevin, 1993). Our study doesn't focus on a specific industry or sector. So we think the differences in perceived environmental turbulence and hostility have significant effects on strategic decisions. Therefore we examined these effects without measuring fit.

The environmental turbulence scale of Naman and Slevin (1993) contains the items of environmental hostility of Covin and Slevin (1989). We adopted these items into two separate reflective latent variables. We used them as environmental turbulence as frequency of technological changes in the industry and as environmental hostility on the market.

5 REGIONAL ENVIRONMENT

According to Beugelsdijk (2007) there is an agreement about that the role of micro level, organization specific factors are underrated in innovative performance. Scientists emphasize the regional factors despite there isn't too much quantitative evidence about role of regions in firm performance. Beugelsdijk (2007) examined more than a thousand firms in 12 regions of Netherland. He found that firm-specific drivers of innovation are more important than the regional environment of firms. Sternberg and Arndt (2001) came to a similar conclusion with European Regional Innovativeness Survey (ERIS). They found that for enterprises and SMEs

the effect of organizational level variables are greater than regional variables. However they notice that the effects are not independent. The environment is not independent from the firms, but determined by local firm characteristics. Regional environment can make the developmental potential of organizations bigger, but alone cannot create it.

Based on the above studies we focused on one region instead of the whole country. Hungarian regions have big differences in firm performance and R&D potential (Ács, Szerb, Komlósi & Ortega-Argilés, 2014). These differences can make an impact on perceived environment. We focused on one region to avoid these problems, but our study can be a base of a regional comparison in the future.

6 FIRM PERFORMANCE

There are many ways to measure firm performance. It wasn't possible for us to gather balance sheets and business reports. There are national differences in generally used accounting indicators. We were not sure about that the entrepreneurs can answer about all data in a quantitative way without the help of an accountant. Differences in firm size also can make the comparison harder. We were sure about the probable low response rate about quantitative measures of business. Hungarian firms tend to hide exact numbers of business in questionnaires even if they are in the free accessible balance sheet. So we looked for a method what can handle the problems above.

We chose the indicators used by Li, Huan and Tsai (2008) because they structured them in latent variables. We applied them as formative variables of three aspects of firm performance. Efficiency is measured by the well know return of investment indicators (ROI, ROE, ROA). Growth is measured by increase in sales, market sizes, and number of employees. We changed a bit in translation the measurements of profit to fit the form they use them in Hungary but the concept of items stayed the same. Beside return on sales, net and gross profit margin measures the profit dimension of firm performance.

7 METHODOLOGY

We gathered data in May of 2014 in the Sothern Great Plain region of Hungary which is a NUTS 2 region. We used paper based and online surveys in Hungarian language. Paper based answers were uploaded to online database right after filling. It made possible to gather answers from entrepreneurs with less computer skills. The items were part of an omnibus questionnaire so we introduce here only the parts what we used for this paper.

We measured EO with items used by Covin and Slevin (1989) on a 7 point semantic differential scale. At 1 were the negative, undesirable states, and at 7 were the positive, desirable states. We used items from Naman and Slevin (1993) to measure environmental turbulence and hostility with a similar method. For learning orientations we used own items based on Sinkula et. al (1997). We picked 2 items for every three dimensions and we wrote the contrary states to the other end of the 7 point scale to match the form of the other items. We followed similar procedure for items about financial resources. They are based on the scale of Atuahene-Gima, Slater and Olson (2005).

We followed the method of Gupta and Govindarajan (1984) like Covin and Slevin (1989) to measure values of performance with items of Li, Huan and Tsai (2008). First we asked about the importance of indicators on a 5 point Likert type scale (5 was „extremely important"). After that we asked about the satisfaction with the performance in the field of same indicators (5 was „highly satisfied). We multipled „importance" scores with „satisfaction" scores to compute the weighted average for each indicator.

In the questionnaire we asked participants to answer if they are the managers of their organization. We were aware that participants have variable view about what manager is. We asked them about their position in the firm to find the entrepreneurs. According to our expectations it was hard for responders to categorize themselves. There are many names for executive officers without definition in Hungarian law according to the legal form of the firm, but many of the responders answered they are just entrepreneurs. We excluded participants who referred about themselves as managers who were responsible for only a part of a company. There were SBU managers, site leaders, accountants among them. These responses are sometimes misinterpretation of the introduction text, sometimes the executive officer gives answering as a task for a secretary or other employee. This way we avoided the use of a definition for entrepreneurship and we found both those who see themselves as entrepreneurs and who are entrepreneurs because they manage a whole company, but think about themselves otherwise.

8 RESULTS

Statistical analysis was made by IBM® SPSS® Statistics 22.0, and SmartPLS 3.2.0 software. We followed the advices of Kazár (2014) about PLS path analysis. Path analysis based on partial least squares is a rapidly developing field of statistics. New methods and possibilities appeared even during our work. We were committed to do analysis in a reliable way so we were aware of these innovations, but in this paper we can't compare the different software packages or the different versions of a software.

We registered 457 responses. 400 were finished, but we excluded 60 because respondents were not entrepreneurs. 50 of them were other managers, 10 of them were employee or undefined. As last step we excluded three big enterprises because they were not MSMEs. There are no more than 100 big enterprises in the region according to expert estimate. A study focused on them would be needed for reliable information about them. After clearing our database we conducted analysis on a 337 item sample.

Survey focused on the Southern Great Plain region, but it does not mean all companies' headquarters in the region (Tab. 1.). We did not exclude them because this can be because of different legal or technical reasons. In our study it was not possible to take a representative sample. We assumed respondents who answered are active in the region and they are part of the regional business ecosystem.

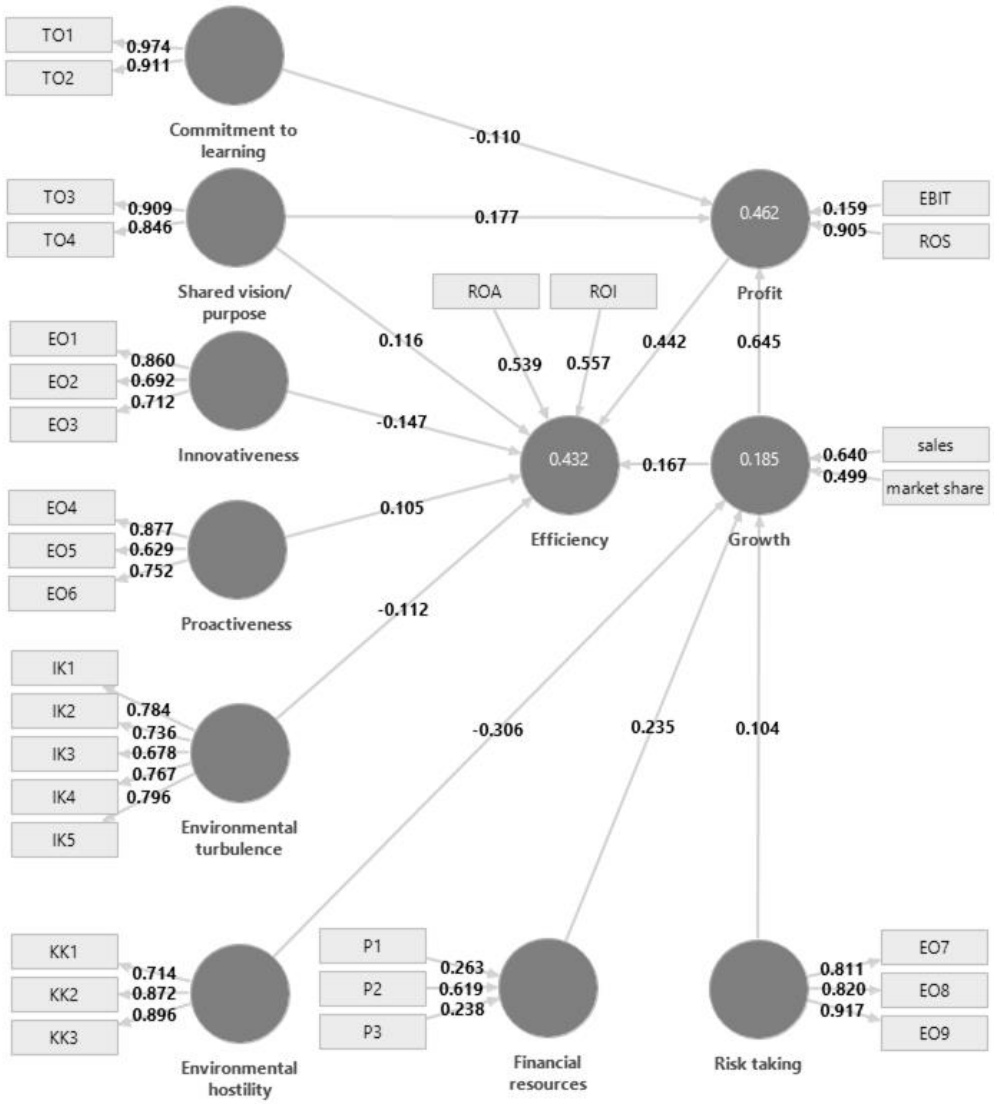
Tab. 1. – Descriptive data of firms (N=337) Source: own construction

Size category	**N**	**%**	**Most important activity**	**N**	**%**
micro	184	54.6	production	43	12.8
small	119	35.3	service	179	59.1
medium	34	10.1	trade	115	34.1
Legal form	**N**	**%**	**Most important market**	**N**	**%**
sole proprietorship	108	32	local	135	40.1
limited partnership	40	11.9	regional	93	27.6
limited liability company	183	54.3	national	73	21.7

other	6	1.8	international	36	10.7

At first we checked our data with Kolmogorov-Smirnov test and Saphiro-Wilk test for normality what showed significant difference ($p<0.05$) at all variables. This also leaves PLS as the useable type of SEM for us. Performance dimensions entered as formative variables. Financial resources was also a formative variable. All other latent variables are reflective. We left only those paths on Fig. 2. where bootstrapping results were significant ($p<0.05$). We did the bootstrapping with BCa method on 5000 subsamples. We set individual sign changes and path weighting scheme.

Fig. 2. – PLS-SEM results with significant ($p<0.05$) path coefficients.
Source: own construction



We reached 10^{-7} stop criterion with 11 iterations when we used PLS algorithm. For missing data we used pairwise deletion for preserve as much data as possible without using estimates. We were forced to remove one indicator from every firm performance variables. ROE is not correlating with other two efficiency items. We assume this can be because of the firm size and number of owners. Growth in number of employees was also independent from growth in sales or market share. Net profit was also different too much from EBIT. This can be in connection with attitudes about tax system what was out of our focus.

Multicollinearity was not affected our data. In inner model the highest variance inflation factor (VIF) is 1.505, while in outer model it is 2.941. We can speak about weak multicollinearity above VIF=5 what is not the case in our study. Standardized Root Mean Square Residual (SRMR) would show amount of errors in model if it is above 0.09 (Hu & Bentler, 1999). In our case SRMR is lower: 0.062. Levels of adjusted root squares is somewhat lower because of the different scales of latent variables (1 to 7, and 5 to 25). Our R^2 values (0.185, 0.432 and 0.462) are acceptable.

We followed Hair et al. (2009) to measure reliability of variables. Cronbach's alpha values were between 0.885 and 0.676, but lower than 0.7 was only one variable: proactivity. For exploratory analysis values above 0.6 are acceptable. Composite reliability values were between 0.941 and 0.800 what is as it should be CR>0.7. Average variance extracted (AVE) values are also above the required 0.5 level (0.889>AVE>0.568).

All but one latent variable have a role in the final model. Open-mindedness dimension of learning orientation has not any significant path coefficients with other variables. Our results shows new viewpoint because we treated dimensions of latent constructs individually.

Innovativeness and proactiveness dimension of EO has a path to efficiency but with different sign. Innovativeness (ß=-0.147) value shows us that return can be lower where innovation is more important. As we referred to Christensen and van Bever (2014) the effect of innovation is not appears instantly in the performance measurers every time. Proactivity has a low positive coefficient (ß=0.105) with efficiency. Proactiveness requires less assets than innovation, if R&D isn't made by the firm. Risk taking is connected to growth (ß=0.104). The effect of it is low, but it can help to make new investments to make the firm grow.

Commitment to learning has a negative connection with profit (ß=-0.108). This shows that learning is an investment what makes the profit smaller in short-term. Shared visions has positive connection with profit (ß=0.177) and efficiency (ß=0.116). We assume that shared visions can make the transaction costs lower inside the firm. We should also note that in smaller firms growth is not always part of the shared visions, but it does not mean they are not profit oriented.

Turbulent environment has a negative effect on efficiency (ß=-0.112). In turbulent environments the need for new investments is probably more frequent. It has no effect on growth and profit if the firms keep up with competition. Environmental hostility has a stronger negative effect (ß=-0.306). It means in a competitive environment it is harder to be successful in business. Financial resources is connected with growth (ß=0.235). Firms with more resources have more freedom in strategic decisions about new investments. Effect is not much higher than other effects we measured so we assume availability of financial resources are not enough to be successful.

For connections of firm performance dimensions we considered the results of various settings and the theories in literature. There is no goodness of fit values in PLS-SEM for the whole model. The setting we have chosen the growth has a smaller direct effect (ß=0.167) on efficiency than indirect effect through profit (ß=0.285). We assume on a long-term the connection of performance dimensions can change in a firm or it can be circular, but we can't handle these situations with one survey and with this method. We examined the actual significant effects in our study.

9 CONCLUSION

According to our results in the case of the MSMEs of the Southern Great Plain region in Hungary there are several paths between dimensions of EO, LO, perceived environment and firm performance. We used a new method for examining paths in model but it is only a first

step of a long way. In the future it would be important to make the scale of orientations and performance more similar. We should revise the used performance indicators to match them to the characteristics of smaller firms.

It is also important to examine the effects of strategic orientations on the long term. The omnibus survey contained other scales we could not examine in this paper (Miles-Snow typology, family/non family business). And we think it is important to compare the results of this region with other regions with similar or different characteristics.

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HUMAN RESOURCES MANAGEMENT METHODS

Lucian Stanescu

Abstract

The article deals with the definition of leadership in human resources management system. The core contribution is to define the process of leadership in terms of its selected methods. Modern methods have still taken on an increased importance, which are empowering, sharing visions or organizational coordination.

The paper explains the difference between the concept of management and creative leadership.

Keywords: communications, human resource management, leadership, management, methods, motivation

1 INTRODUCTION

Human resources management is purposeful and intentional influence in order to achieve given objectives. These goals should be set well with regard to the profiling organizations. An effective people management would have led to the self-functioning team, which is able independently to meet the engaged objectives and plans. Managing people is related to motivation, interpersonal behaviour and communication process. Managers who lead their teams and achieve results through their subordinates, only using an effective leadership they will be able to achieve their desired results just in time and on given quality. Leadership involves working with people whose behaviour is not unambiguously to predict and influence in the future, in contrast to the case of material components of the company's capital. The changing nature of work organizations, including simpler structure and knowledge of effective use of human resources, together with advances in social democracy, begins to increasingly focus on the importance of creative leadership than traditional methods of management (Armstrong, 2005). The nature of management is currently shifting from strategy focusing on achieving results by a consistent employees' surveillance to a climate of systematic support preparation, empowerment, teamwork and coordination in the enterprise environment.

2 LEADERSHIP METHODS

Leadership forms an organic part of the executive management activities. It is about the direct or indirect action on individuals or work groups in order to fulfil the specified requirements and to contribute in the best possible manner to the achievement of corporate goals. From a sociological point of view, it is about a group interaction phenomenon, in which there are reflected the internal and external situations of the given group. This is essentially about a difference, social norms system integration, statuses, social roles and social relationships among group members, group leadership, goals character and group tasks. Human resources management methods imagine the scientifically motivated process of the managers, which are derived from the practical experience, generalized, and simultaneously examined in practical activities and improved (Armstrong, 2006). In the specialized literature are presented fairly a lot of methods of leadership, sometimes also called management techniques or methods of managing people. Between the basic methods, which mainly influent the functions of the management process, it is possible to file the management by means of a common vision;

effective leadership communications, delegating management responsibilities, duties and powers; management by participation; management by motivation; control management and evaluation of the subordinate employees (Drucker, 2006). The mentioned methods are in the process of leading are different one from the other and reciprocally converge. In this conference article I will focus on the methods of leadership communication, motivation and selected modern methods of personnel management in organizations.

2.1. Leadership and Management

The concept of leadership is not in the managerial literature uniformly interpreted. On the one hand, leadership it is seen as one of the basic management functions together with planning and organizing and feedback control, on the other hand it involves persuasion and mobilization of the executive managers in such a way to meet the planned objectives, goals and targets; therefore we can consider this expression as a synonymous of the notion „influencing workers“ or „rectifying workers behaviour“.

Tab. 1 - Leadership and Management. Source: DRUCKER, P. (2006) Management challenges for the 21. st century. Oxford, United Kingdom: Elsevier Ltd.

LEADERSHIP	MANAGEMENT
Planning and budgeting, setting steps in a timetable and making plans to achieve the necessary results.	Determining the direction, creating a vision of the future and an appropriate strategy to achieve it.
Organizing and recruitment of personnel, creating specific structure to meet the planned requirements, and to devolve competence and responsibility.	Involvement of people, communication in order to achieve the set goals, team and coalition building with understanding the vision.
Controlling and problem solving, monitoring results versus planning and deviations from plan.	Motivation and inspiration, activation of people to overcome major barriers created by the rules, bureaucracy, and satisfy their basic needs
He or she constitutes a certain degree of predictability and order, with the potential to achieve short-term results.	He or she creates changings, often of extensive nature, with the potential to create extremely useful changes.

Management theory and practice differentiate between the concepts of creative leadership and management (Northouse, 2013). Manager is representing management, while the bearers of creative leadership are the leader, this name from the English language it is often used even in our country. In conditions from the Czech Republic, there is here confusion about the above mentioned concepts mainly because it does not exist a clear Czech equivalent for concept of manager and leader, which would permit, allowing an expression, to make the difference between content of work of a manager and a leader. The literature uses less the charismatic term or leadership management.

2.2 Leadership Communication

The importance of communication in the staff manager process is given by the fact that it acts not only on people consciousness and will, but also on their interpersonal relationships and also on the relationship to the work environment.

E. C. Murphy (1997) divided communication into 4 basic access categories depending on how the participation of the individuals to communication is.

Tab. 2 - Basic communication approaches. Source: MURPHY, E. C. (1997) Leadeship IQ. New York, United states of America: Wiley Publishers.

RATIONAL COMMUNICATING analytical concrete technical	**INTUITIVE COMMUNICATING** conceptual visionary creative
MANAGER active listening empathic communication adaptable	
FUNCTIONAL COMMUNICATING systematic organized directional	**PERSONAL COMMUNICATING** receptive subjective communicative

The author distinguishes people by the way of communication that is their own. Experienced leader (manager) would have to determine for himself the position of each member in the organization and to apply such a style of communication with the given person, which he or she prefers toward others. The manager must therefore deliver his messages in a comprehensible frequency for a particular employee. During recognition of communication needs, it is necessary to determine whether the prevalent type of communication of a given worker is rational, intuitive, functional or personal. Experienced managers are also aware that they themselves have a certain style of communication and therefore they seek to incorporate into their portfolio other communication styles. According to C. Murphy more than 70%

persons of a group of excellent senior managers demonstrated a high ability in at least three communication styles.

Knowledge of communication styles and approaches is crucial for the manager because he leads the group; he informs, persuades, motivates, controls and monitors the employees, organizes and makes the final decision (Guffey & Loewy, 2008). All these steps are communication functions in organizational contexts of a manager.

2.3 Leadership motivation

Many managers still believe that all staff motivation belongs to the field of finance. A. Maslow showed that there are many other reasons which are fully disposable and they do not cost any money (Beck, 2004). The basis of human activity is the satisfaction of needs. A. Maslow identified five basic needs and then he lined them up in a hierarchical system, which is known as Maslow's pyramid of needs:

- self-realization,
- recognition,
- social affiliation,
- certitude, security,
- physiological needs.

F. Bělohlávek (2008) converts the satisfaction of needs according to A. Maslow to enterprise environment. Physiological needs could be imagined by health protection at work. Security and certitude needs represent the long-term perspective security companies providing employment to existing employees in the future. The social affiliation need can create good relationships in the workplace, for example, organizing outdoor activities and other common actions. The need for recognition from others is represented both by the financial component and also by a non-financial one like praise is. The need for self-realization may represent a job well done and a chance to fulfil personal potential through creative activity.

C. Alderfer customized views of Maslow new findings from research into human behaviour and he reduced needs in three main areas:

- existential needs such as material and physiological needs,
- relational needs in interpersonal dimension,
- needs for personal growth consisting of a creative work on ourselves and our surroundings.

According to the theory of A. Maslow, satisfaction of physical needs guides to lose their importance, while C. Alderfer states that satisfaction of existential and relational needs is declining of their importance, however, in the case of meeting the needs of growth their importance is increasing.

Knowing the motivation of the subordinates, that contributes to a successful work of the chief. Different types of people prefer different kinds of motives; that could be money, personal status, work results, a friendly atmosphere at the workplace etc. If we have to motivate our workers well, we must first understand what motives are dominant in their case.

D. Fuller (2004) perceived motivation of the people as a method of management, where every employee must know what he can and cannot do and be familiar with the expectations of superiors. At this level there are very important the interpersonal relationships and communication appropriately chosen, because commands in any form shall be in accordance

with the situation, needs, knowledge and understanding of the individual. Any ambiguities are a source of pathological conditions for successful job performance.

2.4 Selected modern methods of managing people in organizations

In the context of human resource management system in organizations often there are applied the following methods of leadership. Their common starting point is the perception of employees as a strategic element with an emphasis on the common vision, defining goals and ways to achieve them, understanding people more as a corporate value and not as an executor of subtasks. It is also significant the general acceptance in a long-term the time horizon and challenging objectives, optimistic expectations and perception changing rather not like a burden, but like a possibility to find creative solutions (Northouse, 2013).

A) Leadership creating a shared vision

The vision is perceived as a picture of the future, a focus of changes, a controlled direction for aspiration of workers. It is characteristic that all the workers to be distinctly pulled into events of the organization and to familiarize with the image of where the organization is going to face soon. In the managing working collectives, the vision fulfils many tasks:

- it is a form of setting goals, the vision is showing the direction, the way;
- it presents motivational behaviour tool of workers, an alternative to the commands;
- it is a tool used for coordinating the discussion between people (subordinates).

The most important moment for the management shared vision is to achieve the full identification of all employees in the organization with the above mentioned principles and visions (Armstrong, 2005). At the formulating vision, it is necessary to maintain brevity and do not use any obscure indicators. Traditional manager who wants to transform himself taking the role of a leader must be able to work with a vision, to abandon traditional management style and to renounce giving the vision to people like a command, without any liberties in its implementation.

In the following, it is mentioned what are the basic differences between managerial and leadership principles (Drucker, 2006).

Managerial approaches:

- planning, budgets;
- control;
- discipline;
- reactive behaviour.

Leadership principles:

- formulating visions;
- individual dissatisfaction;
- incitation;
- proactive behaviour.

B) Empowering

Empowering represents a direction of leadership, which consist in offering a certain degree of freedom to workers, independence in the negotiations and exercising the assigned work. This direction consists in allowing them own decision-making and taking over the respective

responsibilities of the worker for his own job performance and achieved results. This is a „soft“ management factor (Beck, 2004). It is about a motivational tool stimulating activity of workers in the assigned section, without being led to the execution by orders and follow-up. Empowering has its foundation in all specific situations where it lacks clear guidelines, rules of conduct and when is needed flexibility to decide, to engage in order to achieve the respective performance parameters. Empowering is also closely related to the concept of delegation, in the sense that somebody is entrusted with the operation of a service or that a limited range of responsibility is transferred to another, usually a subordinate person.

C) Coordination

The need for coordination is based on specialization and the increasing complexity of the tasks to be fulfilled by organizations. Coordination, in terms of balance, without any discrepancies and with compatibility is already necessary in time of setting the organization's objectives. At this stage, a situation may not occur, when the achievement of one goal will negatively affect, or even exclude, to achieve other goals.

It is necessary to pay attention to coordination, when drawing up plans, especially in correct determination of the sequence of activities and resources. Practical situations, in which the need for coordination involves, are different, some solutions emphasize coordination in terms of time, others emphasize the element of synchronization, in other cases, and coordination has to lead to low deviations and errors, from the planned desired state.

Claims for coordination are to some extent determined by the selected type of organization. Larger volumes of coordination will be implemented in the event of organizational models with a distinctive feature of centralization, while in the case of decentralization it is just enough to get basic information from the centre and coordination is transferred to the local level. The extent of coordination depends on the introduction of economic management tools; their effectiveness is linked to the appropriateness of the management setting of the given organization (Northouse, 2013).

3 CONCLUSION

Effective exploitation of human resources in the organization ensures the correct of leadership way, keeping in view the area of specialization, organizational structure, corporate culture and other factors affecting their choice. There are many points of views to the leadership; we can interpret it simply as an influence to employees to follow their manager or, more specifically to use authority in decision making. Management may be based on the effect of personality of the manager or leader, or only on well-defined category of certain behaviour. It's hard to find generally acceptable affirmation; in essence, it is about a relationship in which one person influences the conduct and behaviour of a group, thus subordinates.

The article presents classic and modern methods of leadership (management), integrating with the vision of active involvement of all employees to achieve it. Experienced senior manager would have to determine the position of each member in the organization and apply such a style of communication which the given person prefers. The manager must therefore their message delivered in a comprehensible frequency for a particular employee. At the recognition of communication needs, it is necessary to determine what type of communication to the given employee prevails. People usually have a specific combination of different communication types, but generally it can be identified a dominant communication style.

Understanding these prevailing characteristics means for managers a way to grow in empathic communication with employees. An important part of the management of subordinates consists of recognizing the motivational elements of their subordinates, because the lack of

motivation is behind a series of unfulfilled tasks, unwillingness to seek more efficient procedures and savings or unethical behaviour of employees.

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ARE WE SANDWICH GENERATION FRIENDLY?

Helena Marková

Abstract

The ageing of societies is one of the major challenges of future. The most burden-overload cohort is women aged 35 to 54 which takes care of both young and elderly family members. What is the attitude towards sandwich generation in the Czech Republic? Do we take seriously demographic changes in our society? In the contribution I describe socio-demographic characteristics of the sandwich generation especially in the Czech Republic, the impact of being sandwiched for caregivers, conditions which are prepared by the social policy and labour of Czech governments.

Keywords: sandwich generation, informal care, work-care balance, part-time, flexible schedule

1 SANDWICH GENERATION

This term has become common in societies in the last two decades. It describes in a collective sense, the middle-aged generation who have to take care of elderly parents and dependent children. In the individual sense, the term describes people who are "sandwiched" between caring for their aging parents and supporting their dependent children (Pierret, 2006).

Why am I interested in this problem? Maybe because I am a typical member of the sandwich generation with dependent children and disabled family member. As many of others I try to find balance between all my everyday duties while earning money, studying and having just a little time for relaxing to prevent a mental and physical collapse.

1.1 Why to be interested in the sandwich generation?

The sandwich generation is not a new phenomenon. Historically the children have been cared for their parents, even grandparents while caring their own children. But in these families there were more children and a role of women, who are the main caregivers, was different than it is now. The increased attention to the sandwich generation has the roots in actual demographic trends. Because the life expectancy increased, more people between 40 and 60 have their parents alive.

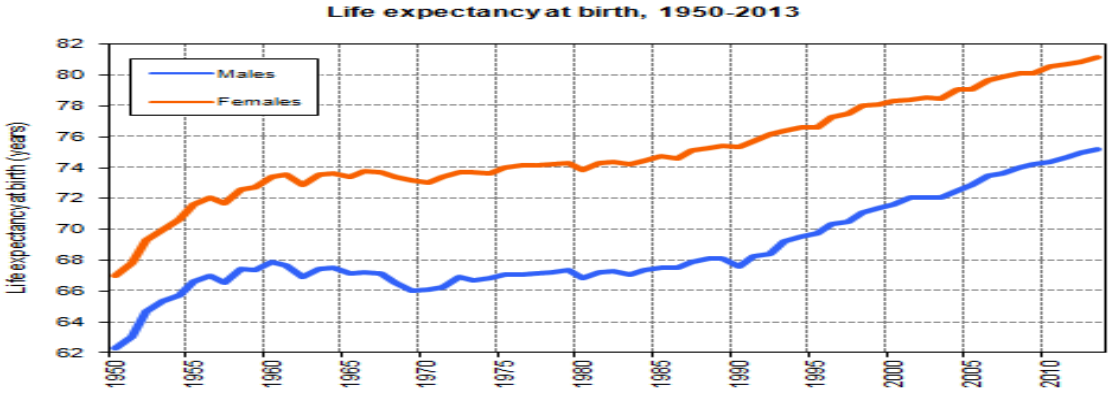

Fig. 2 - The life expectancy at birth, 1950 - 2013. Source: ČSÚ.

These middle-aged people do not have many siblings whom share the care with. Adult children live further from their parents and multigenerational housing is not typical for our society, so caregiving is complicated by distance. Women have children later, so their parents are older, when their children are young and dependent.

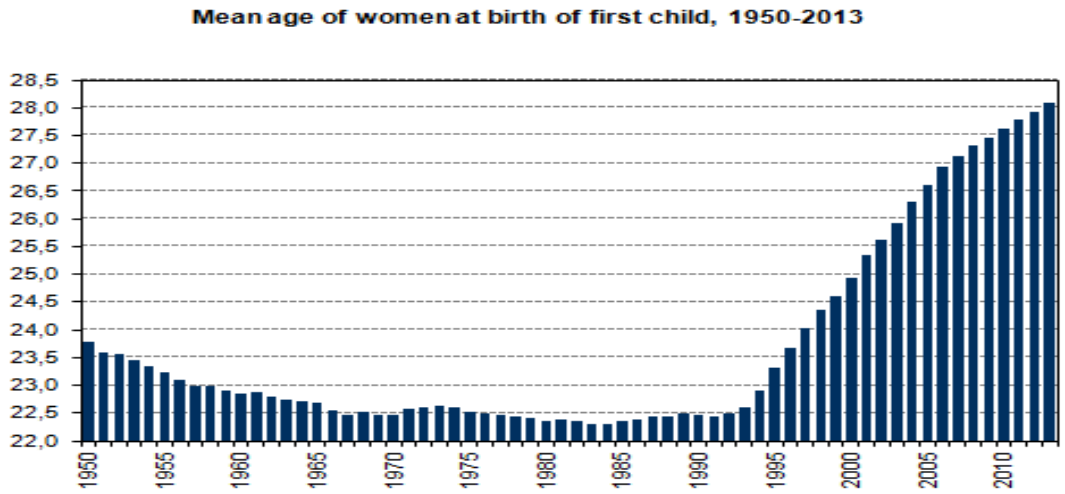

Fig. 3 - Mean age of women at birth of firts child, 1950 - 2013. Source: ČSÚ.

Children dependency lasts longer than earlier, especially because attending colleges, and having their own housing is more expensive for children. It is not the only reason. In my opinion today´s children prefer comfort to independence. And the role of unemployment of young people is important. This problem is solved in all European countries, mainly South European. In the Czech Republic the unemployment at the age 15 – 34 after finishing the education was about 19 % in 2008 and more than 30 % in 2010, in 2013 it was again about 22% (ČSÚ, 2014).

The stress produced by these reasons often has enormous social, economical and psychological impact for caregivers. While caregiving can be beneficial for carers in term of their self-esteem, it can be difficult for working-age carers to combine paid work with caring duties, they often have to quit the job or reduce working hours. The stress can cause the burnout syndrome or worsening of physical and mental health.

1.2 Types of care and their intensity

Sandwiched carers are involved in care of their dependent children and their parents. Most of the statistical analyses that have examined the role of family caring use the terminology of "informal caregiving". However, in policy discussion, carers are often referred to as "family and friends", rather than "informal" carers. Across the OECD, more than one in ten adults (family and friends) is involved in informal, typically unpaid, caregiving, defined as providing help with personal care or basic activities of daily living (ADL) to people with functional limitations (OECD, 2011). ADL are normally done in daily living, it is usually called self-care, such as feeding, bathing, dressing, grooming, work, homemaking, and leisure. There are significant variations in the percentage of the population involved in this type of caregiving across OECD countries. The percentage of the population reporting to be informal carers across OECD countries for which data are available ranges from 8% to just over 16%. There is no clear geographic distribution in the rate of caregiving: certain southern European countries have among the highest percentages (Italy, Spain) but Greece ranks among the lowest rates together with Denmark and Sweden. The Czech Republic is in the middle of the variety with 12 % of ADL caregiving population (OECD, 2011). Some of the

country differences are due to slightly different definitions and interpretations of caring for dependents across countries.

A larger number of carers provide help with instrumental activities of daily living. IADL are defined as the six daily tasks (light housework, preparing meals, taking medications, shopping for groceries or clothes, using the telephone, and managing money) that enable the patient to live independently in the community (Bookman, Harrington, Pass, & Reisner, 2007). The number of carers is high even in countries with comprehensive public long-term care coverage. When informal caring is defined with such a broader focus, close to one in three adults aged over 50 provide unpaid care. Except in southern European countries, a greater proportion of adults provide help with IADL compared to help with ADL. Northern European countries, despite having a comprehensive public coverage for formal care, have the highest share of individuals providing help with IADL.

Tab. 4 - Caregiving by country and type of help, 2004 - 2006. Source: OECD, Survey of Health, Ageing and Retirement in Europe (SHARE).

Caregiving by country and type of help	% of population providing ADL	% of carers providing IADL	% of carers providing both ADL and IADL
Sweden	8	36,2	39,7
Greece	8,7	12,5	17,9
Denmark	9,3	40	43,9
Austria	9,8	22,9	27,9
Poland	10,3	13,4	20,9
Germany	11	28,3	34,2
Netherlands	11,4	34,1	39,2
Czech Republic	12	24,3	31,8
Spain	15,3	10,4	20,4
Italy	16,2	16	26,6

Most of informal carers provide limited hours of care but there is wide variation in hours provided across countries. Low intensity of caring activities (less than 10 hours per week) is provided in northern countries. This reflects the fact, that there is the higher coverage of available formal home care. On the other hand, in the Czech Republic, such as in Poland and southern countries, more than 30% of carers provide intensive caring, even slightly over 50% in Spain.

This is connected with health status and style of living in different countries. While 25% of adults aged 50 and above suffering from one limitation of daily activities receive care from family and friends, this proportion doubles in the case of two or more limitations. In half of the countries, the proportion of those receiving informal care does not vary greatly with two or more activity limitations, while in the other half it increases progressively. Number of people with ADL limitations who receive unpaid care in the Czech Republic is one of the highest in OECD countries (OECD, 2011).

The reason, why there are so many people care-needed, is probably health conditions in comparison with OECD countries, even evaluated by inhabitants about 10 % less on the average (OECD, 2014). There is of course the question of life style in the Czech Republic. As measured in Analysis of behavioral health risks (The National Institute of Public Health, 2013) a lot of overweight and obese people, large consumption of alcohol, wide-spread smoking in the Czech Republic cause many diseases which make health status of elderly much worse and caring needs higher.

Elderly family members are not only parents: they are often in-law members, grandparents and great-grandparents. This phenomenon is called verticalized family, when the family structure is often four-generational. In verticalized families both elderly and child care is required. But for parents in the pivotal position, the demands from adult children and from elderly parents compete, with the result that those who provide help to one are less likely to provide help to the other. An influence of the family solidarity is important, so some pivotal-generation parents engage in intergenerational exchange in both directions, and there is a positive association between helping parents and helping children (Grundy & Henretta, 2006).

1.3 Demography of carers

Caregiving depends on many factors. The reasons, why do we help are bad health state, high age or difficult economical situation. On the other hand there are our possibilities and resources to help: health state, economical conditions, geographical distance, cultural values and social norms (Klímová Chaloupková, 2013).

The most important demographic factors are age, gender, marital status. There is the influence of cultural and even ethnicity conditions.

Sandwich constellation is typical for category of 35 to 54, because this is the time, when their parents´ self-care limitation caused by the age or health problems and dependent children in family need care or support. The feature for this category is their important participation in labour market as well. In the Fig. 3 the structure of carers of elderly over 65 by the age and intensity of care is described (Šindelář, 2014).

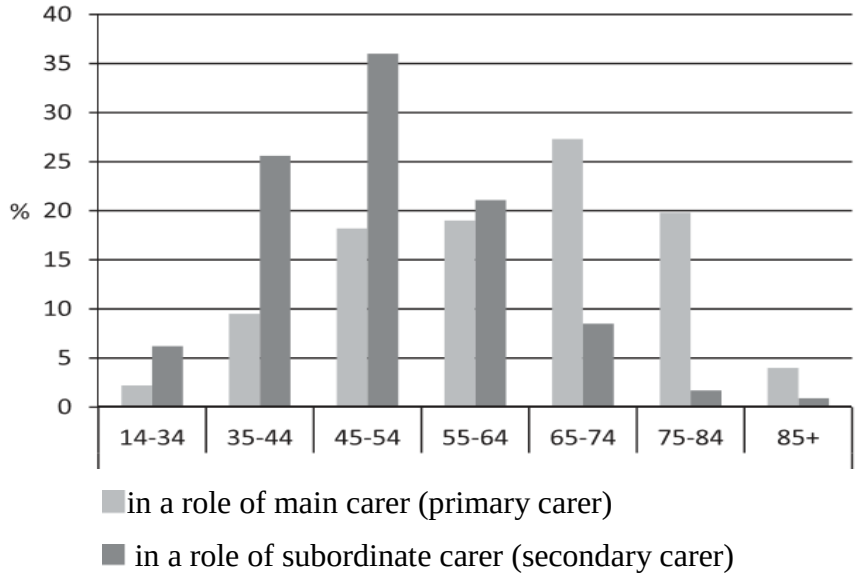

Fig. 4 - Structure of carers of elderly over 65 by the age and role. Source: Šindelář, 2014.

The most common carers are women, especially spouses, daughters or daughters-in-law. Brody already in 1981 describes particularly “women in the middle” (Brody, 1981) and refers

to surveys in which the primary carer is a daughter, daughter or spouse, usually prefers to men.

The available data shows, that every fourth or fifth woman and sixth men producing less intensive care and every tenth woman in more intensive care of elderly (at the average) belongs to the sandwich generation. With increasing age of carers the number of typically sandwiched (triple-sandwiched by work, children and parents) declines, because their children grow up and leave home. Unfortunately the needs of care receivers are more intensive, so according to increasing retirement the carers are pressed by work and care duties for long time.

The prediction of the number of the sandwich generation members is dramatically worse. The reasons described above are especially lower nativity and increasing life expectancy, age of women at birth of first child and age of retirement.

2 IMPACT OF CARE ON CARERS

The care both of children and elderly family members together with work influence the lives of carers in many points of view.

2.1 Mental health impact

While unpaid carers provide a valuable service to society and looking after family members or friends brings great rewards, there is growing concern about increased psychological distress, strain and overall health deterioration endured by family carers. Isolation and lack of support might prove a high burden and result in distress or mental health problems (OECD, 2011). In Fig. 4 the percentage of mental health problems among carers and non-carers and ratio is shown.

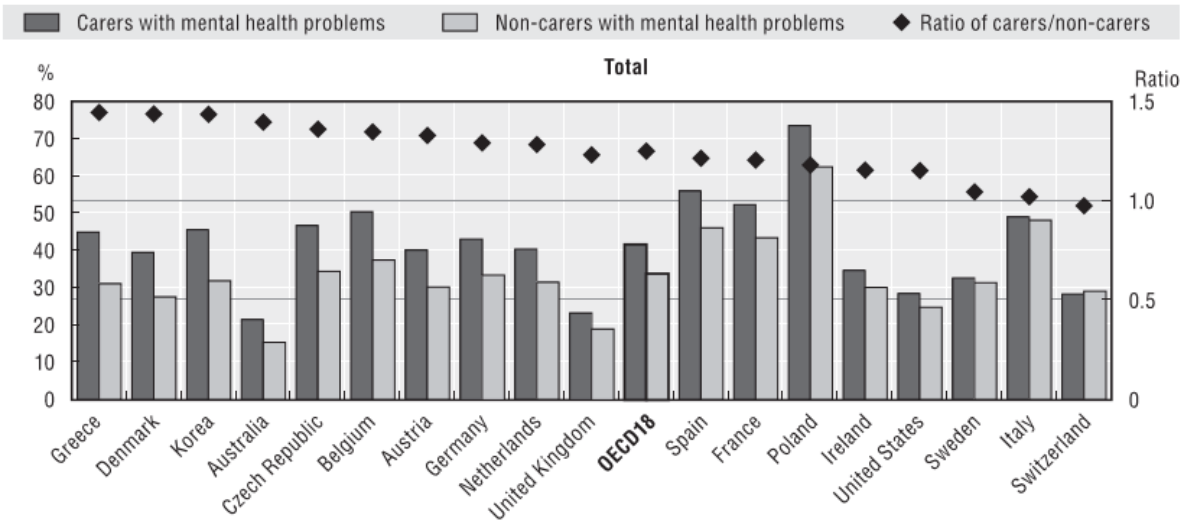

Fig. 5 - Percentage of mental health problems among carers and non-carers and ratio. Source: OECD 2011. Help wanted? Providing and paying for long-term care.

2.2 Well-being impact

Well-being impact on sandwich generation is not explicit. The results of well-being impact studies differ. Šindelář analyses data of ISSP 2011-2012 Rodina a zdraví in the Czech Republic (Šindelář, 2014) and concludes, that the sandwich constellation do not have to exhaust only, it can fill up positively through the good relations to care receivers. But other surveys refer about incompatible stress and role conflict especially if the sandwich caregiver is defined as a woman with four roles: married and living with spouse, mother of a child age

25 or less living at home, employed and a primary caregiver to an un paired parent who did not co-reside (Rubin & White-Means, 2009). If we check the changing family conditions in the Czech society, in the view of increasing number of single-parent families, unemployment of young people and increasing age of retirement, we can expect worsening of well-being impact on caregivers.

3 WORK – CARE BALANCE

The informal care in families often takes about 20 hours a week, which is next half-time job for carers in the Czech labour market conditions. The impact on work life and career of carers is expected.

Surveys realized in sandwich generation often present, that caregivers, especially women are not satisfied with work-life balance. They work fewer hours then they want to work, they miss too many days and they are dissatisfied with quality of their work (Rubin & White-Means, 2009). In the Czech Republic, (ppm factum research, 2013)the survey "Jak se žije ženám 45+" was realized. Only 30% sandwiched women are satisfied with their work-life balance, 45% of them have a holiday because of care. Work-care balance would be improved by flex-time (variable work schedule) (84%) or combination with home-office (75%). Although women 45+, both carers and non-carers prefer full-time job (64%), 18 % sandwiched carers more to non-carers prefer ¾-time job and 14 % more prefer half-time job. By the opinion 56% of sandwiched carers the government does not support conditions for caregivers to assert themselves on the labour market. In The Czech Republic it is particularly low support of part-time job. Employers are not corporate social responsible enough, so they do not feel the need to make berths with flexible working hours or with possibility of home office (where is possible) (ppm factum research, 2013).

Similar results are concluded by (Rubin & White-Means, 2009): sandwiched caregivers more likely than non-sandwiched work fewer hours than they want.

An interesting perception was documented by Ettner in 1995 (in (Rubin & White-Means, 2009): withdrawal from the labor force due to caregiving responsibilities may be harmful to caregiver mental health. I understand it in case of caregivers, when labor force participation helps them to lessen the stress cumulated by dual role serving.

3.1 Position of carers: What can employed caregivers do?

Most of caregivers are employed full-time, especially in the Czech Republic, where it is the most common form of work. Employed caregivers try hard to find the balance between work and care, but with intensive care it is more and more difficult. They often take early retirement or quit the job altogether. It causes emotional problems or risk of poverty, because without income in middle-age they face reduced retirement income, pension benefits or Social Security income. If caregivers like their job and coworkers, they can be depressed.

There are some recommendations for caregivers to protect themselves from negative impact of intensive care of family, especially openly describe the situation and try to find optimal solutions before it becomes a problem. The most important is to compartmentalize their life to prevent burden and stress and join other family members to family care to support intergenerational solidarity (Wilken, 2008).

3.2 How to support carers – a role of employers

Particularly the sandwiched caregivers appreciate the need of work to prevent financial and of course mental problems of being unemployed. They are often the most responsible employees. For the employers realize the Corporate Social Responsibility through the support of caregivers or sandwiched caregivers.

The first step is Open Door Policy, when employees are not afraid to discuss their problems with an employer and they try to find solution, useful for both.

A lot of employers in the Czech Republic oppose the spreading of part-time or flexible schedules. They are afraid of management difficulties, heavy administration and many of them, just losing control of the employees. But with increasing role of work force in economical system, changing social roles of employees and social environment is important to cooperate with employees to help them with family care obligations.

Next instruments of Corporate Social Policy are company policy friendly to caregivers, support services, educational informational programs, unpaid vacancy in case of unexpected situations, different benefits (consultancy with help care, psychological help).

3.3 A role of the government

Czech government does not support part-time or flexible working regimes with any special instruments of social or labour policy, although all the Czech democratic government have proclaimed it in their policy statements. Home care system is not extended, not only in long-term care, but assistance programs are missing too. Educational system is not flexible enough, for 5 years there is lack of kindergartens. There is The National program of Ageing Preparation (Active Ageing), but in my opinion the politics do not have it as a priority, as same as child care.

4 CONCLUSION

In the contribution sandwich generation members are defines as a category aged 35 to 54, especially women. In the Types of care were summarized numbers of carers in different countries and influence of caring intensity on carers. There are not only negative effects of care: positive is self-esteem of carers and increasing intergenerational solidarity in families which take care of elderly family members. Mental health problems among carers are more frequent, but well-being impact is not explicit.

Because of middle-aged labour market participation their position as carers, even when they are in roles of spouses, parents, caring children and employees, is very difficult.

There is the space for policy reforms, particularly creating labour market conditions to help caregivers to combine care and paid job, for example more possibilities of part-time job, flexible working regimes, and improving and spreading social services to reduce stress during the caregiving.

Acknowledgement
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Fig. 1 - The life expectancy at birth, 1950 - 2013. Source: ČSÚ.

Fig. 2 - Mean age of women at birth of firts child, 1950 - 2013. Source: ČSÚ.

Fig. 3 - Structure of carers of elderly over 65 by the age and role. Source: Šindelář, 2014.

Fig. 4 - Percentage of mental health problems among carers and non-carers and ratio. Source: OECD 2011. Help wanted? Providing and paying for long-term care.

Tab. 1 - Caregiving by country and type of help, 2004 - 2006. Source: OECD, Survey of Health, Ageing and Retirement in Europe (SHARE).

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WHAT MODESTY BRINGS TO LEADERSHIP, TESTING NEW MODEL BY MEANS OF THE GEPARD PLATFORM[1]

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Abstract

The paper has for objective to present new empirical model for more efficient leadership based on the concept of modesty/humility and self-esteem. We enacted the research on undergraduate student of management, N = 156, based on the in-class behavioral experiment, using the Hexaco personality test. By means of the 3D graphical analysis (least square method of weighted distances) we bring an evidence, that the combination of the Modesty and Self-esteem work as predictors of altruism (expressed in the form of a dictator game) and of the personality trait of Gentleness (a tendency to be mild and lenient in dealings with other people). These findings have strong implications for HR and personnel selection, in the respect of crating a pleasant and constructive work-pleasant. This paper also demonstrate the usefulness of behavioral experiments in the form of the in-class simulations with the aim to create and verify new managerial theories ("Gepard" pedagogical platform).

Keywords: Leadership, Modesty, Self-esteem, in-class simulation, education

1 INTRODUCTION

The wisdom of thousands of years, both in the East and West, talks about the importance of modest in one's life. On the other hand this wisdom is only very occasionally reflected in the managerial practice and research nowadays. We perceive this discrepancy as a paradox and informational gap.

This paper has for objective to present the idea of modesty as crucial for efficient management and leadership nowadays, as it brings, combined with the leader` s self-esteem a very powerful leadership mindset.

Second objective is to prove the efficiency and usefulness of the in-class simulation in creating and verifying theoretical concepts in management, alongside with creating the environment for highly innovative and inspirational teaching at faculties of business.

2 THEORETICAL FRAMEWORK

Robert Solomon in his book A Better Way to Think about Business provides a useful definition of humility as: a realistic assessment of one's own contribution and the recognition of the contribution of others, along with luck and good fortune that made one's own success possible. Humility enables leaders to distinguish between: (a) self-esteem, (b) self-confidence, (c) self-assessment. Humility is the mid-point between negative extremes of arrogance and lack of self-esteem. To our view, this definition, based on one's own capacity to discern among esteem, confidence and assessment is most compatible with our view of the humility concept (Vera - Rodriguez-Lopez, 2004).

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In Harvard Business Review, Collins (2001) describes the concept of "Level 5" leader as a seemingly paradoxical combination of humility and fierce resolve. Rather than lacking ego or self-interest, "Level 5" leaders are ambitious, but with the ambitions for the firm and for the others. One of the characteristics is that humility is not really a visible virtue, but appears in a more implicit way.

Vera and Rodriguez-Lopez (2004) came up with their own model of six key concepts of humility in the learning organization: (a) openness to a new paradigm, (b) eagerness to learn from others, (c) acknowledgment of own limitations and ability to correct it, (d) pragmatic acceptance of failure, (e) ability to ask for advice, (f) development of others. Thanks to the application of the key humility concepts of a learning organization, the company should achieve a high performance based on instant innovations.

A consistent and statistically valid measure of the humility is provided be the Hexaco/Honesty-Humility model (Ashton - Lee, 2007, 2008). The model stems from the lexical research in several language and identifies six important personality traits: Humility-Honesty, Emotionality, Extraversion, Agreeableness, Conscientiousness and Openness to Experience. Hexaco model is derived from the widely known model "Big Five", based on five personality traits. Research shows that Honesty-Humility works as a single work performance predictor in the people-oriented jobs as nursing (Johnson et al., 2011). Lee et al. (2005) showed that the Honesty-Humility works as a predictor of a work-place delinquency.

3 METHODOLOGY

3.1 Operationalization of the term "humility" for research purposes

We decided to base the research on two variables Modesty and Sincerity as they are important for the quality of behavior in line with what we would expect from the general idea of the Humility concept (Ashton-Lee, 2007, 2008). We will abbreviate this concept as SIMO (Sincerity + Modesty).

Modesty is defined *as a tendency to be modest and unassuming. Low scorers consider themselves as superior and as entitled to privileges that others do not have, whereas high scorers view themselves as ordinary people without any claim to special treatment*. The second accompanying personality trait is Sincerity that could be defined as *tendency to be modest and unassuming. Low scorers consider themselves as superior and as entitled to privileges that others do not have, whereas high scorers view themselves as ordinary people without any claim to a tendency to be genuine in interpersonal relations. Low scorers will flatter others or pretend to like them in order to obtain favors, whereas high scorers are unwilling to manipulate others* (Asthon – Lee, 2015).

Third important variable for this research is Social Self-Esteem that could be defined *a tendency to have positive self-regard, particularly in social contexts. High scorers are generally satisfied with themselves and consider themselves to have likable qualities, whereas low scorers tend to have a sense of personal worthlessness and to see themselves as unpopular* (Asthon – Lee, 2015).

3.2. Sample and methods

There were 156 students participating in the experiment (females 68.8 %, age 21 - 22). Participants filled the questionnaire of HEXACO-PI-R inventory, paper-based, 60-items version (Ashton – Lee, 2009).

Experiment was in the form of a Leaderless Group Discussion (Costigan – Donahue, 2009, Waldman et al., 2004). Participants were facing a choice to choose a managerial position in the ethically sensitive (unethical) situation defined as a task to "*dismiss women who had high*

rate of work absences due to the need to stay home with the children having disease". Preferences were marked on the standard 5-point Likert scale.

Another task was to decide how would the participants *divide money between him- or herself and somebody else, an anonymous person*. This exercise works as a measure of altruism and the capacity to share, in line with the theory of the dictator game (Kahneman, 2003) and the methodology proposed by Hilbig – Zettler (2009) and Hilbig et al. (2013).

We also measured *Gentleness* in the frame of Hexaco test *as a tendency to be mild and lenient in dealings with other people. Low scorers tend to be critical in their evaluations of others, whereas high scorers are reluctant to judge others harshly* (Ashton – Lee, 2015) defined.

Consequently, we enacted a correlation analysis as a predecessor of a 3-dimensional graphical analysis (least square method of weighted distances), by means of Statistica 12 software.

4 RESULTS

Partial results are displayed in the following table (Tab.1), showing the correlations between personality traits SIMO (sincerity and modesty) and Self-esteem, defined by the Hexaco test (Ashton – Lee, 2009).

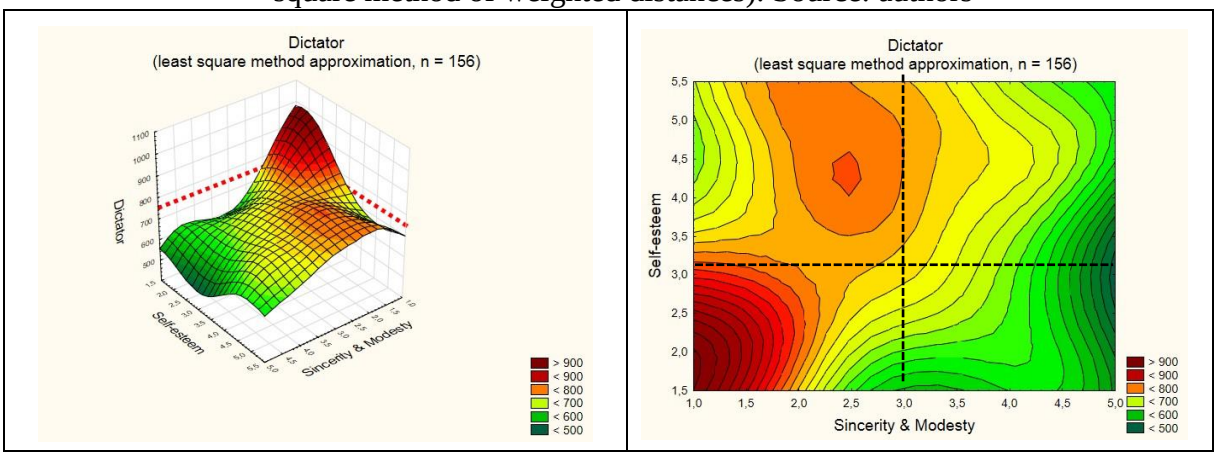
Tab. 1 – Correlation matrix between personality traits and the managerial aspects (*p < 0,100 **p < 0,200). Source: authors

	SIMO (sincerity & modesty)	**Self-esteem**
Person-organization fit in the ethically sensitive situation	**-,1481**	-,0797
	p=,066*	p=,324
Dictator	**-,1878**	**,1124**
	p=,019*	**p=,164 ****
Gentleness	**,1270**	-,0306
	p=,115**	p=,705
Preference of a managerial position in a situation without an ethical issue	**-,2217**	**,2322**
	p=,006*	**p=,004***

Table reveals certain correlations that will be further analyzed by means of 3D graphical analysis. It is important to note that the fact that certain correlations are on the border of statistical significance (0,100 < p < 0,200) does not exclude the pair of variables from further analysis as the pair of variables might provide an interesting explanation of the phenomenon in the frame of the 3D analysis.

Fig. 1 reveals that the combination of the personality traits SIMO (sincerity and modesty) and self-esteem work as predictors of altruistic or respectively greedy behavior. Respondents that would keep the maximum of money for themselves (dictator game) are cumulated in the frame of the quadrant defined by the low level of SIMO (sincerity and modesty) and self-esteem.

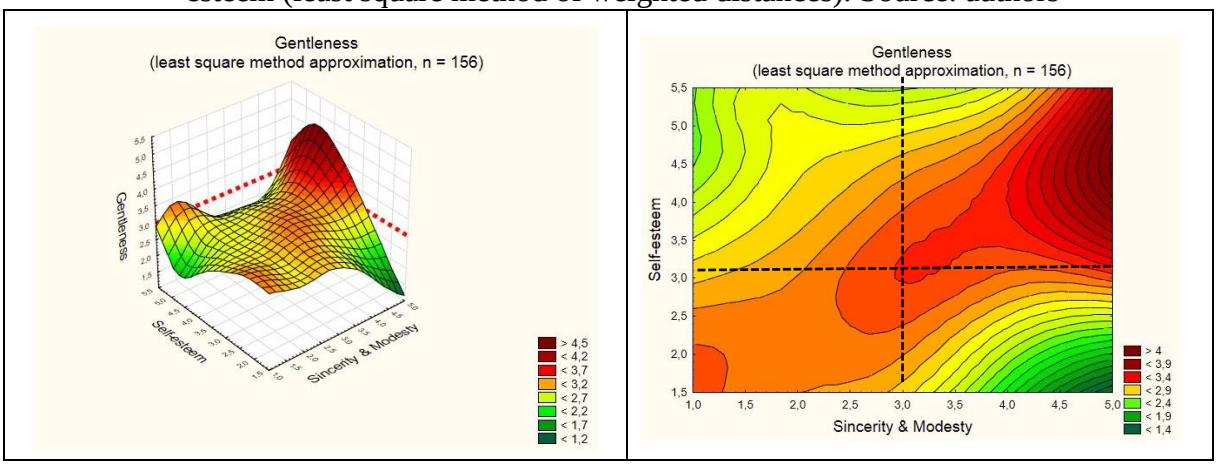
Fig. 1. – 3D maps: Altruism (in the form of the dictator game) and SIMO / self-esteem (least square method of weighted distances). Source: authors



In other words, Fig. 1 shows that the participants with high SIMO and self-esteem are marked by the high level of altruism and tendency to respect the needs of the other people.

Fig. 2. represents an evidence that the respondents with the high SIMO and high self-esteem are characterized by the high level of gentleness, hence a tendency to be mild and lenient in dealings with other people.

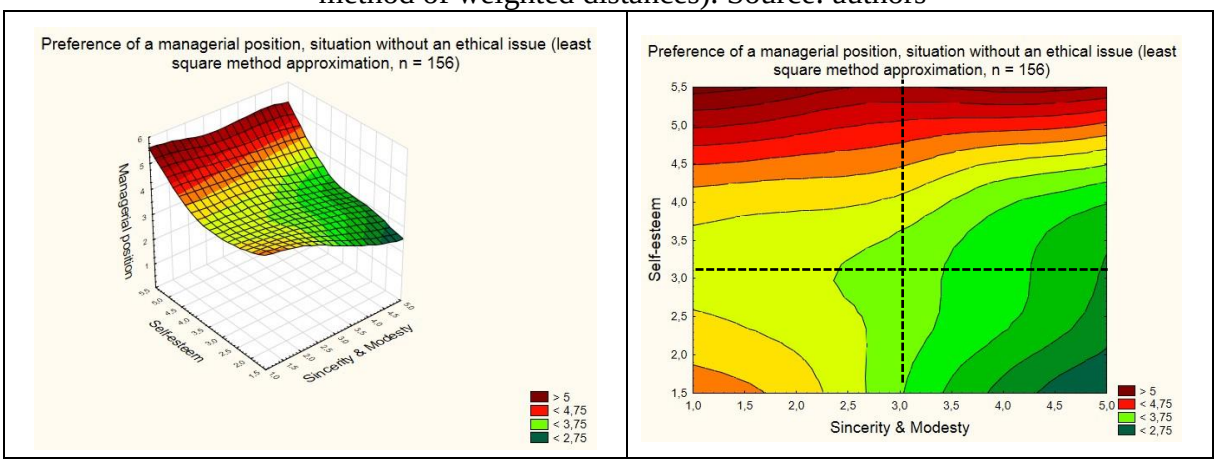
Fig. 2. – 3D maps: Gentleness (tendency to be mild and lenient with people) and SIMO / self-esteem (least square method of weighted distances). Source: authors



In other words, Fig. 2 implies that people with high SIMO and self-esteem as leaders have tendency to create warm and pleasant atmosphere at the work place.

The next figure (Fig. 3) displays the constellation between the personality traits of SIMO (sincerity and modesty) and self-esteem combined with the preference to be a manager (by means of the least square of weighted distances). From the Fig. 3 we understand that the preferences to be a manager occur together with the high self-esteem and alongside all the scale of the SIMO.

Fig. 3. – 3D maps: Preference for a managerial position and SIMO / self-esteem (least square method of weighted distances). Source: authors



In other words, preferences of a managerial position occur in the two upper quadrants (Fig. 1), high self-esteem and low SIMO and high self-esteem combined with SIMO.

It is also not without an interest to note that classical linear regressions might not be the most optimal source of understanding the data and their interrelation when it comes to understanding the real-life phenomena. Hence, as a result in the field of methodology, a strong encouragement appear to exploit the possibilities offered by 3 dimensional mapping of data.

5 CONCLUSION

Consequently, as a result of the above mentioned findings, there comes an important implication for the human resource management and selection of team-leaders and managers. As managerial ambitions appear in both upper quadrants (Fig. 3), high self-esteem combined with both low and high SIMO, it turns out to be highly advisable to select the candidates with higher level of SIMO as these people will have higher tendency for altruistic behavior and sharing, combined with the higher tendency to be lenient, as this will influence positively quality of working environment in terms of interpersonal relation and overall atmosphere in the organization.

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A CASE STUDY OF CORPORATE SOCIAL RESPONSIBILITY IN VIETNAMESE AND KENYAN ECONOMIES

Do Thi Thanh Nhan, Felix Kombo

Abstract

The issue of unsustainable development has increasingly become an interesting topic for research and debate. One of the proposals agreed unanimously by researchers and state agencies is to strengthen corporate social responsibility (CSR). It means an enforcement of entrepreneur's commitment to contribute to sustainable economic development. The article is not intended to go deeply on figuring out solutions for corporate social responsibility but a discussion of awareness of corporate social responsibility from the state agency's perspective. Followed by the viewpoint of state agencies, we recommend that corporate social responsibility should be understood to be entrepreneur's discretionary duty to comply itself with socially mandatory regulations.

Keywords: corporate social responsibility; sustainable development; state agency; entrepreneurs

1 INTRODUCTION

Vietnam's economy became one of the fastest-growing economies in the world in 2007, and has begun to reveal ominous signs on the growth quality. In fact, the economy has been growing on the theme of hyper inflation, severe environmental pollution and warnings on food safety. Due to these problems, the issue of unsustainable development has arisen as an urgent topic recently. One of the solutions for unsustainable development has been recommended by researchers and government. The solution is to consolidate CSR because of its potential to build a dynamic, competitive and cohesive economy (Polychronidou, 2014).

Advocation for better supply chain, labour conditions and observation of human rights for Kenyan workers in enterprises is attributed to the emergence of social responsibility in Kenya. United Nation (UN) Global impact is among the institutions that have emphasized on CSR in Kenya. However not fully implemented by most enterprises, researchers such as Muthuri and Gilbert (2011) argue that Kenya's unique economic, political, social and cultural conditions has made CSR activities easily practiced.

This paper would not focus on how to improve social responsibility of the corporations. Instead, it is intended to have a further discussion of whether CSR should be recognized as options or obligations in the process of law-making of state agencies or how to understand CSR correctly from the view of state agencies.

1.1 The definition of CSR

First of all, enterprises are vital part of society since they are major contributors of economic growth and social welfare. In general, CSR has demonstrated the committed contribution of enterprises to the sustainable development of society. Particularly, CSR was defined by the UK government as the responsibility of an organization for the impacts of its decisions on society and the environment above and beyond its legal obligations, through transparent and ethical behavior. Meanwhile, The World Business Council for Sustainable Development introduced a more detailed definition of CSR: "Corporate Social Responsibility is the continuing commitment by businesses to behave ethically and contribute to economic

development while improving the quality of life of the workforce and their families as well as of the local community and society at large".

Luo and Bhattacharya (2006) also reiterate the above definitions by stating that CSR is simply a direct or indirect contributions to the society by performing socially responsible behaviors and/or engaging in actions that advance some social good or welfare. In summary, Matten and Moon[2] (2004) said that the concept of corporate social responsibility includes other concepts such as business ethics, corporate citizenship, sustainability and sustainable development, corporate environmental management, business and society, business and governance. In addition, it is a dynamic concept and is always challenged in the context of economic, political and social characteristics. Furthermore, CSR involves legal, economic, ethical and philanthropic expectations (Carroll and Shabana, 2010).

1.2 The reasons to perform CSR

Enterprise is an important part of society due to its interacting activities. The society creates a business environment for enterprises in terms of raw materials markets, capital markets, and labor markets. Meanwhile, consumer market has defined the outcomes of the businesses while the businesses have relied on the social environment to survive and develop for long term success. In return, they have expressed the important factors that have contributed to the social environment.

Assuming, there is always the right to act freely without proper remedies, the social order and disorder to the business environment will be abused. Furthermore, people are also embracing companies that offer socially responsibility products and services. Loureiro et al. (2012) argue that CSR contributes to better financial performance directly by reducing costs and increasing productivity. It is also noticeable that, in long term, if the companies just only chase profit as the merely objective, customers will ostracize enterprises. For instance, Chinese enterprises who want to only make profits have resulted to environmental pollution, consumer's safety and ecology concepts. Hence, many products that are made in China have been thought to contain poisonous matter. In contrast, enterprises that always comply laws, in good standing, and participate in charity programs, have resulted to good reputation, consumer's trust and loyalty. Thus, when companies implement CSR within their businesses, they are prone to benefits in future.

In summary, implementing CSR apparently has promised enterprises more than a chance to get profit; it will be an opportunity to get profit in sustainability.

1.3 The reasons not to apply CSR

- ***Heterogeneity in the implementation of CSR***

Recognizing the importance of the social responsibility of enterprises would be necessary but it has not been implemented in a consistent way in all business. Furthermore, if the corporation is doing well in CSR, they would create sustainable growth in the future. However, the awareness of CSR among enterprises is often different. Therefore, the process of implementing CSR usually creates additional costs for entrepreneurs.

[2] Dirk Matten is a professor at York University in Toronto, Canada and strategy consultancy on corporate social responsibility in Hewlett-Packard; Jeremy Moon is a professor in University of Nottingham, England and the director of the international center for social responsibility.

The benefit of social responsibility creates mutual benefit in the future, and it will be only achieved if there is consensus implemented by the enterprises. The corporations which do not enforce social responsibility reduce the feasibility of achieving mutual benefits for the society, decrease enterprise costs to achieve higher benefits. Therefore, the businesses will perform well in CSR. Obviously, the conflict of balancing social and private benefits discourage businesses to engage to CSR.

In other words, a regular firm do not engage in CSR initiatives if CSR raises costs in present and has uncertain benefits in the future. In this case, it would be a reasonable for corporations to refuse CSR.

- ***Conflicts of interest between business and society***

All activities of the businesses as well as CSR aim to bring higher interest than costs. It means that enterprises usually expect to gain more benefits rather than spend more costs. However, the concepts of cost and benefits are perceived differently by enterprises and society. As a result, differences in perceptions lead to differences in behaviors. In the end, CSR is not implemented effectively.

A business is only interested in the benefits and costs relates to individual while it concerns the social interest and costs of a whole. Meanwhile, this matter has had much broaden vision in the society's point of view. Externalities are the best examples for the difference. Johnson (2005) defines "externalities" as the opportunity costs (or by-product benefits) of purchase, production, or other resource-usage decisions that are not directly paid (or enjoyed) by those making the decisions. Externalities are the costs (or benefits) of an economic activity incurred (or enjoyed) by third parties. For instance, in the case Vedan whereby the company discharged waste water to Thi Vai River for years. It was the externalities that caused damages to farmers in Ba RIA - Vung Tau, Dong Nai, Ho Chi Minh City. But why is Vedan still allowed to operating and discharge untreated waste into the river for many years now? The answer is that the government did not evaluate its externalities accurately and fully in Vedan project. In addition, Vedan did not and still does not concern CSR on ecological environment. In a similar case, in 2008, a Posco Corporation's $5 billion project to build a steel factory was denied because it might have caused potential damages to Khanh Hoa province's natural environment as well as economic advantages (the benefits from sea).

On the other hand, these examples do not imply that externalities were only negative. In fact, they have positive side. Dung Quat oil refinery project is an example. Despite the fact that many foreign experts advised Vietnam government to locate the refinery site in Vung Tau, it was built in Quang Ngai, a province in central Vietnam. Actually, this decision covered an ambition to use it as leverage to improve this area's economic condition. Karura Forest, in an example in Kenya. In this case, they Kenyan government used to grab land from the forest and allocate to private companies or political allies. Wildlife in the forest (monkeys, bush pigs and African civet) and plant species such as croton megalocarpus, warburgia ugandensis and uvaridendron anisatum started becoming extinct. However, pressure group (Green Belt Movement) protected Karura Forest and reclaimed the lands.

To sum up, CSR appears as a conflict of interest between enterprises and society. In particular, private company's interest might damage society's benefits, whereas, satisfying society's interest might cause a burden of cost for companies. To survive, companies need to take their interests as priority rather than CSR. .

- ***Incompatible objectives between corporate objectives and society***

According to Milton Friedman's[3] article, the sole social responsibility of business is to increase its Profits". He argued that the managers representing shareholders have to perform management operations of business to maximize its profit. In case the managers have the intention of doing CSR because of private willingness, they should use their personal financial sources rather than the resources and assets of the enterprise. Even if enterprises were enforced to involve in CSR, it would be actually for profit. Milton Friedman's point of view might explain such unethical behavior as corporate tax evasion, polluting the environment and smuggling prohibited or poor quality goods.

In summary, when objectives are not compatible, enterprises easily give up social responsibility to gain profit.

1.4. Is CSR are obligation or not?

Some scholars have different opinions with Milton Friedman and they say that a business which is part of a society is operated in the environment that is generated by society. Therefore, enterprises have to take responsibility for their actions when behaviors cause negative impacts on society and the environment. This view supports CSR to be taken as a volunteer duty which creates a better society. At a certain perspective, this view presents a lesson on business ethics which means achieving an ethical standard by propaganda tool and advocating for voluntary behaviors. To fulfill a social responsibility, a business has to achieve good sense of obligations to create the profit for society in order to increase the benefit of the environment. This is how to indirectly promote CSR.

However, this is just an ideal and the reality would be far different such as the effectiveness of educational measures to disseminate ideas for CSR is often very low. Apparently, CSR could be hardly achieved in practice if it is considered as an option. As a result, it is expected as an enterprise's voluntary obligation. In other words, CSR should be made in the laws which would be controlled by the state to force businesses to practice CSR.

However, considering the psychology of human nature, imperatives cause inhibitions and reaction of disobedience. Moreover, the corporate behavior is naturally not to perform CSR practices as long as corporate profitability increases. Therefore, the firms are still breaking the law and it is because of less strict laws on CSR. Therefore, the state should create effective mechanisms for businesses in order to ensure that the enterprises create more benefits for the entire society. In addition, CSR is considered an essential requirement for the survival and growth of companies (Sharif and Rashid, 2013).

To sum up, CSR should be obligations of the enterprise. This issue is very important because it contributes to increasing of efficiency of the operating state regulatory policies on CSR.

1.5. State regulations on social responsibility of businesses

For the State to regulate CSR, two conditions have to be satisfied:

Firstly, the impact of the State's policy to adjust the business actions should be justice and comprehensive to avoid creating unfairness between businesses doing CSR well and the firms refusing CSR.

Secondly, the policy of the State to regulate CSR has to respect the basic principles of business that is "profit" which is the first priority. Activities for CSR have to guarantee profit for enterprises. The policies of CSR have to be strict, reasonable and update. On the other

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Milton Friedman (31/07/1912 - 16/11/2006) was a American Nobel Prize-winning economist. He was a supporter of liberal capitalism. He has made important contributions in the field of macroeconomics, microeconomics, economic history and statistics

hand, the penalties must be strong enough which can increase the cost of business if business continues to perform its business activities which are harmful to society. Thus, the enterprises will be self-adjusted on their behavior and create social benefits on a voluntary basis.

Tab. 1: Principles for the State to regulate CSR law. Source: own

		Society	
		Favorable	Unfavorable
Businesses	Favorable	**(1)** Enterprise operations support benefits for both the society and themselves	**(2)** Enterprises operations support benefits for themselves but it is a bad impact on society
	Unfavorable	**(3)** Enterprises operations raise benefits for society but it increases costs for enterprises.	**(4)** Enterprises operations bring up no benefits for both society and themselves.

Based on table 1, the firm's perception is profit, and therefore, the state does not have to intervene in their activities in cell number (1), (2) and (3). Furthermore, box number (1) describes the business activities of enterprises that created benefits for both society and themselves. In this case, enterprises are ready to increase economic activity generating social benefits on a voluntary basis.

For example, a joint stock company Lasta in coordination with broadcasters in Ho Chi Minh City has successfully implemented the program "Overcome our destiny-Vượt lên chính mình". The fact that this program attracts more and more viewers increases its profits for advertising.

Moreover, effect from the program is even better because it has a good impact on social welfare. Firstly, the company cooperating with Lasta achieved brand image marketing objectives while contributing effectively to their social responsibility. Consequently, motivation for enterprises to comply with CSR is created and expanded pervasively in business community, encouraging them to be involved in CSR. Secondly, the poor people get benefits from Lasta business by having a chance to improve their living standard. In this case, CSR is well performed without mandatory actions from the State. For those businesses, the state should consider encouraging them by for example supporting policies on tax exemptions and creating good conditions for business activities.

Box number (4) shows business activity of the enterprise that do not provide benefits for both society and themselves. Without involvement from the state, enterprises will close down their businesses.

Meanwhile, box number (2) and box number (3) express the conflict of interest between society and enterprises. Box number (3) is the opposite case with box number (1). In this box, enterprises do not create benefits for enterprises themselves but for the society. To deal with the situation, the state has to respect the enterprises. For example, instead of forcing them to

apply CSR, the state has to be involved in creating social responsibility through providing public services.

In box number (2) whereby enterprises operations support benefits for themselves and bad influences for society, the state plays an important role in regulating the firms to perform CSR as per the laws. Responding to the case, the state should regulate the provisions of the sanctions to increase costs for businesses if they do not perform social responsibilities. Such strict regulations and strong sanctions will result to reduced profits and as consequence limit the activities of the enterprise. In addition, to protect the fairness for enterprises implementing CSR, the state should have compensation policies or rewards to encourage them. For example, during the recent price stabilization program in Ho Chi Minh City, which was applied to reduce pressure of inflation, businesses were encouraged to be committed not to raise prices. In return, the state would compensate for any damage that the commitment might bring to the companies and strict punishment was applied to the firms who broke the the promises. As a result, businesses participated in the implementation of CSR under the state's control.

2 CONCLUSION

CSR reflect the commitment of businesses to contribute to social sustainable development. Besides, appropriate CSR activities should target communities, shareholders and stakeholders in the achievement of commercial successes and further honoring ethical values. Although implementing CSR raise costs, it has an investment to harvest sustainable development in the future. However, most businesses still refuse social responsibility. It is because of the heterogeneity in the enterprises' CSR implementation. Furthermore, there are the differences between business objectives and social objectives that account for the obstacle. CSR has to support companies to earn profits rather than preventing them. In my opinion, CSR could not force businesses self-conscious perform. With the concept of Milton Friedman, to enforce CSR, the state should be involved by issuing legal frame to enhance enterprises' CSR implementation which base on the basis principle for benefit of the corporations.

For the State to regulate CSR, two conditions have to be satisfied:

Firstly, the impact of the State's policy to regulate the business action should be fair and synchronized to avoid creating unfairness between business making good CSR and those who refuse CSR.

Secondly, the policy of the state to regulate social responsibility has to respect the basic principles of business that was "profit" as the first priority.

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THE POWER OF COLLECTIVE KNOWLEDGE IN DISASTER MANAGEMENT: HOW CROWDSOURCING CAN SAVE LIVES

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Abstract

Natural disasters happen all over the word. No matter if it is about floods, earthquakes, hurricanes or fires, all these emergencies threaten people's lives and must be dealt with speedy fashion. Disaster managers are heavily trained to deal with adverse situation, but they need relevant information to be able to make the best decisions possible and act quickly to resolve the situation. This information can be generated by individuals in or around the site. Thanks to the Internet and massive expansion of social networks, lot of information is already spontaneously generated by these individuals. In this paper an analysis of how crowdsourcing opens new possibilities for interaction and knowledge sharing by large group of people which can be put to use in disaster relief is presented. Starting with a general overview of the topic, we define key terms are defined: disaster management, volunteered geographic information and crowdsourcing. Then, a way of how the collective intelligence techniques can be adopted to assist to crisis management is demonstrated. After describing general architecture for collective knowledge base emergency management systems and after overviewing crowdsourcing tools to empower the community during the disaster management, best practices of its application and key challenges of crowdsourcing use in disaster management are suggested. In the end, the Crisis Map of the Czech Republic as the first national attempt to create a crowdsourcing based crisis map is presented. The paper concludes by stressing on the key challenges and possible further research and development of the crowdsourcing based maps. A systematic literature review was executed to analyse, evaluate and interpret all the studies available in the literature about area of interest to fulfil the main objective of this article which was to identify whether crowdsourcing can be used in disaster management.

Keywords: crowdsourcing, collective intelligence, crisis management, disaster relief, the Crisis Map of the Czech Republic

1 INTRODUCTION

In recent years, we have been witnesses to number of disasters caused by natural hazards. A natural disaster occurs when a community is seriously affected by a natural event and the damage is so great that foreign aid is needed (Longueville, Luraschi, Smits, Peedell, & Groeve, 2010). Baharin et al. (2009) defines disaster management as an alternative to improving resilience and thus avoids or reduces the impact of natural disasters. According to Horita et al. (2013), it is an ongoing process involving a series of activities before, during and after and event, which are divided into four main phases which are migration, preparedness, response and recovery. In all these phases, information used by disaster management play a key role and that is why it is essential for emergency agencies to be provided with accurate, timely and complete information about the current state of the environment, as well as about the predictions of upcoming changes and their expected effects, since a slow response based on incorrect data can lead to serious consequences (Ostermann & Spinsanti, 2011).

Despite all of our technological advancements and various systems available to predict and respond to disasters, natural disasters like floods, earthquakes, tsunamis, tropic cyclones, tornadoes or wild fires are still difficult to manage. While preventing natural disasters is beyond of our capabilities, providing better information to the disaster management professional and the affected persons is not. Thus, when a disaster occurs, sometimes the only

way how to save numerous lives is to generate a timely reaction to its outcomes. This situation puts extra emphasis on the importance of high-quality information management for emergency communications (Besaleva & Weaver, 2013).

Thanks to diffusion of the Internet and new information and communication technologies, large amount of people are now online 24/24. These people have several active profiles on online social networking sites like Facebook, Twitter, LinkedIn, Flickr, and YouTube, so a culture of content production and sharing is taking hold. The current generation of Internet users is used to participate online in many different forms. Moreover the Internet nowadays opens up new possibilities for interaction and knowledge construction by large groups of people. This knowledge can be put to use in many situations, including disaster relief (Vivacqua & Borges, 2012).

People affected by the disaster possess local spatial knowledge which can be useful for disaster management. As seen in recent years, disaster and emergencies generate a lot of spontaneous participation (Vieweg, Palen, Liu, Hughes, & Sutton, 2008). Growing access to new technologies makes it more likely that those affected by disaster will be better placed to access information, to provide one and communicate their own needs. As Palen et al. (2007) mention, these individuals on the ground, equipped with smartphones, tablets and cameras (all with build-in GPS capability) are able to communicate information more easily and to affect the way people outside the disaster area understand and perceive what is happening there. Powered by cloud-, crowd-, and SMS-based technologies, these individuals can now engage in disaster response at an unprecedented level. Individuals proved increasing tendency to communicate with others about what is going on, sometimes making photos and video as well (Vivacqua & Borges, 2012). They respond strongly to large emergencies, using their social and technological resources to help manage emergency situation (Hughes, Palen, Sutton, Liu, & Vieweg, 2008), which makes this a strong candidate domain for the application of collective intelligence techniques. Traditional relief organizations, volunteers, and affected communities can, when working together, provide, aggregate and analyse information that targets, speeds and improves humanitarian relief. The challenge is thus to create a synergy and to direct this energy towards the creation of content that could be useful for emergency management (Vivacqua & Borges, 2012). This trend toward communications, driven by and centred on people, is called crowdsourcing and it is challenging and indeed changes the nature of disaster management.

As it will be demonstrated in this paper, one of the positive characteristics of social media, which is its capacity to harness collective knowledge, is no longer being overlooked. It is proved, that crowdsourcing has recently been successfully implemented in crisis management all over the world. Following that trend, and taking into consideration the latest movements toward mobility in the technology world, the analysis of how the collective intelligence can save lives is presented in this paper. The purpose is to investigate the ways in which collective knowledge could be applied in disaster management.

1.1 Volunteered Geographic Information (VGI)

The number of crisis around the world has been increasing in the last years and suggests there is a real need to make communities more resilient to them. In addition to providing conventional authoritative data, ordinary citizens and residents in the affected areas are also voluntarily supplying information about the affected areas, in what has been called crowdsourced or Volunteered Geographic Information (VGI). The VGI was defined in 2007 by Michael F. Goodchild (2007) as a collection of digital spatial data that are produced and disseminated by individuals or non-official institutions, i.e. by ordinary citizens using

appropriate tools to gather and disseminate their views and geographical knowledge on the web.

Three years later, Goodchild and Glennon (2010) conducted a study on crowdsourcing VGI for disaster response and they discovered that so far, the growth of spatial data was limited to activities carried out by specialist organizations. Following the emergence of Web 2.0 and the improvement of mobile devices to provide data related to their location, people began to be more involved in this area, not just by examining it, but also by providing data and information, that was in many cases, more detailed and of higher quality than that provided by official institutions.

According to Coleman et al. (2009), VGI and its "volunteerism" is an effective way to expand, qualify, and contribute information for humanitarian purposes. This improved the amount of information available about the events and the experiences of the community members, unis tools like the grassroots maps of the Humanitarian Open Street Map Team and Wikimapia, as well as the crisis maps of Ushahidi (Okolloh, 2009). Together, the people involved form a new group of players in disaster management who are known as Volunteer and Technical Communities or digital humanitarians. These players have produced a considerable amount of information on the Internet which is a potential valuable resource.

VGI applications allow specific information to be collected such as local knowledge, which usually cannot be gathered through traditional data collection process (Goodchild, 2007), and thus empower highly detailed reports to be compiled on local conditions when there are disasters (Zook, Graham, Shelton, & Gorman, 2010).

The use of VGI in disaster management processes has been studied by Roche et al. (2013) who examined the perspectives of its employment, both in terms of technologies and applications. A systematic literature review assessing the current state of research of the use of VGI as a source of information for disaster management is presented by Horita et al. (2013). Their research shows there is an increasing body of knowledge of VGI and the way it can improve disaster management. They also point to gaps in the use of VGI in the research area of "preparedness" and "recovery", as well as the need for more robust case studies and experimental research to support this promising filed.

1.2 Crowdsourcing

Crowdsourcing is a new, online-based, way of outsourcing that relies on large and undefined networks of people taking advantage from their collective intelligence. The term crowdsourcing – combination of two words "crowd" and "outsourcing" – was first defined by Jeff Howe (2006) in 2006 in the Wired Magazine as *"the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call"*. According to Surowiecki (2004), these large groups of people are able to generate results above and beyond what a single individual could ever accomplish.

Since Howe's definition, different crowdsourcing definitions, categories, dimensions, and typologies have been discussed in the literature: Doan et al. (2011), Schenk and Guittard (2011), Geiger et al. (2011), etc.

After analysing 40 existing different definitions of crowdsourcing and considering some specific aspects of the crowd, Estellés-Arolas and Gonzalez-Ladrón-de-Guevara (2012) have proposed an integrated, exhaustive and global definition of crowdsourcing which covers the majority of existing crowdsourcing definitions. According to them *"crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge,*

heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken". An addition to this definition, Brabham (2013) contends that only online projects should be termed crowdsourcing.

In compliance to them Saxton et al. (2013) define three key elements intersecting in web-based crowdsourcing which are, according to them, the crowd, the outsourcing model, and advanced Internet technologies. By their definition, *"crowdsourcing is a sourcing model in which organizations use predominantly advanced Internet technologies to harness the efforts of a virtual crowd to perform specific organizational tasks"*.

Different types of crowdsourcing has been described for example by Halder (2014), who states that different types of crowdsourcing have expanded rapidly allowing citizens to connect with each other, governments to connect with common mass, acquiring information quickly and participating in issues that affect citizens. The increased use of crowdsourcing platforms and the positive development of crowdsourcing help common people to become more active and informed citizens. That is why crowdsourcing has been extensively studied in the disaster management domain, especially for crowdsourcing disaster data collection and analysis.

2 CROWDSOURCING: THE POWER OF COLLECTIVE INTELLIGENCE

In recent years, researchers have stated that large groups of people can perform as well or even better than individual experts. Surowiecki (2004) argued that groups with certain characteristics are almost certain to produce useful results, and named this collectively produced intelligent behaviour the "Wisdom of Crowds". One example of crowdsourcing is open source initiative in which a crowd of people contribute to one joint effort, frequently generating a solid product. Probably the best known case is Wikipedia – collectively created encyclopaedia (Vivacqua & Borges, 2012). Another well-known example is Linux, one of the best known open source systems ever written.

According to Segaran (2007), the amount of data available has extended greatly with increased online participation, and it is possible to make use of this data through the application of artificial intelligence and data mining methods. This author adds that harnessing collective knowledge involves combining knowledge from a group of people to produce novel information of insight.

As mentioned above, all phases of disaster management require information. One of challenges faced by disaster relief organizations is gathering information upon which to act. Time is a critical factor in all phases of emergency management. Crisis management requires a lot of information for appropriate decision making. Vivacqua and Borges (2012) believe that by focusing the efforts of the population, it is possible to generate useful, actionable information that can be useful for disaster managers. In their research, they reflect on different approaches to collective knowledge for disaster relief, considering the information needs and possibilities for collective participation in four phases of the emergency management activity, and present generic architecture system for the introduction of collective knowledge in disaster management.

Through the Internet or via mobile phones, individuals may contribute information as they see fit. Focusing these contributions is the challenge emergency managers must address to turn this into useful information. Using Facebook, Twitter, Instagram, Flick, YouTube, SMS, or the Web enables any citizen to quickly provide information which could be sent to emergency respondents as they travel to the disaster location, so they would arrive at the location with better knowledge of the situation. Sending photos or videos would greatly help the authorities better understand the situation, without having to rely solely on individual judgment (Halder, 2014; Vivacqua & Borges, 2012).

While studying the papers dealing with collective intelligence in disaster management, it was found that first, Vivacqua and Borges (2012) analysed the possibilities of harnessing collective knowledge in disaster relief and presented a framework and examples of how this could be accomplished. In the continuity of their research, first crowdsourcing support system for disaster surveillance and response has been developed by Chu et al. (2012). This system is focused specially on maintaining a comprehensive view of disaster sites with the help of on-site users.

Then, Palmer et al. (2012) studied smartphones using for collaborative disaster data collection and they created and implemented the Raven framework supporting applications for collaboratively collecting structured disaster data on the Android OS. By leveraging machine learning methods, Schulz et al. (2012) wanted to minimize the human efforts for turning unstructured crowdsourcing disaster data into relevant information supporting the rescuers in making better decisions.

Next to the authors dealing with efficiently leveraging crowdsourcing efforts to handle disaster data collection and analysis tasks, others focus on issue if providing real-time assistance to on-site users leveraging the collective efforts of off-site users, which is indeed important in disaster relief. For example, Gao et al. (2011) investigated both advantages and disadvantages of using crowdsourcing data in disaster management and brought into focus that the crowdsourced data credibility as well as the collaboration in the crowdsourcing tasks remains the major challenge. Following their research, Weaver et al. (2012) studied the applications and trust issue of crowdsourced data in disaster tasks and suggested solutions, while Yu et al. (2012) examined the efficiency of organizing off-site users' efforts in resolving crowdsourcing tasks and proposed a community-based crowdsourcing approach. Based on their research, Yang et al. (2014) designed and develop a crowdsourcing disaster support platform which can effectively support on-site rescue staff by leveraging crowdsourcing power and achieve good usability.

We have seen that some crowdsourcing platforms had already been designed. However, all authors agree on the fact that there is a need for further research.

2.1 Crowdsourcing Tools for Disaster Management

We have seen that mobile technologies and social media have transformed the landscape of emergency management and disaster relief by enabling disaster affected citizens to produce real time, local information on critical events. That is why the growing interest on how to leverage social media for disaster management comes as no surprise, nor the number of platforms and tools that aim at making sense of this vast amount of crowdsourced data for emergency management and response (Poblet, García-Cuesta, & Casanovas, 2014). According to Poblet et al. (2014), the velocity, variety, and volume of social media information – as a particular type of big data – can be leveraged in all phases of an emergency management lifecycle. Increasingly, emergency organizations are embracing social media and mobile applications to issue alerts and provide updates for incidents.

Poblet et al. (2014) review a set of online platforms having in common the use of data generated and processed by large numbers of citizens via social media and social networks that have been applied in the area of disaster management so far. These authors also propose taxonomy for its categorization. By offering a general overview of technological solutions that are currently applied in the area of emergency management they present 25 different tools (16 disaster management platforms and 9 mobile applications) already available in the disaster management domain. They have classified them by establishing a set of dimensions related with the four main characteristics of the tools which are: the phase of the management disaster cycle where it better applies to, the availability of the tool and its source code, the core functionalities and the crowdsourcing role types. Poblet et al. (2014) propose following classification of crowdsourcing tools:

Online Platforms: Sahana, OpenIR, Ushahidi, CrisisTracker, etc.

Online apps: Geopictures, UN Assigns, FemaApp, Pushpin, Vespucci, OSMTracker, etc.

Further examples of crowdsourcing tools can be also find in research presented by Vivacqua and Borges (2012) who demonstrate an example of FireMash – a system to report bushfires in Australia which combines live feeds from the New South Wales Rural Fire Service (who currently provide information on both Twitter and RSS) and pinpoints their location on Google Map.

Aulov et al. (2014) developed the AsonMaps platform which is designated for collection, aggregation, visualization and analysis of near real-time, geolocated quantifiable information from a variety of heterogeneous social media outlets in order to provide emergency responders and other coordinating federal agencies not only with the means of listening to the affected population, but also to be able to incorporate this data into geophysical and probabilistic disaster forecast models that guide their response actions. They demonstrate the feasibility of the platform on the case of Hurricane Sandy, during which the platform was successfully implemented to into the crisis management system.

Nass (2014) presents results of a project that aims at developing a smart and interoperable computer solution for supporting emergency and crisis management fed by crowdsourcing information. Part of this system is a mobile application that supports people in providing information about the situation.

Another tool is CrowdHelp software platform described by Besaleva and Weaver (2013) developed in collaboration with emergency response and medical specialists with experience from large natural disasters such as the 2010 Haiti earthquake. This platform works on a versatile application (accessible on smartphones, tablets and computers alike) which collects direct feedback from its users about their medical condition, in combination with data coming from sensors in smart devices (smartphones, tablets, laptops, etc.) and is to be used for enabling fast response of emergency professionals to devastating events.

A more general initiative, Ushahidi is a platform for crowdsourcing emergency events, which can be freely downloaded and installed, to allow anyone to collect and visualize information on a given set of events. It is an open source project that enables any individual to send in information, through the Web or via mobile phones and aggregated this information (Vivacqua & Borges, 2012). Another open source platform, Sahana aims to support coordination efforts in disaster situations by aggregating information sent by multiple users.

2.2 Good Practices of Using Crowdsourcing in Disaster Management

Crowdsourcing was successfully used to aid the management of disaster in several countries. The systematic literature review and various examples of using crowdsourcing during disaster management are proposed in research presented by Horita et al. (2013).

In this paper, we mention the best known ones: Haiti earthquake in 2010: (Heinzelman & Waters, 2010), (Zook et al., 2010), (Muralidharan, Rasmussen, Patterson, & Shin, 2011), (Yates & Paquette, 2011), (Sarcevic et al., 2012), (Munro, 2013); Fukushima nuclear disaster in 2011: (Utz, Schultz, & Glocka, 2013); South East Queensland Floods in 2011: (McDougall, 2011), (Bruns, Burgess, Crawford, & Shaw, 2012), (Bird, Ling, & Haynes, 2012).

2.3 Limitations and Key Challenges of Crowdsourcing Use in Disaster Management

It should be noted that the use of crowdsourcing in disaster management also present challenges to the organization in the way it allows knowledge to be managed. Yates and Paquette (2011) claim that the accuracy of the information, which is extremely important when managing emergency response, needs to be constantly checked and validated which seems to be very difficult given in consideration the amount of data that are uploaded into crowdsourcing systems.

It is also important to stress that crowdsourced approaches rely on a naïve interpretation of the situation, and that is why the expertise and training of respondents should not to be ignored. Collective intelligence approaches may generate suggestions or guesses but they must be weighed by experts when being taken into account during disaster management. They can be used while making plans, but do not substitute expert knowledge (Vivacqua & Borges, 2012).

All approaches are bound to generate a large amount of information, which risks worsening respondents' decision-making process, as there is a possibility of information overload. Another trouble is the reliability of the incoming information. Given that information is sent in, and not verified in any way, there is no way to know if the information is true (Vivacqua & Borges, 2012). Verification algorithms are needed to check on the veracity of the information, and protocols and procedures would be necessary to disrupt coordinated attacks. For instance, many individuals send in the same information, this can be seen as corroboration, and that information can be considered more reliable. Alternatively, a trustworthy source may be sent to verify some information that has just come in and that may seem questionable.

A potential threat mentioned by Vivacqua and Borges (2012) is that coordinated groups may launch attacks against the system, and deliberately provide incorrect information in order to jeopardize the disaster response process.

Emergency management usually involves multiple agencies, so coordination becomes a critical aspect of the relief effort (Llavador et al., 2006). This gets very complicated due to the different information systems used by these organizations (Carminatti, Borges, & Gomes, 2012). Furthermore, typically all normal networks and power sources are unavailable at the site of the disaster.

Other key challenges can be found in research by Schimak et al. (2015) who point out for example the incentives for participation, ethical considerations or information extraction and uncertainty.

Despite the rising popularity of communities using social media in disasters, it is still not a normal part of mainstream emergency communications globally. To accelerate take up of social media by response agencies, capacity building is needed. Guidelines and training

resources are key to achieve this. According to Culleton (2015), national guidelines for using social media for disaster resilience are important to provide guidance for emergency response agencies.

To effectively implement a whole of community approach for using social media for disaster resilience requires capacity building the community, providing education and information on the role they can play in using social media for disaster resilience to help themselves, each other and emergency response agencies (Culleton, 2015). Public education campaigns and materials need to have social media integrated into them with simple, action oriented information. Campaigns also need to encourage citizens to help each other by sharing disaster information via their social networks. To encourage effective sharing of location based information for situation awareness, citizens need guidance on key information protocols such as adding the official #hashtag and the time when sharing warnings and enabling GPS on mobile devices when sharing images from the scene. Moreover, to implement this whole of community approach to using social media for disaster resilience, governments and response agencies need to incorporate social media into mainstream emergency communications, engage with the community as partners, capacity build the community by providing education and information and empower them by providing the tools and platforms to help themselves and their communities (Culleton, 2015).

3 THE CRISIS MAP OF THE CZECH REPUBLIC

Even in the Czech Republic an example of using crowdsourcing in disaster management is found. The project is called The Crisis Map of the Czech Republic and it is a combination of crowdsourcing and participatory mapping. It is the first Ushahidi use in on-line application for crisis mapping in the Czech Republic.

The project of the Crisis Map of the Czech Republic came into existence on the initiative of the Czech Television. During the floods in 2010, when vast areas of the Czech Republic were underwater, the Czech Television launched the Facebook page to collect text, photo and video-based reports, and experienced a massive involvement of citizens – thousands of them used social networks to report about the current state of affairs. At that time, the processing and verification of data was very complicated and demanding for the undermanned team of the Czech Television. Despite some problems, the operation successfully tested a new, unexpected role of a broadcast medium such as national television and unprecedented operation based on crowdsourcing of crisis information from the public proved to be successful. Since that experience, the Czech Television has begun experimenting with the creation of its own crisis map. These experiments resulted in The Crisis Map of the Czech Republic, which was fully deployed during the major floods in May 2013 in order to collect information about the crisis from the first responders – people directly affected by the floods.

The Crisis Map of the Czech Republic builds on the experiences from foreign countries. While creating a map, the experience of the Standby Task Force by one of its co-founders Jaroslav Valůch was transferred to the Czech Republic, at the end of 2010. One year later, following the meeting between Jaroslav Valůch and Pavlína Kvapilová (CEO of New Media Division of the Czech Television), the idea to develop a project based on the Czech Television and the Standby Task Force experience from Haiti was formed. Ushahidi was identified as a suitable platform for The Crisis Map of the Czech Republic (Pánek, Marek, Pászto, & Valůch, 2014).

In order to ensure that the map would not duplicate official response systems and structures, and to provide an added value to responders as well as to potentially affected population, the map was prepared during the expert discussions in cooperation with Jaroslav Valůch

(collaborator and co-founder of Ushahidi international volunteer community for crisis mapping The Standby Task Force), a representative of the Integrated Rescue System of the Czech Republic Luděk Prudil (Director of Operational Management of the Ministry of Interior) and representatives of humanitarian organizations (Adra, People in Need, Czech Red Cross, Flood Control Association and the Association of Reserve Brigades of Czech Army). The whole project is managed by Pavlína Kvapilová.

The Crisis Map of the Czech Republic was publicly announced at the official press conference in the mid-February 2012, and since, it is ready to use and remains in the standby regime. The map is intended to be used only in case of national or regional severe disasters, such as major floods affecting a significant amount of population, their health and properties. The map is activated and publicly enabled only at the moment crisis situation strikes, and when the Czech Television and official rescue services are obliged by the law to inform citizens. So far, this has happened twice – during the major floods in May 2013 and during the simulation in September 2013. The activation of The Crisis Map is announced in TV broadcasting, after that the public can freely report their observations, impressions, warnings and advice through recommended routes.

The technological background of the Crisis Map is following: the map, using the Google Map API as a reference basemap, is based on Ushahidi mapping platform with its plug-ins, which are utilized as the main tool for the collection, aggregation and visualization of data and reports. An underlying core part of the Crisis Map is Ushahidi Content Management System (CMS), which is used for the administration of incoming reports and the entire web application environment enabling to convert, manage, sort and filter incoming reports from SMS messages, tweets, Facebook posts, emails, etc. Another key function of the Ushahidi CMS is management of incoming reports and their verification, geo-localization and final publication on the map. Additionally, CMS collects statistical data about website visits, page views and reports, and provides various graphs and charts for visual interpretation. The Crisis Map provides a user-friendly environment for the interested public and the system administrators. Thanks to its open-source origin; the platform is also quite easily customized according to what the users need or what the situation demands. A more detailed description of technological issues is described by Pánek et al. (2014).

How the Crisis Map works? In case of emergency, the system is launched on the website www.krizovamapa.cz as a support tool for television reporting, and its launch is announced in the crisis broadcast of the Czech Television. If there is a crisis situation, the map opens to the public who has a four basic ways of reporting about the crisis: reporting on the news channel on Facebook profile of CT24 at www.facebook.com/ct24.cz; by sending Twitter messages with hashtag #krizovamapa, by sending an e-mail report to report@krizovamapa.cz or through an intuitive on-line form directly on the map website www.krizovamapa.cz.

Since the management of reports is completely integrated in the Ushahidi platform, all forms of delivery of reports can be carried out within one system in the administration by several team members at the same time.

The Crisis Map team consists of the core team members – the staff of the New Media Division on the Czech Television and a network of volunteers that remain on standby mode for any future activation (Pánek et al., 2014). The management of the crisis map is divided into specific workflows and teams, whose responsibilities are divided according to information processing. All the reported information is processed by the core team and subsequently sorted, categorized and passed to the verification team to approve reports which are finally displayed in the map. The teams proceed in the following manner: first team sort out the information that has nothing to do with crisis information; second team afterwards

verify the information if possible. Members of the verification teams are trained specialists who will try to find out if the information is true or not, and, at the same time, they will mark "certified" or "uncertified" while entering this information into the map. The veracity of information obtained through crowdsourcing is never 100% verified, however, as stated Jaroslav Valůch, even unverified information may have at some point value and serve at least as a certain indication of relevance of received information. Thanks to the verification team, it is possible to better manage the barrage of information and filter out the true from rumours, quickly evaluate the overall situation and provide a clear visualization of crowdsourced information. Received messages are displayed in real time on the map, and the resulting output is a dynamic map with selectable layers. The Crisis Map is composed of two types of layers – velocity layers and static layers such as an administrative structure, water, contaminated sites, etc.

As Pánek et al. (2014) state, the advantage of Ushahidi is that one can use it not only as the reporting system but also as a system of early warning. The map user can define the area of his/her interest and the system is able to send reports which are concerned with the chosen area

The success of the Crisis Map is illustrated with examples of Google Analytics data, according to which the map recorded 378,000 visitors and nearly 2, 5 million pages viewed during its first deployment during the floods in May 2013. At that time, 15, 000 messages, 3, 000 reports via the on-line form, 4, 500 messages on Facebook and 9, 000 tweets was sent by citizens. The most relevant reports were considered those from the web forms, which were also entered directly on the map (ČT24, 2013).

The Crisis Map also plays an important role after the floods. In the recovery phase, the category "coordination assistance" was operatively added to the map, so humanitarian organizations could provide data about where their coordinating centres are located and where therefore citizens can turn to if they want to help with cleaning work. Thanks to Crisis Map it is possible to effectively locate and define the supply and demand for help (Kužvart, 2013). According to Jaroslav Valůch, one of the problems that arise in crisis situations is paradoxically the citizens' over activity. Those in good faith to help may disturb the coordinated and organized help provided by the integrated rescue system and humanitarian organizations. Therefore, the aim of the Crisis Map is also to inform citizens not only of how coordination of humanitarian assistance and rescue operations functions, but also about how they can get involved through the voluntary assistance (ČT24, 2012).

The Crisis Map of the Czech Republic is a unique interconnection of citizen journalism, social networking and crisis crowdmapping, which, as states Kužvart (2013), stand on three pillars, while first pillar is the information filtering and map use as a supplementary source of data for both, citizens and the state, in time of crisis. The second pillar is volunteers' coordination. The third one is an interactive creating of situational awareness of citizens who on one hand in the context of citizen journalism supply the information into the map, and receive them back in the aggregated and selective form, on the other hand. This is hot a loop transfer of information beneficial for both parties is created.

The Crisis Map of the Czech Republic was established primarily for the needs of the crisis reporting of the Czech Television, which aims at using the Internet and the social networks to obtain information in crisis situations from their viewers and present them subsequently through the television screen. The Crisis Map, however, is not only an effective tool for television news, the goal is to civil processed reports serve as an additional information channel for the services of integrated rescue system and humanitarian organizations (Matyášová, 2012). It is important to note that the map is just a complementary option to

report emergency events, and all activities take place in conjunction with the IRS of the Czech Republic, whose role is irreplaceable in crisis situations. That is why citizens should thus primarily use official emergency call numbers. According to Marek (2014), one of the project creators, Crisis Map does not pretend to replace the IRS and spontaneously coordinate the assistance in the affected areas; on the contrary, its goal is to be a complement to this well-functioning system. Users can either directly report into the map or use it as an almost real-time source of information about the crisis situation (Pánek et al., 2014).

3.1 Limitations and Key Challenges of Crisis Map of the Czech Republic

As stated above, the Crisis Map, of which main purpose is to supply emergency management in case of disaster, provides tools for crowdsources information management and its dissemination by using new media streams.

Despite the fact that the map has shown its usefulness on three levels of availability: for the purposes of the Czech Television, its broadcasting and topicality of news; for rescue services, local authorities and humanitarian organizations; and for the public as the most updated and authentic source of information, the creators of the map are aware of the need to its improvement and constant development. The map and its deployment are still rather imperfect since there are still some problematic issues that should be mentioned – from the stability of servers and hardware through volunteer activation and workflow concerns to the quality of reports.

Pánek et al. (2014) observed some weaknesses of the map during its real deployment and they point out some challenges. First of all, they call for need to involve and train more volunteers to become members of the core team in order to ensure sufficient human capacity that can be promptly activated. Another issue is that should be improved is overall organizational management. Since the Crisis Map is the project governed by Czech Television, whose priorities are aimed at their basic issues during the non-crisis time, the development of the map is not continuous. As a result, for example, new plug-ins as well as new Ushahidi platform updates were not added to The Crisis Map prior to its deployment during the floods, even though they available at the time. Therefore, it is important to keep the platform and plug-ins up to date in the future by assigning an employee of the Czech Television New Media Division, who would be responsible for it.

Another problem is mentioned by Růžičková (2012), according to whom there is a lack of general public awareness of the crisis mapping possibilities. From the technical perspective, she also point out the disadvantage of complicated and user unfriendly interface of Ushahidi's content management system (CMS) which should be made simpler.

Finally, there is no Crisis Map of the Czech Republic mobile application so far. We believe that the development of a specially optimized application for mobile devices that could be directly linked to the crisis map and could simplify the direct input of records is one of the most alarming challenges that could significantly improve the system.

4 CONSLUSION

Recent studies have reported that people tend to use their social networks to communicate and to keep each other informed in the event of large scale emergency (Vieweg et al., 2008). Thus, it makes sense to tap into this collective knowledge during disaster situations since every piece of information, although seemingly unimportant, can be valuable in the case of any natural or artificial emergency.

In this paper, it was presented that examples from crisis incidents and ongoing research projects show that crowdsourcing techniques have a lot to offer in the field of crisis

management. In crises situations any environmental, economic and health sector can be affected. However, in order to obtain real-time, accurate and trustworthy information of ongoing crisis incidents and to establish crowdsourcing as additional tool for crisis manager, significant technological and methodological advances are necessary. As Schimak et al. (2015) state, in principle, designing such a system is relatively simple, but in our opinion crowdsourcing tools are like English: it is easy to develop one, but quite difficult to do it in such a way that it optimally supports crisis managers, while at the same time attracting large numbers of users. In summary, the ideal crowdsourcing application should be designed to support crisis managers in managing issues related to user motivation, to mitigate privacy and ethical issues, as well as to support a right balance between top-down and self-organization of volunteers per design.

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CHANGE OF MANAGERIAL APPROACHES WITHIN IMPLEMENTATION OF CLOUD COMPUTING IN SME´S IN THE CZECH REPUBLIC

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ABSTRACT

Cloud computing has become one of the main discussion theme in the questions of company information support. With the cloud computing new terms and technical conditions are defined. These systems might have important impact to institutions performance. Besides the practise in global corporates small and medium enterprises take place as sector that finds out benefits and performance aids of that solutions. Nowadays small and medium business solutions are common in offers of main service providers. Another question is whether we can maximize utility that systems provide us and how to archive it even in the age generating huge amounts of information and data.

Keywords: management, information system, information management, cloud computing, enterprise cloud, SME

1 INTRODUCTION

In the name of research, of which the current research is concerned, is the concept, which is for Czech academic and corporate environments relatively new, however actual. This is a phenomenon called Cloud computing (hereinafter referred to as CC). The location of IT infrastructure shifts to the network in order to reduce costs connected with hardware and software that enterprises owns (Sakr et al. 2011). In average only 11% of total expenditures of IT departments in companies is spent on development in opposite to maintenance costs (McAfee 2011). Therefore, in the beginning it is necessary to define this term, although some authors shared the view that there is no uniform definition (Grossmann, 2009; Voas a Zhang, 2009). In the literature thus far is mostly used definition of cloud computing from 2011: „Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics, three service models, and four deployment models." (NIST, 2011). Authors Mell and Grance created on the basis of this definition CC's taxonomy, which has become widely accepted in both the academic and business spheres. Model CC divided into three main categories: SaaS (software as a service), PaaS (platform as a service) and IaaS (Infrastructure as a service) (Mell a Grance, 2011).

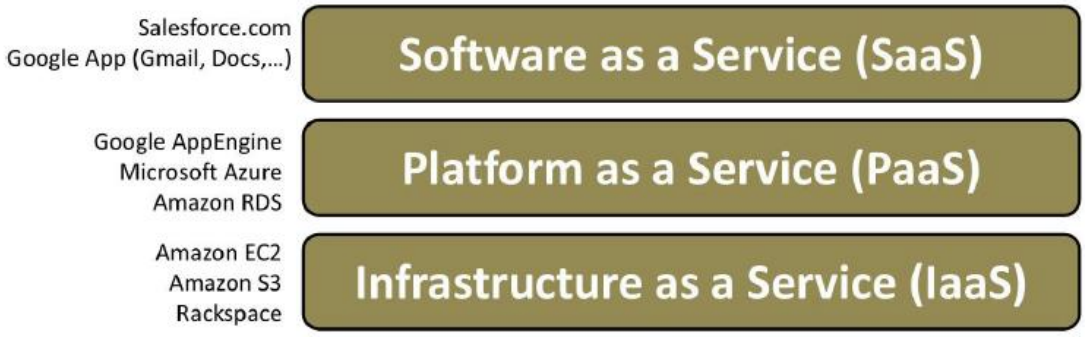

Fig. 1 - Models of cloud services (Sakr et al. 2011)

Enterprises need enterprise architecture that can exactly meet all requirements in order to reduce information system complexity. This means savings connected also with increasing capacity and agility of the system. (Wang et al. 2012)

Somewhat simplified and more generally than NIST defines CC Furth namely as a new style of computing in which dynamically scalable and virtualized resources are mainly provided in the form of services across the Internet (Furth, 2010). In contrast Buyya comes with the claim that cloud rather represents a distinct type of parallel distributed system composed of interconnected and virtualized computing resources (Buyya et al. 2008). According to Ferguson-Boucher is not a new technology, as it might, with regard to the previous authors, at first glance, but for him it is a new way of delivering computing resources based on the already long existing technologies (Ferguson-Boucher, 2011). A similar view is shared by some other authors. For example Howie (2010).

A completely different perspective here says Sultan, who considers CC for continually evolving paradigm which brings the promise of new opportunities for the use of computing resources, and this for reasons still ambiguous economic-technological definition across disciplines (Sultan, 2011). Rapidly growing computer power produces big amounts of data. One of the opportunity is the question how to monetize those (Sakr et al. 2011).

In the current literature concerning CC are three main themes that according Trigueros-Preciado et al. stand out above the rest. First of all, these are the characteristics and levels of development, further technical limits and in the last row on security issues. Along with this definition therefore draw attention to the lack of studies dealing with the CC in terms of business perspective, particularly small and medium-sized enterprises, as business users (Trigueros-Preciado et al., 2013). The service side of CC is defined by three main perspectives: Efficiency, creativity and simplicity. Those three desires offer users higher performance, better innovations and understandable system environment (Venters, Whitley 2012).

As the crucial advantage for SME‘s that CC brings considers Ghaffari return on investment, which has never been feasible mainly because of its flexible cost structure and scalability said. CC noticed by him and other authors aims to reduce the amount of complexity, minimize costs, but also increase organizational flexibility (Ghaffari et al. 2014; McKinney, 2010; Sultan, 2011 etc.). Ghaffari also finds attractive CC for many SMEs due to their not so significant amount of resources and technical expertise to set up an appropriate infrastructure so that they can compete with their larger competitors. Compelling reasons for implementing cloud is mentioned including cost savings, also necessary to adapt to technological developments and retain existing and attract new clients. (Ghaffari et al. 2014). Other authors dealing with the advantages of CC for SME's are Mohabbattalab (2014) or Trigueros-Preciado (2013).

Our research mainly concerns the implementation of CC's in SME‘s in Czech Republic not only due to their importance in the economy of the Czech Republic, but it should be noted that in terms of large corporate companies are often reluctant CC services cost-efficient manner. Consulting firm McKinsey found that typical data centers of large corporate companies can operate at significantly lower costs than those which would be required to outsource some of the existing cloud services (Miller, 2009). The situation for SMEs is different in the sense that they have resources to set up the initial infrastructure, which is essential for the realization of the cost structure of large data centers (Marston et al., 2011).

Deemed necessary, because of my research, mention authors from the Czech Republic, although researches on CC in the Czech Republic is still very rare.

Marešová and Hajek, who find that the emerging trends in the field of ICT are also topical in the Czech area and among which included the right dynamics of networking and cloud services. But rather they are dealing with the macroeconomic viewpoint specifically developing and circumstances relating to CC for selected SMEs in the country. Taking their survey, which was conducted in selected SME's in Czech republic (AMSP, 2011) shows that nearly 70% of respondents have never heard of the term CC, but 92% of those who are already using cloud services, are satisfied and appreciate flexible access to information (Marešová a Hájek, 2014). Similar research as Marešová and Hájek have dealt Bajdor and Lis in Poland, but in terms of quality and market certain similarities can be considered inspirational (Bajdor and Lis, 2014).

From the Czech authors is still possible to mention Buchalcevová and Galu dealing with ecological considerations ICT law with emphasis on SMEs. They agree with the above authors that CC is an opportunity for SMEs, despite limited resources, experience and knowledge, moreover, added that the adoption of CC can also mean a more economical option in terms of energy used so far (Buchalcevová, Gala, 2012).

For other authors Strnadová, Voborník cloud computing represents a cost-effective, adaptable way of how to provide business services and at the same time simplify the creation and management of cloud environments to provide cloud services, which can be a basis to support the workload and risk sharing, mainly due to investment restrictions and allow policy pay-per-usage PPU (Strnadová, Voborník, 2014). The policy PPU as major advantage of CC identifies and presents it as Quddus. For users constitutes a much cheaper way of using software, because they pay only for what they use specifically and is thus the most efficient use of resources (Quddusi, 2014). The fact that in the context of CC may not only talk about usage computer technology notes Christensen, who sees most obvious CC usage on mobile devices and this in future years (Christensen, 2009).

From a management perspective thus comes with the implementation of CC some changes in the business model even in the activities of managers. Since comes a new opportunity not only to actively work and communicate with customers, partners and vendors, while the ability to provide relevant data, assess alternatives and far more to gain awareness of customer behavior and market (Kepes 2014).

It should be mentioned, that with the coming trend CC naturally come and certain challenges, presented operational and organizational issues and therefore fall within the remit of corporate management. These challenges need to address before they are implemented cloud services. One of the authors dealing with these processes is Flatin-Martin, who notes that in the case of implementation of the cloud is a new service from management and will be expected to ensure quality during the transition and subsequent expected results. It creates Cloud management, which is facing the six challenges: versatility, scalability, automation, interoperability, security and diagnosis (Martin-Flatin, 2014). Through the above potential

obstacles, there are still security and legislative affairs, meaning the possible risk and must be respected and taken into account (Anthem, 2010, Lanois 2010). Use single cloud services should therefore be managed prudently with regard to both aspects of the matter (McKinney, 2010).

Géczy deemed essential for effective management of managerial oversight of corporate data. With the transfer of data and services to external providers the company loses substantial control over their timely management and storage. Necessity is so balanced approach in the conception and use of CC, which mentions McKinney (2010), while for the manager and is responsible in consideration of the risks and potential benefits associated with it (Géczy et al. 2012). Which fundamentally affects not only their current methods, approaches, as well as education. At the risk arising from the lack of its own expertise in understanding the CC points Mohabbattalab et al. In his study, since it can lead to a tendency to limit the possibility of implementation of CC in MSP (Mohabbattalab et al., 2014).

With the above also harmonizes Dudin and Smetanine who add that including the aforementioned lack of knowledge and skills of staff there are also managers' fear of losing control over their information and communication technologies, or the problem of information security. (Dudin, Smetanin, 2011). With reduced enterprise managers' fears, uncertainties and fear as a way to expand CC also resonate Zhang Q, Cheng L, Boutaba R (2010).

2 DISCUSSION

According to IDC, the amount of digitally produced data increased in years 2006 – 2011 from 0,18 to 1,8 zettabytes. That means that more amounts of data is being than traditional system are able to store or analyse (Sakr et al. 2011). The criticism of CC is for not fully investigating the potential of technologies (McAfee 2011). Specific solutions can also be high technology focused instead of accepting unique business needs. Along with the implementation of cloud based systems comes some pitfalls that can cause decrease of usability together with many benefits (Low et al. 2011). CC industry is evolving and growing rapidly. It is quite hard to specify the certain needs and the offer that can meet them (McAfee 2011). The understanding of what CC is or is not becomes more problematic. Even the questions how to manage SME company becomes more complicated with respecting different approaches.

The argument for cloud computing for organizations is a compelling one. But as Steve Arnold said few yeras ago: „Organizations are conservative beasts. Furthermore, the agitation rippling across the Web logs and Internet news services may be increasing concern among some senior managers about the reliability, stability and security of cloud services." (Arnold, 2008)

3 FUTURE RESEARCH

Thus arises the potential for research and also a space for raising the skills of management in CC for easier implementation and subsequent management of such services used. In situations in which SMEs creates virtual enterprise networks can be defined another research challenge. Are cloud based systems ready to be connected to another ones (Wang et al. 2012)?

Significant research opportunity takes place also in the area Health Care System. Cloud based hospital information systems give us advantages of information access for purposes like our health is. The question is whether current "best practices" applied in global corporations or SMEs are reasonable enough in order to use them in medical systems with all opportunities and threatens. Bill Schmarzo (2013) states that we have to learn how to use our data

warehouses and defines data mining as very important term connected with monetizing them. (Anon.2014)

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USE OF CROWDSOURCING IN TALENT MANAGEMENT

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Abstract

Crowdsourcing is a new concept that gradually penetrates into business management as a tool of the future. Its use has spread quite well on the field of product development, advertising, crisis management or knowledge management. However, it has much broader use. The aim of the current paper is to explore the possibilities of the use of crowdsourcing on the field of talent management. For the purposes of the paper talent management activities are divided into three sections: recruitment and selection, staff retention and employee development.

Keywords: talent management, talent, crowdsourcing, staff retention, recruitment, employee development

Introduction

Talent management is nowadays broadly perceived as one of the crucial activities of human resources management. With the pressure of competition and globalization rising, the systematic approach towards the talent management in organizations in highly desirable. In order to reach their strategic goals, companies have to adapt to various changes - technologic, economic, political, legal, and last but not least, demographical. The current paper focuses mainly on transformation related to technological and demographical changes. One of new tools that were developed due to fast technological progress, is crowdsourcing. It has proved to be a useful tool so far, with high potential of use in various areas such product development, marketing, crisis management or knowledge management. However, some of the areas have not been researched yet or very little. At the same time, a new generation of workers, so called Generation Y or Millennails, has entered the labour market. This generation is the one who made the implementation of crowdsourcing possible; it is very technologically and digitally skilled. By 2025 it will account up to 75% of labour. Therefore the question asked is what other areas might be crowdsourcing used in? And how useful could it possibly be?

It is impossible to cover the whole topic of crowdsourcing in one paper. Therefore this paper is focused on the use of crowdsourcing on the field of talent management. First, it provides the background of talent management introducing current and future trends. Secondly, it introduces crowdsourcing as a new potential management tool. Third, it looks on the possibilities of crowdsourcing use in talent management divided into three parts: recruitment, staff retention and employee development.

Talent management

In the 1990s a group of McKinsey's consultants launched a term 'war for talent' (Michaels et al., 2001), which has become one of the basic assumptions of the talent management. The 'war for talent' is based on the opinion that having talented people attracted and retained is becoming gradually more difficult as a result of specific psychological contract and demographic changes (Tucker, Kao and Verma, 2005). According to Schweyer (2010), organizations face three main forces that cannot be overlooked. Those forces are internet, concept of a global organization and changing demography of labour. Kwon (2014) and

Reilly (2008) emphasize talent management as a tool that helps to react on demographic, social, economic changes as well as market specifications. Organizations have adopted the idea of talent management. Also they have gradually developed a stand that without talent management their productivity as well as development and growth are in danger. They believe that organizations that do not implement talent management slow down their innovative approach, lower their attractiveness for potential workers and as a result company's value decreases (Schweyer, 2010). Calo (2008) identified two main categories of demographic risks that organizations have to face today. The first one is a capacity risk referring to upcoming retirement of baby-boomer generation. The retirement of this large numbered generation means not only a loss of a skilled workers, but also a loss of built up knowledge and expertise that newcomers will not have. The second risk Calo (2008) called a productivity risk. The trend of increasing age of employees in the organizations negatively effects their productivity, knowledge obsolescence, decreasing motivation and reluctance for self-development. Last but not least, increasing number of older workers in the organization also increases labour costs.

Although talent management has become a phenomenon (Dries, 2013), neither academic researchers nor companies' professionals agree on how to define *talent* and *talent management*. Smilansky (2005) considers only an extraordinarily capable employee with a significant potential and impact on company's performance to be a talent. He believes that talent management should take into account only a small amount of key individuals aspiring to higher and top management posts in the organization. Becker et al. (2004) perceive talent as an individual, who is able to differentiate an organization from others and therefore significantly influence its competitiveness. On the other hand, there are opinions that talent management should not relate only to the small group with potential of managerial growth, but also to specialists and experts as it is as difficult to engage and retain them in the organization (Smrčeková, 2007).

Although literature is quite clear about why talent management matters, it is much less specific in defining it (Huang and Tansley, 2012). Definitions provided by companies' professionals and academic researchers vary. Furthermore, neither significant number of publications nor majority of companies that have adopted a talent management concept are able to describe or define the central concept (Lewis and Heckman, 2006). According to Lewis and Heckman (2006), there are three ways of interpreting talent management. First, term talent management is often used simply as a new term for common human resources practices. Secondly, it may be alluded to company' succession-planning practices. Thirdly, it generally refers to the management of talented employees.

Armstrong (2007, p. 390) defined talent management as "a use of integrated set of activities to ensure that the organization attracts, retains, motivates and develops the talented people it needs now and in the future." Warren (2006, p. 26) stated that "in the broadest sense, the term can be seen as the identification, development, engagement, retention and deployment of talent, although it is often used more narrowly to describe the short and longer-term resourcing of senior executives and high performers." Compared to these broader definitions, Collings and Mellahi (2009) introduced talent management in a more specific way. They understand talent management to be "strategic activities and processes that involve the systematic identification of key positions which differentially contribute to the organization's sustainable competitive advantage, the development of a talent pool of high potentials and high-performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization." (Collings and Mellahi, 2009, p. 2). Dries (2013) emphasizes that most of the authors see talent management as a part of general

organization's human resources management. However, some authors perceive talent management as a mindset. As a result, those authors enforce talent management to be an important part of an organizational culture.

Horvathova (2010) presents number of situations that talent management might be a suitable solution for. Talent management might help if

- the organization face difficulties when filling the key positions
- there is a lack of qualified people either in the organization or on the labour market in general
- organization is able to attract new talented employees but has trouble retaining them
- there is a undesirable fluctuation in the organization
- organization is not successful in finding enough opportunities for further employee development within the organization
- there is a organizational restructuring expectation
- etc.

The main asset of a properly set and applied talent management is a condition where talented workers contribute greatly to the execution of the strategy and objectives of the organization. Other benefits may be a decrease of fluctuation costs, decrease of costs related to a recruitment of new employees and their adaptation, increased organization's attractiveness towards potential workers, consistent succession planning for key positions, better use of employee potential, developing and promoting employees from internal resources, better functioning motivation, minimization of losses associated with unoccupied key position etc.

With the increasing influence of globalization and internalization of businesses, the new term of global talent management appeared (Al Ariss & Cascio, 2014). According to Vaiman and Scullion (Vaiman & Scullion, 2012) global talent management "includes all organizational activities for the purpose of attracting, selecting, developing, and retaining the best employees in the most strategic roles on a global scale." Authors also emphasize that global talent management responds to differences in organizations' global strategic priorities as well as cross-cultural differences (concepts and opinions on how talent should be managed in various countries where the organization operates).

All along the globalization and internalization it is necessary to take into account a fast development of information and communication technologies (ICT). Even though it may not be clear at first sight, besides other areas ICTs have an impact on talent management as well. The trend of development of a supportive HR infrastructure and an increasingly sophisticated technology has penetrated the field of talent management and has led to a more customized approach to talent management (Cantrell and Smith, 2010).

Crowdsourcing

Crowdsourcing is an organized activity taking place in the online environment that uses a collective intelligence (that is an ability of a group of audience to find better problem solution than an individual) with the use of a modern information and communication technologies. It is a new, online way of outsourcing. The term *crowdsourcing* was created as a combination of words *crowd* and *outsourcing*. It was first defined only in 2006 by Jeff Howe (2006) as "the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call." However, according to Halder (2014) crowdsourcing was known much earlier and originally it did not relate on the use of internet or ICTs. He maps the historical development of crowdsourcing from the 18th century when the British government first used crowdsourcing

for a maritime chronometer development. Other known crowdsourcing cases are for example development of Toyota logo (1936) or design of Sydney Opera House (1957).

Nowadays most authors agree that crowdsourcing is directly linked to the internet (Vivacquu and Borges, 2012). The most up-to-date and accurate definition of crowdsourcing integrating various aspects was provided by Estellés-Arolas and Gonzalez-Ladrón-de-guevara (2012), who described crowdsourcing as "a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken."

When used, crowdsourcing provides quite broad scale of benefits. First of all, crowdsourcing provides an access to the enormous knowledge potential. Shao et al. (2012) state that thanks to crowdsourcing organizations may gain benefits of multiple solutions, shorter research and development time, reduced costs and solutions of higher quality. The process is also speedy and is cost less in terms of time and money (Premnath and Nateson, 2012). (Wexler, 2011)) emphasizes that crowdsourcing attracts hobbyists, amateurs and enthusiasts who are interested in the topic.

At the same time, researchers point out some of possible problematic issues related to crowdsourcing. Shao et al. (2012) found that there is a relatively low satisfaction of seekers with crowdsourcing platforms, mainly because of the small number and low quality solutions. Therefore it is essential to determine factors which influence the quantity and quality of solvers participating in the projects in order to attract more high-level solvers. Other challenges occur during the realization of the crowdsourcing projects in terms of adequate project management ((Hammon & Hippner, 2012). Premnath and Nateson (2012) also state that crowdsourcing is not a good option to go with if the problem is ambiguous and diffused as in that case it creates even more confusion and often turns the focus away from the real problem. Also, crowdsourcing has only limited use when the problem is of secretive nature. Premnath and Nateson (2012) also emphasize that crowdsourcing as a form of social networking "is a boon but sometimes it turns into a bane when the privacy is affected" as it may lead to quite antisocial activities and possibly later needed legal intervention.

Although crowdsourcing has its pros and cons, its use has spread into a various areas of business and management. It is used for example in marketing (advertising, product development, branding), financing (crowd funding, public offers, micro financing), production management, technologies or corporate and social responsibility management. It is also partially used in human resources management as organizations are very careful and often conservative when implementing a new tool regarding their people.

Possibilities of crowdsourcing use in talent management

As it was previously said, it is quite difficult to define talent management. For the purposes of the paper, the author decided to divide talent management activities into three parts: recruitment and selection, staff retention and employee development.

Recruitment and selection

Out of the chosen parts, recruitment and employee selection is the one most explored in relation to crowdsourcing. As one of the main task of human resource management is to select a right person for the right job, crowdsourcing is a suitable tool for recruiting the right men in modern days (Premnath and Nateson, 2012). Gillespie (2012, p. 17) states that "organizations that tend to be more successful are those that focus on what it means to acquire and assimilate new talent into their workplace." It responds to the need of new talents as a respond to the demographical changes (Calo, 2008). "When the older workers retire, and you haven't been successful attracting young people, you'll be in a bind" added Gillespie (2012, p.17). What does the process of recruitment via crowdsourcing looks like? Usually an assignment is given to a public. Public later recommends the suitable candidates to the companies (Premnath and Nateson, 2012). Assignments vary based on the industry and position being filled. The process takes place in the online environment where participants submit their outputs (ideas, proposals to a given problem etc.). By providing human labors from a cloud or virtual pool it creates a significant value to the company. The process itself is cost effective as well. Wu (2014) emphasizes another important point: if someone does not know the solution to the given task, "he or she is not going to fake expertise in order to answer a question" (p. 25), but rather will not participate in the challenge at all. At the same time, thanks to the massive number of participants that crowdsourcing is able to reach, there is more than satisfying pool to choose the best talents from. Business leaders are even able to subscribe to a service that "provides access to numerous competencies that the organization never acquire on its own or bring into its core" (Rivera, 2014). Talent sourcing then becomes fairly manageable part of strategic workforce planning. As a result, crowd sourced recruitment is perceived as an effective method and the future for talent acquisition.

Staff retention

Once company finds a talent, it stands in front of another challenge. How to keep the employee? There are plenty of theories on employee motivation, satisfaction and rewarding from various authors (Armstrong, 2007). Crowdsourcing may be perceived as a new tool that fits into those schemes and helps to pursue the desired status.

Workers of generation Y and younger demographics prefer fast feedback, open access to information, teamwork and participation in decision-making process when a change is adapted. They want career development, faster promotions and more responsibility (Corsello, 2013). They also behave with less privacy and decorum, compared to previous generation of Baby boomers and Generation X (Wu, 2014). They are also technologically skilled and are not afraid to communicate online. In fact, they expect a freedom to use social media and social collaboration tools (Corsello, 2013). All of these are proved to motivate them. And as crowdsourcing meets all these requirements, it seems to be a fitting tool for staff retention. It can be also used for a performance reviews as it takes place online and often in a real time. It may help to increase organization's effectiveness and efficiency (Wu, 2014). As Jonathan Trichel, principal of Deloitte Consulting, stated, "Crowdsourcing is the art of tapping a broad set of people collaborating in a purposeful, structured, social platform to solve business problems ranging from high volume, low value tasks to challenges requiring sophisticated, highly specialized skills" (Coy, 2014).

As growing number of organizations uses an internal information system, the implementation of crowdsourcing should be rather straightforward. The problem is most of the companies still uses their internal information system only as a storage for hard data or projects'evidence, and not as a communication platform. The transformation will take its time, however, experts

predict that many traditional HR practices need to change in order to build new systems of work that create adaptability, innovation and speed, and foster expertise, collaboration and descision-making (Corsello, 2013). In other words, crowdsourcing can help organizations build, engage and foster communities of workers that can be used effectively for recruitment and branding (Shegrill, 2014). .

Employee development

Originally, crowdsourcing was designed as an outsourcing of a certain problem to a group of individuals outside the organization. However, with the raising importance of information and communication technologies in the life of organizations crowdsourcing can also be used on the internal basis, especially in global corporations (PwC, 2011). Although the area of employee development with the use of crowdsourcing is not well researched yet (Cantrell and Smith, 2010), author proposes possible way of use.

Crowdsourcing can be an effective part of e-learning. A struggle of older e-learning platforms it that they are static, serve mostly as a storage for study materials and participants cannot cooperate or discuss the topic or problem in a real time. The idea and technology of crowdsourcing changes this approach. It has been successfully used worldwide on the platforms of massive online open courses (MOOC). The most known MOOC platforms are Coursera, edX or Udacity. MOOC are open to public and usually last from six to twelve weeks. Courses consists of online lectures, study materials to read, quizzes to complete, tasks to solve, discussion with other students and collaboration. The interesting part is that completed tasks are often reviewed by students themselves, the crowd. Some courses take it even further and students vote for the winner of the problem-solving task, which supports the opinion of Premnath and Nateson (2012). They say that one of the principles of crowdsourcing is democracy and the right of people to vote for the best.

The MOOC principles are well adaptable to a company's needs. Changes would be needed in:

- Target group. It would not be open to public, but accessible only to certain employees.
- Content of courses. As it would follow a different strategy that should answer to talent management and workforce planning, there would probably be a fixed structure of follow-up courses provided to employees.
- Expert trend. As Calo (2008) stated, with the older generation retiring there is an increasing need for new experts. Crowdsourcing learning platform could be useful when transferring the knowledge and expertise to younger workers.
- Innovation. With the tasks given to employees within the studied course, there is a high probability of innovation appearance. At that point, effective organizational knowledge management is needed so the drawn innovation could be stored and used.

Crowdsourcing learning meets new trends in education, is appropriate for global companies, offers certain customization and builds up a community of workers with the same interest and expertise. People in general tend to engage with their colleagues and friends through social networks (Shergill, 2014). Corporate social networks work the same way as it leverages both professional and personal relationships. Implementation of crowdsourcing into a corporate employee development offers an enormous potential, however the transformation will require its time.

Conclusion

As a respond to demographic and technological changes, there has been a new developed concept of crowdsourcing. It will be a growin tool across many industries in the future.

Although it has penetrated various fields already, many of them need further research to prove how effective crowdsourcing may be.

In this paper the author has introduced the possibility of crowdsourcing use on the field of talent management. First, the author presented the role of crowdsourcing in recruitment and employee selection, where crowdsourcing has become quite used and effective tool already. Secondly, possible use of crowdsourcing in staff retention was presented as it responds well to current demographic changes. More academic work needs to be done to relate crowdsourcing more closely to various motivational theories and it is an intention of an author to dip deeper into the topic. Thirdly, a proposal of crowdsourcing use in employee development was presented in relation to already known model of massive online open courses. Different point of approach was taken at this point, however, further research would need to be done in order to prove the efficiency and functionality of the suggestion.

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THE STRATEGIC MANAGEMENT SYSTEMS AND STRATEGIC CONTROLLING SYSTEMS IN CZECH INNOVATIVE COMPANIES

Jiří Beran

Abstract

This paper deals with the strategic management and strategic controlling system in companies operating in the market areas where frequent innovations are crucial for long term success.

It contains the results of own survey carried out in the selected Czech companies. The method of structured interview with owners or top management members was chosen for research. The interview questions deal mostly with ways used by the companies so as to create and maintain the strategic management system on dynamic markets. The information derived from the structured interview is compared with the economic results of company. Consequently, the relations between inputs and results are found.

The results indicates the positive relationship between presence of strategic management system and the value creation, as well as the importance of the position of its sponsor at the corporate hierarchy.

Keywords: strategic controlling, strategic management, innovative companies

1 INTRODUCTION

In recent years, we can observe that the changes are coming more frequently than before. Not only changes related to our private lives, but even more changes in the business and economic environment.

There are companies riding a wave of these changes. And there are companies negatively affected by them. Even in the Czech Republic there are many companies doing their business in fields that have been changing extremely quickly. Some of them are more and some of them less successful.

The aim of this article is to:

- Outline the issue of strategic management of innovative companies generally
- Present the results of own research
- Put these results in context of their business performance
- Observe the differences between various ways of strategic management
- Provide with conclusion based on research results

2 THE THEORETICAL BACKGROUND

The strategic management is defined by various authors differently. For this paper we use this definition (Nag, Hambrick, & Chen, 2007):

„The field of strategic management deals with the major intended and emergent initiatives taken by general managers on behalf of owners, involving utilization of resources to enhance the performance of firms in their external environments.“

It has to be mentioned, that this is not the only valid point of view.

Some authors are giving emphasis to alternative explanations of strategic management, possibly based on military history of the theory of strategy. Synek (Synek & Kislingerová, 2010) highlights that the word "Strategy" is based on Ancient Greek "Strateg", which means surprising gumption or a trick. "Defeating of competitor is the basic target. In the economic area it means the obtaining of comparative advantage of one subject over another one. This also creates the basic difference between the strategic and long-term (or conceptual) management."

It is defined by Kovář (Kovář, 2008) similarly. "The real strategic management and the real strategic operations are based on non-indifferent relation and negative way of connection between at least two subjects. The main aim is liquidation or absorption of competitor".

However, the research presented in this paper deals with the system used by companies for practical strategy management. It doesn't examine why the companies are managing strategy, it examines how they do it.

Primarily, it checks whether companies have some strategic management system, who is the person moving it forward, and which groups of measures are included.

These groups are based on Balanced Scorecard methodology. Balanced Scorecard is a publicly available methodology for Strategic management in organizations. Its authors (Kaplan, 1996) designed it because they felt the demand for tool, that could easily (and at the same time complexly) manage the organization in accordance with its vision. They work was motivated by observation of the situation in many organizations, that had no strategy, and even if they had, it was rather formal then effective and didn´t contain any measures.

Nowadays, Balanced Scorecard is a theoretically well-established methodology, reviewed, criticized and amended by many authors in Czech Republic (Vysušil, 2004) or globally (Horváth & Partner, 2007).

Simply put, the strategy defined in accordance with the Balanced Scorecard methodology contains following basic parts: company vision, objectives in perspectives, measures assigned to these objectives and a set of so called strategic actions related to these objectives. Since the objectives (or measures) are supposed to be connected by cause and effect relationship, the form describing strategy is called the Strategy map.

In this paper, Balanced Scorecard is used as a base for a Strategic management system definition.

3 MATERIALS AND METHODS

The research was carried out from 2011 until 2014. It was based on quite detailed inspection of 18 technology companies in the Czech Republic, consequent fulfillment of structured questionnaire with respondent and comparison its results with real financial performance of companies.

3.1 Companies in research

Following companies are included in the research:

2N (2N Telekomunikace, a.s.), Advanced Materials (Advanced Materials - JTJ s.r.o.), Cígler software (Cígler software, a.s.), ČKD Elektro (ČKD ELEKTROTECHNIKA, a.s.), Ella CS (ELLA-CS, s.r.o.), Etnetera (Etnetera, a. s.), Jablotron (JABLOTRON, s.r.o.), LMC (LMC s.r.o.), Meopta (Meopta - optika, s.r.o.), Ryor (RYOR a.s.), Software 602 (Software602 a.s.), Sprinx Systems (Sprinx Systems, a.s.), Tescan (TESCAN ORSAY HOLDING, a.s.), Tokoz (TOKOZ a.s.), TOS Varnsdorf (TOS VARNSDORF a.s.), TYC (Strojírna Tyc, s.r.o.), Unicorn (Unicorn, a.s.), Žďas (ZDAS, a.s.)

This means there were 6 companies from IT industry, 3 from medicine/pharma/chemistry industry, 4 from hi-tech optics and electronics and 5 companies from machinery industry.

3.2 Respondents

The research information was received during interviews with the companies' representatives – active managing owners, co-owners or general managers and members of management participating directly in the top management.

3.3 The form of questioning

The dialogues were conducted in a structured manner and usually took from one up to three hours, since the structured interview was accompanied by non-structured explanation and specification. The dialogues were conducted directly in the researched companies and were mostly combined with interesting show-round inside the companies - in the areas of production, administration, research and development.

3.4 Structure of dialogue

The respondents were asked, among other, the questions listed below. Given the differences between companies and respondents (in terms of terminology, scope of activity, fields of greater focus) and also the context of dialogues, some questions were adjusted to some respondents. In some dialogues several questions were omitted entirely – that was because in reference with the pieces of information previously obtained the answers were evident.

As an additional source of information the data from publicly available sources was used.

These questions covered following topics:

- Form and content of the strategy set
- Structure and content of company strategic performance indicators
- Way of communication of the strategy targets and indicators to employees
- Satisfaction/dissatisfaction of employees with the measurement system and productivity monitoring
- Technique of providing data for measuring the KPI
- Software used for the strategic management

3.5 Comparison with real financial performance

The results of dialogues provide with a view on how the companies are strategically managed. However, the question is whether this management is successful or not.

In this paper, the publicly available ("Justice.cz, the official web of Czech justice," 2015) balance-sheet and profit and lost statement was analyzed and the performance evaluated.

Based on these statements the value creation was recognized. The value creation is calculated as the difference between companies ROE and the opportunity costs of capital. These opportunity costs were taken from publicly available statistics ("Benchmarking diagnostical system of financial indicators INFA," n.d.).

The company creates value in case its ROE is higher than the opportunity costs of the capital.

4 RESULTS

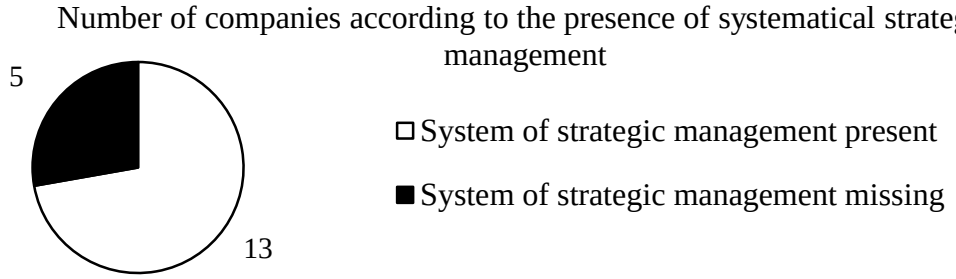
4.1 Presence of strategic management system and its impact on value creation

The first evaluated issue was the presence of strategic management system.

Since the strategic management systems in companies are very variable, for the purpose of this text the existing strategic management system (in some form) it is supposed to contain:

- A set of objectives
- A set of performance indicators
- A set of plans or projects ensuring achievement of objectives

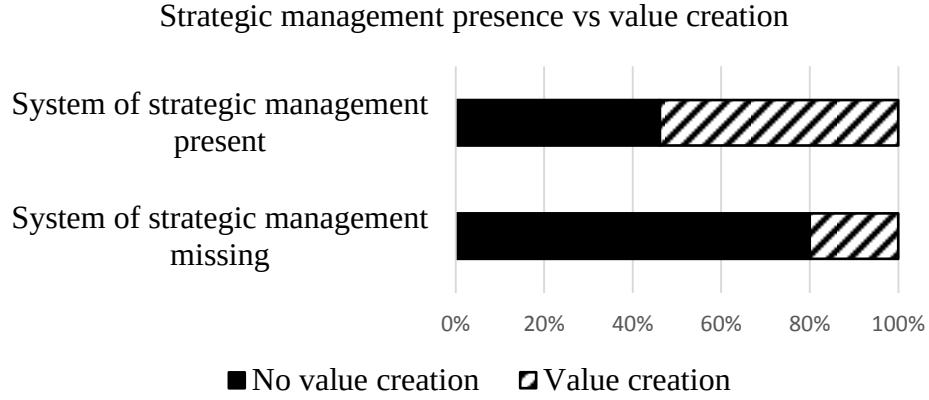
It is clearly visible that this description references the Balanced Scorecard. However, the Balanced Scorecard terminology and Balanced Scorecard methodology are not really widespread among the Czech managers, so the definition mentioned above is more general.



Img. 1 – Strategic management systems in companies. Source: Author

From the researched companies, 13 declares presence of strategic management system and one of them specifically uses the Balanced Scorecard methodology. The question is, why 5 of them do not have it. The respondents from these companies mostly declared, that they do not need any strategy, since: 1) Strategy is not relevant for anybody except of owner, who keeps it in his mind 2) Strategy is too rigid in the fluctuating business world 3) Strategy is a constraint limiting people´s creativity and activity.

It can be understood that there are valid arguments against strategy system creation and maintenance. Besides the reasons mentioned above, this is also very time consuming and consequently expensive – since most of activities related to strategic management systems are done by top managers with relatively high staff costs.



Img. 2 – Impact of strategic management on value creation. Source: Author

However, comparison of financial performance of both groups of companies confirms the expectable fact, that the presence of strategic management system brings higher financial performance. This result corresponds to the findings of other researchers (Hoque & James, 2000).

Unfortunately, it should be said that not only some companies do not have strategic management system, but even managers from companies that have it do not pay too much attention to it. They do not focus sufficiently on creating, updating and publication of it. It

would be difficult to statistically prove this fact, but it was generally admitted by the respondents during the dialogue.

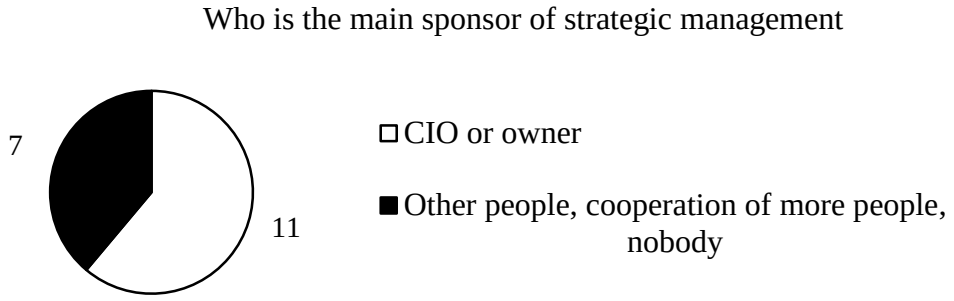
It has to be also mentioned, that no company in research has any system of presentation or publication of strategy inside the company. Some of them occasionally present some info about strategy and its fulfillment on meetings or, as mentioned by many managers, on the Christmas party.

This practically means that the strategy is often kept inside the top management team. It is obvious that this situation strongly eliminates the important role of strategy sharing, that should bring a lot of synergy to company. The positive impact of strategy sharing is also proved, even in innovative companies. (Pearce & Ensley, 2004)

4.2 Main sponsor of strategic system implementation and its impact on value creation

The situation in a company can be observed and evaluated. But it should be also seen who the person taking care about the strategic management in a specific company is. It is mostly the highest manager. However, in 7 companies it is someone else – someone with weaker decision making power. In these companies it was quality manager, financial manager, combination of more people or, in one case, no one.

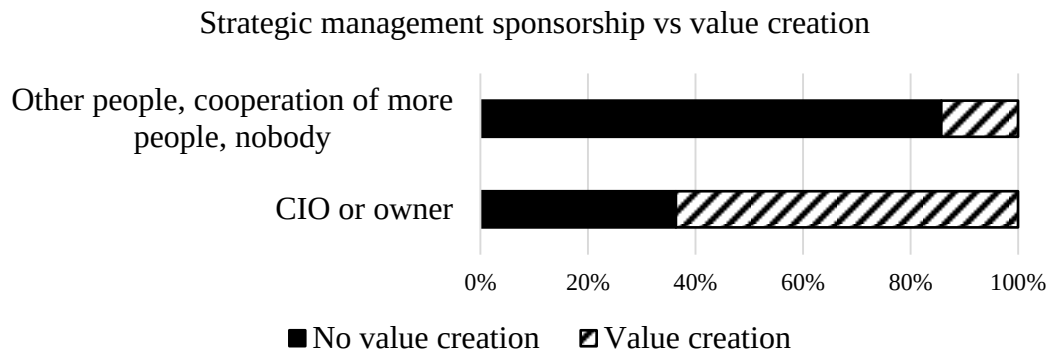
When compared with the results above, it may look surprisingly that despite there are only 13 companies having strategic management system, here is declared that the strategy is pushed by someone in all companies. This is because in the previous subchapter the strategic management system was defined as the set of elements (objectives, plans, indicators). However, in this subcharter is examined who is the person, who takes care about the strategy – no matter how much is the system mature.



Img. 3 – Main sponsor of strategic management. Source: Author

The results show that the strategy is not pushed forward by the most powerful person in hierarchy in 7 companies. In this group the ratio of companies generating value is lower.

This was, in interviews, mostly explained by the fact that only the highest manager has enough power to continually keep and push forward the long-term, continuous process of strategic system implementation. The importance of highest manager active acting in this area was repeatedly highlighted by respondents, as well as it is mentioned by theoretical resources (Kaplan, 2006).



Img. 4 – Impact of sponsorship on value creation. Source: Author

One interesting result should be mentioned here. Except of the results presented above, more than 50 other parameters of companies were analyzed. This information covered not only strategy management, but also the methodologies of innovation management or HR approaches.

These parameters were analyzed by the datamining tool – MS SQL Analysis Services approached by MS Excel 2013 add in. This tool evaluated all parameters provided to it and analyzed its impact on value creation, and detected the sponsorship of strategic system implementation as the most relevant factor for value creation. The second one was the presence of strategic management system.

4.3 Perspectives covered by strategic controlling

The strategic controlling system has also been the subject of the research.

The respondents were asked about the areas that are regularly checked at the strategic management level. Again, these areas approximately equal the Balanced Scorecard perspectives.

Img. 5 – Strategic management systems in companies. Source: Author

All companies are checking financial indicators. In fact, this has to be done because of the mandatory obligation to keep accounts. The companies only use the simple indicators (like

profit, revenues…) but they do not use any sophisticated evaluations like EVA, MVA, INFA etc.

3 companies do not check indicators related to customers satisfaction with company, its behavior and its products, the rest of companies does. The ways of observation differs depending on the type of industry. Companies providing complex, large projects visit the customers frequently and ask about their satisfaction. On the other hand, other companies focus on statistical evaluation of big data provided by large number of (relatively small) customers. For example Cígler software uses the statistically evaluated customer's feedback as the main base for the evolution of their key product Money.

The internal process performance is checked by most companies, but it is difficult to compare it because of different industries. In some companies (Unicorn, Sprinx systems, Tyc) primarily project related indicators are checked. On the other hand, in companies more aimed at production like Meopta, Ryor, Tos, the indicators are more focused on processes.

The most difficult aspect to measure is definitely the lowest perspective – the perspective of learning and growth. Measuring of its indicators is complicated due to the "softness" of the area where people, their skills, motivations and abilities are handled.

The respondents admit that they mostly measure the easily measureable indicators – like formal education, fluctuation, certifications, work safety etc.

They are aware of the fact that this is not sufficient – because these indicators do not reflect the most important capital of innovative company – the creativity, the ability to act quickly, the deep technical knowledge, the ability to work in a team.

Anyway, it has to be said that in spite of some attempts there are very few methodologies sufficiently handling measurement of this parameters.

When describing the indicators controlled by companies at the strategic level, it should be noted that none of the researched companies analyses the logical connections between measures or between objectives.

As mentioned above, this means the companies can not sufficiently look for the causes of problems.

5 Discussion

There is a large number of publications demonstrating the importance of systematic strategic management.

However, this issue is not examined enough in the rapidly developing area of innovative companies in the Czech Republic.

This study confirms, that even in this area companies can benefit from the strategy in case it is systematically handled.

The limits of this study have to be mentioned. The research was more qualitative than quantitative, examining not only facts, but also reasons. This approach is very time consuming which limits the number of companies. This number cannot be big enough to draw universal conclusions.

Further research should cover larger number of companies, but it has to consider that the systems, approaches and even terminologies used by companies in the area of strategy management are very variable, which brings high risk of misunderstanding or misinterpretation.

6 CONCLUSION

The presented study demonstrates that not all of Czech innovative companies manage their strategies systematically enough. Some of them even lack strategic objectives, measures or action plans.

However, comparison of companies with and without this system confirm the assumption, that presence of strategy results in higher performance defined as difference between ROE and opportunity costs of capital.

The study also demonstrates the importance of strategic management system implementation and maintenance sponsorship. This factor, sometimes neglected, seems to be really important for successful strategy implementation.

The system of strategic level performance indicators is the integral part of strategic system. However, the companies focus more on the financial and internal process performance indicators than on the customers or learning and growth indicators and they overlooked the importance of cause and effect relationships between indicators.

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MARKETING

NETWORK OF COMPANY STORES AS A MARKETING TOOL

Petra Pupák Waldnerová

ABSTRACT

Using the right marketing tools should make your brand special – different from the others. How about using a company store as a marketing tool? Marketing tool is a mean of communication with a customer and a customer plays the most important role in each business.

Selling your products, keeping in touch with the customers and promoting your brand – all together. Where should be the company stores situated to catch the customers? Nowadays, the trend says that people spend their time in shopping centres. Everything situated in one place – shops, services, leisure time activities, playground, etc. Seven days per week, open from the morning till the evening, no matter what´s the weather like. Locate a company store in a successful shopping centre should be also the way how to promote the brand and get people know about your products. Doing marketing research helps companies to know where do their customers buy their products, where do they spend their time and which marketing tools play the important role in communicating with them. Asking the right question in marketing research can help them to use the right ones.

Keywords: Marketing, marketing tool, shopping centre, customer, company

1. INTRODUCTION

History of shopping centers dates back to the distant past. First of all, a large shopping center is regarded as Grand Bazaar in Persian Isfahan, whose foundation is dated in the 10th century. It consists of two km covered street, which is filled with shops on both sides. Mentioned arrangement was later named a shopping mall. One of the largest shopping centers boom occurred in the 15th century, when the first shopping malls were opened in Europe. Since the mid-19th century Paris was just a model for the world, which has built halls and passages with a glass roof.

One of the first real commercial centers was located in Burlington Arcade in London, the establishment of which was in 1812. Followed Westminster Arcade in American style from 1821 in Rhode Island in the United States. In 1860 was established Milan's famous Galleria Vittorio Emanuelle II. Russian GUM shopping center was built in the capital on Red Square in 1893.

Since the time of the interwar period were shopping centers in Germany very popular and this trend continues until today. The largest development of shopping centers in Europe came in 1967, when the Brussels-based International Organisation Business and urban planning, which defined the principle of the development of shopping centers in Europe.

During this period in Europe, built the first regional shopping centers in the meadows and at the same time had run the construction of suburbs and city centers. Regional shopping centers accounted for relatively large objects, mostly single deck. Near the house is a sprawling parking. The heads of regional shopping centers, which were created in the 60s, a regional shopping center Main Taunus Zentrum built at the intersection of highways near Frankfurt am Main to enlarge and to the end of the 80s was the largest in Germany. At the end of the 60s

opened the first indoor shopping centers in Scandinavia. The first shopping centers as we know them today, originated in northern Europe. The reason was probably low temperatures and short days. Known as shopping centers in Stockholm, Copenhagen and Helsinki.

In 70 years there has been construction of large multi-storey buildings. The motto of shopping centers since been "shopping as an experience." The centers are equipped with air conditioning, greenery, customers have found the staging area. The biggest advantage, however, was to offer a wide range of opportunities for shopping, dining options, services and entertainment. In some shopping centers were placed hotels and cultural facilities - sought to extend the time to use these centers. In our vicinity are representative of those shopping centers Donau - Einkaufszentrum Regensburg and Shopping City Süd in Vienna. Bratislava had its first major department store until 1931. The five-storey building built in our country at that time a very successful and renowned businessman Bata on Hurbanovo square. The first modern shopping center was opened in Bratislava in 2000.

In Slovakia, according to growing numbers of shopping centers, there culture of shopping was changing. Especially families with kids spend their free time shopping and relaxing under one roof. In 2000, kicked off the trend in the capital opening of the first shopping center in Slovakia, located in the center of Bratislava - Polus. In total leasable area of 38 500 m2, a visitor could find shops, services and entertainment and new experiences under one roof.

Polus has changed Vajnorska street into a busy area, which leads in Bratislava prefer to avoid. The central urban areas began to attract developers in the region, they were great advantage of less expensive land and less competition than in the capital. So gradually evolve shopping malls such as Europa Shopping Center in Banska Bystrica (2006), Galeria MLYNY in Nitra (2009), Aupark in Zilina (2010), Aupark in Piestany (2010) and others. Study exploration activities GfK tenant mix of shopping centers offer a comprehensive overview of the business centers in Slovakia. In our area there are about 1,500 stores with fashion brands in shopping malls. Significant indicator is that four out of five Slovaks visit at least once a month a shopping mall and average purchase ordinary is 52 euros. In Slovakia there are more than 80 shopping complexes, including malls, galleries, shopping piers or stop shops. Many international brands have decided to open up its operations in shopping centers mainly because of high traffic due to a number of other brands, opening hours, as well as easy parking, often free for at least the first three hours.

Most shopping centers are located in the western part of the country, wins the capital Bratislava with number 18. Within the mix of tenants has the largest, up to 36-percent share of category Clothes by entering mode for adults and children, footwear and sporting goods. Successful shopping center but it would provide its visitors a combination of operations so as to satisfy its customer. Visitors most often buy clothes, shoes, cosmetics and food. Stores located in city centers are regarded as a counterweight shopping sites on the periphery. Prevent emptying of historic centers and provide your visitors stores in close proximity to their place of residence and so many of them are of high traffic, particularly during working days.

In some European countries, such as Germany or England, it is a tradition for residents to shop in the center, and thus large shopping centers on highways originate only in the last 30 years. Their construction but reduced the number of customers in urban centers, mainly due to better parking, a larger area and a wider choice.

Increasing urbanization and digitalization of the world are global trends that affect the behavior of visitors shopping centers in Slovakia and the Czech Republic. The assumption is that, in the future, visitors will be decided by the quality of the shopping center. Important factors include its proximity, access, parking, mix of shops and services that the center offers.

Successful center has to offer customers something extra. It is important to monitor global trends that affect people's lifestyles and behavior. Many customers are looking for added value of experience.

2. DATA AND METHODS

Locate the company store in the shopping malls will be not only a business plan, but also combining brand promotion and achievement of public awareness of the brand. For successful shopping centers find businesses under one roof in daily average of 25.000 visitors and it is an ideal place for the presentation of their brands. During the autumn of 2014, a face to face questionnaire was distributed and collected from 610 respondents. The subjects for this study were selected using a convenience sampling method. The main population for research was 18 years and older people living in Slovakia. To standardize responses, the close ended questions were used. Using of close ended questionnaire also ensured easy analysis of data. The results were evaluated in SPSS software program. Frequency distributions and cross tabs were used to analyse data.

According to Table 1, considering the demographic segmentation of survey participants, 44% of consumers were male, 56% were female, 49% were between 18-24, 21% were 25-35, 9% were 36-45, 12% were 46-55, 9% were 56 and older age. 31% of all respondents graduated from university, 64% had secondary education and 5% had reached primary education.

Table 1 Demographic Segmentation of Survey Participants

Gender		*Residence*		*Education*	
Male	44%	City of Nitra	54%	Primary	5%
Female	56%	Other	46%	Secondary	64%
				Higher	31%
Age		*Nowadays you are*		*Number of household members*	
18-24	49%	Employed	44%	1	4%
25-35	21%	Unemployed	5%	2	17%
36-45	9%	Student	40%	3	21%
46-55	12%	Maternity	3%	4	36%
56 and more	9%	leave		5	14%
		Retired	8%	More than 5	7%

Source: Own questionnaire survey

3. RESULTS AND DISCUSSION

Trends in the last decade wish shopping centers. Accumulation of thousands of visitors a day is a challenge for entrepreneurs. Location shops to world-class shopping brands, not least serves as a marketing tool and many international companies appreciate it. Another advantage is the possibility of direct communication with customers and its subsequent analysis, exploring its needs. Location of shops on a busy site in successful shopping center could help the brand to become popular among the general public.

The aim of the marketing research was to find out if people know wine producers in Nitra region, if they usually buy wine products and if they buy these products in shopping centres. We were also interested in how often do the respondents attend shopping centres and it they wish to buy the whole range of products of our brand in one place.

80% of all respondents buy wine products and 66% of them buy these products in shopping centres. It is a positive response for us, because our plan is to locate shops in shopping centres in our region.

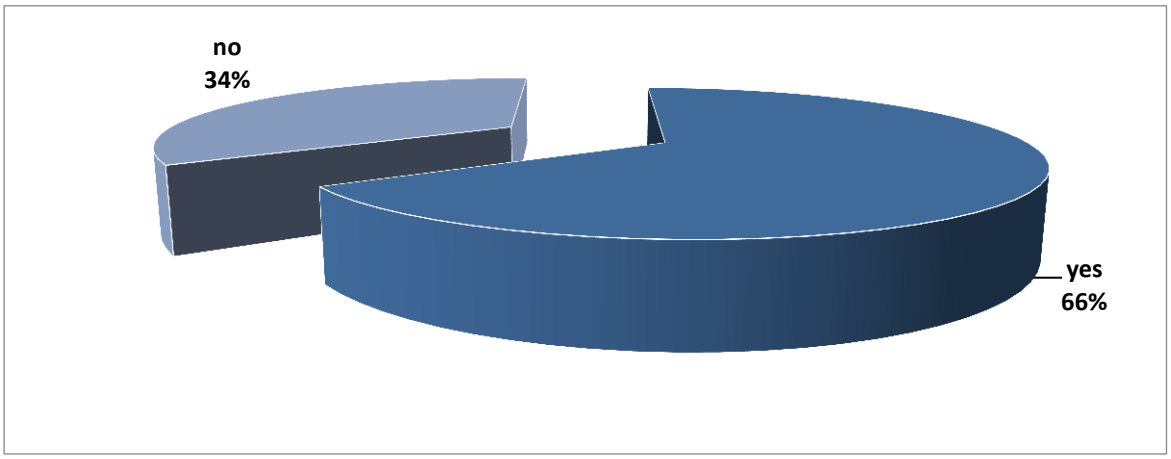

Figure 1 Do you buy wine products in shopping centres?

Source: Own questionnaire survey

Our respondents mostly buy wine products in shopping centres once a month (Figure 2). 28% of them buy wine product in shopping centres anually. 10% of asked buy products once a week and daily. We need to focus on this two groups.

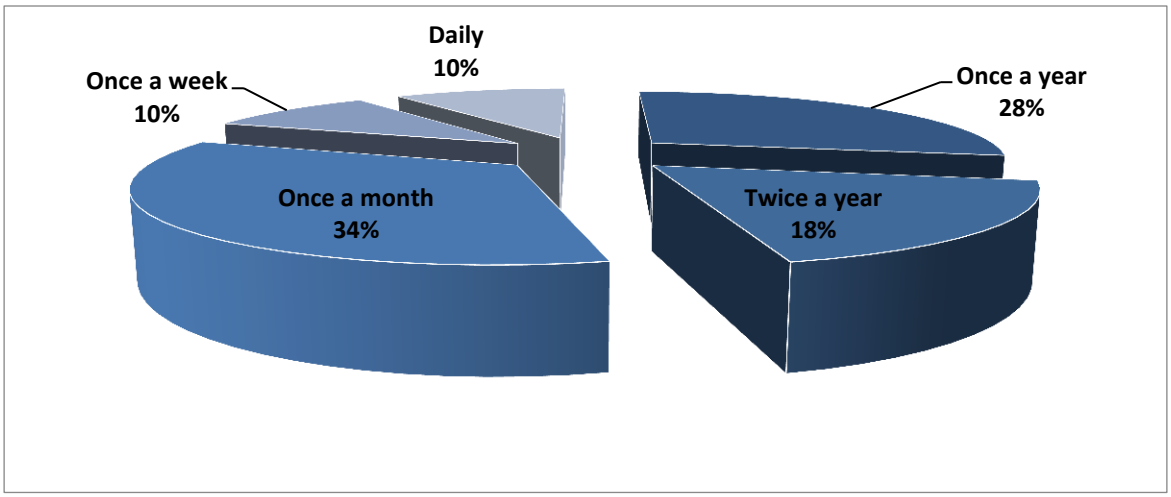

Figure 2 If so, how often?

Source: Own questionnaire survey

In our country, last few years people drink wine more than in the past and this trend shows that wine producers has the opportunity to sell more. If the shop will be located in the shopping centre – place where people nowadays spend their free time, the success is coming. It´s important to know what kind of products people prefer the most. Most of the asked said, that they prefer white wine, but 32% of respondents said, that they drink rather red wine. On the third place was rosé (even more and more popular in last few years) and just 13 asked said, that they prefer wine spirit, which people usually choose during special occasions.

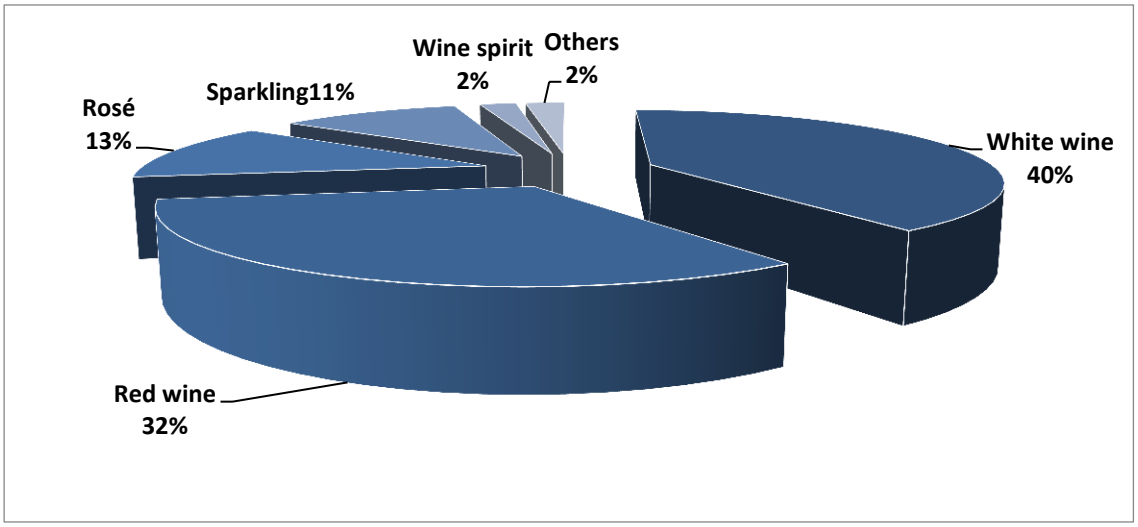

Figure 3 Which wine product do you prefer ?

Source: Own questionnaire survey

Slovak people mostly buy wine in supermarkets and prefer wine that costs from 6€ to 10€. In foreign countries wine lovers usually prefer buying wine in specialized wine shops. In past few years the trend of wine shops also came to Slovakia but people still didn´t get used to it. They prefer to buy low-cost wine in supermarkets during their usual purchases. According to this locating a company store is a shopping centre close to a supermarket would be the best choice for an entrepreneur.

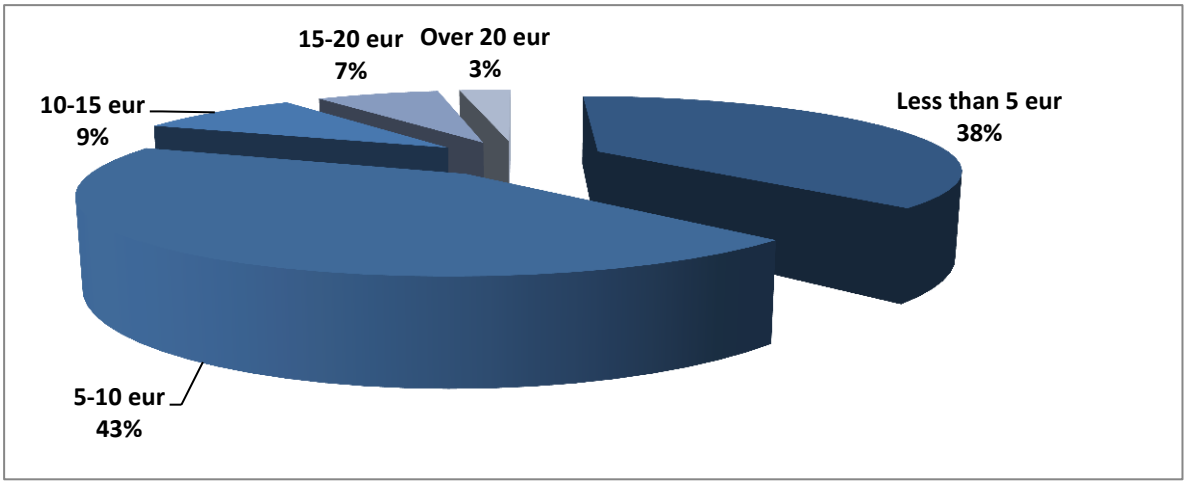

Figure 4 In which price category do you buy wine products?

Source: Own questionnaire survey

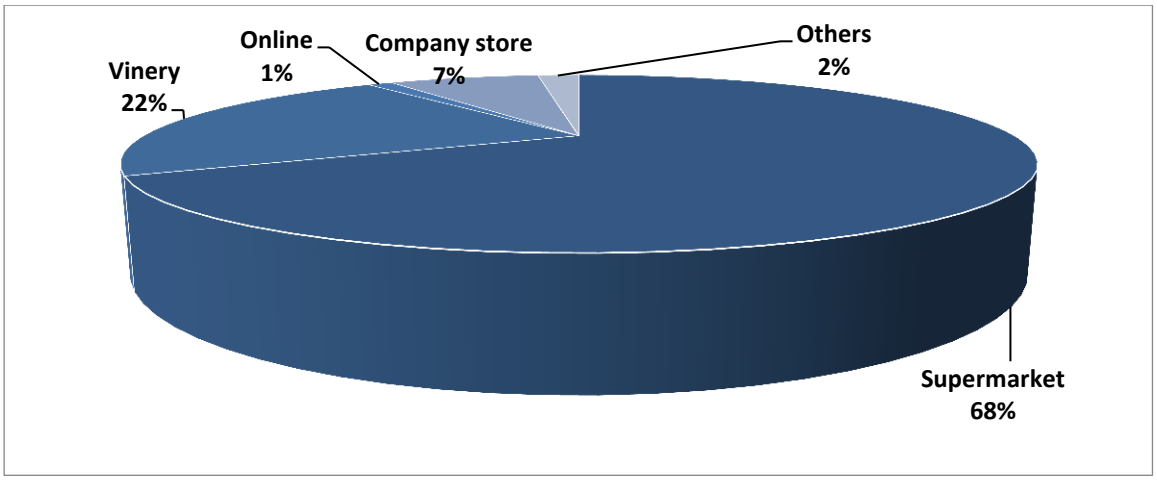

Figure 5 Where do you usually buy wine products?

Source: Own questionnaire survey

Consumers have a wide range of wine products they can buy. They can choose between a lot of regional and international brands in a good prices. Having a positive awareness is very important. Using the right marketing tools helps getting know your brand. 82% of asked said, that they know our brand (Figure 6). Locating the company store in a shopping centre will be also a marketing tool. Choosing the right shopping centres with daily footfall at least 20.000 visitors per day will be need.

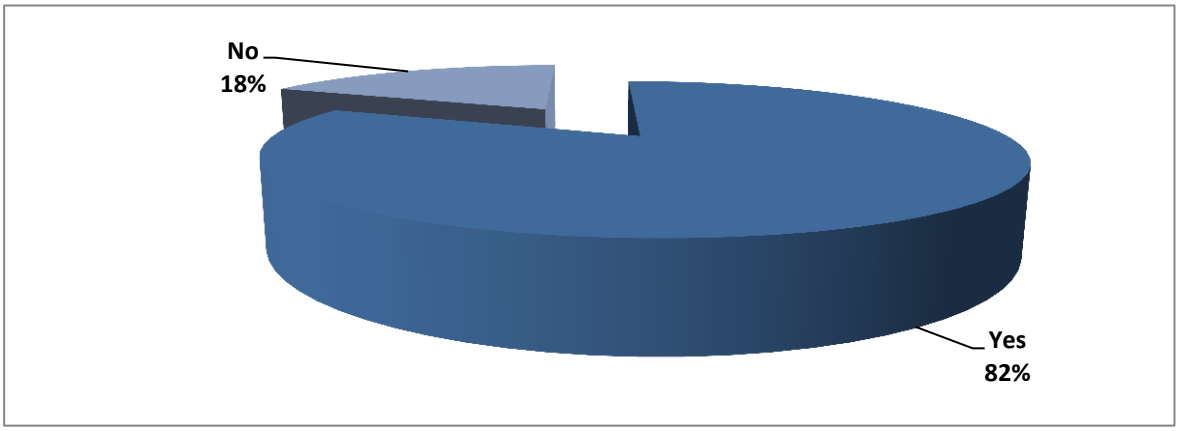

Figure 6 Do you know brand Château Topoľčianky?

Source: Own questionnaire survey

As we can see in Figure 7, the most important marketing tool is „word of mouth“. People still believe the most their families and friends and references from them. In this field also internet and online marketing has an important role. Using social media is very popular and cheap so entrepreneurs should think about to create a profile that will promote their brand. Our brand is trying to promote products with PR articles. Useful is promoting the awards from competitions. People get to know that the product is in a high quality.

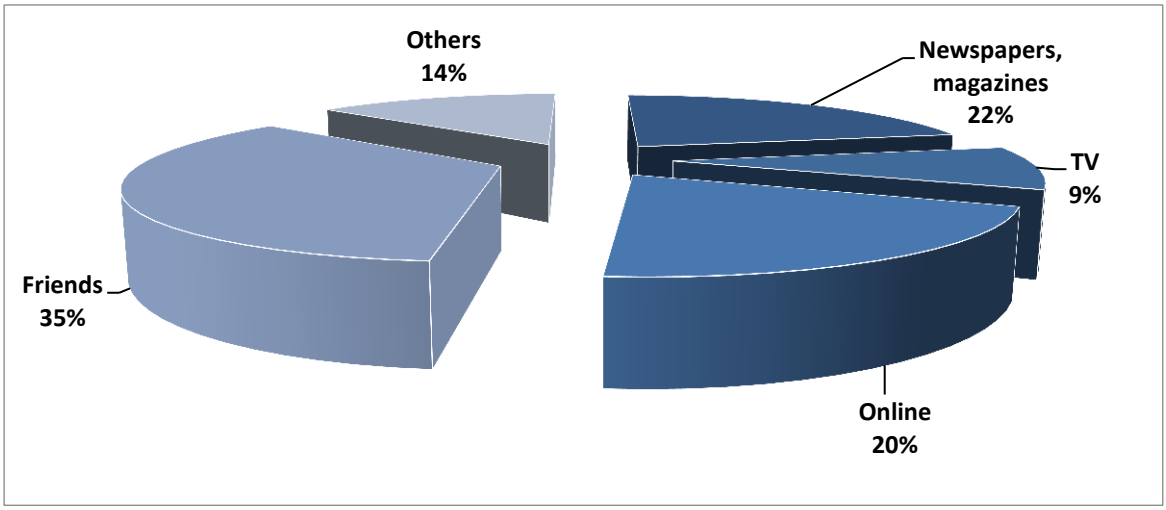

Figure 7 How do you get informations about new products of this brand?

Source: Own questionnaire survey

72% od asked said, that would appreciate the opportunity to purchase whole range of products in a shopping centre. For us it is a good sign, because our business plan is to locate our shop in a shopping centre.

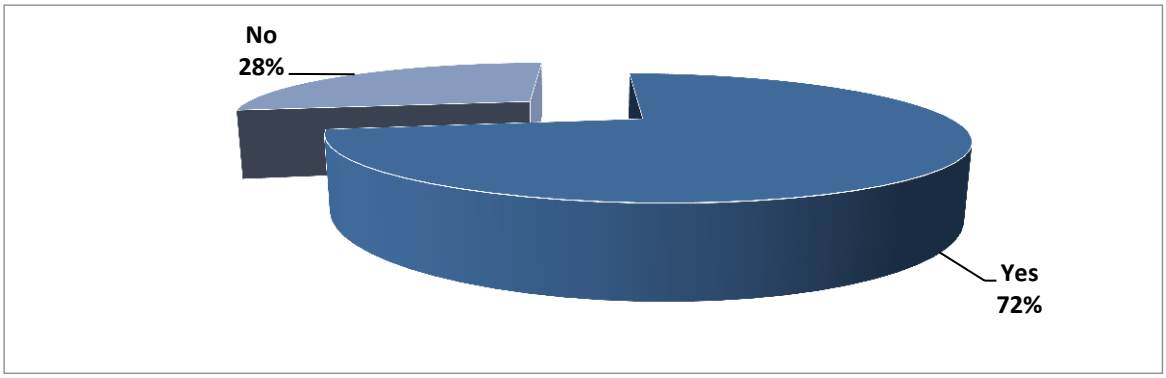

Figure 8 Would you appreciate to purchase whole range of products in a shopping centre?

Source: Own questionnaire survey

Most of our respondents in the questionnaire said, that they don´t miss any product in wine market (Figure 9). Just 6% said, that they want to see in our supermarkets new products such as stum, flavoured wine or flavoured sparkling wine. Few of them want wine spirit. Our company should think about how to promote more the wine spirit we already produce.

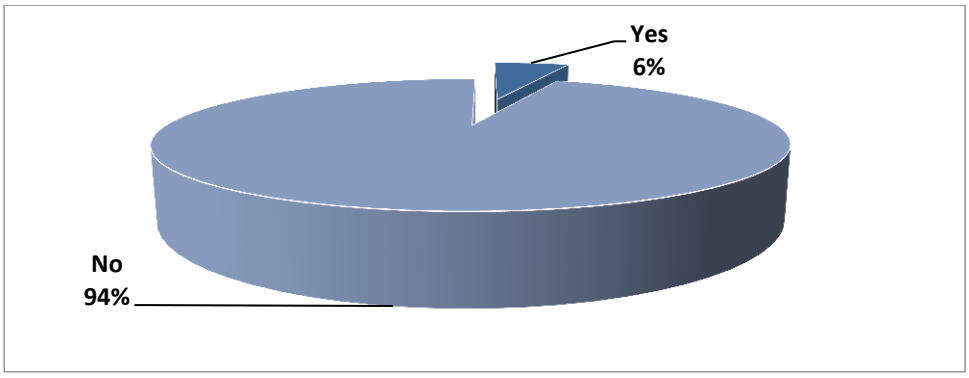

Figure 9 Is there a product in our marketing, that you are missing?

Source: Own questionnaire survey

4. CONCLUSION

The importance of marketing research is to make marketing decisions. This research helps the companies to make a decision about using a company store as a marketing tool. In last ten years people spend their leisure time in shopping centres. They also spend their time in the malls during the week for business meetings or lunch. Lots of people appreciate free parking and services in one place, they don´t need to move from one place to another. Finding a good place in a shopping mall with the highest footfall is a need, after that the shop will be also a great marketing tool. Getting in everyday touch with the customers can bring to the company new ideas and company can be more focused on customer´s needs.

Marketing research helps in understanding competitors´ information such as their identity, marketing network, customer focus and scale of operations. This helps in surviving and in certain cases, even leaving behind the competition – even foreign brands in wine field. Moreover, with market research you can also help to understand the under-served consumer segments and consumer needs that have not been met – every entrepreneur needs to know the customer opinion.

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COMPARISON OF FACTORS AFFECTING SATISFACTION WITH PUBLIC TRANSPORT: A STRUCTURAL EQUATION APPROACH

Pavlína Pawlasová

Abstract

Satisfaction is one of the key factors which affect customer loyalty. It can be assumed that satisfied customer will be willing to return to the service provider. Overall passenger satisfaction with public transport may be influenced by overall service quality. Frequency, punctuality, speed, proximity, accessibility and safety of transport, fare, cleanliness in the vehicle, information and other factors can be included among factors influencing passengers´ satisfaction. The aim of this paper is to identify the most important factors and to validate the proposed model of factors affecting customer satisfaction with public transport in the conditions of the Czech Republic. The method of factor analysis with method Varimax was used in order to categorize variables according to their mutual relations. The method of structural equation modelling was used to evaluate the factors and validate the model. The optimal model was found. The logistic parameters, including service continuity, punctuality and frequency, and service, including station proximity and information rate, are the factors affecting passengers´ satisfaction in the highest rate.

Keywords: public transport, satisfaction, structural equation modelling

1 INTRODUCTION

Vendors should try to achieve the maximum user satisfaction with services, products or purchases. A high consumer satisfaction rate contributes significantly to consumer loyalty to the service provider (Zamazalová, 2009). Consumer satisfaction helps companies to establish long-term relationships with consumers (Shiau & Luo, 2012). Also success of a public transport system depends on the number of passengers which the system is able to attract and retain. Therefore the quality of a service becomes an issue of maximum importance (de Oña, de Oña, Eboli, & Mazzulla, 2013).

The aim of this paper is to identify the most important factors and to validate the proposed model of factors affecting customer satisfaction with public transport services in the conditions of the Czech Republic. The method of factor analysis with method Varimax and the method of structural equation modelling were used to evaluate the factors and validate the model.

The result of this research can help the public transport providers to improve their services. It is important to attract many passengers mainly because of decrease in the number of cars in cities, reduction of the environment pollution and also because of noise abatement.

2 THEORETICAL BACKGROUND OF THE USERS´ SATISFACTION MEASUREMENT

The service quality consists of many attributes affecting satisfaction with public transport services. If the service quality is measured from the customers´ perspective, the most important is the passengers´ perceptions about each attribute characterising the service. It is not only important to know the perceptions about the factors of quality, but the most important is to identify which factors have the highest influence on the global assessment of the service. Nowadays asking customers to state the importance of each service attribute is frequently used, but it can lead to erroneous estimation, because some factors can be rated as important even though they have little influence on overall satisfaction, or they are important only in one of the moments of the assessment (before or after thinking) (de Oña, de Oña, & Calvo, 2012) (de Oña, de Oña, Eboli, & Mazzulla, 2013). Therefore it is recommended to apply one of the derived methods, which determine the importance of the attribute by statistically testing the strength of the relation of individual factors with overall satisfaction (Weinstein, 2000).

In de Oña, de Oña, Eboli, & Mazzulla (2013) there was structural equation modelling applied in order to measure passengers' satisfaction with public transport services. It was found the variable Service, including speed, frequency, punctuality of transport and information, is the factor which influences users' satisfaction in the highest rate. Other variables Comfort (temperature and space on the board) and Personnel (safety and courtesy) are not so important.

First the model structure designed by de Oña, de Oña, Eboli, & Mazzulla (2013) was tested in the conditions of the Czech Republic. It was found the model is not optimal for describing of Czech passengers' behaviour. That is why the methods of factor analysis and structural equation modelling were used in this paper. According to de Oña, de Oña, Eboli, & Mazzulla (2013) method of structural equation modelling is appropriate for describing a complex phenomenon like transit passenger perception of the used service.

3 RESEARCH METHODOLOGY

The purpose of this research was the identification of factors influencing passengers' satisfaction with public transport services. A factor analysis with method Varimax was applied in order to categorize variables according to their mutual relations. A structural equation modelling (SEM) was applied to evaluate the proposed model in the Czech conditions and find the optimal model with the most significant factors.

The data were obtained in questionnaire research in March 2014. The population was all passengers of public transport in Ostrava, meaning everyone who has ever used some public vehicle in Ostrava. The sample consisted of 592 respondents. The respondents expressed their attitudes and opinions regarding the statements on a Likert scale of 1 to 7, where 1 corresponded to a negative statement and 7 corresponded to a positive statement.

3.1 Factor analysis

A factor analysis uses basic statistical methods. These statistical methods are multiple regression and partial correlation. The multiple regression is a method of statistical explanation of the first type, when part of variance of one variable is explained by regression. It is explanation of variance of one variable by its relation to other variables. Partial derivative represents statistical explanation of the second type, when all the correlation of two variables is explained by their mutual correlation with another variable. It is an attempt to explain the correlation between two variables by their mutual covariance with the third variable. It means that mutual relation of variables is explained by their relation to another variable (Butler, McDonald, Nelson, & White, 1990).

Factor analysis was made up by method Varimax, which was developed by Kaiser in 1958 and nowadays it is indubitably the most popular rotation method by far. Abdi (2003) claims that "for Varimax a simple solution means that each factor has a small number of large loadings and a large number of zero (or small) loadings. This simplifies the interpretation because, after a Varimax rotation, each original variable tends to be associated with one (or a small number) of factors, and each factor represents only a small number of variables. In addition, the factors can often be interpreted from the opposition of few variables with positive loadings to few variables with negative loadings. Formally Varimax searches for a rotation (i.e., a linear combination) of the original factors such that the variance of the loadings is maximized."

3.2 Structural equation modelling

Structural equation modelling (SEM) is a technique which can be considered as similar to the regression modelling but SEM is more advanced. It permits to introduce latent constructs really appearing in such a phenomenon in which are some latent factors due to the respondent subjectivity (de Oña, de Oña, Eboli, & Mazzulla, 2013). According to Nachtigall et al (2003), a general structural model consists of two parts – a measurement model and a structural model.

A *measurement model* depicts the relations between the observed and the unobserved variables. If one of the observed variables constitutes an unobserved variable, it is called a proxy variable. It is called an indicator if it is measured by several observed variables (Urbánek, 2000).

Observed variables correlate only with measured unobserved variables, so the variance explained by the linear dependency of the observed variable on the unobserved variable represents every 'valuable' variance of the observed variable (Urbánek, 2000). The model does not interpret the residual segment of the variance. The residual variance can be considered as an unobserved variable.

The measurement model can be algebraically interpreted as two systems of equations in matrix form (de Oña, de Oña, Eboli, & Mazzulla, 2013):

$$\vec{x} = \Lambda_x \vec{\xi} + \vec{\delta}, \tag{1}$$

$$\vec{y} = \Lambda_y \vec{\eta} + \vec{\varepsilon}, \tag{2}$$

where $\vec{x}$ is the vector of the indicator for the vector of unobserved variable $\vec{\xi}, \vec{y}$ stands for the vector of the indicator for the vector of unobserved variable $\vec{\eta}, \vec{\xi}$ is the vector for the unobserved exogenous variable, $\vec{\eta}$ is the vector for the unobserved endogenous variable, Λ_x and Λ_y are the matrixes of the structural coefficients for the relations of variables' vectors $\vec{x}$ and $\vec{\xi}$ and variables $\vec{y}$ and $\vec{\eta}$, and $\vec{\delta}$ and $\vec{\varepsilon}$ are the vectors of residual variables for the vectors $\vec{x}$ and $\vec{y}$.

The covariation matrixes Θ_δ and Θ_ε of the vectors of the residual variables are also included in the measurement model. These matrixes are usually diagonal, and residual variables do not correlate in the model (de Oña, de Oña, Eboli, & Mazzulla, 2013).

A *structural model* comprises the relations between the latent variables. This model detects which unobserved variable is independent (exogenous) and which unobserved variable is dependent (endogenous). We can say that the exogenous variable is not influenced by any of the independent variables, whilst the endogenous variable is influenced by other variables. The structural model can be defined as follow (de Oña, de Oña, Eboli, & Mazzulla, 2013):

$$\vec{\eta} = \mathrm{B}\vec{\eta} + \Gamma\vec{\xi} + \vec{\zeta}, \tag{3}$$

where B and Γ are the matrixes of the structural coefficients of the unobserved endogenous (exogenous) variables and $\vec{\zeta}$ are the measurement errors (disturbances).

The *validity of the proposed model* can be proven with multiple chi-squared tests and the rate of change of a conditional mean is interpreted as a regression coefficient. CFI, NFI, RMSEA and Cronbach´s Alpha were used in this paper. Standardized regression coefficients should take values of 0.5 (optimally 0.7) and higher if the relations between the variables are important (Hair et al, 2010).

The comparative fit index (CFI) can be algebraically interpreted as:

$$CFI = \frac{P_N}{P_{N_b}}, \tag{4}$$

where P_N and P_{N_b} are the parameters of noncentrality for the estimated and the basic model. The CFI ranges between 0 and 1 and the value of this index should be close to 1.000 for the optimal model. This index does not vary much with sample size (Urbánek, 2000).

The normed fit index (NFI) can be algebraically defined as:

$$NFI = 1 - \frac{F}{F_b}, \tag{5}$$

where F is the minimum value of the loss function for the estimated model and Fb is the value of the loss function as the minimum for the basic model (Urbánek, 2000). The possible range of NFI values is 0 to 1. The NFI index should also be close to 1.000. We consider that a model with an NFI lower than 0.9 can be improved (Hooper, Coughlan, & Mullen, 2008).

The RMSEA index can be calculated as:

$$RMSEA = \sqrt{\frac{(\chi^2 - df_k)^2}{(N-1)}}, \quad (6)$$

where χ^2 is the chi-square, df is the degrees of freedom, k is the number of estimated (free) parameters and N is the sample size; see Hair et al (2010). The RMSEA index should take a value of 0.08 up to 0.10 and lower. The lower its value, the more the proposed model fits the real data; see Urbánek (2000).

The Cronbach´s Alpha is one of the most frequently applied coefficients of reliability and it measures reliability as internal consistency. It is a measure of reliability used to evaluate the degree to which different test items that probe the same construct produce similar results. The Cronbach´s Alpha can be calculated as:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k} \sigma_i^2}{\sigma_t^2}\right), \quad (7)$$

where k is the number of estimated (free) parameters, σ_i^2 is the variance of component i for the current sample and σ_t^2 is the variance of the observed total test scores. The actual value of the Cronbach´s Alpha should be (in optimal case) higher than 0.7 for each latent variable. If the Cronbach´s Alpha of the latent variable exceeds 0.7 and higher, this latent variable is valid (Urbánek et al, 2011).

4 MODEL ANALYSIS AND RESULTS

The variables in the model are specified in this part of paper and then the results of factor analysis and the validation of the proposed model are described. Validation consists of the validation of the measurement model and the validation of the structural model as well as the evaluation of the goodness-of-fit indexes.

4.1 Specification of variables in the model

There were 15 observed variables in the original tested model. The number of variables was reduced in order to optimize the model. Variables that were not statistically reliable and significant in the original tested model were excluded from the model because of model optimization. These are variables fare system, station comfort and station cleanliness, see Tab. 1. These variables had to be excluded from the model because the model with these variables had too low values of goodness-of-fit indexes. It can be considered that these factors are not important for Czech passengers' satisfaction.

There are 12 observed variables and 15 latent variables including 12 residual variables in the optimal model. The number of variables is appropriate to number of respondents because it is known the number of respondent should be at least 5 or 7 times more than the number of variables. The following Tab. 1 shows the variables in the original tested model and in the optimal model.

Tab. 1 – The variables in the model. Source: Author´s own.

Variables in the original model		**Variables in the optimal model**			
Type of variable	***Name of variable in the model***	***Type of variable***	***Name of variable in the model***	***Type of variable***	***Name of variable in the model***
Observed variables	Station proximity	**Observed variables**	Station proximity	**Latent variables**	Logistic parameters
	Punctuality		Punctuality		Service
	Frequency		Frequency		Satisfaction
	Service continuity		Service continuity	**Residual variables**	e1 – e12

	Transport speed	Transport speed	
	Transport comfort	Transport comfort	
	Safety	Safety	
	Information	Information	
	Timetable clarity	Timetable clarity	
	Vehicle cleanliness	Vehicle cleanliness	
	Fare	Fare	
	Overall satisfaction	Overall satisfaction	
	Fare system		
	Station comfort		
	Station cleanliness		

To be precise, we explored the respondents' perceptions about the following:

Station proximity	The public transport stations are accessible without any problem. ,
Punctuality	Punctuality of public transport is precise and unfailing.,
Frequency	Frequency of public transport is sufficient with regard to the number of passengers. ,
Service continuity	Service continuity is time and space manageable; it means the transport changes are not complicated. ,
Transport speed	Transport speed is satisfactory with regard to the traffic situation. ,
Transport comfort	Travelling in the public transport is comfortable regardless of season (summer, winter). ,
Safety	Travelling in the public transport is safety. ,
Information	Information in the public transport vehicles (maps, station signals) is sufficient. ,
Timetable clarity	Timetables on the public transport stations are clear. ,
Vehicle cleanliness	Insides of vehicles are clean and maintained. ,
Fare	Fare (price and validity) is affordable. ,
Overall satisfaction	Overall passenger satisfaction with public transport in the city.

4.2 Results of factor analysis

A factor analysis was applied in order to categorize variables according to their mutual relations. It was calculated in SPSS 22. It was found the factor analysis was valid and was successful in 86,8 %. See Tab. 2.

Tab. 2 – KMO and Bartlett's Test. Source: Author´s own.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,868
Bartlett's Test of Sphericity	Approx. Chi-Square	2712,699
	df	91
	Sig.	,000

Following Tab. 3 shows actual communalities, which mean rations of latent variable on variance of observed variable.

Tab. 3 – Communalities. Source: Author´s own.

Name of variable	Initial	Extraction	Name of variable	Initial	Extraction
Timetable clarity	1,000	,518	Punctuality	1,000	,467
Station proximity	1,000	,579	Service continuity	1,000	,548
Vehicles cleanliness	1,000	,533	Frequency	1,000	,503
Information	1,000	,520	Transport speed	1,000	,576
Transport comfort	1,000	,457	Fare	1,000	,566
Safety	1,000	,458			

Extraction Method: Principal Component Analysis.

The eleven variables in the model were categorized into two components of factors according to the factor analysis with method Varimax. The designed components were used to create latent variables in the structural equation modelling. See the exact design of components in Tab. 4.

Tab. 4 – Rotated Component Matrix. Source: Author´s own.

Name of variable	Component	
	1	2
Station proximity	,729	
Information	,698	
Timetable clarity	,682	
Safety	,637	
Vehicles cleanliness	,549	
Transport speed	,546	,526
Transport comfort	,475	,407
Fare		,731

Service continuity		,698
Frequency		,641
Punctuality	,364	,519

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 6 iterations.

The first latent variable „Service“ is measured by eight observed Specifically station proximity, information, timetable clarity, safety, vehicles cleanliness, transport speed, transport comfort and punctuality were evaluated.

Another latent variable „Logistic parameters“ is measured by six observed variables. To be precise, we explored the respondents' perceptions about transport speed, transport comfort, fare, service continuity, frequency and punctuality. See Fig. 1 for the graphical design of the model.

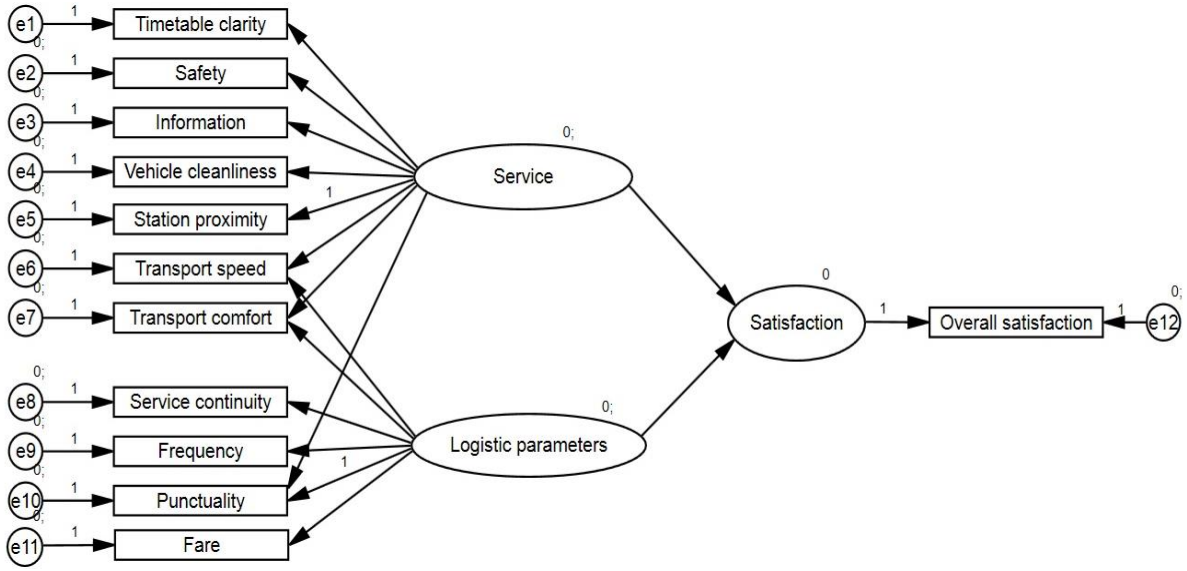

Fig. 1 – Designed model of satisfaction with public transport services. Source: Author´s own.

4.3 Results of structural equation modelling and validity of model

Presented values of regression coefficients and Goodness-of-Fit Indexes were calculated in SPSS Amos 20. Fig. 2 shows relations between variables in the measurement model according (1) and (2) and relations between variables in the structural model according (3).

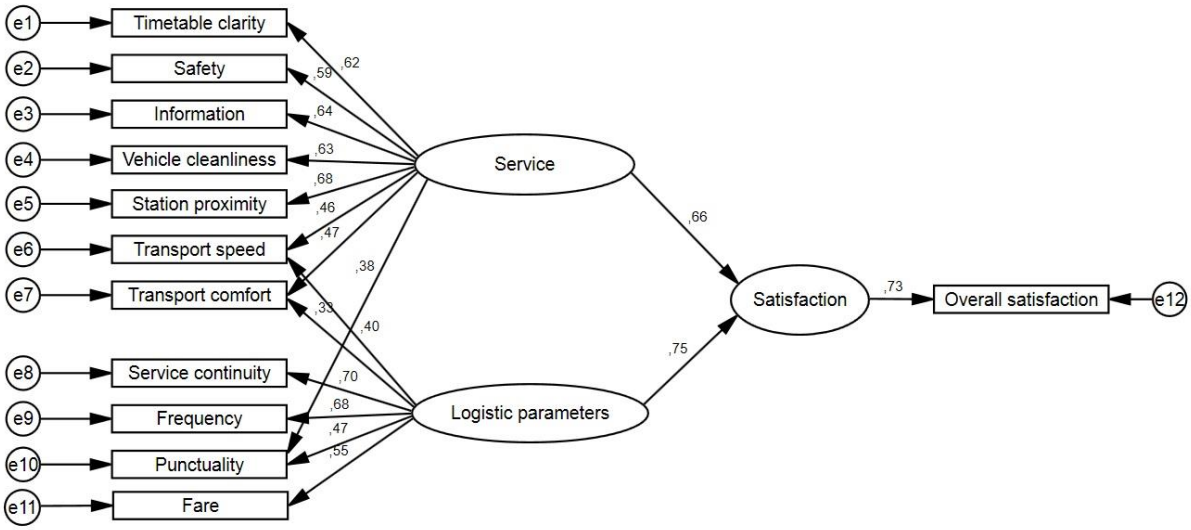

Fig. 2 – Optimal model with standardized regression coefficients. Source: Author´s own.

Validity of measurement model

There are tested relations between observed and unobserved variables in the measurement model. Following Tab. 5 shows the values of standardized regression coefficients in the measurement model. It is used the significance level of 0.05.

Tab. 5 – Values of standardized regression coefficients in the measurement model. Source: Author´s own.

Latent variable	**Observed variable**	**Significance**	**Standardized regression coefficients**
Service	Timetable clarity	0,000	0,616
	Station proximity	0,000	0,683
	Vehicles cleanliness	0,000	0,625
	Information	0,000	0,638
	Transport comfort	0,000	0,473
	Safety	0,000	0,593
	Transport speed	0,000	0,458
	Punctuality	0,000	0,376
Logistic	Transport comfort	0,000	0,331
parameters	Punctuality	0,000	0,472
	Service continuity	0,000	0,699
	Frequency	0,000	0,677
	Transport speed	0,000	0,399
	Fare	0,000	0,553

All observed variables in the measurement model are statistically reliable at the significance level of 0.05. If we consider 0.5 as the minimum value for a significant relation between variables, all the tested variables are significant. See Tab. 5.

The latent variable Service is better explained by station proximity and information as well as vehicles cleanliness, while punctuality has a minor effect on this variable. The variable Logistic parameters is best understood by the service continuity and frequency.

According to the actual value of standardized regression coefficient of variables fare and safety the relation is moderate. We can consider their impact is weak. The rest of observed variables have strong relations to their latent variables. We can consider that transport speed, punctuality and transport comfort are the most important factor influencing passengers´ satisfaction.

Validity of the structural model

The relations between latent endogenous and latent exogenous variables in the structural model were tested. The following Tab. 6 shows the values of the standardized regression coefficients in the structural model. We used the significance level of 0.05.

Tab. 6 – Values of standardized regression coefficients in the structural model. Source: Author´s own.

Latent endogenous variable	**Latent exogenous variable**	**Significance**	**Standardized regression coefficients**
Satisfaction	Service	0,000	0,656
	Logistic parameters	0,000	0,755

If we consider the significance level of 0.05, the relation between the latent variable Service and the latent variable Satisfaction and the relation between the latent variable Logistic parameters and the latent variable Satisfaction are statistically reliable. The variable Logistic parameters is little bit more important than the variable Service because the actual value of the standardized regression coefficient is higher for the variable Service; see Tab. 6. The relation between the variables Service and Satisfaction is moderately positive whereas the relation between the variables Logistic parameters and Satisfaction is strongly positive.

Goodness-of-fit indexes of the proposed model

The comparative fit index (CFI), normed fit index (NFI) and RMSEA are used to validate the proposed model. These coefficients were calculated in SPSS Amos 20. Internal consistency as reliability is measured by the Cronbach´s Alpha. The Cronbach´s Alpha was calculated in SPSS 22.

The CFI, NFI and RMSEA indexes show that the proposed model is optimal; see Tab. 7. The CFI index was calculated as (4), the NFI index was calculated as (5) and the RMSEA index as (6).

Tab. 7 – CFI, NFI and RMSEA indexes for the tested model. Source: Author´s own.

Model	**CFI**	**NFI**	**RMSEA**

Default model	,882	,865	0,097

The CFI index of the tested model takes the value of 0.882. This is a high value. In addition, the NFI index, which takes the value of 0.865, shows that the model can be improved only minimally. According to the NFI index, the proposed model fits the real data with 86,5 %. The actual value of the RMSEA index is also good enough. All applied indexes confirmed that this model is optimal.

The Cronbach´s Alpha for each latent variable was calculated as (7) and the actual values are shown in Tab. 8.

Tab. 8 – Values of Cronbach´s Alpha for each latent variable. Source: Author´s own.

Latent variable	**Cronbach´s Alpha**	**N of items**
Service	,830	8
Logistic parameters	,785	6

It was find all latent variables are valid because the actual value of Cronbach´s Alpha for each latent variable is higher than 0.7. It is possible to determine this model is valid.

5 CONCLUSION

This paper discusses the factors affecting passengers´ satisfaction with public transport in the conditions of the Czech Republic. The aim of this paper is to identify the factors affecting passengers' satisfaction with public transport and to find the optimal factor model in the conditions of the Czech Republic. This paper includes the theoretical background of users´ satisfaction measurement. A factor analysis with method Varimax was used in order to categorize variables according to their mutual relations. A structural equation modelling was used to evaluate the proposed model in the Czech conditions and find the optimal model with the most significant factors. The theoretical background of these methods is also the part of this paper. The data that were analysed came from questioning. Goodness-of-fit indexes, specifically CFI, RMSEA and NFI, and Cronbach´s Alpha were used to validate the way in which the proposed model fits the real data.

This research demonstrated that factor analysis and structural equation modelling methodology is a powerful tool which can be used as a technique to identify the latent aspects that are hidden under a series of attributes describing the quality of the service. This type of methodology is useful, but it is difficult to establish if this tool is better than other methodologies. According to the goodness-of-fit indexes used, the proposed model can be considered to be optimal in the conditions of the Czech Republic. The fit of the real data and the model is high.

Czech users' satisfaction with public transport is affected the most by the variable Logistic parameters. It was found the variables transport speed, punctuality and comfort are the most important indicators of satisfaction. At the other hand the variables fare and all external factors such as station cleanliness or station comfort are not important for Czech passengers. It can be recommended to improve logistic factors of transport such as number of vehicles, frequency, speed, punctuality and service continuity to attract more passengers in order to reach the decrease in the number of cars in cities, the reduction of the environment pollution and also the noise abatement.

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SOCIAL MEDIA COMMUNICATION IN AGRICULTURE: CASE STUDY OF CROATIAN WINE MARKET

Berislav Andrlić, Đuro Horvat

The wine market forms a significant part of the total world agricultural market that expands and marketing changes are needed, with the aim of adapting the process of globalization and technology development. Croatia is a country with a long tradition of grape and wine production. In the last five years, there has been on increase of the agriculture areas under wineyards, and also the increase of wine production. Despite this, Croatia has continued to increase wine imports most by from neighboring countries. At the meantime, market liberalization will encourage the Croatian wine export, where the main disadvantages are inadequate branding, unsufficient Internet promotion and small production. Because of these reasons, there is a need for researching and planning the role of social media in field of wine marketing via Internet. A further idea of the paper focuses on the application of Internet technology and the techniques of wine brand communication. Information technologies nowdays are completely changed techniques of planning and implementation of e-marketing in wine industry. The new way of doing business is called „social media marketing“ as process of gaining website traffic or attention through social media sites. That results with electronic word of mouth (eWoM) what refers to any statement consumers share via the Internet (e.g., web sites, social networks, instant messages, news feeds etc.) about an wine event, wine product, wine brand or wine region or producer. On the other hand, the actual business benefits of this relatively new form of communication have hardly been investigated, particularly within the wine industry in Croatia. Therefore this paper has two objectives: to determine the use of social media by Croatian wine producers in function of branding (Facebook, You Tube, Twitter, Instagram, Foursquare etc.); and to identify wine consumer behaviour on Internet via Google Trends and Google Correlate tool. The current study provides only a snapshot of the whole Croatian wine market and branding, and will serve as platform for further researches in the future.

***Key words**: marketing, Internet, wine, branding*

1. INTRODUCTION

Wineries or wine cooperatives need to have a clear understanding of what exactly the discipline of marketing and branding encompasses in order to be able to compete effectively in today's saturated wine market. Only with a clear understanding company can work seamlessly toward offering products to customers that are both willing and able to purchase them. The purpose of this first part of the paper is to give a conceptual background as to what the discipline of wine branding and marketing encompasses. The paper includes a definition as well as an overview of a generic marketing and branding process and how the elements of the that discipline coincide with each other to create a comprehensive, cohesive and effective wine brand strategy in one geographic region.

Contemporary market conditions include the use of innovative forms of communication and branding. (Washburn, Till, Priluck,2000) Internet and social media are in agriculture and wine sector, as in all other types of economy changed the classic ways of doing business by companies and cooperatives, and are used as a communication, transaction and distribution channel. (Andrlic, Andlar, Galic, 2011). Precisely because of the dependence of supply and information exchange in the production and distribution chains, wine business is shown suitable for the rapid adoption of information technologies and interactive media. Internet and especially Web 2.0 technologies will be the backbone of marketing in the wine business in the future.

2. THEORETICAL CONSIDERATIONS OF WINE MARKETING AND BRANDING

American Marketing Association defines mark as name, notion, sign, symbol, design or combination of the aforementioned; which serves for identification of the product and /or service of one producer or seller towards other participants on the market. (Bennet, 1998). From the marketing perspective, a wine brand is more than a product name. It is a vision, a set of values and a key idea – which form brand identity and serve as the cornerstone for the development of branded products and services. The main task of wine brand identity is to establish a specific perceptions in the mind of the consumer, which will result in differentiation and uniqueness. These benefits include tangible product characteristics, such as quality, features, style and design. Decisions on these characteristics are of an extreme importance since they significantly affect consumers' response to the product. (Kotler, 2006).

Wine brand is part of the mark which can be pronounced and which contains letters, words and numbers. To protect name or sign of the mark, firm must register it as trademark at the corresponding institute. When defining wine brand the following circumstances must be taken into consideration:

- Product mark depends on customer's perception;
- This perception is under influence of additional values of the product itself;
- These additional product values must be sustainable as competitive advantages.

Wine brand strategy suggests management with product's tangible and intangible values and management of each customer's contact with the mark, taking into consideration all potential contacts with former and present rival marks. Difficulties of contemporary wine brand management are reflected in the following circumstances: disturbing rate of failure of new

products on developed markets, generic products and trade marks successfully compete with branded marks, profit rate reducing even with famous marks. (Agres, 1997).

Wine brands are for wine cooperatives and companies' means of identification and determination of origin, means for legal protection, and signal of quality level for customers, means to enrich the product with unique associations, and the source of competitive advantages and financial revenues.

Analyzing the previous branding facts and considering the role of geomarketing and technology in wine business, it is possible to notice the following perspectives of wine branding used by companies and cooperatives:

- speed of gaining potential wine consumers becomes a key task, and their demands needs to be fullfiled in the shortest possible time,
- all must be connected with everything, wineries and wine cooperatives with hotel guests, products with services, deigners with future customers, i.e. all the former, current and potential guests mutually,
- the added value of the product and service must increase faster than the product and service itself,
- it is necessary to install the product in each service, and service in every product (hibryd welfare),
- the whole business should be managed in a real time, disposing all necessary informations at the time of their creation,
- by using the information technology the business costs are reduced,
- products and services should be offered interactively in a direct contact with potential guests,
- all products and services should be individualized and adjusted to the individual guest,
- it is necessary to collect informations from each business transaction.

Such activity implies creation of market value of the brands for the material, components or parts that are necessarily parts of other products that are marked by the brand. (Kotler, Keller, 2008)

3. WINE MARKET IN EUROPEAN UNION

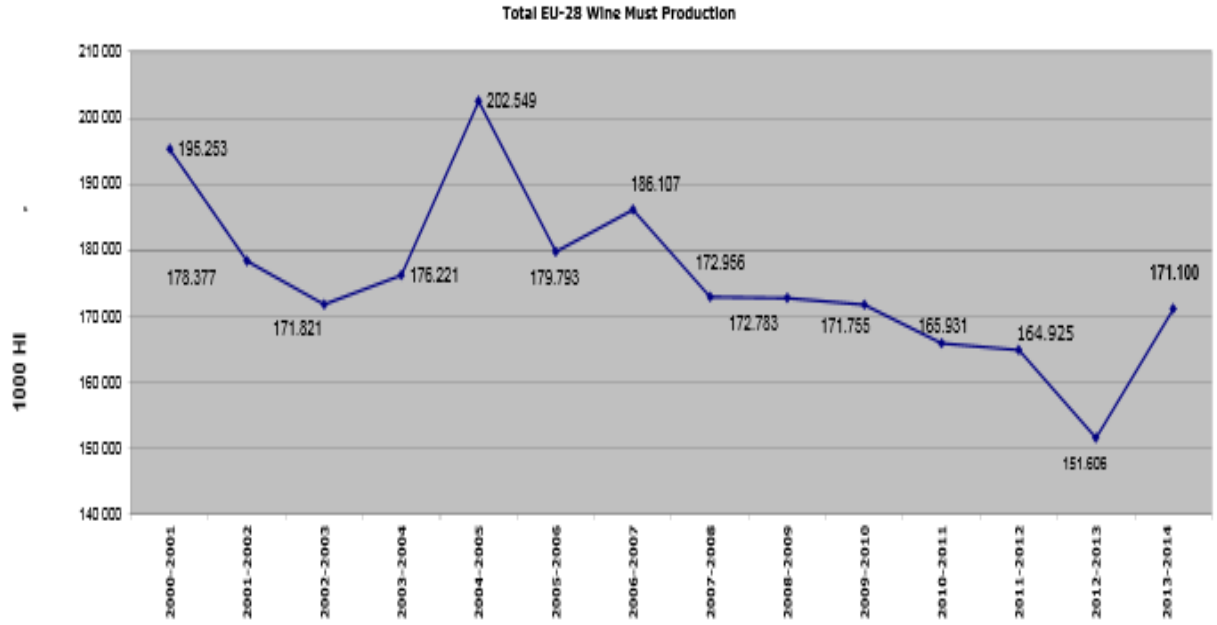
Wine has been consumed for ages in Europe. Throughout history, although its popularity has varied, it has always existed as a drink with a long story behind it. Today, the wine market has become a big regional business. Matt Kramer, an American wine writer, tried to translate the French word "terroir," which explains wine's ability to convey a sense of place. He settled on "somewhereness." The idea behind this is that a good wine should taste like it came from some particular place in the world. (Dlačić, Kadić, Vranić, 2012)

Croatia is a Mediterranean country, lying to the east of Italy, across the Adriatic Sea. Towards the north lie the Alps, and to the north-east the country forms the western end of the great Pannonian Plain. The interior of Croatia has a continental climate, with cold winters and hot summers with enough rain for this to be a major agricultural area. Wine-growing is concentrated in the hilly areas bordering on the Pannonian Plain. The Dalmatian Coast is typically Mediterranean in climate, although the Dinaric Alps mountain range creates pockets of alpine climate at higher altitudes. The coastline of the Adriatic Sea is ideal for grape cultivation with its hot, humid summers and mild winters. Further down the coast, and on the islands, grapes are grown on the karst hillside, sometimes steep slopes with little rainfall. Some of the best-known wine-production areas are on the Dalmatian islands. Located along hillsides and slopes, wine regions along the coast receive many hours of sunlight, ideal for

grape production. Croatia is part of EU so further data will present situation on that wine market.

The European Union (EU) produces about 171 mil hL of wine every year. It accounts for 45% of wine-growing areas, 65% of production, 57% of global consumption and 70% of exports in global terms (Council regulation (EC) No 1234/2007). There are 2.4 million wine producers in the EU and 2.2 million people work in the wine sector. The EU wine production represents 5% of the total value of agricultural production. (Čačić, 2012)

Figure 1. Total EU Wine production

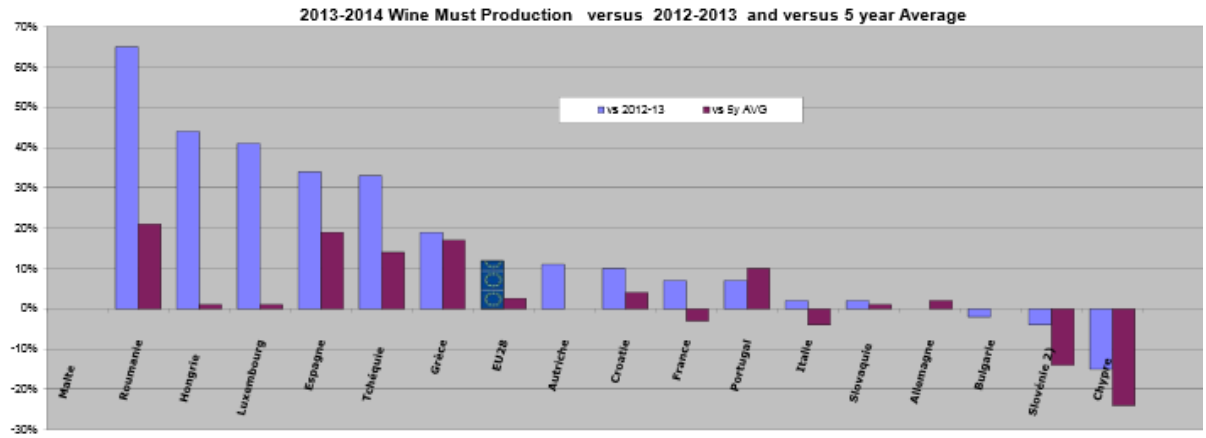


Source: European Commision, avaliable at: http://ec.europa.eu/agriculture/markets/wine/facts/2013-2014_fr.pdf, 17.01.2015

Croatian wine has a history dating back to the Ancient Greek settlers, and their wine production on the southern Dalmatian islands of Vis, Hvar and Korčula some 2,500 years ago. Like other old world wine producers, many traditional grape varieties still survive in Croatia, perfectly suited to their local wine hills. Modern wine-production methods have taken over in the larger wineries, and EU-style wine regulations have been adopted, guaranteeing the quality of the wine. (Narodne novine web site, 2015)

New wine market reform was adopted in the EU in 2008. The reform objectives were: increasing competitiveness of the EU's wine producers, strengthening the reputation of the EU quality wine, recovering old markets and winning new markets in the EU and worldwide, operating through clear, simple and effective rules, ensuring balance between supply and demand, preserving the best traditions of the EU wine and reinforcing the social and environmental fabric of rural areas. The reform was market oriented, taking into account consumers and rural development. On next graph we can see sample of Croatia on EU wine market.

Figure 2. Positiong of Croatia on EU wine market



Source: European Commision, avaliable at: http://ec.europa.eu/agriculture/markets/wine/facts/2013-2014_fr.pdf, 18.01.2015

Croatia joined the European Union in July 2013. This prompted an avalanche of new imports, firstly sold on the shelves of hard and soft discounters like Lidl and Kaufland. Initially, it did not affect the prices; in fact, still red wine witnessed a substantial increase in price. 2014 is likely to see those new brands penetrate and set a new standard in pricing. Because of these reasond it is imortant to plan and create new wine brand of the region to position better Croatian wine on the market.

4. CASE STUDY "VINA CROATIA": BRAND STRATEGY

Croatian Chamber of Economy, with the Wine Cooperative of Croatia, gathers all Croatian wine producers with the aim of a unified market approach, establishing the preconditions for an increase in sales in the domestic and export markets and, ultimately, action to increase the competitiveness of local wines, namely the creation of products with higher added value. This is the biggest wine cooperative in Croatia, so authors used data from interview of members and avalaible data from marketing department of the Wine Cooperative of Croatia.

Case study will present primary research data about new brand concept and arhitecture „Vina Croatia-Vina Mosaica". Plan for this concept is to create visual identity Vina Croatia that will be visible to all performances in foreign and domestic markets and in all promotion activities. Adoption of the visual identity is the first step in building a functioning and recognizable destination wine brand and wine region of Croatia.

A definition of brand direction for constant reference on:

- wine selection and development
- regional focus and priority
- branding and promotion.

Objective of this region wine brand created by Wine Cooperative of Croatia is to put Croatia on the map as a reputable source of distinctive, high quality wines. When we analyze competitive cositioning, it is possible to conclude that brand *Vina Croatia* will stand out from New World wines on heritage, from Old World on simplicity, from other emergent wine sources on accessibility.

On next picture we can see visual brand arhitecture as the unique "alphabet" of design elements of Vina Croatia– such as shape, color, materials, finish, typography and composition – which directly and subliminally communicate Croatia wine region values and personality through compelling imagery and design style.

Figure 3. Wine brand arhitecture of Vina Croatia

Source: Marketing department of the Wine Cooperative of Croatia

Brand Equity can be defined by sone wine specifics of Croatia, indigenous flavours, notable origins – wines that taste of place, exemplified now by:

- Profound, powerful Plavac Mali from the sun-drenched slopes of Dalmatia's World Heritage coast
- Bright, fragrant, Spring-like Malvasia from the cooler air of mystical, green Istria
- Rich, textured Grasevina from the rich soil and golden summers of Slavonia and the Croatian Danube
- Fresh, lively, hillside wines from the cool climate of the sunlit Croatian Uplands

Vina Croatia will embody the country's multi-faceted natural and cultural uniqueness:

- Its natural riches and wealth of destinations
- Its ancient heritage and future vision
- Its multi-cultural origins and originality

With these values, Vina Croatia evokes a new brand of Croatian enterprise, harnessing indigenous strengths within, to compete on the world stage, and heralding a new identity to unify the Croatian mosaic with key brand words. (for example: Dalmatia : World Heritage Wines; Istria : The Rite of Spring ; Slavonia and the Croatian Danube. Pure Gold. ; The Croatian Uplands: Hillside Wines)

Chosen visual identity should represent the brand Vina Croatia with an emphasis on diversity (regional, national and international) and make Vina Croatia effective ambassadors of a new national wine identity, especially in conjunction with the interests of Croatian tourism and in context of Internet market.

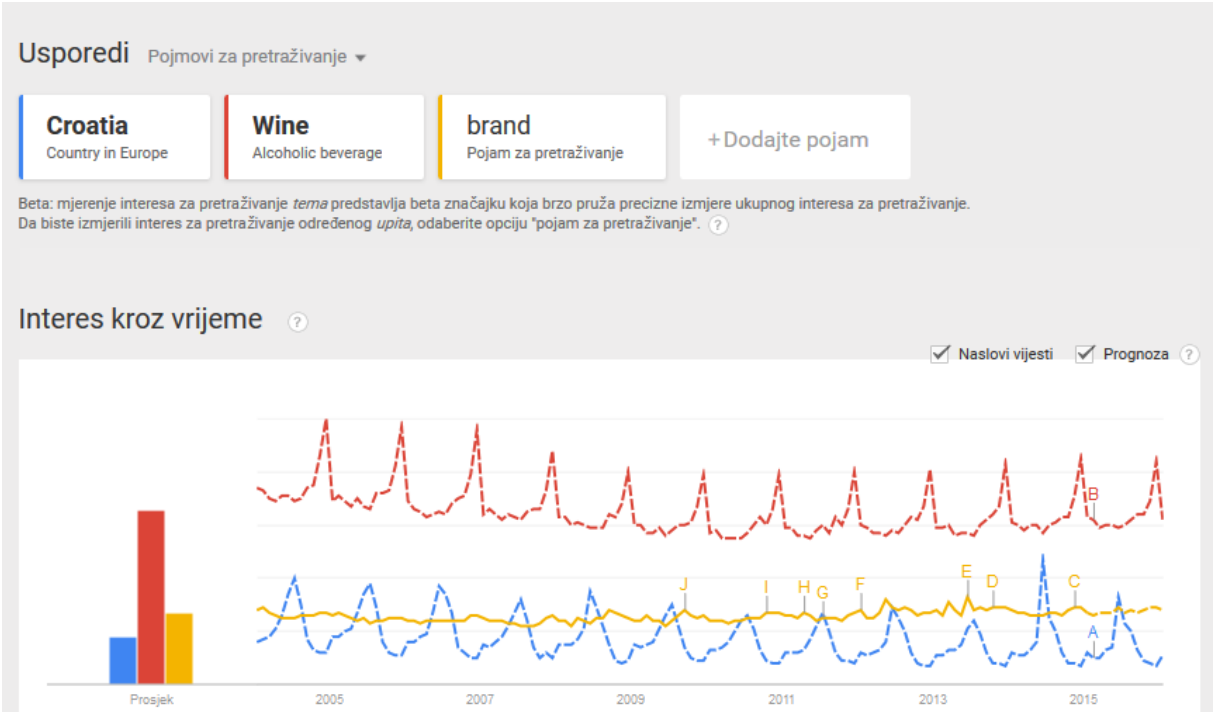
5. WINE COOPERATIVE AND VINA CROATIA BRAND COMMUNICATION: STATE AND TRENDS

Market research is a key element for monitoring quality of wine promotion. It connects consumers, wineries and cooperatives and the public with the company using the actual information. In further dana, we will present some web 2.0 tolls used by Wine Cooperative of Croatia using statistic methods of analysis. This brand is on the beginning of introduction on the market because it was created in 2014. Wine cooperative of Croatia use only few usual social networks because it is life cycle phase of introduction on the market. **(**for example You Tube: VINA CROATIA VINA MOSAICA trailer, Facebook profile). In the promotional activities brands have to be complementary, however even more important is the complementary of the image and wanted perception. (Vranesevic, 2007)

After this preliminary research, it is possible to propose use of some actual social netorks, which can be used in wine region branding by cooperatives: Blip - Get video & podcasting on your blog; Placesite - Wi-fi portal & location communities: Mappr - Map Flickr photos per tag. www.mappr.com/ ; Panoramio - Share mapped photos. www.panoramio.com/; Flickrmap - Map Flickr photos. www.flickrmap.com/; Stumble Upon - Social bookmarking (random sharing). www.stumbleupon.com/; Fotoflix - Upload & share photos. www.fotoflix.com/; My-brand - Manage online advertising online. mybrand.ads-click.net/; Vimeo - Upload & share video. www.vimeo.com/ etc.

Marketing and wine brand opportunities analysis, in which the swap process is carried out on the is based on future market research. It is the essence and the core of decision making system in marketing management. Any attempt to a comprehensive definition of market research must describe the role and the purpose in which the research is set as a part of wine marketing plan. Because of that it is imortant to make research of wine consumer behaviour in context of Internet and time of interest via Google Trend tool.

Figure 4. Wine consumer behaviour on Internet



Source:http://www.google.hr/trends/explore#q=%2Fm%2F01pj7%2C%20%2Fm%2F081qc%2C%20brand&cmpt=q&tz=, 20.01.2015.

The data shows that consumer interest for Croatian wines and brands is appearing seasonally in the year. Web visit is related to the summer and winter, when Goole toll indicates the biggest serach by terms: Croatia/wine/brand. Accordingly, before the growth curve of interest, it is necessary to plan the start of a brand campaign of wineries and cooperatives, which refers to the May and November.

6. CONCLUSION

With increased use of Internet, impact of cooperatives in promoting wine brands and regions become more and more significant then it was the case with other media channels and environments. The simplest formulations were, Internet gives chance and represents a challenge for strategic marketing planning of wine brands and regions. This concept emphasizes the fact that wine brand image is not result of its properties and values, but comes out of entire experience a consumer might have with a certain wine brand and region. Taking into consideration the organizational aspect, conclusion is that brand creation on internet involves globalization, need for integration of diverse communication channels, increased linkage with public sector, winerires, wine cooperatives, capacity of the message on website, use of social networks etc. These considerations are proposed to be in focus of attention when planning marketing of wine cooperatives on Internet, in the process of creation of brand as the main competitive advantage in contemporary business environment.

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MARKETING EVENTS IN A DIGITAL ERA – A COMPARATIVE ANALYSIS OF NEW AND TRADITIONAL EVENTS IN TERMS OF BRANDING EFFECTIVENESS

Malgorzata Karpinska-Krakowiak

Abstract:

A marketing event is an activity or a performance held by a company for branding purposes. It is usually planned well ahead of execution and with anticipated results. The process of staging such events is regarded as a part of event marketing industry, which - due to its high potential in building brand experiences and establishing direct contacts with customers - has been widely adopted into branding and marketing communication strategies worldwide. Since recent proliferation of digital media created new opportunities for producing diverse performances, there have emerged innovative forms of event marketing e.g.: pop-up shops, flash mobs, street games, branded pranks etc. As there has been little theoretical and empirical work dedicated to these new branding phenomena, this paper aims at providing a reflective framework for a few of them. The first section of the text is, therefore, dedicated to theoretical explanations about traditional events – their social role and effectiveness in terms of branding and marketing communications. The second part of the paper presents most recent examples of lately developed event forms i.e.: branded pranks and alternate reality games. The author discusses their innovativeness and possibilities to build key brand indicators with them. Numerous examples of events staged by diverse brand categories are provided, including: Audi, Smirnoff, O_2, T-Mobile, Heineken, Tymbark (juice brand), Nivea, Coca-Cola etc. The paper concludes with several areas for inquiry to be addressed in future research endeavors.

Keywords: marketing events, event marketing, festivals, branded pranks, alternate reality games, brand effectiveness

1 INTRODUCTION

Early studies dedicated to events as parts of promotional strategies date back to 1980s., which makes event marketing not a recent phenomenon (Cunningham et al., 1993). However, in the era of growing skepticism towards traditional advertising and media (e.g. television, press or radio), event marketing is regaining marketers' attention. According to Miller and Washington (2012), it has been an expanding industry over the past decade, regardless of the downturn in a global economy. In his analysis, Ian Whiteling (2009) reveals that events has been usually accounting for a substantial share of promotion budgets (e.g. 22-26% in 2009). Surprisingly, this calculation did not include those events that had been staged, recorded and used as a content for internet branding campaigns. If one calculated the actual expenses on off- and online events, the results would undoubtedly be more overwhelming.

As event marketing became an attractive communication platform (alternative to traditional media), there emerged an extensive body of literature which covered issues related to event planning, production, organization, management, evaluation and monitoring. Most of these analytical and empirical works were dedicated to traditional event categories like festivals, concerts, fairs, exhibitions, gameplays, tournaments, celebrations, political meetings, entertainment or business occasions (Hoyle, 2002; Silvers, 2004; Bowdin et al., 2006; Masterman & Wood, 2006; Goldblatt, 2007). However, little academic consideration has been given to recent developments in event marketing (e.g. flash mobs or pranks), due to certain

difficulties in categorizing them and capturing their branding impact. This paper, therefore, discusses selected forms of event marketing, which are new, creative and largely unexplored by academic milieu. The purpose is to provide a reflective framework for branded pranks and alternate reality games and to examine them in terms of their possible promotional effects, risks involved and challenges.

2 TRADITIONAL MARKETING EVENTS AND THEIR ROLE IN BRANDING

A marketing event is an activity or a performance held by a company for branding purposes, planned ahead of execution and with anticipated results. There exist two broad categories of events: proprietary (owned by the company) and sponsored ones (i.e. endorsed by the company's brand). While owned events are produced by the brand (e.g. Heineken Open'er Festival in Poland), the latter category refers to the situation, where a brand becomes a sponsor and enters a contractual relationship with existing events (e.g. Arena and International Swimming Championships organized by FINA, i.e. Fédération Nationale de Natation). For this reason, event marketing has been long investigated by marketing scholars within event sponsorship framework (e.g. Cornwell et al., 2005; Sneath et al. 2005; Close et al., 2006), although there may be significant differences between branding effectiveness of owned and sponsored events.

Traditional forms of marketing events mainly include: festivals of various themes (e.g. film, art, design, fashion, photography, advertising etc.), sport tournaments, fairs, concerts etc. All of them share some distinctive features. They usually involve some sort of **celebration**: Glastonbury festival celebrates music; Sundance Film Festival celebrates art of cinematography; Mercedes-Benz Fashion Week is a carnival of design and apparel; soccer world cup games are about feasting and enjoying the beauty of sports. These types of events are held only occasionally throughout the year or decade; they take place in extraordinary settings and with extraordinary guest participants (e.g. celebrities or famous personages). People take part in festivals in order to experience something outside their everyday life, to socialize, to search for pleasure and entertainment. In other words, such events maintain **unique** and **unusual** character, they **suspend** daily routine and **the rules of everydayness** (Falassi, 1987; Goldblatt, 1990; Karpinska-Krakowiak, 2014). As a consequence, they generate a **sense of community**, stimulate social groupings with **no hierarchical order**, and build **intensive interaction** between participants (Getz, 1991; 2005; 2008).

Marketing events provide brand managers with opportunities to expose large numbers of excited (in psychological terms: aroused by the event) consumers to their brands. According to the research findings presented by Pham (1992), certain (but not too high) amounts of arousal increase recall of sponsorship stimuli at sporting games, which makes events a comfortable solution for products attempting to build their **reach** and **awareness**. Apart from **maximizing familiarity** with brand and its **visibility**, festivals and sports tournaments are regarded as vehicles for **brand attitude formation** or even for building **purchase intents** among participants (Speed & Thompson, 2000; Lardinoit & Quester, 2001; Pope & Voges, 2000). They are also considered as successful **brand equity** tools (Zarantonello & Schmitt, 2013). For example, Pope and Voges (2000) conducted a study which showed that once consumers learn about a support (sponsorship) given by a brand to an event, there significantly increases their interest into buying sponsors' products. This relationship is specially moderated by the degree of respondents' identification with a sponsored team, organization or an event (Madrigal, 2000).

Traditional forms of events have been largely recognized by marketers as creative, easily accessible, flexible and rather precise instruments in brand promotion (Robinson & Noel, 1991). Many practitioners believe that establishing a direct, real-life contact with consumers during a festival, an exhibition or a sporting game, may result in realistic and memorable **brand experiences** (Miller & Washington, 2012). There are two fundamental methods for creating brand-consumer encounters at events: (1) digital and non-digital signage (e.g. boards, displays, video and streaming screens etc.); (2) brand activation projects. While with the first method marketers may only **stimulate perception** of attendants and **influence consumers' memory** by increasing frequency of the message displayed, the second option offers more branding opportunities. They have been described by Coppetti (2004) and may be grouped as follows:

(a) **product usage** i.e. organizing product trials and samplings in event venues and on sites. This is a frequently applied solution for new brand introductions, complex products or difficult to explain services. Even "non-tryable" products (like alcohol), may benefit, if they are creative enough e.g.: at Newquay's Unleashed festival, Smirnoff distributed not free vodka, but distilled water (purified from sea water in a special device exhibited at the event).

(b) **audience activation** i.e. allowing participants to get involved in an attractive play with a brand. Zipfer (beer brand), for example, held professional dance workshops for their customers at the Beach Volleyball Grand Slam in Austria in 2007.

(c) **building brand-consumer relationships** i.e. encouraging diverse forms of interaction between a brand and a consumer. It usually starts with ensuring the physical presence of brand representatives and their product at the event (e.g. exhibition stands, interactive kiosks, product booths etc.). The deeper connection is activated, when a brand attempts to make consumers feel obligated to it (e.g. by means of gifts, certificates, special services). This has been a common mechanism frequently used by Arri, Panavision, Sony and other hi-tech brands at Camerimage International Film Festival in Poland. Another example is Amstel (beer brand), which at Big Chill festival in 2008 hired special characters who, if spotted in a crowd, had to serve a free beer to the spotter at the Amstel specially designed bar.

(d) **building brand resonance** i.e. sensually introducing consumers into the world and philosophy of a brand. It usually combines interactive brand display with brand activation projects, allowing consumers to enter a separate branded space and to touch, hear, listen and learn about the brand with all their senses. At the Wire Festival in London the British brand O_2 arranged an exclusive area called "O_2 Bluespace", where participants could have enjoyed this event in the comfortable deckchairs with the excellent view of the stage, easy access to the bar and in a stylish branded atmosphere.

Developing genuine **brand experiences** by means of traditional marketing events is basically about making a brand **fun** and **useful** on site. As noted by Dye (2008): "(…) *regarding an event as an extended sampling exercise is bound to fail. At best, people will forget the product; at worst, they may regard it as an unwanted intrusion of the commercial world into their leisure time. (...) It's about being part of people's festival experience and not an unwelcome distraction (...). Know who you want to attract and give them something to remember*" (p. 29-32). In this context, marketing events serve not only to strengthen consumers' memory traces about a brand, but also to build brand-consumer relationships based on mutual understanding and joined real experiences. For many attendees a brand may become a companion, an entertaining friend, or simply an enjoyable co-participant of the event.

3 NON-TRADITIONAL MARKETING EVENTS

In recent years event industry has entered an online world and evolved into more digitalized forms with advanced technologies like, for example, new display and mobile solutions, tracking systems, augmented reality, life-streaming, holograms etc. This shift allowed for more brand-consumer interactions, and contributed to more intense and amusing on-site experiences. It also extended potential impact of events from actual attendees to online users, as certain performances, games and shows may be viewed with a smartphone from any place in the world.

Growing digitalization and accessibility of new technologies has led to further blend of various tools in the promotion mix and prompted the development of multiple innovative options. As a consequence, events became integrated into other advertising tools, causing new alternatives to appear: what once was a simple urban game, now has become a transmedia storytelling with extensive number of online and offline players (e.g. McDonald's "The lost ring" campaign); flash mobs are no longer spontaneous gatherings of anonymous individuals, but they turned into carefully planned shows performed in public, recorded and later disseminated as an attractive content of web campaigns (e.g. T-Mobile "Life's for sharing" campaign). Surprisingly, despite being frequently used and applauded by practitioners, these new forms of event marketing have received little academic attention and scholar scrutiny. It is thus worth investigating and reviewing them. The next section, therefore, presents examples of few non-traditional events and is followed by the discussion on their branding potential and effectiveness.

3.1 Alternate Reality Games

In 2007 Internet users could have come across a strange website which instructed them to travel to specific locations in the United States. As they arrived at the specified addresses, they were given freshly baked birthday cakes with phone numbers and "Call me now" written on them in icing. Once one called the number, the cake rang itself. After digging into a cake, one could have found a mobile phone with a charger and further instructions that allowed to play an alternate reality game specially designed to promote the upcoming movie "The dark knight" (the Batman sequel). The birthday cakes were a part of a long trail of tasks and puzzles, which, as the game proceeded, managed to involve over 10 million players worldwide ("Why so serious?", 2013).

Alternate reality games (ARGs) are very pervasive and immersive games that have lately captured the imaginations of marketers and game enthusiasts. For over past few years ARGs have been extensively used to promote entertainment industry (mainly video games and films), but they are also considered as very attractive promotion vehicles in other markets e.g.: restaurant chains (McDonald's), cars (Audi, General Motors), charity organizations (British Red Cross), electronics (Sony, Sharp), or even fast moving consumer goods (Wrigley, Tymbark – the juice brand). As branding tools, they have evolved from urban events, festivities and role-playing games. A typical branded ARG is a serious game based on transmedia storytelling: participants are playing detectives, i.e. they follow trails and tips scattered in the physical and virtual spaces in order to uncover some mystery, secret or to solve a puzzle; they reassemble story pieces, which are embedded in diverse on- and offline media; they look for clues to puzzles, riddles and problems prearranged by the designer of the game. ARG players have to work together, as most of the challenges are impossible to track and solve alone.

What makes ARGs attractive for participants is that the boundaries between **fiction** and **reality are intentionally broken or blurred** by game designers. The first ARG in Poland,

titled “Operation – Bottlecap”, was produced by a juice brand, Tymbark. The game narrative was based on a concept of a crime that had happened to the owner of Tymbark (Maspex company): somebody had stolen a legendary Tymbark bottlecap dating back to 1936 and Maspex representatives summoned consumers to help them find a thief. Community of thousands of people worked together for several months in order to solve this puzzle. The game took place in real world settings; players participated in authentic story-related events and genuinely performed their belief in the veracity of the game, even though they were aware of its fictional character (in reality, the whole robbery had been staged for the promotional purposes). In ARG’s terminology, they were enacting upon “TINAG” aesthetics (TINAG - “This Is Not A Game”) i.e. they voluntary immersed into an alternate world of game and suspended their disbelief in it (McGonigal, 2003a; 2003b).

Unlike in case of traditional events, **participation in an alternate reality game does not imply celebration nor suspension of everyday rules**. Instead, it involves ultimately real and immersive experiences with brand. As ARGs mimic the reality, they do not constitute a regular “magic circle of play” i.e. a secondary world, reserved only for players; a kind of temporary structure or a cultural contract, that isolates the play from the outside world (Nieuwdrop, 2005). In ARGs there is **no clear distinction between a non-play and play-ground**, as clues are embedded in both real and faux objects: existing monuments, buildings, books, events or specially created websites, videos, TV-series, blogs etc. As a consequence, there is no official beginning of the game and there exist multiple opportunities and mechanisms to enter it at any moment and start playing. In most ARGs there are numerous so called “rabbit holes” i.e. starting points - specially designed occasions or situations that are intended to prompt participation. Classical examples of rabbit holes are: birthday cakes in “Why so serious” ARG (described in the beginning of this section), honey jars with nine plastic letters suspended inside (“I love bees” ARG for Microsoft), T-shirts with odd overprints (ARG titled “Year zero” for Nine Inch Nails). Another mechanism that blurs the boundaries between game fiction and non-game reality is “tiering” i.e. providing distinct content to separate audiences, which allows players to build their own – albeit different – game experiences (Dena, 2008), and to advance the narrative into various directions. As subsequent clues and puzzles reveal game scenarios, it is the players who actually construct (or considerably contribute to) the eventual ending of the story. This makes ARGs very flexible, semi-predictable and – as a result – non-traditional marketing vehicles.

Despite much temporal, spatial and authorial dispersion (there is no single time and place to experience the alternate reality game; there exist multiple contributors to the storyline and its dynamics), ARGs might have great potential in differentiating brands from their competitors and in establishing valuable brand-consumer experiences. Even though in most ARGs the brand is not much evident, there are still remarkable profits to be gained by companies:

(a) **building extensive reach**, for example, the ARG promoting a Batman movie - “Why so serious” - managed to involve over 10 million players from around the world (“Why so serious?”, 2009); McDonald’s ARG named “The lost ring” attracted over 3 million gamers from 100 countries across the globe (“McDonald’s Advertising Strategy…”, 2009);

(b) **creating positive word of mouth and excitement around the brand**. Audi’s ARG titled the “Art of the heist” generated word of mouth worth of over 45 million public relation impressions in 3 months (“Effie awards brief of effectiveness…”, 2006);

(c) **activating consumers and motivating them to act upon a brand.** In “I love bees” over 2 million players followed thousands of clues and collaborated to solve the mysteries in branded environments and settings (Kim et al., 2008);

(d) **prompting brand sales.** The "Art of the heist" campaign, for instance, allowed for exceeding sales goals by over 15% ("Effie awards brief of effectiveness…", 2006).

3.2 Branded pranks

A branded prank is a practical joke played by a brand on unsuspecting consumers. A common business practice is to record such prank and eventually use it as a disguised advertising message in an online marketing campaign. As a result, branded pranks have become non-typical marketing events, which are staged in real settings and afterwards disseminated by companies for branding purposes. Carlsberg, for example, arranged a prank for its consumers in a public place: as unsuspecting people entered the cinema, there were only limited seats available among a scary-looking group of bikers. If visitors took the seat next to the bikers, they were awarded with a beer for their gallantry and friendly attitudes. This situation was filmed and then distributed around the internet as a viral video, which managed to collect over 16,767,750 views - as until February 2015 ("Carlsberg stunts with bikers in cinema", 2011).

As an entertaining event, a prank is not a new phenomenon and it has been extensively used for decades by television producers in, for example, the Candid Camera format. In contemporary marketing, however, practical jokes have just begun to be exploited professionally. Branded pranks (i.e. staged by advertising agencies on behalf of brands) are usually complex events, carefully planned and produced in a way to achieve expected results. Such events involve unsuspecting consumers caught up in a trap or set up by actors in prearranged marketing stunts. Heineken, for instance, has been long involved in organizing branded pranks as a part of its global advertising strategy. In 2010 it set up a tricky marketing stunt in Milan. The company arranged a fake cultural event combining a classical recital and a poetry meeting. It took place exactly at the same time Real Madrid and AC Milan teams played their important football match. Heineken collaborated with 100 Italian individuals, who were requested to persuade their partners, students and employees to sacrifice the game on TV and attend the classical music concert instead. As a result, over 1 thousand AC Milan fans turned up at the event. Eventually they were rewarded for their devotion with a great surprise: in 15 minutes the concert was interrupted and everybody could have enjoyed the game live on the big screen above the stage (Karpinska-Krakowiak, 2014).

From socio-cultural viewpoint, pranks share many similarities with traditional events, as they suspend the typical social order and routine of everydayness, and, simultaneously, they are unserious, make-believe, and involve magnitude of surprise. At the same time, pranks use play mechanisms and, like in case of alternate reality games, they **attempt to blur the boundaries between artifice and reality**. What distinguishes them form traditional events is that they belong to the category of disparagement humor i.e. they are **acts of playful deceit and they are held to tease or even mock the victims, while entertaining the audience**. In Nivea "The stress test" prank, for example, the victims were secretly photographed as they sat in the airport departure lounge. Within couple of minutes the trickster (i.e. Nivea representatives) used these photos in faux newspapers and TV programs broadcasted in that lounge in order to depict the objects as extremely dangerous fugitives. As the prankees grew stressed, the airport security guards approached them with Nivea antiperspirant deodorants to relieve their stress and reveal the trick (Karpinska-Krakowiak & Modlinski, 2014). This joke ridiculed and surprised the victims, as they did not expect to become a subject of any mockery or a comic situation (i.e. the boundaries between fiction and reality were temporarily suspended).

Brands use pranks predominantly to **meet and entertain consumers** on and offline. As highly captive for diverse audiences, practical jokes have become a modern executional tactic for promotional messages designed to **draw consumers' attention** especially in such a

cluttered environment as the internet. According to Karpinska-Krakowiak and Modlinski (2014), well-crafted pranks can gather a multimillion viewership in an impressively short time perspective e.g.: "Push to add drama" by TNT achieved a 50-million audience in less than two years; "Christmas miracle" by WestJet collected over 36 million online exposures in 9 months (Karpinska-Krakowiak & Modlinski, 2014). Apart from **maximizing reach** and **building brand visibility** on the internet, branded pranks are expected to:

(a) **introduce a viewer into the world and philosophy of a brand** (e.g. "Push to add drama" by TNT involved film-like, very dramatic and spectacular scenes being played out live in urban streets);

(b) **provide a proof of brand attributes** (e.g. Nivea "The stress test") or **an amusing portrayal of brand core values** (e.g. Heineken's fake concert);

(c) **build or strengthen an attachment to the brand with use of truly intensive emotions**, e.g. Coca-Cola in their "Small world machines" prank invited inhabitants of Lahore and New Delhi – i.e. people who have been living in Indian-Pakistan conflict for years now – to share a moment of joy with some technological assistance provided by the brand (Moye, 2013).

4 CONCLUSIONS

In contemporary marketing it is increasingly difficult to draw vivid boundaries between new and existing promotional instruments or to capture them as totally separate entities. Consequently, as the newer forms of events evolve, they share some characteristics with their traditional counterparts and, simultaneously, they introduce some innovative qualities to the industry. Basic similarities between traditional and non-traditional events are: both are forms of **entertainment**; they are **carefully planned**, produced and organized; they have ability to acquire **massive reach** and **extensive brand exposition** in a relatively short time perspective; they involve some sort of consumer participation and **brand-consumer interaction**, which may lead to the development of genuine **brand experiences**.

New forms of events benefit mostly from innovative technologies and proliferation of the internet. As a consequence, they create **more brand experience opportunities**, because they allow for addressing more **versatile and numerous audiences** (both on- and offline), which in turn prompts a **viral effect** of such events. Unlike their traditional counterparts, many categories of new events (esp. ARGs, pranks and flash mobs) **do not involve much celebration, feasting, or carnival** *per se*. Instead of reversing everyday routine of participants, they deliberately **distort the boundaries between fiction and reality**, between truth and deceit. They openly use negative emotions (e.g. shock, fear, derision) and disparagement humor. Eventually, they **do not promote directly the brand**; they do not sell it. In most ARGs, flash mobs and pranks the brand stays behind the scenes or is revealed discreetly at the end of the footage presenting the event (comp. ARG titled "The Lost Ring" by McDonald's or "Life's for sharing" campaign by T-Mobile).

Despite much research regarding event marketing, there is still void in data on new forms of events esp. on their effectiveness and possible impact on immediate and delayed consumer responses. There still remains a magnitude of questions unanswered e.g.:

(a) Compared to traditional events, what specific branding indicators are best to depict the actual effectiveness of non-traditional events?

(b) What are the mechanisms and factors influencing the online viral effect of non-traditional events?

(c) What psychological, sociological, cultural and other factors moderate the effectiveness of non-traditional events and how?

(d) Does (and to what extent) blurring the boundaries between fiction and reality increase the effectiveness of non-traditional events?

(e) How different audiences respond to diverse categories of non-traditional events and why?

(f) How the product category of the brand moderates the effectiveness of non-traditional events?

It would be highly valuable to address these (and other) questions in future empirical and theoretical endeavors.

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PERCEPTION OF ORGANIC FOODS BY YOUNG CZECH CONSUMERS AND ATTITUDES TOWARDS THEM

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Abstract

The paper provides findings about perception of organic foods by young Czech consumers, their attitudes towards them and identifies their motivations and barriers to purchase decisions. Primary data were collected via focus groups (n = 24) and questionnaires (n_{2012} = 400 and n_{2013} = 366). There are both positive and negative attitudes towards organic foods among young Czechs. Most of the respondents agree with quality and health benefits of organic food as compared to conventional foods.

Keywords: organic food, attitudes, perception, Czech, young consumers

1 INTRODUCTION

The global demand for organic foods and interest in organic farming has started partly as a result of rising awareness of the negative side effects of highly intensive agricultural production, including the high use of mostly chemical fertilizers and pesticides (Komorowska, 2014), partly due to food scandals that made consumers turn to natural alternatives. Over the years this was followed by offer of organic food products in supermarkets, implementation of certification standards and support of producers by governments. European market is the largest and most complex market of organic food and drinks in the world (Oroboi et al., 2012).

The objective of this paper is to present results of research mapping the perception of organic foods by young Czech consumers and attitudes towards them. It also identifies motivations and barriers to purchase decisions.

2 LITERATURE REVIEW

Organic Trade Association (2011) explains the exponential growth of organic food market by the fact that advertisers have a better knowledge of what drives organic consumption. Thanks to media involvement the number of environmentally aware individual coming from broader range of social and economic backgrounds has expanded (Mainieri et al., 1997). Consumption is less predictable by demographic characteristics, instead motivational and psychological factors help better to solve this problem (Hughner et al., 2007).

Inglehart and Welzel (2005) present their observation that in wealthier nations consumers tend to replace materialistic values with post-materialistic, such as concern for the environment and quality of their lives, which drives consumers interest also in organic food. Vancley et al. (2011) point out consumers´ concern for reduction of ecological footprint. Besides environmental concerns, other authors provide evidence for motivations connected to with to protect one´s health (e.g. Brunso and Scholderer, 2001 or Megicks et al., 2008). Smoluk-Sikorska and Łuczka-Bakula (2013) add also the motivator that by support of organic production consumers also support the sustainable development of rural areas.

Kareklas, Carlson and Muehling (2014) divide the considerations into two groups: egoistic (such as one´s health and well-being) and altruistic (environmental concerns, animal welfare, etc.).

3 METHODOLOGY

To fulfill the given objective, it was needed to obtain primary data. A number of methods for data collection were employed: focus groups and a questionnaire, which was carried out in two years (2012 and 2013). Furthermore, the data were drawn from personal in-depth interviews. In this article, only selected results of a larger study focused on the behavior of young people on the market with organic foods are presented.

The primary source of data presented in this paper comes from focus groups. To ensure objectivity, three different focus groups sessions which took from 1.5 to 2 hours were conducted, but first of all a testing round of focus group with students, who were between 23 and 25 years, was executed. A part of the students were already employed, others only studied. Men and women were represented equally. After this pre-test some alternations were implemented (e. g. samples of foods were removed). In October 2012, the three focus groups were executed and lead by a moderator, each focus group always consisted of eight respondents with equal representation of men and women and consumers who buy and do not buy organic foods. The average age was 26 years for women and 28 years for men. The average monthly income across households was around 40 000 CZK and the average number of household members was two. All focus groups were recorded on a camera. Based on the recording, most important information was summarized. These data were coded and evaluated. Each focus group was compared with one another in order to find a common agreement on the questions.

The questionnaire survey was carried out in 2012 and 2013. The structure of the respondents had a similar representation in both years (n_{2012} = 400 and n_{2013} = 366). The obtained data were processed with Statistica v. 12, pivot tables were calculated and hypotheses tested.

4 MAIN RESULTS

4.1 Perception of organic food

Most participants of focus groups perceive organic foods as products grown without use of chemicals. This point of view is shared by both consumers of organic foods as well as consumers who do not buy organic products. Also the questionnaire survey provided similar results. It was found that the majority of respondents (in 2012: 87%; in 2013: 79%) identifies with the definition that "products of organic farming is a product which is grown without synthetic fertilizers, chemical sprays or genetic modification". A certain part of the respondents noted that for them the organic products are only overrated trends and characteristics of these products are not any different from conventional foods (2012: 7.5%; 2013: 13.5%). It is quite interesting that this opinion seems to have growing support.

When respondents were asked what were their personal opinions on organic foods; the most common answer (in both years) was that the organic foods differ only in price when compared to conventional foods (this was noted by more than 25% of respondents in this open-ended question). The second most frequent response was that organic foods do not contain chemicals, that they are grown in specific ways, or are natural. Respondents also reported that organic foods have a better quality, more vitamins and have a higher nutritional value. In 2012, out of 400 respondents 25 replied that organic foods are healthier. The following year, this answer was indicated only by 3 respondents (out of 366). Also the number of responses "organic is no different from non-organic foods" has increased (2012:

8 respondents; 2013: 17 respondents). In both years, the same number of responses indicated opinion that the labeling of organic products is senseless, just a trend or a fraud on consumers. This fact has probably occurred after a concurrent debate about the real contribution of organic products. Out of all such publications, it is possible to mention an article in dTest (2012), which was focused on pesticides in honey from AlbertBio. Even on this basis, it is possible to derive rather a negative view of respondents.

Focus groups experienced both positive and negative attitudes towards organic foods, which was partly due to intentional composition of the group including both consumers and non-consumers of organic foods. Proponents of organic products communally agreed that their purchases contribute to the development of small agriculture businesses and help to return to traditions. On the other hand, the other group stands up for the opinion that organic foods are only rather a fashion trend helping to make more money. The main perceived advantage is considered the support of fair production by small farmers without chemicals and in a friendly manner to nature. The main disadvantage is a higher price, which corresponds with higher time costs and efforts of producers and often also smaller harvests. Another mentioned disadvantage was a possible presence of nitrate. This view was most probably influenced by information mentioned in media shortly before the conducted research. Participants also mentioned that if they did not personally know the farmer, they do not have confidence in their products.

Another major theme was the influence of organic farming on nature. Less than a half of the participants believe that organic production has a positive impact on nature. Conversely, the second view was exactly the opposite. In their opinion the production of organic food is very expensive and this has a negative effect on nature.

4.2 Perceptions of quality of organic foods

The largest group of respondents partially agreed with the statement that organic foods have better quality than conventional foods (2012: 58%; 2013: 51%). In the first observed year, 17% of respondents totally agreed and the number of the respondents in the second year was 21 %.

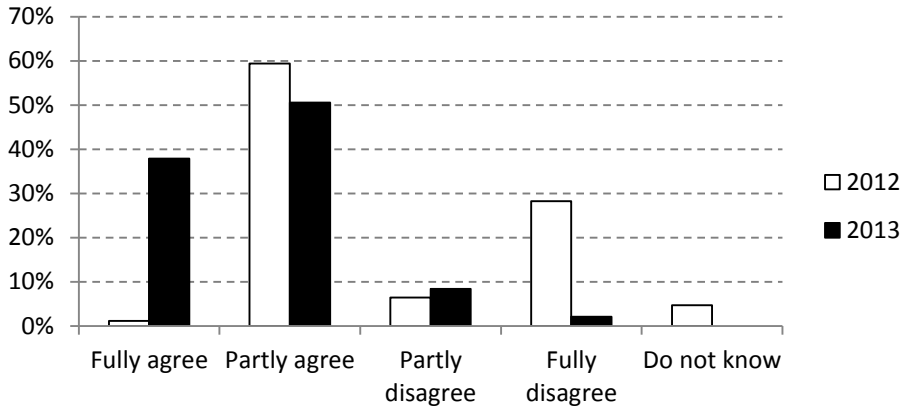

Fig. 1 – The extent of agreement with the statement "organic foods are higher quality foods than non-organic foods". Source: Questionnaire survey 2012 (n = 400) and 2013 (n = 366).

This claim was also tested by using a contingency analysis. The goal was to see how the two groups of consumers (organic foods consumers vs. non-consumers) perceived organic products. The test hypothesis dealt with the quality of organic foods (H_0: Perception of higher quality organic foods is not dependent on buying organic foods).

- 2012: p-value is close to zero (0.0000). This hypothesis of independence was rejected. With 95% confidence, the relationship between those marks may be demonstrated. Contingency coefficient = 0.3474. This value is not very high; therefore, the dependence is not very strong.
- 2013: p-value is close to zero (0.0000). This hypothesis of independence was rejected as well. With 95% confidence the relationship between the characters can be established. Contingency coefficient = 0.489. This figure is higher than the value in 2012; therefore, the dependence is slightly stronger.

Tab. 1 – Purchases of organic foods and level of agreement with a statement "organic foods are better than non-organic foods". Source: own questionnaire survey 2012 (n = 400) and 2013 (n = 366).

	Do you buy organic foods?					
	2012			**2013**		
Organic foods are higher quality than non-organic foods	**Yes**	**No**	**Total**	**Yes**	**No**	**Total**
Fully agree	47	23	70	4	13	77
Partly agree	111	124	235	105	84	189
Partly disagree	8	48	56	17	40	57
Fully disagree	2	27	29	3	28	31
Do not know	2	8	10	1	10	11
Total	**170**	**230**	**400**	**190**	**176**	**366**

The relationship between consumers who buy organic foods and the belief that organic foods have higher quality than non-organic foods is clear from the Tab. 1. They are more confident in the higher quality of organic foods than non-consumers of organic foods. This was also confirmed by the responses recorded from focus groups.

4.3 Health benefits of organic foods

Most respondents partly agreed with the fact that organic foods are healthier than conventional foods (2012: 55%; 2013: 47%). In 2012, 22.5% of respondents fully agreed with this statement and in 2013 it was 24% of respondents.

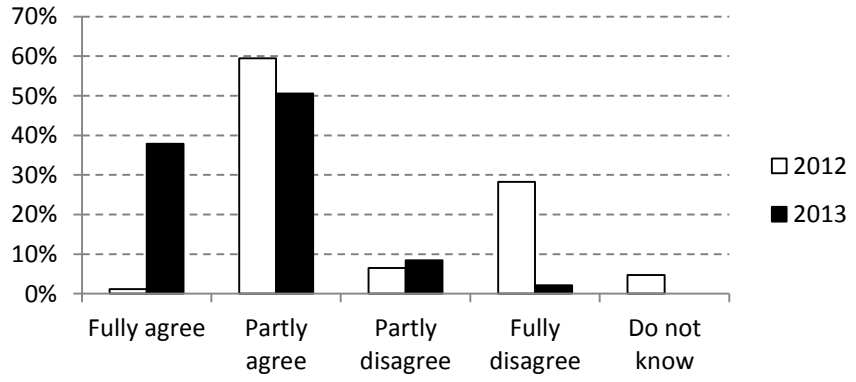

Fig. 2 – The extent of agreement with the statement "organic foods are healthier than non-organic food". Source: own questionnaire survey 2012 (n = 400) and 2013 (n = 366).

The dependence was verified by the test of following hypothesis H_0: Perception of higher health benefit of organic foods is not dependent on buying organic foods.

- 2012: p-value = 0,0004 is clearly smaller than the chosen significance level of 0.05, it is therefore possible to reject H_0 and we may accept the alternative hypothesis. Contingency coefficient = 0.244, which demonstrated a weak dependency.
- 2013: p-value is close to zero (0.0000). Based on this result, H_0 can be rejected. Contingency coefficient = 0.42. This value is higher than the value from the previous year and therefore the dependency is stronger.

With 95% confidence, there is interdependence between the two characteristics People who buy organic foods agree more with the statement "organic foods are healthier than non-organic food." In particular, the results can be seen in the following graph based on contingency table. This graph illustrates the answers of the respondents who buy organic foods and we can see a clear a difference attitudes in the two analyzed years.

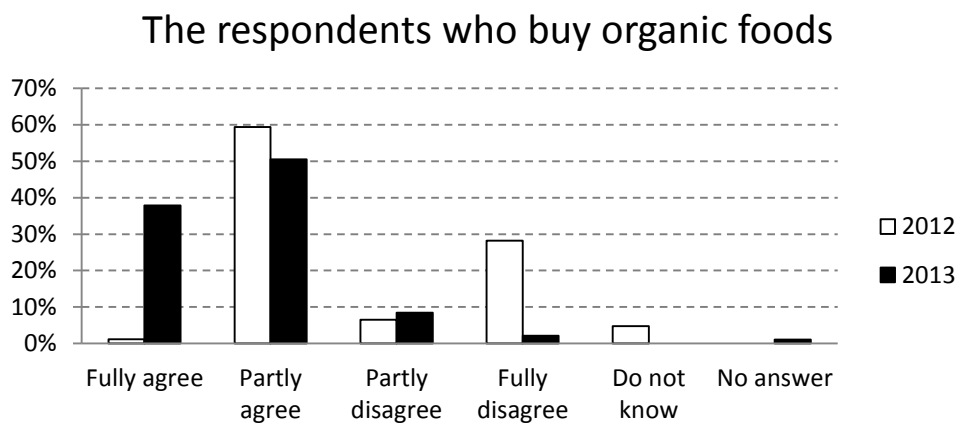

Fig. 3 – Extent of agreement with the statement "organic foods are healthier than non-organic foods" Source: Questionnaire survey in 2012 and 2013.

A half of the participants of focus groups believe that organic foods are healthier, or at least hope for that. By contrast, the second half does not believe in this statement. The most common reason for this was the presence of water contaminated with chemicals in all products – thus also in organic foods. However, organic meat was mostly seen as a healthier and with better quality. This view was shared by those who do not believe in organic foods as well.

Motivations and barriers to purchasing decisions

In 2012, the most common motivator for respondents to buy organic foods was a conviction that organic foods taste better than non-organic foods. By contrast, in 2013, the most common reason for purchasing these foods was confidence in the quality of the products. Another reason was the belief in health benefits of organic foods.

The most frequent barrier for those who do not buy organic foods is price (2012: 40%; 2013: 36% of consumers who do not buy organic foods). Also the respondents do not believe in the quality and producers of these products.

Group discussions confirmed the statement. The respondents see the biggest limitation in the higher price of these products. In general, respondents feel very badly informed and have little faith towards the retailers of organic foods. It is partly caused by the fact that consumers do not have direct contact with producers. In this situation, on one hand the perception of quality is a motivating factor, and on the other, this factor is taken as a barrier. It is often possible to see that consumers do not completely believe in the quality of organic foods and it is one of the primary reasons for lack of interest in organic products.

According to farmers, an important motivator for purchasing organic foods can be a need of these products due to their compliance with a gluten-free diet or a doctor's recommendation of healthy eating. It is also interesting to note that if consumers start consuming organic foods, they do not usually change this eating habit and tend to consume them. The interest of individuals in organic products is still growing, but very slowly.

5 DISCUSSION AND CONCLUSION

This article discussed the consumer behavior of young people towards the organic foods market. The main objective was to assess how this segment perceives organic foods and how they perceive quality and health benefits of organic foods consumption. Looking at the results it can be argued that the consumers are familiar with the definition of organic foods, which is defined by law. Many consumers define a product to be organic if it is produced in organic farming and grown without artificial fertilizers, chemical sprays and genetic modification. Besides that there such consumer for whom organic foods mean only trends and a way to make more money. Similarly as it was stated by Kareklas et al. (2014) we could see that both egoistic and altruistic considerations are involved among young Czechs in perception of organic foods benefits.

The trust in organic food products is undermined by affairs published in media, such as currently discussed question about the health benefits of organic foods or an article dTest (2012) about the honey AlbertBIO, in which nitrate was detected. Company ProBio (Czech biggest producer of organic foods) responded to this article with a declaration that the amount of nitrate was minimal and there was no need to worry. In general results of presented research shows that those who do not buy organic foods have lower trust in these products than the organic food products buyers.

Furthermore, the survey was aimed at the perception of health benefits of organic foods among young people. Also in this case results proven dependence of perception on whether consumer buy/ do not buy organic foods. Buyers of organic products have both higher faith in health benefits of organic foods and also their quality in both consecutive years of questionnaire surveys.

Komorowska (2014) mentions price of organic foods as a barrier to higher sales of them. The same seems to be a problem to young Czech consumers. Further barriers are little faith in the quality and health benefits of organic foods. On the other hand, the factors that motivate consumers to purchase organic foods are better taste, perceived higher quality and health benefits, sometimes supported by an advice from a doctor or a nutritionist to eat organic foods.

We can assume that these finding among young Czech consumers can be similar to those of a broader age range. Future research will cover more age groups and will focus on deeper analysis of motivations and in general factors influencing marketing of organic foods. Also use of knowledge discovery techniques on data from marketing research of consumers' behavior is planned (see e.g. Turčínek and Motyčka, 2013).

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THE IMPACT OF MARKET ORIENTATION ON PERFORMANCE OF THEATRES

Nevenka Pašek

Abstract

Our research is focused on the exploration of market-orientation and its effect on the performance of theatres in Slovenia. If the theatres want to increase their revenues, they must reinforce their market orientation. Of course, it is necessary to point out that they must maintain the performances of artistic value.

Financial indicators, which are used to measure the business performance, are not sufficient for the company, especially not for non-profit organizations, including organizations in the field of culture. The most important objective for them is to meet the needs of the community, customers and stakeholders, which are associated with such organization.

The main purpose of this research is to explore the market orientation of theatres, which represent in addition to innovation, learning and perceived value a crucial challenge how to redirect such organizations.

Keywords: market orientation, theatres, performance

1 DESCRIPTION OF THE NARROW SCIENTIFIC FIELD AND THE PROBLEM

Our research is focused on the exploration of market-orientation and its effect on the performance of theatres in Slovenia.

Constantly changing environment causes changes in artistic organizations. Differences that occur in such organizations are derived from their mission, which also causes differences in the marketing, in the measurement of performance and in the funding characteristics. Constant reducing budgetary resources over the past years has required from theatres to rise own revenues. In other words means to increase commercialization of theatres. If the theatres want to increase their revenues, they must reinforce their market orientation. Of course, it is necessary to point out that they must maintain the performances of artistic value.

Market-oriented organization is focusing on the needs of customers, knows their competitors and interfunctionally uses and processes the information about the market. Different concepts, in which the organization can carry out its marketing activities varying according to the degree of market orientation. The older they are less are they oriented on customer needs. In theatres is common concept of the production, where everything is subjected to the production of performance. Wishes and needs of customers are not taken into account, because everything is subordinated to the artistic message. Consequently it comes down to the lack of audience and reducing the revenues from ticket sales. Activities associated with marketing of the performances are often made in last minute, for the marketing are available only limited sources and the artistic directors usually interfere with marketing activities. For empty performances is always guilty marketing department. This kind of understanding is derived from the lack of understanding of the role of marketing in organizations. Many times the marketing departments are labeled as propaganda. All mentioned above leads us to the fact that if these organizations want to increase revenues, they must reinforce their market

orientation. Of course, it is necessary to point out that they must maintain the performances of artistic value.

The fact is that the main objective of businesses is a profit, which can be used as a financial measure. The peculiarity of non-profit organisations is not profiting, but to meet the needs of the community and, therefore, the profit appears to be completely wrong objective and indicator for performance of the non-profits. The most important objective for them is to meet the needs of the community, customers and stakeholders, which are associated with such organization.

Market orientation is one of the fundamental concepts of marketing science. The origins of this concept dates back to 50 years (Drucker, 1954; Levitt, 1960; McNamara, 1972; Drucker, 1954; Kohli/unfortunately Clottey went back, 1990). Back in 1954, Drucker wrote that companies need to deal with the activities of the company from the perspective of the customer. As the cornerstone is considered an article of Shapiro (1988) issued in Harvard Business Review, where for the first time arises the need for the conceptualizing of market orientation.

Serious research and defining the concept of market orientation started in the early 90s, when almost simultaneously two articles appeared; one from Kohli and Jaworski and another from Narver and Slater. Kohli and Jaworski(1990) define marketing orientation as organizational behavior or set of activities that are related to the business. They understand market orientation as: (1) creating the knowledge about the present and future needs of the customer, (2) data transmission about market to other sections of the organization and (3) the responsiveness of the organization on this information. Narver and Slater (1990) have regarded market orientation as organizational culture, marketing orientation which forms the patterns of behaviour in organization. Under the concept of market-orientation they understand one- dimensional "construct", which consists of three behavioural components: (1) orientation on customers, (2) orientation on competitors and (3) the inter-functional coordination and two criteria in decision-making: a long-term orientation and focus on profit.

On the basis of these two approaches two measurement scales for measuring market orientation were formed: MKTOR (Narver, and Slater, 1990) and MARKOR (Kohli, Jaworski and Kumar, 1993). Both of them are also the basis for many other scales which were developed then for the measurement of market-orientation (Ruekert, 1992; Deng and Dart, 1994; Narver, Slater and MacLachan, 2004). Among them is also MORTN scale (Depandhé and Farley, 1998).

Many other authors have researched the concept of market orientation more or less represented by the both above mentioned approaches (Day, 1993; Deshpandé, and Farley, 1998; Deshpandé, and Webster, 1989).Lafferty and Hult (1999) have found in their research the four characteristics that are the same regardless of the approach: (1) orientation on the buyer, (2) the importance of the intervention of knowledge (information), (3) interfunctional coordination of marketing activities and (4) reaction to the marketing activities through the implementation of appropriate actions.

There are numerous studies which have explored the relationship of market orientation and business performance. Almost all found a positive relationship between market orientation and business performance (Narver and Slater, 1990; Pitt, Caruana and Berthon, 1996; Chang and Chen, 1998; Doyle and Wong, 1998; Hunt and Lambe, 2000; Lonial, Gupta, Raju and Ziegler, 2000; Slater and Narver, 2000; Harris and Ogbonna, 2001, Pulendran, Widing and Speed, 2003; Qu and Ennew, 2003; Cano et al., 2004; Kirca et al., 2005; Shoham et al., 2005; Santos-Vijande et al. 2005; Haugland, Myrtveit, and Nygaard, 2007; Martin-Consuegra and Esteban, 2007; Panigyrakis and Theodoridis, 2007; Farrell, Oczkowski and Kharabsheh,

2008; Grinstein, 2008; Megicks and Warnaby, 2008; Singh, 2009). None of them revealed the negative impact.

Some researchers have also explored the impact of market orientation on business performance in the field of culture Voss, G.B and Z.G. Voss (2000), (Camarero, C. and M.J. Garrido (2008), Fillis, I. (2006), Hausmann, A. (2007) Hsieh, J. (2010).

The market orientation can be a proactive –"market driving" or reactive- "market driven". Reactive market orientation is understood as a straight adaptation of the organization to the changing requirements of the customers, the environment and market conditions (Kohli et al., 1993; Slater and Narver, 1998; Jaworski et al., 2000). Proactive oriented organization dictates its own rules of the game on the market that are changed to her advantage. In this way, the organization shapes changes in customer requirements e.g. the behavior of customers or market structure (Carrillat et al., 2004; Jaworski et al., 2000; Kumar, 2004). The primary mean to achieve this goal are the radical innovation of products, processes, marketing or business level systems. Despite the different characteristics of the reactive or proactive marketing orientation, examples from practice suggest that organizations can use both approaches at the same time. In this case, we are talking about complementary market-orientation approaches (Jaworski et al., 2000; Kumar, 2004).

It is well known that innovations are the driving forces behind the development of the organization .The innovations also improve effectiveness of the organization. So the questions are what the relationship between the market orientation and the innovations is and what their impact on performance is. Researchers who are engaged in areas affected by the innovation and market orientation do not have a single opinion on this issue. Some research demonstrated the positive impact of market orientation on the ability of innovation (Kohli and Jaworsky, 1990; Ruekert, 1992; Deshpandé, Farley, and Webster, 1993; Slater and Narver, 1994; Atuahene-Gima, 1996; Gatignon and Xuereb, 1997; Sandvik and Sandvik, 2003). Others suggest that high market orientation limits innovation and leads only to incremental innovation (Christensen and Bower, 1996; Berthon et al., 1999). These researchers argue such results with the facts that the orientation on the existing customer's wishes limits the willingness to risk, which in turn leads to development of the innovation with limited level of novelty. Companies also are not able to recognize opportunities in existing and new markets (Slater and Narver, 1995; Johnston et al., 2003).

Learning orientation can be conceptualised as "a set of values that affect the tendency of enterprises in the creation and use of knowledge" (Sinkula, Baker, and 1997, p. Noordewier 309). Learning orientation is a dynamic process of accumulation of knowledge. Organizations with a high degree of learning orientation appreciate the knowledge in two areas: (1) response to environment changes and (2) the ability to continuously check their relationship with the environment (Baker and Sinkula, 1999). Organizations that show a high orientation recognize the importance of learning from their environment (Santos-Vijande et al., 2005; Weerawardena of Cass and Julian, 2006) and recognize that innovation does not come only from the radical changes in the environment (Baker and Sinkula, 1999). Learning orientation positively affects business performance (Santos-Vijande et al., 2005) and innovation (Cavusgil and Calantone, Zhao, 2002). Baker and Sinkula (1999) and Baker, Sinkula and Noordewier (1997) have developed a scale for measuring attitudes to learning. Their construct consists of three dimensions: commitment to learning, open the attachment and sharing the vision. Wang and Wei (2005) in his study noticed that the learning orientation and orientation on the quality could be very critical when transmitting the effects of market orientation on the performance of the business. A strong learning orientation is a prerequisite for superior

market-oriented processes to create and sustain competitive advantages Baker and Sinkula (1999).

Research, focusing on a variety of strategic orientation and the interactions between them are rare. (Grinstein 2008) explores the relationship between the market, technological, entrepreneurial and learning orientation. There are also other interdependent constructs such as product orientation, innovation orientation, orientation on customers and market orientation, spreading the field research and develop the need for synthesis in the relations between these constructs.

Research shows that only a single orientation is insufficient (Atuahene-Gima in Ko, 2001; Baker and Sinkula, 1999; Bhuian et al., 2005) as interconnection and relations between different orientations enable organizations a competitive advantage in the long term (Hult et al., 2004) and better business results Grinstein (2008). Research should, therefore, focus on the interaction between strategic orientations Salavou et al. (2004).

2 THE PURPOSE, OBJECTIVES AND EXPECTED CONTRIBUTION

The main purpose of this research is to examine the impact of market orientation on the business performance in theatres. According to the purpose the research objectives are: (1) to explore the perception, what the managers, artists, employees in theatres understand, what they think about market orientation, (2) to explore what is the impact of market orientation on performance (3) to explore what is the impact of innovativeness, learning and perceived value for consumer on market orientation and business performance (4) to propose improvements for theory and praxis. The market orientation represents the business culture, and the adoption of such culture leads to the positive effects of business (Narver and Slater 1990). This approach will be used in the study. This will at the same time provide the basis for further work in this area.

The estimated contribution of the doctoral thesis is a theoretical and practical. Theoretical contribution refers to: (1) the study of the performance of the theatres, where the market orientation is one of the key levers that with the other three concepts, innovation, learning, perceived value, based on the challenges shows, how to redirect such organizations. That gives us an insight into the deeper understanding of the problem, (2) understanding the necessity of transformation of influencing the mindset in relation to the marketing and its impact on the performance of the business, and (3) design of appropriate market-based activities that improve the performance.

The practical contribution of the doctoral thesis is in particular, in the creation of a general model of market orientation on the organizational level and the development of appropriate indicators for measuring performance, which gives the practical contribution of the doctoral thesis, strategic nature.

2.1 The Research Model

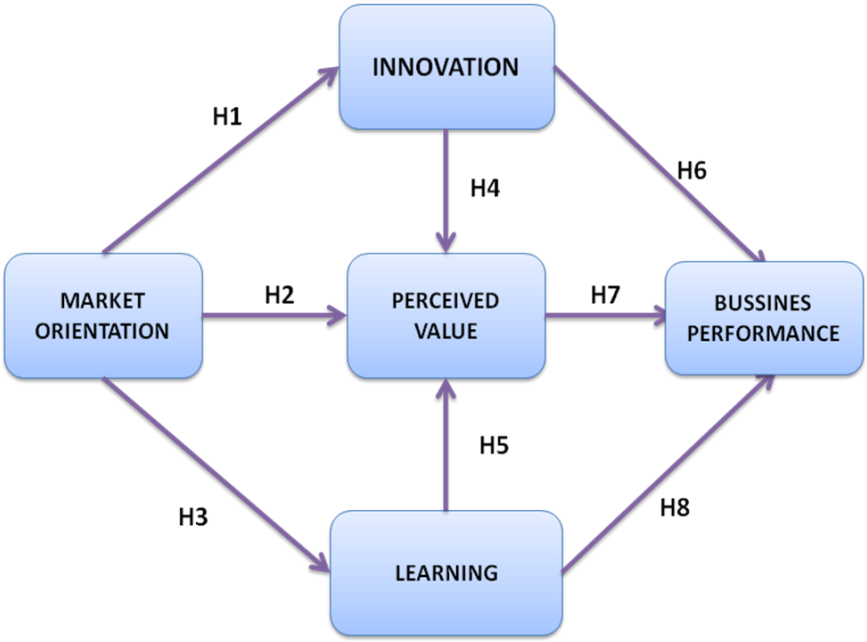

Fig. 1 – Research model

Hypothesis H1-H8 and the links between the fundamental constructs.

H1 assumes a positive linkage MO and innovation

H2 assumes a positive linkage MO and perceived value for the consumer

H3 assumes a positive linkage MO and learning

H4 assumes a positive linkage of innovation and the perceived value for the consumer

H5 assumed a positive linkage of learning and the perceived value for the consumer

H6 assumes a positive impact of innovation on business performance

H7 assumes a positive impact of perceived value for the consumer on the business performance

H8 assumes a positive impact of learning on business performance

The equation of the model

BP = f{MO, I, L, PV, F}

BP = business performance

MO = market orientation

I = innovation

L = learning

PV = perceived value for the consumer

F= other factors

The field of this research in Slovenia and internationally has not been very researched yet, so we see a potential in the selected topic, because of the actuality of the selected topic and of the introduction of the results of the research in the Slovenian and international environment.

3 METHODOLOGY

The main purpose of this research is to explore the market orientation of theatres, which represent in addition to innovation, learning and perceived value a crucial challenge how to redirect such organizations.

Research is divided into two parts, theoretical and empirical. The theoretical part is conceptual and is based on systematic literature rewiev. In regard with theory will be carried out the conceptualization, operationalizaton of variables, the structure of the questionnaire and scales for the measurement of marketing concepts. In marketing research, we have to take into account the theory, because only in this way can the findings be interpreted and integrated in the existing research (Malhotra, Peterson, Bardi, Kleiser, 1999).In the study, we will take into account the guidelines of marketing research, in the preparation of the questions we will rely on the existing literature, which examines in more detail the specifics of the activities of the organizations of the performing arts (Gatignon and Xuereb 1997; Holbrook and Zirlin 1985; Narver and Slater 1990; Slater and Narver 1994).

In the dissertation it will be used the existing and verified scale for the market orientation measurement: MKTOR (Narver, Slater, 1990) and MORTN (Depandhé and Farley 1998). The scale will be adapted for the theatres.

In practical part, the qualitative and quantitative methods will be used. Qualitative research method refers to the in-depth interviews with directors, managers and artists about their understanding of the concept of market orientation and its impact on business success. In this way, we gain insight into the breadth and depth of the area in the survey, so we can focus on the subjective meanings, definitions, symbols, and descriptions of specific cases.

Quantitative empirical research will be carried out with the help of the questionnaire, which will be divided among managers, artists and employees in theatres in Slovenia. The questionnaire will be preliminary tested before the implementation on a small sample employees. The reliability of the questionnaire will be checked to ensure the quality of the measurement and use of the instrument. The expected pattern is a population of 250 respondents. The empirical analysis of the conceptual model will be carried out with modeling linear structural equations. Constructs will be checked with faktor analysis with SPSS and Lisrel. Here we will take into account the instructions of Hair, Black, Babin, and Anderson (2010). In this way it will be possible to test the consistency of the theoretically well-founded conceptual model with empirical data.

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CURRENT TRENDS IN MARKETING COMMUNICATION AND THEIR APPLICATION TO TOURISM

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Abstract

This paper deals with current trends in marketing communication and their application to the field of tourism. The ever growing importance of the Internet and the development of technologies that are becoming more accessible to consumers have given rise to new kinds and forms of marketing communication that need to accommodate to all these trends. Social media play a significant role both on the demand and on the supply side and are starting to shape consumers' decision-making process. In tourism, this concerns primarily the impact of online reviews (WOM or eWOM marketing), mobile marketing and online marketing. The fact, that social media is an important part of the communication mix in tourism is demonstrated by successfully implemented campaigns; campaign of Cape Town on Facebook, first Twitter hotel Sol Wave House or TrueView advertising of Nassau Paradise Island on YouTube. The first two of these campaigns are even low cost and Facebook campaign of Cape Town meets the elements of buzz marketing.

Keywords: Tourism, marketing, marketing communication, social media, word-of-mouth marketing, online reviews.

1 INTRODUCTION

Successful tourism services or products, successful activities of organizations engaged in tourism or successful destinations cannot do without a high-quality and thorough marketing strategy. It forms a basis for an appropriate configuration of the communication mix and the use of the right marketing communication tools, in line with the specifics of tourism. The communication mix no longer includes only five basic tools. Over the time, as technologies develop, new tools are constantly introduced. Forms of communication previously identified as old forms separate and develop in their own distinct way. However, it still holds true that there must be interplay of individual marketing communication tools, rather than their isolated effect (Csikósová, Antošová & Čulková, 2014).

In particular social media have gained enormous popularity in recent years. The relationship between travelling and technologies is as close as never before – businesses are in increasing numbers turning to social media to present their services and to reach customers in a most personal manner (Santos, 2014). The Internet has changed the world of marketing communication. And the Internet and social media are a popular option for young people who take computers, tablets and mobile phones for granted (Dev, Buschman & Bowen, 2010). The Internet is thus becoming a powerful tool not only for consumers who find there all the information needed, but naturally also for businesses that are free to use it to appeal to their potential customers and get them to buy online.

2 MARKETING COMMUNICATION TOOLS

Previously, there was the following standard division of marketing communication tools into these five categories (Jurášková, Horňák & et al., 2012): advertising, personal selling, sales promotion, public relations and direct marketing. Each of these categories has its own specific tools (Kotler, Wong, Saunders, & Armstrong, 2007). Due to technology development the present communication mix has been somewhat extended and has been gradually modified. The existing tools have been extended to include sponsoring (Karlíček & Král, 2011;

Pelsmacker, Geuens, & Bergh, 2003; Přikrylová & Jahodová, 2010), exhibitions and trade fairs, interactive marketing, event marketing, online communication or WOM marketing, i.e. word-of-mouth marketing (Jakubíková, 2008; Karlíček & Král, 2011). The following Fig. 1 represents the division of marketing communication tools. Different colours are used to signal standard division of tools and newly added tools of marketing communication. We may also expect that new forms and methods of communication with target groups will emerge as a result of information technology development.

Fig. 6 – Marketing communication tools. Source: Own compilation

Individual marketing communication tools cannot operate in isolation. In order for the impact on the recipient of the message to be enhanced, they need to be interconnected, making use of their synergistic effect. This combination of marketing communication tools is referred to as Integrated Marketing Communications (IMC). This is an approach to brand messaging where individual components cooperate and create a unified experience in the customer, since they are presented in the same tone and style that will reinforce the key brand message (Csikósová et al., 2014). IMC means identification of possible communication channels with an impact on consumer behaviour through basic marketing communication activities (Mihart, 2012). The main aim of IMC is creation of a marketing message that will reach the target segment (Mihart, 2012) by combining the effects of individual marketing communication tools, instead of their isolation, thus ensuring maximum cost effectiveness (Csikósová et al., 2014). Key trends in implementation of IMC include: loss of trust in mass advertising, rising media prices, need to increase message impact and influence and the related need to increase effectiveness and efficiency, media and audience fragmentation (Jakubíková, 2008). In a more detailed examination, integration does not involve only basic communication tools, but all its levels are taken into account, i.e. horizontal, vertical, external, and data integration. As a result, IMC saves money and eliminates duplication in graphics, photography, etc., since these elements can be shared and used simultaneously at several places (Csikósová et al., 2014).

2.1 Traditional marketing vs. new forms of marketing communication

As society advances and is faced with various global social, economic and technological changes, marketing also develops. Market fragmentation and ever increasing resistance of customers to traditional stimuli has led to the emergence of new forms of marketing communication (Vysekalová & Mikeš, 2010). As companies begin to realize the value of the Internet as a primary component of their marketing communication, they also start to apply alternative marketing techniques accordingly, which often means a more cost effective solution and also a more effective way of actively engaging the consumer, compared to traditional advertising channels (Castronovo & Huang, 2012).

New technologies emerging in marketing force companies to think creatively and come up with the most effective way of addressing their customers (Přikrylová & Jahodová, 2010). This leads to employment of new forms and tools of marketing communication. 21st century trends in marketing communication include guerrilla communication, mobile marketing, viral marketing, WOM and buzz marketing (Přikrylová & Jahodová, 2010) or also e-mail marketing, SEO, event marketing, and also social media, such as chats, blogs, YouTube, Facebook, Twitter etc. (Castronovo & Huang, 2012). The following section will focus on the most important of the tools mentioned above.

Social media

Social media can be generally defined as the Internet and web-based technological platforms designed to facilitate social interaction among individuals, groups and organizations, enabling transformation of one-way communication (monologue – one to many) into a social dialogue (many to many) (Mills, 2012). Social media, i.e. social networks and microblogs, are at an increasing rate replacing traditional media. The buzz around these new marketing opportunities seems to be an unlimited space (Bruhn, Schoenmueller, & Sch, 2012). Blogs, podcasts, e-books, press releases and other forms of online content provide organizations with space that allows them to get closer to the customer who will appreciate this form (Scott, 2008). Among one of the most popular social media include Facebook. The most frequent goals of Facebook advertising campaigns were increasing company's website visit rate (78%), sales boosting (68%), improving client awareness about trademark or company (56%) or launching a new product or a service (12%) (Vejacka, 2012). The following Tab. 1 sums up the most common social media tools and their objectives.

Tab. 5 – Social media tools and their objectives. Source: Castronovo & Huang, 2012

Tool	Objective
Chats	• improve customer service • create sense of community • room for customer feedback
Blogs	• prompt recommendations via WOM • build a meaningful relationship with the customer • increase loyalty
YouTube	• harness power of video to increase sharing of content in other sites
Facebook	• advertising • community development • target specific audiences
LinkedIn	• connection with professional community
Twitter	• customer engagement • conversation propagation

Google Wave	• increase collaboration and engagement • crowdsourcing
FourSquare	• increase local and mobile connectivity • increase network engagement

Guerrilla marketing

Guerrilla marketing is based primarily on the use of non-conventional and non-traditional practices capable of achieving high message effectiveness with low cost compared to classic marketing communication tools (Vysekalová & Mikeš, 2010). Online distribution of guerrilla messages allows for their viral dissemination through blogs and social networks (Castronovo & Huang, 2012).

Mobile marketing

Mobile marketing can use a wide range of other tools, such as advertising SMS/MMS, SMS contests and voting, location-based marketing (Přikrylová & Jahodová, 2010); it can be used to collect CRM data and, once again, it is possible to make use of viral content especially thanks to the availability of mobile Internet (Castronovo & Huang, 2012). Mobile advertising offers the opportunity to make promotion effort with higher effectiveness and lower costs in respect of the target segment (Selvi, 2014).

WOM

Word-of-mouth recommendation is a way of passing of information about products and services that people have heard about or tried on to other people. It is not a new form of communication in marketing, but it has seen a boom with the advent of online environment. Often, it produces much better results than planned marketing (Talpau, 2014). Xu (2007) distinguishes three types of WOM communication: customer – customer, which corresponds to communication in close circles, organization – customer, where an employer encourages its employees to talk about the products and services of the organization, and organization – organization, where information is shared for commercial purposes. The virtual world has created new terminology related to WOM marketing, in particular viral marketing, word-of-mouse and click-of-mouse. These terms are developing in time and their definitions are still debated (Mills, 2012).

Event marketing

This notion includes holding of events connected primarily with an experience including their planning and organizing within corporate communication (Přikrylová & Jahodová, 2010). Marketing events together with public relations are among the tools that shape and provide image in tourism (Muhcina, Popovici, & Popovici, 2014) and may take on various forms, such as cause-related marketing, including sports, cultural and music events, lifestyle marketing or sponsoring (Castronovo & Huang, 2012). Events do not have a positive effect only on the firm organizing them, but also on other entities. Their overall economic effect is given by the sum of direct effects with visitors (accommodation, catering, shopping, tickets) and event organizers (furniture, equipment, advertising, etc.) and indirect multiplied effects, which includes suppliers of goods and services (Della Lucia, 2013).

2.2 Use of new forms of marketing communication in tourism

During the first decade (1991 to 2002) of Internet use in business context tourism and travelling assumed a leading role, as they managed to effectively communicate with their existing as well as potential customers via online channels (Zach, Gretzel, & Xiang, 2010). O´Connor (2008) reports in the following period (from 2001 up to present) even more significant changes in tourism marketing with a shift of technical focus from web

functionality and usability to persuasion and empowering of the customer, recently also due to the ubiquitous mobile computing. At a later stage of this period, the introduction of smartphones with their technologies including GPS, camera or e.g. the Internet has enhanced social environment to such a degree that users are able to control their travelling experience any time and from anywhere (Sigala, Gretzel, & Christou, 2012). With mobile Internet access (tablets and smartphones) journey planning behaviour is dramatically changing – travellers now postpone decisions that they used to make before their departure (Xiang, Magnini, & Fesenmaier, 2015).

Consumers increasingly use the Internet as the preferred source of information about destination, journey planning and for booking accommodation (Choi, Lehto, & Oleary, 2007). While the Internet as a journey planning tool has reached saturation level, it is still number one among sources of information for travellers (Xiang et al., 2015). Social media content, in particular online reviews have a positive impact on visitors in tourism (Sotiriadis & Zyl, 2013; Ye, Law, Gu, & Chen, 2011; Zhang, Ye, Law, & Li, 2010). Many tourism consumers read destination and hotel reviews (e.g. on tripadvisor.com) before making their online decision. These online discussion portals and forums are an opportunity for hotel industry managers due to their impact on customer preferences (Vermeulen & Seegers, 2009). This is also confirmed by Ye et al. (2011), who indicate that positive online reviews on websites of travel agencies can significantly increase the number of online hotel reservations made via websites. Positive consumer views also boost popularity of restaurant websites (Zhang et al., 2010). Social media and other forms of online communication demonstrate enormous influence on consumer decision-making in tourism. Social networking sites and their content (pictures, videos and comments below them) are becoming increasingly popular when planning trips or journeys (Xiang et al., 2015). Sotiriadis & Zyl (2013) are not exactly of the same opinion, as their research has revealed that while Twitter users make use of information from this medium, they do not base their decisions on it, since they probably use also other sources of information in their decision-making. An important role in tourism marketing communication is played also by "eWOM", i.e. electronic word-of-mouth. It is capable of influencing consumer attitude, perception, intentions, but also product choice in a planning context (Xiang et al., 2015). WOM and recommendations from friends and family are considered a credible medium by 92% of consumers worldwide (Santos, 2014).

Social media do not have an impact only on individual tourism services; destinations can also use their tools to strengthen their competitiveness. Main objectives of social media campaigns are creating/fostering of awareness of a destination, achieving greater publicity and supporting tourists in planning of their journey. Among the most widely used social media are Facebook, YouTube, Google, Google Street View, Instagram or Twitter, but also Android and smartphone applications (Kiráľová & Pavlíčeka, 2015).

Web-based communication is extended by communication via electronic newsletters. Communication via newsletters for instance in case of potential wine tourists can help to make the transition from pre-visit stage to the actual beginning of their visitor experience smooth. In a similar fashion, communication via this tool can allow for relationship "maintenance" in the post-visit phase (Leighann & Judith, 2014). This will apply not only to wine tourism but also to other tourism industries.

Thanks to mobile marketing, tourism entities can target a potential customer directly, fast and in an easier manner, while at the same time they can speed up the processes and increase their publicity and awareness (Selvi, 2014). A Pew Research Center survey reveals that 23 percent of American adults use their smartphone for route search or recommendations relating to their current position (Zickuhr & Smith, 2011). Similarly, 30 percent of Canadians are online during their travel; 64 percent of these travellers use smartphones to access online resources

(Ipsos, 2011). As a result of the growing adoption of GPS systems and smartphone applications, there has been a substantial decline in the use of printed maps and schedules. Many consumers thus do not plan anything in advance and put off important decisions (hotel, restaurant, shopping opportunities search) until they actually set out for their journey (Xiang et al., 2015).

The following Tab. 2 brings an overview of authors dealing with the issue of new forms of tourism marketing communication. Online marketing and web include the use of websites of companies/destinations/services and e-mail marketing; social media comprise all social networks such as Facebook, Twitter and also blogs, chats, etc. WOM or e-WOM marketing include in the context of this paper in particular online reviews and recommendations.

Tab. 6 – Authors dealing with new forms of tourism marketing communication. Source: Own compilation

Author / Trend	Online marketing and Web	Social Media	Mobil Marketing	WOM	Event marketing
(Choi et al., 2007)	X				
(O´Connor, 2008)	X				
(Zach et al., 2010)	X				
(Zhang et al., 2010)		X			
(Ye et al., 2011)				X	
(Sigala et al., 2012)	X				
(Vermeulen & Seegers, 2009)				X	
(Della Lucia, 2013)					X
(Sotiriadis & Zyl, 2013)		X		X	
(Leighann & Judith, 2014)	X		X		
(Selvi, 2014)			X		
(Kiráľová & Pavlíčeka, 2015)		X		X	
(Xiang et al., 2015)	X	X	X	X	

3 SUCCESSFUL TOURISM MARKETING CAMPAIGNS

Social media have dominated the world of marketing communication in recent years. They are used for ordinary communication between individuals, but companies also employ them in their effort to attract potential customers and make them act. Tourism is no exception. What follows are examples of successful communication campaigns executed via social media.

3.1 Cape Town Tourism – Facebook competition

In September 2012, Cape Town Tourism introduced an attractive competition on Facebook social network. It was launched under the title Send us your Facebook Profiles. This Facebook competition encouraged travellers to send their profile picture to create a virtual tour of the Cape Town and its least-known places. As a reward, travellers could create their own five-day holiday in Cape Town and follow their profiles as they explore the hidden sights.

Thanks to this competition, after 150 Point of View (POV) videos, 400 updated statuses and 10,000 holiday pictures had been added, there were 5,800 new page impressions and monthly page visit of Cape Town Tourism Facebook profile rose to 41,000 visitors. The campaign was so successful that the number of tourists in Cape Town increased by 4% and Table Mountain received a record number of tourists in the past 83 years. This campaign was awarded the Best Overall Use of Social Media Award at the 2013 Travel + Leisure Social Media Award. (Athenkosi, 2014)

3.2 First Twitter hotel in the world

Sol Wave House (Mallorca, Spain) became the first hotel in the world that can be labelled as "Twitter Hotel". This name does not mean only the blue-white decor of the hotel (in line with Twitter's colour scheme), but it is in particular linked to the hotel's marketing strategy as such.

When guests check-in, they are granted access to the hotel Twitter account, accessible only via hotel WiFi connection. Guests can then tweet each other, send private messages, share pictures or flirt with those that are online or send virtual kisses via #SocialWave.

Guests are motivated to tweet about the hotel by the fact that food and drinks are ordered at the pool bar by tweeting at @SolWaveHouse. The hotel organizes #TwitterPool Party where Twitter guests get a free drink every Friday. (Athenkosi, 2014)

3.3 Nassau Paradise Island

Nassau Paradise Island (NPI) decided to lure more American tourists via TrueView in-stream advertising. The principle of this kind of advertisement is that it is displayed automatically when a selected video is played. The viewer can skip it after a defined interval or let it play as whole.

The aim of this campaign was to reinforce the position of NPI on ten key markets of the East and partly also the West coast of the USA. Since classic form of advertising would be in this scope financially inaccessible, TrueView advertising on Google platform was selected. Each of the five campaigns that were launched in that year increased page visits in average by 33–56% (where TrueView advertisements were active) and the price for cost-per-view dropped from 15 to 11 cents. (Oates, 2014)

4 CONCLUSION

As far as new forms of marketing communication applied to tourism are concerned, current attention is focused mainly on online marketing and web, social media and WOM or eWOM marketing, as shown also by Tab. 2. Individual tools are intertwined and interrelated. The driving force behind all these forms is the Internet. Although not a novelty in itself, its mass adoption and availability also through mobile computing enables users to be constantly online and thus search for and share information. Consequently, information is easy to reach for the users. It is now up to the providers to show how they can handle information and benefit from its use.

The Internet is also changing tourist consumer behaviour. Thanks to the Internet and availability of information and information technology, tourists leave their options open until later before their departure or even until the time after arrival at their final destination. Reservation systems allow for making a reservation of accommodation or restaurant just shortly before arrival.

Social networks and WOM marketing are becoming a real phenomenon. Personal recommendations are very important for consumers and may play a key role in their decision-

making. With online reviews of lodging and dining facilities, but also of entire destinations or tourist areas at hand, a visitor can get a more detailed idea and personal views of those who have already tried the service or have visited the destination or area. Personal experience is more relevant to a visitor than general information available in various resources.

All the successful marketing campaigns described above use social media as a means to transmit the message to the target segment, evidencing their increasingly significant role in tourism. The first two campaigns (Cape Town Tourism a Sol Wave House) may be also considered low-cost activities. In particular the virtual Cape Town holiday has a strong viral nature and thus this activity may be also described as buzz marketing.

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USE OF THE WINE TOURISM IN THE REGION DEVELOPMENT: THE COMPARATIVE STUDY

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Abstract

This paper deals with wine tourism and its influence on the development of rural region. Wine consumption and wine education is very popular among wine consumer nowadays. Wine consumption is also associated with such activities which are called wine tourism. These activities include wine tasting in wine cellars, wine festivals or sport activities accompanied by wine tasting (e.g. cycling, wandering or yoga). With the growing awareness of this type of tourism is also growing interest to actively participate in various activities. Visiting of wine producers in the cellars, tasting with expert commentary and folklore events can be found among the most popular activities. The Czech Republic and Canada as a country with a similar wine production was chosen for the international comparison. These countries are also similar in offer of wine tourism activities.

Keywords: Tourism, tourism development, wines, wine tourism, regional development, Czech Republic, Canada

4 INTRODUCTION

Tourism has become an increasingly important part of many people's everyday lives in these hectic times. People seek the traditional way of relaxation: according to the methodology of tourism research, they are tourists on holiday (they stay in the given place for more than three days) (Ryglová, Burian and Vajčnerová, 2011). However, the type of a short-term stay, where the tourist stays in the destination for less than three days has become increasingly popular. The aim of such trips may be relaxation in the form of weekend wellness stays in spa resorts, alpine tourism or relatively new and very popular areas of adventure tourism and rural tourism and its categories, such as agritourism (Govindasamy, Kelley, 2014). This kind of tourism is needed for rural areas because it helps to revitalize these areas and also helps to solve the problems of the lagging agricultural production (Šimková, 2008).

One of the current trends, gaining on popularity, is the interest in regional cuisine and an important related commodity – wine. Synergic effects brought about by the connection of wine and tourism represent great assets for the entire region concerned. The development of tourism assists in the economic growth of the region: first through the increased sales of the regional wineries, and second by creation of new jobs and business opportunities. The above motives are often the primary reasons for visiting the region; they are not just supplementary activities (do Paço, Alves, & Nunes, 2012; López-Guzmán, Rodríguez-García, Sánchez-Cañizares, & Luján-García, 2011; Zielinska, 2009).

Tourism is one of the important and developing parts of wine industry also on the international scale (Neilson, Madill, 2013). The so called "wine tourism" is defined as "a visitation to vineyards, wineries, wine festivals and wine shows for which grape wine tasting and/or experiencing the attributes of a grape wine region are the prime motivation factors for visitors." (Hall et al., 2002, p. 3)

The beginnings of research focused on the issues of wine tourism date back to the mid-1990s, when experts dealt with the influence of wine tourism on the development of rural areas (Getz, 2001). The basic definition of wine tourism is the one mentioned in the paragraph above, which is often cited in literature (Kunc, 2009; Alant, Bruwer, 2004). This definition may be supplemented with the statement that the visit to a wine-growing region need not be the primary motivator. According to Neilson and Madill (2013) the visit to a winery is only one of the activities included by tourists into a whole set of activities they undertake in the given region. In this context, wine tourism is part of a bundle comprising cultural and historical attractions and other forms of leisure activities.

As mentioned above, on the one hand tourism provides the necessary platform to wine industry enabling it forming customer relations, and on the other hand it is one of the decisive motivation factors for visits to such regions. In other words, the combination of wine and tourism significantly contributes to the sustainability of the region. However, this also requires a certain level of conditions that reflect and comply with visitors' requirements: efficient strategies for tourist destinations and development strategies must be devised, and real as well as potential behavioural models of customers must be studied, which shall facilitate growth of sales and gain and keep customers on a long-term basis (Grybovych, Lankford, Lankford, 2013).

According to Kučerová and Makovník (2009) it is necessary to develop the regional tourism policy because it is important part of the socio-economic policy in many EU countries. It includes a lot of activities and process of discovering which brings not only economic benefits for the region and eliminates negative impact of tourism development on region (Kučerová a Makovník, 2009; Luštický a Kincl, 2012).

5 WINE TOURISM IN THE CZECH REPUBLIC

Wine tasting and wine consumption are included in wine tourism as one of the forms of rural tourism, which is part of ecotourism and nature-oriented holiday. Next to cultural and city tourism, sports and active holiday, spa stays and congress and trade fair tourism it is considered the most important form of tourism, for which the Czech Republic has the best preconditions (CzechTourism, 2013). In order to support rural tourism and bicycle touring, the CzechTourism agency within its marketing conception introduced the project of Summer Travels as one of subcategories of the product Travels Through Countryside, which focuses on the utilization of cycle trails, paths and thematic routes, including wine trails (Palatková, Tittelbachová, & Valská, 2012). The idea is based on the SWOT analysis of current trends in Czech tourism, which sees the centuries-old tradition of Czech viticulture as a strength and the development of rural and wine tourism as an opportunity (CzechTourism, 2013).

5.1 Awareness of wine tourism

The conducted surveys suggest that wine tourism is becoming more and more popular with tourists in the Czech Republic. 85 % respondents were aware of visits to wine cellars of small winemakers as part of wine tourism in the year 2007, whereas 42 % visited a wine cellar in a distant past and 27 % not long before the survey was taken (Vinařský fond 2007). This survey focused only on visits to wine cellars and not on wine tourism in general. Therefore the results presented in the following text rather significantly differ from results obtained in 2007. However, the lower figures still support the fact that wine tourism has the potential to facilitate the development of tourism in the region. 40 % of Czech adults had heard of wine tourism in the year 2008; 40 % of them (i.e. 16 % of the total number of respondents) had experience with this form of leisure activities. More than a half of the respondents (54 %)

expressed interest in visiting South Moravia for this reason (Vinařský fond 2009). This percentage was even higher in 2012: 46 % of adults and 52 % of wine consumers in the Czech Republic. The above data concerning wine tourism correspond to the figures on the turnout of visitors to South Moravia in 2012. 15 % of Czech adults and 19 % of wine consumers visited South Moravia for the purpose of wine tourism (Vinařský fond 2012).

It is interesting that the respondents did not directly connect wine consumption with wine tourism. This follows from the survey conducted in 2014, where only 23 % respondents said they related wine tourism with wine consumption. On the basis of the data, we may assume that it is the part of population (or wine consumers) who had used services related to wine tourism, and thus we can speak of the growing popularity of wine tourism in the Czech Republic. Wine consumption is most often associated with wine tourism by respondents from the South Moravia region, which is probably attributed to the fact that wine tourism is mainly offered in wine-growing areas of South Moravia. Also earlier surveys concentrating on wine tourism document that tourists are interested in South Moravia in particular in the context of wine tourism.

5.2 Provision of information and wine tourism programmes

The level of information availability concerning wine tourism has been improving. 60 % wine consumers knew where to get information about the possibility to visit a wine cellar in 2007 (55 % in 2006). The proportion of the relevant information sources has been gradually changing. The two main sources of information are relatives and friends, and the Internet (Vinařský fond 2007), whose information role has been gaining on importance. This fact is illustrated in Table 1, where the proportion of the Internet use in seeking information about wine tourism increased considerably.

Table 1 – Sources of information about wine tourism. Source: Vinařský fond 2007

Information source	Proportion in 2006	Proportion in 2007
Relatives and friends	77 %	71 %
Internet	22 %	31 %

Two thirds of respondents knew where to look for information about wine tourism in 2008. They would primarily contact their relatives and friends (if possible from South Moravia) or they would search the Internet (Vinařský fond 2009).

As far as individual programmes of wine tourism are concerned, an evening in a wine cellar with wine tasting or a visit to a wine cellar with sampling and professional explanation was considered as the most attractive. As the least attractive were found the programmes of participation in grape harvesting and processing and somewhat surprisingly also bicycle touring (Vinařský fond 2007). In fact, it is bicycle touring that lies in the focus of various programmes included in the conceptions of tourism development in the Czech Republic. Popularity of wine tourism programmes is illustrated in the chart below (Fig. 1).

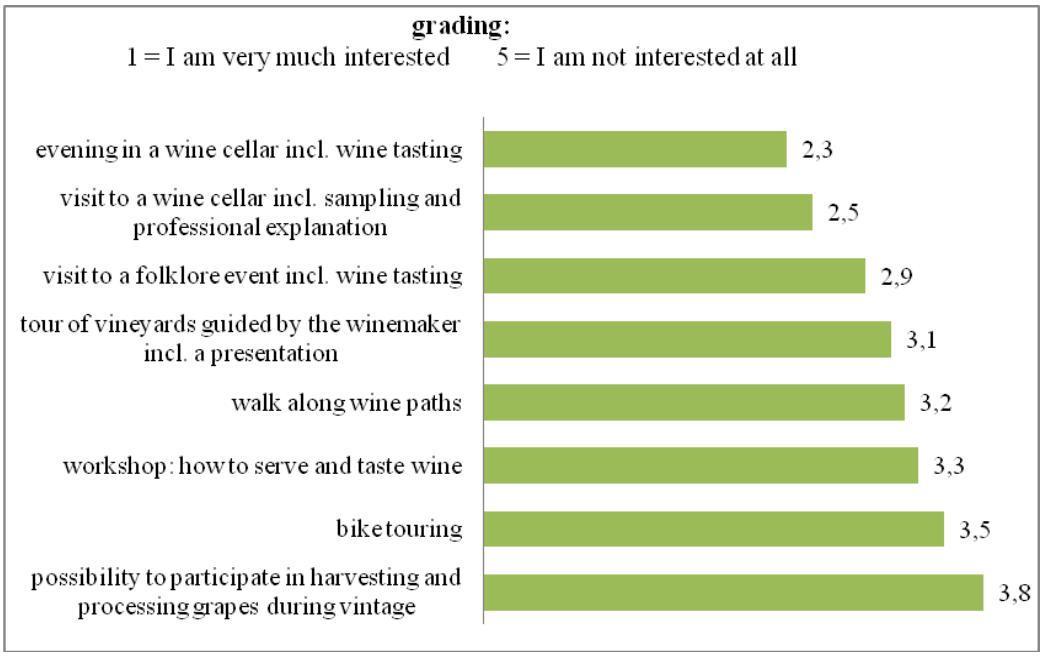

Fig. 1 – Popularity of wine tourism programmes. Source: Vinařský fond, 2007

6 WINE TOURISM IN CANADA

Canada belongs to small wine producers. Canadian production is small-scale and although never a global leader. Canada was chosen for this research because its amount of wine production is comparable to the Czech Republic. There was different development in both countries. In 2009 the Czech Republic produced more than 30 000 thousand liters of wine than Canada. The situation was completely different in 2011 when Canadian production was almost 20 000 liters higher. In 2012 both countries were on the same level of production – 65 000 thousand liters (Wine Institute, 2012). In relation to the "Old world wines" the "new world wines" are quite new on the market (Dyk, 2015). Canadian wine industry has a great repute (Lonely Planet, 2011).

Tourists can visit several wine areas in five Canadian provinces (Canadian Vintners Association, 2013; Aspler, 2006):

- Niagara region in Ontario;
- Okanagan Valley (the country's leading producers), Similkameen Valley, Fraser Valley, the Gulf Island and the Cowichan Valley on Vancouver Island in British Columbia;
- South of Montreal, along the St. Lawrence shore and Quebec City in Quebec;
- The Annapolis Valley, Avon River Valley, Bear River Valley, Gaspereau Valley, LeHavre River Valley and the Northumberland Coast in Nova Scotia;
- Prince Edward Island.

According to Bell (2010) and Canadian Vintners Association (2010), Canada welcomes about 3 million visitors every year. This number was more than four times higher when the Olympic Games were held in Vancouver. They also state that the Canadian wine industry generates $1.2 billion in tourism and tourism employment related economic impact.

The forms and range of wine tourism opportunities differ among the provinces. The total tourism impact (represents the total direct tourism-related revenue and wages plus indirect

and induced revenue and wages generated by direct wine tourism) measured in thousands of Canadian dollars was in 2013 643,798 in Ontario, 476,428 in British Columbia, 34,132 in Nova Scotia and 63,707 in Quebec (Frank and Rimmermann, 2013). Also the number of wine-related tourists is different in the respective provinces – 1,900,000 tourists in Ontario, which produces a large volume of VQA wines and ICB wines, 800,000 in British Columbia, where the wine tourism is growing (especially in Okanagan Valley), 100,000 in Nova Scotia and 200,000 in Quebec also with growing potential stemming from the proximity of the large city of Montreal.

As mentioned above, according to the Canadian Vintners Association (CVA, 2013a) there is a system for quality assurance of wines produced in Canada. This regulatory system is similar to the systems in other wine-producing countries such as France (AOC), Italy (DOC), Germany (QmP) and also the Czech Republic (VOC). The Vintners Quality Alliance (VQA) is Canada's symbol of quality wine and ensures the high-quality Canadian wine to the consumer. The VQA symbol on a bottle of Canadian wine assures the consumer of quality production, content, varietal percentage, appellation, and vintage.

The second aspect worth mentioning is the International and Canadian Blend known as ICB wines. This blend builds on the designation "Cellared in Canada" and wines labelled accordingly, which are made from foreign grapes but are produced and sold in Canada. The standard is to use the minimum of 40 % domestic content. The wine may contain up to 75 % of imported wine (Grape Growers of Ontario, 2010; Frank and Rimmermann, 2013).

Another term associated with wine production is Icewine. Canada is the world's largest and highest quality producer of Icewine (Bell, 2010; CVA, 2013b). On 12 February 2014, the Government of Canada published its Standard of Identity for Icewine within the Canada Agricultural Products Act (SOR/2014-10). The regulation sets out that: "Only wine that is made exclusively from grapes naturally frozen on the vine is *"icewine"*, *"ice wine"* or *"ice-wine"*." The Canadian Vintners Association (CVA) is the legal owner of the Canadian "Icewine" trade-mark and actively protects the integrity and authenticity of Icewine in Canada and in global markets (CVA, 2013c).

4 WINE TOURISM IN PRACTICE

It has been documented by the earlier surveys concerning sources of general information on tourism as well as by surveys directly specializing in wine tourism that tourists often seek the relevant information on the Internet. Therefore the growing number of tourist businesses focuses their attention to the Internet, where they present their offer of services. The CzechTourism agency established the portal called Kudy z nudy (*Escape from Boredom*), so that all the information about destinations and the related attractions may be found in one place. Here, tourists can find a destination and get some inspiration regarding to activities offered in the area. Wine tourism is represented as well and this category comprises over 250 various activities and places to visit.

A relatively broad portfolio of activities related to wine tourism in South Moravia is offered by the company Znovín Znojmo, one of the pioneers in this category of tourism in the Czech Republic. Its conception contains interconnected activities and is targeted to general public; not just to the company's own clients. One of the interesting activities combined with hiking is the so called Znovín Walking, joining Nordic Walking, which has recently become very popular, stay in the beautiful countryside of the Podyjí National Park and wine tasting at several stations. Tourists can individually choose from 14 planned trips or take part in the Znovín Walking Day, on which they can walk the route with a guide. Znovín, supported by the city of Znojmo and Czech Prime Minister Bohuslav Sobotka, strives for the inclusion of

the Šobes vineyard to the UNESCO World Heritage List. Such listing would significantly assist the Znojmo region in attracting larger number of visitors and developing local tourism.

Similarly to Znovín Walking, cyclists can make use of the project of Moravian Wine Trails, thanks to which they can tour the wine-growing region by bike. The project encompasses 1,200 km of bicycle paths reaching from Znojmo to Uherské Hradiště, interconnected by the backbone Moravian Wine Path (Moravské vinařské stezky, 2000). The funds for the project were obtained from the EU – Cross Border Cooperation Programme and European Regional Development Fund – with the support from the Ministry for Regional Development.

Another type of wine tourism is the event called Open Cellar, during which the visitors can attend the respective winemakers' cellars and taste wine, if interested. Similar events are also organized in the Lower Austrian Weinviertel region, a partner in the close cooperation with Nadace Partnerství (*Partnership Foundation*) and Centrála cestovního ruchu Jižní Morava (*South Moravia Tourist Office*). The cooperation consists in the mutual promoting of events by Czech and Austrian partners (Moravské vinařské stezky, 2000).

Wine tourism is often connected with local gastronomy, traditions or historical events. Examples of such projects are Historical Vintage in Znojmo, Pálava Vintage Festival, Znojmo VOC Festival or Jarovín Rosé Festival. All the above events are great attractions bringing many tourists from all over the Czech Republic and abroad to the region. The VOC Festival is unique, because it enables the visitors tasting newly classified wines (VOC = Wines with Original Certification). The event resembles for instance the beginning of sale of St. Martin's wines (young wines) in the Czech Republic, the variant of Beaujolais Nouveau Day in France.

As mentioned above, wine tourism is closely connected with gastronomy. Tourists are offered thematic tasting menus, where meals are matched with wines. Special gastronomy is often part of wine-tasting and wine-selling events, where emphasis is placed on local and regional food. For instance, VOC Festival is accompanied with specialties from Pohořelice carp, and Open Cellar event offers traditional homemade titbits. St. Martin's wine tasting is historically connected with eating St. Martin's goose. Young (St. Martin's) wines have become increasingly popular in the Czech Republic.

The VOC Znojmo Association is starting a completely new project aiming at the support for wine tourism. The city of Znojmo and surrounding wine-growing villages shall be connected by a special wine bus (vinobus in Czech). The line shall begin in the historical centre of Znojmo and the bus shall continue through wine-growing villages along the circuit of 62 kilometres. Therefore tourists who are interested in tasting wines of local winemakers do not have to organize their private transport: the bus shall run at least four times a day. The bus shall be equipped with bike racks for the convenience of cyclists. The Vinobus project is sponsored by the city of Znojmo and the South Moravia Region.

In Canada there are differences between provinces in the offer of wine tourism opportunities. According to (Getz, 2002) there were 44 wineries in Okanagan and 38 in Niagara. The main difference is that the Niagara region has developed much faster than the Okanagan region, including opening restaurants, places of accommodation and value-adding issues like culinary schools or large retail operations. Another reason for the different development of the regions was the reason why the wineries were built – in the Niagara region a lot of wineries were built primarily for the purposes of tourism, to become tourist destinations (Getz & Brown, 2006).

These two wine areas are not the only ones in Canada (as mentioned in Chapter 3). Wineries range from Cowichan Valley, Vancouver Island on the west to the east coast peninsula of Nova Scotia, and tourists can enjoy a lot of different events connected with wine tasting.

In British Columbia, most of wine-tasting events are complemented by culinary delights or sports activities. When attending such events, tourists can taste wines of one winery or many wine producers. The tours often lead from the winery or vineyard to the tasting room. Visitors can also enjoy a tour which includes a picnic in the vineyard. Regarding sports activities, there is an event during which the participants first practice yoga and after that they taste wine. And, of course, wine producers also offer tasting of various species of wine including rosé (Wine of BC, 2015a).

These wine tourism activities are similar to those organized in the Czech Republic. Czech wine lovers can attend the Jarovín Festival of rosé wine tasting and also, as mentioned above, they can undertake sports activities such as the Znovín Walking or cycling along the Moravian wine trails.

Numerous wine festivals are held in British Columbia. One of the biggest and oldest wine events in the world is the Vancouver International Wine Festival (Wine of BC, 2015b). This festival offers varied events for all levels of wine drinkers, collectors and trade professionals. Of course, visitors can meet owners, winemakers and senior representatives of 170 wineries from 14 countries of the world. Wine Festivals in Okanagan (Okanagan Wine Festivals, 2015; Robbins, 2013) are also well-known.

According to Canada South Wine Tours – a Tourism Industry Council of Ontario certified tour company that specializes in Ontario tours, which typically last 6-7 hours and include at least 4-6 wineries and lunch in a vineyard. The events also offer meet and greet opportunities with winemakers and/or winery owners (Canada South Wine Tours, 2015).

Visitors are offered two kinds of tours – a guided tour that is available in each of Canada's wine regions. The second one is a "DIY" (Do It Yourself) tour, e.g. a bike tour. If the guests come to the winery by car, there is one difference in contrast to the Czech Republic – the driver must be designated in advance and is not allowed to participate in the wine tasting. He or she can taste the wine, but after the sniff and swish he/she has to spit out the wine. Canadian regulations are stricter than Czech ones in this area (Campbell; Dyk, 2015).

5 WINE TOURISM IN THE CONTEXT OF CONSUMER BEHAVIOUR OF CUSTOMERS

To buy a bottle of wine nowadays means that the consumer makes a decision from an infinite number of products offered on the market. Although the offer of the range of products is abundant in other categories of food industry, too, we can say that in the case of wine the choice amounts to hundreds of pieces.

This is not the only circumstance that makes the decision difficult for the average consumer. High level of information for making the right decision is needed in this product category; however, such information is not easily available to the average consumer.

As mentioned by Heslop, Cray, & Armenakyan (2010), the consumer usually makes the choice on the basis of three aspects: brand, country of origin and price in relation to the quality, suitability and use in different situations.

Other factors, which according to the conducted surveys mostly influence customers in the selection of wine, include in particular the kind and type of wine, the consumer's experience, the variety and on the sixth place, the region or country of origin. Although the preference of the country of origin does not play the decisive role, Czech consumers clearly prefer wines from South Moravia or as the case may be, from Bohemia (MZLU, 2004; Veselá & Zich,

2015). Only less than a third of consumers prefer wines produced in other countries (Víno a spotřebitel, 2012).

The way of wine consumption has changed in the past seven years in that the consumers primarily favour quality. They seek quality wines with the help of their more experienced friends and they put emphasis on trustworthy information (Víno a spotřebitel, 2012).

In the introduction to Chapter 2 we mentioned that wine tourism is a part of rural tourism. Another of its forms is agritourism, whose rise significantly contributes to the development of the geographic area concerned. According to Govindasamy & Kelley (2014), tourists visiting destinations within the conception of agritourism tend to attend events which have wine tasting as their primary aim. The prevailing number of respondents in this tourist category thinks that the offer of wine varieties is better with the winemaker than in the supermarket, and considers the price of winemakers more favourable than the price in supermarkets.

The question is whether there is a direct interaction between wine tourism and decision making in the selection of wine with regard to the country (region) of origin. The research of Famularo, Bruwer, & Li a McCutcheon, Bruwer, & Li (2010; 2009) suggests that the region of origin is a relevant factor influencing the buying decision in the process of wine purchase. The research also revealed several important relationships between the region of origin as an aspect affecting the buying decision and various reasons why people visit wine-growing regions. These relationships are measured using Pearson product-moment correlation coefficient; the first examined element is always the region of origin as an aspect affecting the buying decision and the second one is the reason why people visit the wine-growing region. The correlations are as follows:

- Medium to strong correlation with obtaining knowledge about wine (0.498);
- Medium to strong correlation with wine tourism and obtaining knowledge about production of wine (0.439);
- Medium to strong correlation with wine tasting in winemakers' cellars (0.433);
- Medium to strong correlation with wine purchase in winemakers' cellars (0.411).

Based on the above findings, the authors stress that the visit to a wine-growing region may lead to greater interest in wine. The fact that the tourist can taste and buy wine directly at the producer shall influence him/her during the next purchase of wine.

However, in case the tourists visit the wine region for the purpose of relaxation or sports, mutual interaction with the inclusion of the region of origin into the buying decision is represented by a relatively weak, negative correlation.

In conclusion we must not omit the fact that women put more weight on the region of origin as a factor influencing the buying decision than men (McCutcheon et al., 2009).

6 CONCLUSION AND DISCUSSION

Presented paper dealt with the possible influence of wine tourism on the development of rural areas. These areas are needed to be developed – to encourage their sustainable economic growth through the tourism development and primarily, in the wine areas, the wine tourism which is connected to the main product of agricultural production that is declining.

The tourism development is also necessary for improving the quality of services provided in the particular region and its infrastructure and through this it contributes to the increase of

standard of living in the region. If the inhabitants are satisfied with the level of services and infrastructure in their own place then the place can attract more tourists.

The main factor of encouraging the wine tourism was rural economic restructuring and changed consumer preferences in the "Old world" (to which the Czech Republic belongs). However, in the "New World" countries such as the United States of America, Canada and Australia the consumers' preferences tended to the greater consumption and to the high quality wines (Hall et al., 2002).

Awareness and popularity of wine tourism in the Czech Republic is continuously growing that is confirmed by the research results held by the Viticultural Fund in the years 2006, 2008 and 2012 and also the research results from the research which was conducted by the authors of this paper in 2014. The respondents who come from the South Moravia most often connect wine with wine tourism. Awareness of this type of how to spend free time is sufficient; moreover the Internet is increasingly the main source of information.

For the comparison the Czech Republic and Canada were chosen because both countries produce quite similar amount of wine yearly. Not only that both countries have almost the same amount of wine production but also they offer to tourist similar activities related to wine. Wine tasting is the main activity offered within wine tourism in both countries. What is more, in Canada tourists can enjoy guided tours with picnic in the vineyard. In both countries, there is also very popular to organize wine tasting festivals which are very popular among both lay and professional public and in some cases they are organize with international participation. Very popular, in the present time, is also doing some sports, e. g. cycling or yoga, during or after wine tasting.

As it was mentioned in previous text wine tourism is integral part of development of rural areas in both countries. It helps them not only to improve their services connected with tourism but also to increase the standard of living of local inhabitants and enhance image of the region. These positive factors then influence the consumer behaviour of potential or exiting demand in positive way. So it would buy products originated in these areas and contribute more to the region development.

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CONSUMER PERCEPTION OF DAIRY FOODS LABELS AT THE POINT OF PURCHASE

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Abstract

This paper is focused on the consumer perception of dairy food labels and consumer buying behavior. The data were collected through focus groups (n = 39). The research was aimed at milk, yoghurts and processed cheese packages. In the case of milk, the consumers preferred pleasant packages with a picture which illustrates its content. The consumers focused on friendly and untypical labels regarding yoghurt. The brand is the most important part of the processed cheese labels. The dairy foods labels were tested using eye-tracking technology (n = 332). Specifically, the data were obtained through the eye-tracking device SMI RED 250. Particular attention was given to consumers´ perception by analysing AOI (area of interest). The research was realized during November 2014 in the Eye-Tracking Laboratory at Mendel University in Brno.

Keywords: dairy foods, labels, point of purchase, focus groups, eye tracking

1 INTRODUCTION

Dairy food products belong to a very important part of the human diet. In 2012 the average consumption of milk and dairy foods in the Czech Republic was 243 kg per human (ČSÚ, 2014). Robertson (2010) highlights that 1/3 of the milk production in the EU, US or Australia is consumed as liquid milk.

Actually it is one of most discussed themes regarding the perception of healthy dairy foods. There are two groups of consumer opinions, especially relating to the consumer´s perception of dairy foods resulting from cow milk. The first and traditional opinion say that dairy food products are important to the human's health because they include important nutrients, high quality milk proteins, minerals, calcium, phosphorus, potassium, magnesium, zinc, vitamins A, D, B2, B6 and B12 (Kopáček, 2013). Especially vitamin D is very important for healthy bones (Sykora et al, 2014). A second opinion considers the cow´s milk as the most common of allergens, including cholesterol and fatty acids which might cause arteriosclerosis. This opinion is mostly supported in advertising of dairy products made from different types of milk (goat, sheep) or especially margarine. But according to Šustová and Sýkora (2013) the level of cholesterol is overestimated. In 100 ml of fat milk is just 14 mg of cholesterol, and in 100 ml of half milk is just 6 mg of cholesterol. The maximum consumption of cholesterol per day and person is 300 mg.

Another important stimulus influencing the consumer decision-making process at the point of purchase are packages and labels of products. These factors influence primary the consumer´s attention. According Cheverton (2014) the consumer´s attention is impacted by effective packaging design and results in a longer time spent at the shelf and potentially results in a sale. The milk packages also have other functions. According Sykora et al (2015) the stability of vitamins in milk depends on the kind of packaging. After thirteen days of sensory testing the best packaging material for milk was determined to be plastic packaging produced with a transparent UV filter.

From December of 2014 it is determine by Czech law what must be mentioned on food labels. Firstly the label and the information it contains must be truthful, visible and readable. The mandatory information on labels includes composition, allergens, volume, shelf-life and place of origin (Obermaier, Čejna, 2013).

In relation to labelling mention Jones and Richardson (2007) mention the importance of a colorful design of different fat types of milk. These colors help consumers to evaluate nutritional values. These findings are also supported by eye-tracking research from Siegrist et al (2014). According to an eye-tracking study by Vidal et al (2013) the most observed factor regarding the evaluation of healthiness of yoghurt is the amount of fat.

When designing labels it is necessary to keep in mind some rules. The work of Feunekes at al. (2007) supports a need for simplicity. Their research points out a more simplified front-pack labelling needs less time for evaluation. This in turn would make the buying behavior easier in shops where consumers tend to make quick decisions. Kim, Lopetcharat and Drake (2013) discovered that the brand as well as the fat or sugar level influence purchase intent. Krystallis and Chrysochou (2011) claim that a 'low fat claim' results in a higher loyalty and is therefore important as part of the communication.

2 METHODOLOGY

4.1 Participants

The participants (n = 39) of the focus groups were part-time form students from the Faculty of Business and Economics at Mendel University in Brno. 54 % of them were female. 79 % of the participants were ranged in the age from 21 to 30 years. Just one respondent was younger than 21.

Most of the participants (69 %) lived in South Moravian Region or in the Olomouc Region (13 %). The largest group of participants (51 %) lived with parents. 28 % lived with a partner, wife or husband. Only 21 % of the participants had children.

51 % of the focus groups participants were employee and 26 % were students. 10 % were on maternity leave. 2 participants were unemployed and another 2 were entrepreneurs. One respondent was retired.

Every participant of the focus group had to meet the requirement that they play an active role in the shopping decision-making process of dairy food products. 4 focus groups meetings were conducted. The time spent on one focus group research was 90 minutes.

The participants for the eye-tracking study were chosen from the full-time students from the Faculty of Business and Economics at Mendel University in Brno. All participants (n = 332) ranged in age from 19 to 25 years, with 78 % of them being female. Students with bad calibration were excluded from participation. The participants were chosen randomly and divided into 3 research groups (milk labels, yoghurts labels and processed cheese labels). The time spend with one participant was 15 minutes.

4.2 Procedure

All researches were realized during November 2014 during November 2014 at the Eye-Tracking Laboratory at the Department of Marketing and Trade at the Faculty of Business and Economics of Mendel University in Brno. Focus groups researches were based on prepared research questions. Each focus group began with familiarizing the participants with the purpose, process and rules of the experiment. A camera and a voice recorder recorded each focus group. The rules of the focus groups were:

- everyone is entitled to his or her opinion and nobody can assail this opinion;

- everyone can tell everything about a certain theme or a certain question;
- the moderator can intervene in the discussion;
- comments to discussion can be written on paper.

The first group of questions was about the participants and their motivation for participating. Another group of questions were about buying behavior in general. All the other questions were focused on dairy food – preferences for buying dairy food, opinions about dairy food, favorite brands, opinions about labels of dairy food and preferences for sales promotion aimed at dairy food.

The second part of the focus groups was aimed at an experiment with dairy foods labels. As a preparation for this experiment, photos of front labels were taken from dairy food which can be found in Czech retail chains. A photographic tent was used to take the photos. Each image was adjusted and printed. These images were later used for an eye-tracking research.

In total 12 front labels of milk were used (figure 1), 8 front labels of white yoghurts (figure 2) and 15 front labels of processed cheese (figure 3). The task of the respondent during the focus group was: "Look at these labels and chose 3 which you like and 3 which you don´t like. Base you choice on the design of labels and motivate your choices."

Fig. 1 – Overview of milk package

Fig. 2 – Overview of yoghurts package

Fig. 3 – Overview of processed cheeses package

Three of the most favorite front labels were chosen for eye-tracking research. The eye-tracking data were collected through the SMI RED 250 device. This device has a sampling rate of 250 Hz. The distance between the participants and the eye-tracker built in the screen was 60 cm. Firstly all participants were calibrated by 9 automatic calibration points and

validated by 4 validation points. After the calibration and validation the participants answered questions regarding their identification.

Next the respondents were shown on the eye-tracker screen pictures with the previously chosen dairy foods labels. The order of these pictures was randomized for each participant. The task for the participants was: "Take a look at these labels". Each label was shown during 10 seconds. The aim of this task was to discover which part or stimuli of the chosen labels yields the most attention.

All eye-tracking data were collected by the SMI Experiment Center software and transformed to SMI BeGaze software for analysis. The key performance indicators for the areas of interest were: brand, title name, fat, claims, weight, nutrition value, image and content.

3 RESULTS

4.3 Common consumer behavior

Participants were asked about their preferred shop for buying food and their motivation to buy there. Participants mostly prefer to shop near their home or work. They mostly prefer bigger retailers. Consumers mainly shop in small or specialized retailers in case of urgency. Some consumers look for specialized shops because these shops offer them specific products. In this regard consumers often mentioned Tesco, which offers them a satisfactory offer of products without lactose. Smaller retailers like Coop or Flop are preferred by consumers which live in a village. Most often consumers choose Lidl, because in their opinion Lidl has high-quality food compare to the price. To a lesser extent Globus was chosen as a retailer with qualitative food. Finally, farm markets were also mentioned in regards to providing quality.

Consumers buy food with a short shelf-life daily or once per two days. In the case of food with a long shelf-life, shopping is done on a weekly or monthly basis. In the case of dairy food consumers are limited by their fridge's capacity. According Sýkora et al (2014) shelf life is a very important and substantial factor influencing the quality of milk.

Based on previous information we can identify two groups of consumers. The first group buys dairy food products once per two days. Consumers from this group prefer more qualitative products with short shelf-life. These consumers very often combine these products (e.g. with jam) or use them as semi-products. Mostly they buy large quantities of white yoghurt, which consumers combine with home-made marmalade or jam. Some consumers make from the milk their own yoghurts, creams and special kind of curd dessert. In their opinion it is unsuitable to use milk with long shelf-life for home-made products as they lack taste.

Some consumers of this group buy dairy food, especially milk, directly from the producers. Very often they want to buy milk in milk vending machines. But consumers complain about the availability of these vending machines. This reality was confirmed by all participants. Participants who didn't taste milk from milk vending machines yet, claim they would like to try it out in the future. At the same time the participants said that this milk is very expensive. They therefore assume that this type of milk is unavailable for families with children.

It is necessary to mention that milk vending machines offer milk without pasteurization. According Sykora et al (2015) its impossible store unpasteurized milk more than a few hours and in addition raw milk should contain pathogenic micro-organisms like *Mycobacterium tuberculosis*, or *Coxiella buernetti.* This problem was unknown to all participants.

The second group of consumers buys dairy food products once per week or once per two weeks. They prefer milk with long shelf-life especially packaged boxes. Both groups have the same number of consumers.

Consumers also mentioned in connection to dairy food shelf-life, that products with short shelf-life are perceived as more healthy. The participants had different opinions regarding the healthiness. Primarily consumers with families perceive dairy food products as healthy, especially for children. This opinion was also confirmed by other consumers without children. Consumers often said that based on the results from different studies, they think dairy food products made from cow milk aren't so healthy. These products have a lot of lactose and the human body can´t cope with it.

Consumers perceive fat milk as being healthier than non-fat milk. Next to that they claimed that on Czech market there aren't so many qualitative products available as in, for example, Germany or the UK. This is the reason why one of participants buys dairy food in a specialized shop, which offers German products. At the end of the survey about health, all participants said, those dairy foods are healthy, but only in a reasonable amount.

Regarding the preference of dairy food brands consumers are relatively heterogeneous. Olma, Tatra and Kunín were the most preferred brands. Regarding milk they preferred the offer of their favorite shop or they make a choice based on the price. The brand is an important factor for them. In case of yoghurts the respondents mostly mentioned Holandia and "Jihočeský ve skle" brands. For both brands the consumers justified their choice by claiming these brands have a better quality and taste.

In the case of private brands some consumers associate these brands with lower quality. Most consumers also notice a considerable difference among various private label brands. Many participants have their favorite product in some private label brand line. They justified their choice based on the taste of these products.

4.4 Perception of dairy food packages and labels

Consumers claimed, that the package and the label didn´t have a big impact on their decision making process. Many participants preferred closable packaging for practical reasons such as spilling and smell. For this type of packaging consumers are willing to pay more. The same is true for yoghurts with a plastic cap. Due to this cap yoghurts are fresh for a longer time. All of the consumers stated they wouldn´t buy milk in a plastic bag because it's impractical.

The consumers claimed that they are interested in packaging. They focus mainly on the volume of the products, to determine if the size of packaging isn´t an optical illusion. Consumers also mentioned the color of the packaging isn't important. In their opinion, the color of milk packaging should be blue, or white with red components. Different colors confused the consumers. For instance, black and white label captures the consumers' attention, but it creates doubts if the product belongs to the right product category. Similar responses were gathered in relation to the yellow milk label from Billa.

In many cases the consumers mentioned problems regarding the similarity of product packaging across food categories. In this regard the respondents mentioned the Tesco Organic brand which evokes different opinions than the brand is supposed to evoke.

The participants claim that a label with many decorative elements reflects an expensive product. On the other hand a simply label causes an impression of a cheap product. The consumers also said they automatically check the expiration date. Eye-tracking research haven´t proved this yet.

Most participants automatically pay attention to the ingredients. First of all the healthy life preferred consumers focused on content of fat. The consumers look more often at the ingredients of meat products. In the case of dairy food they think that most of the products have similar ingredients.

The participants also claimed that they pay attention to place of origin. They prefer Czech products and have distrust to products made in Poland.

Based on the expectation of participants, a correct label must include the place of origin, the expiration date, allergens, weight and nutritional values, especially volume of fat. Ingredients should be written simply without unknown names. Unknown names could discourage the purchase.

4.5 Perception of milk packages and labels

The participants gave the most positive response to the half-fat long-life label from Jihočeské mléko from the brand Madeta (number 5). This label evoked an impression of an old Czech farm, was perceived as pleasant and calming. Also most participants were aware of this brand and buy it.

This label was submitted to the eye-tracking experiment. On the figure 4 we can see the particular stimulus of the milk label Madeta presented by areas of interest (AOI). Based on the dwell time the most important part of the label is the title name "Jihočeské mléko". This part of the label is given more attention than part with image presenting a Czech farm. The part which was given the second most attention was the mage. The part with the title name also resulted in more revisitors. In comparison with results of focus groups it's possible to say, that the image is very important stimulus for the consumers, but they give more to the title name.

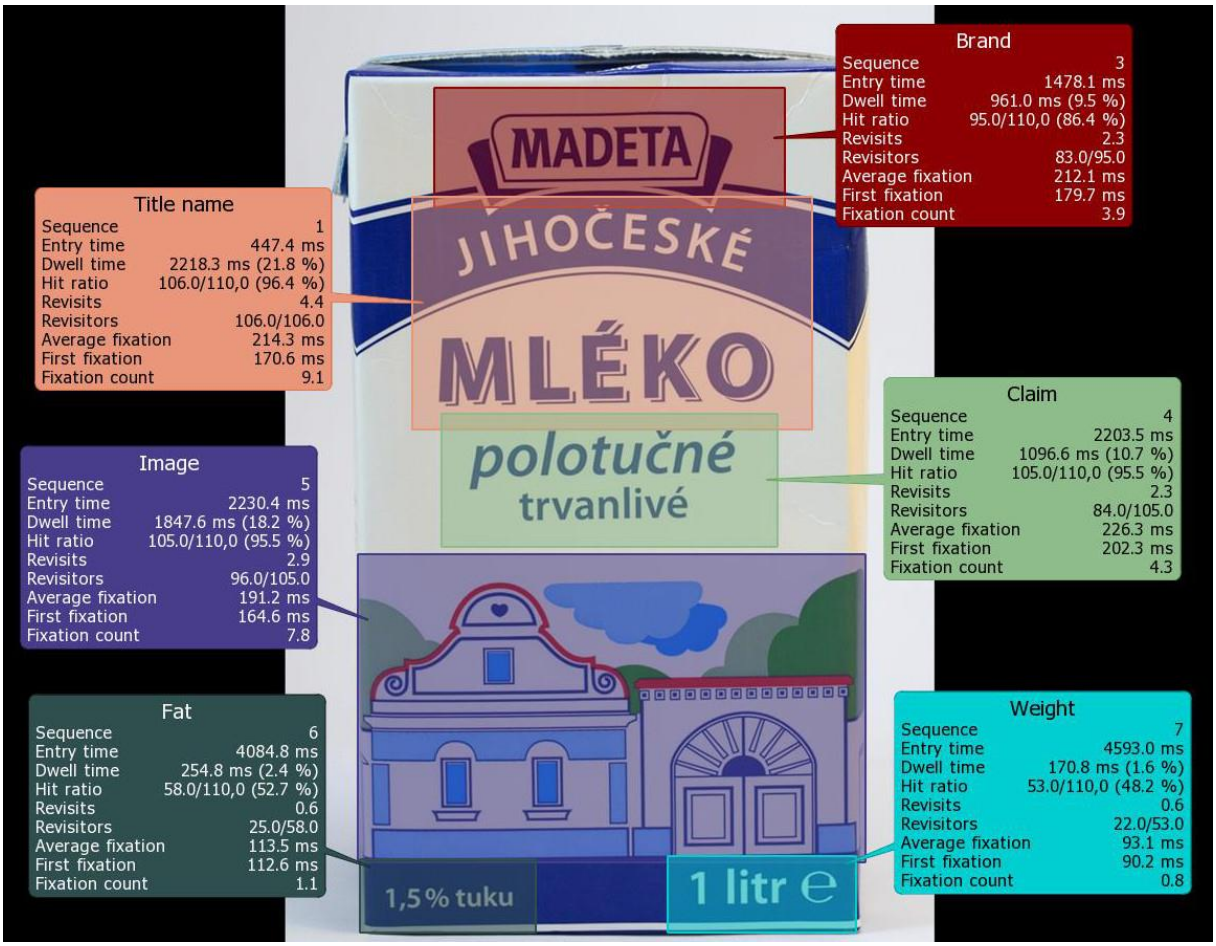

Fig. 4 – AOI milk label

The second most favorite label according to the focus group's participants was the long-life half-fat milk label from the brand Tatra (number 1). Consumers liked the consistent design

and color, with unusual elements. They were mostly interested in the title name "mléko", which looks like it was made from milk.

The same number of participants had positive attitude to the fat and half-fat long-life milk labels from the brand Pragolaktos (number 6 and 9) and the fresh long-life milk label from the brand Pilos (number 8). On the Pragoloktos labels the respondents liked the images of the product – a bottle and jug with milk. They also liked the color design. On the Pilos label the respondents liked the connection with nature. However the green label of this milk evoked negative emotions among some consumers. They accept the opinion that green color is friendly and has connection with nature, but in their mind they do not connect this color with milk.

The worst label according to the participants was the long-life fat milk from the brand Aro (number 10). In their opinion it looks cheap The second worst label was according to the participants the half-fat fresh milk label from the brand basic (number 2) and full-fat milk label from the brand Milbu classic (number 7). The respondents chose the Milbu label because the colors didn't fit together and looked like toxic. The brand basic appeared to the consumers as very empty and cheap. The third worst label was the half-fat milk label from the Tesco value brand (number 11). Consumers considered this label to be non-original, cheap, and containing a lot of text. The drawing of the cow on the label reminded them the Milka brand (chocolate).

4.6 Perception of yoghurt packages and labels

For the experiment with yoghurt the participants chose on the first position Gazdovský white yoghurt Hollandia (number 6), White goat yoghurt Farma zahradka (number 2) and Klasik white yoghurt from the Olma brand (number 5). On second place was chosen White yoghurt from Valašsko (number 4). The participants chose Hollandia because they are aware of this brand and have a preference for it. Another reason was the simple and accurate design. White goat yoghurt Farma zahradka was chosen by the participants because the label looks interesting and atypical. This label is completely different in comparison with others. Olma Klasik was chosen because the participant thought it is one of the 'normal' and 'classic' labels. White yoghurt from Valašsko is regional product and participants were aware of it.

Hollandia yoghurt was submitted to eye-tracking experiment. On the figure 5 we can see the areas of interest of the Hollandia label. The dwell time and number of revisitors show the same results as in the case of the previous milk label. The most attention was given to the title name, followed by the image depicting the cow.

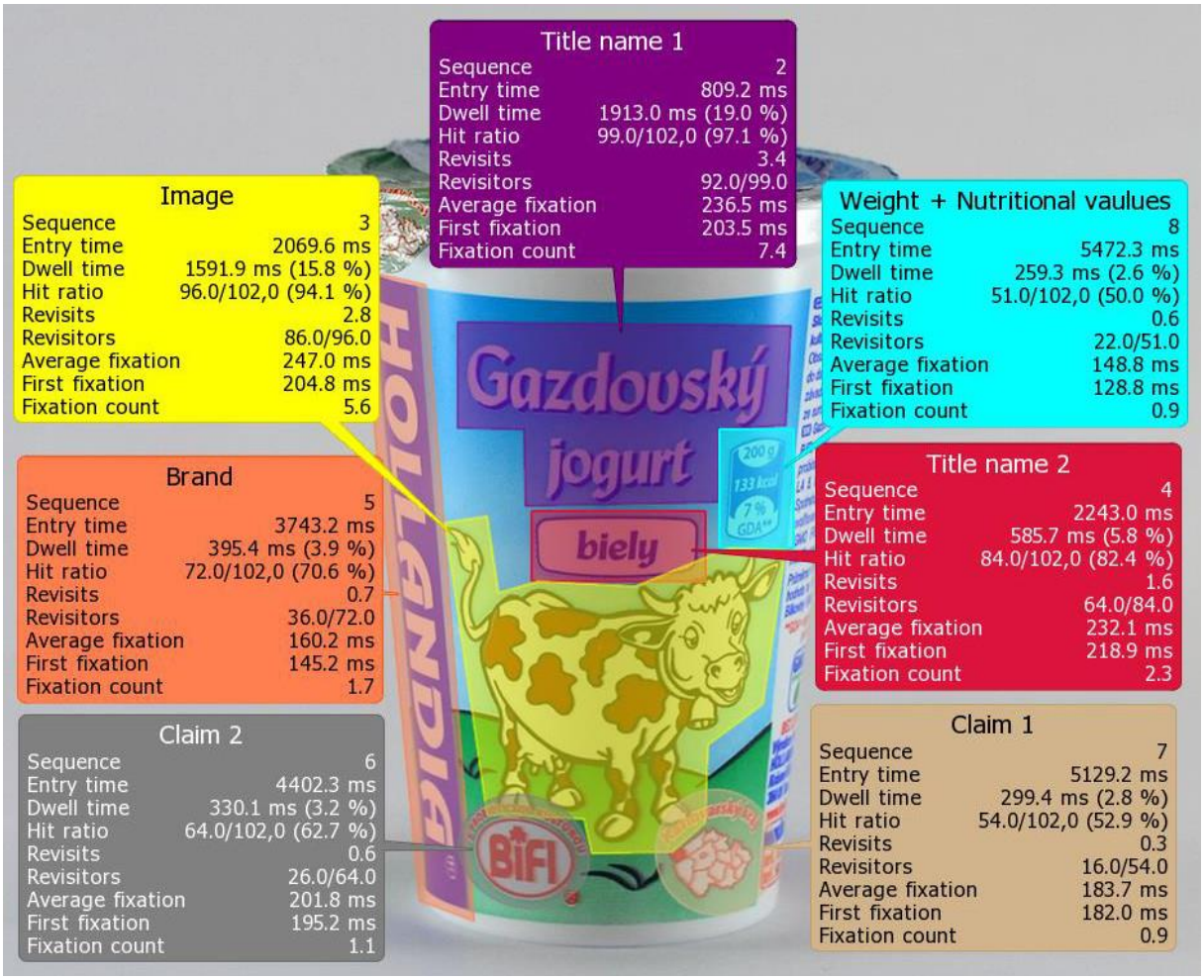

Fig. 5 – AOI white yoghurt label

The worst labels according to the participants were the label of Yoghurt white crème 500g Pilos (number 7). The consumers thought this label is graphically crowded and not interesting. Some of the respondents don´t like the image of the marguerite. They don´t know the relation of this image with the yoghurt. The second worst label was White yoghurt 500g Classic (number 8). The participants thought this label is simple and looks cheaply.

4.7 Perception of processed cheese packages and labels

For the experiment with processed cheese the participants chose the labels Apetito (Delicious cream (number 15), with blue cheese (number 10), with ham (number 13)) and Lučina for child cottage-cream cheese (number 8). Apetito was chosen because the participants are aware of this brand and it is typical cheese brand for them. Lučina is a very interesting label for them that evoke nature and health. Some participants are aware of this brand and they have a preference to it.

The Lučina label was submitted to the eye-tracking research. The areas of interest are presented on figure 6. The most important stimulus in this case is the brand (based on dwell time results). On second place is the claim number 2 which present the information “100 % without food additives”. Images representing nature don´t attract so much the participants’ attention. We can say that in the case of processed cheese the most important factors determining the consumer’s attention are the brand and complementary information.

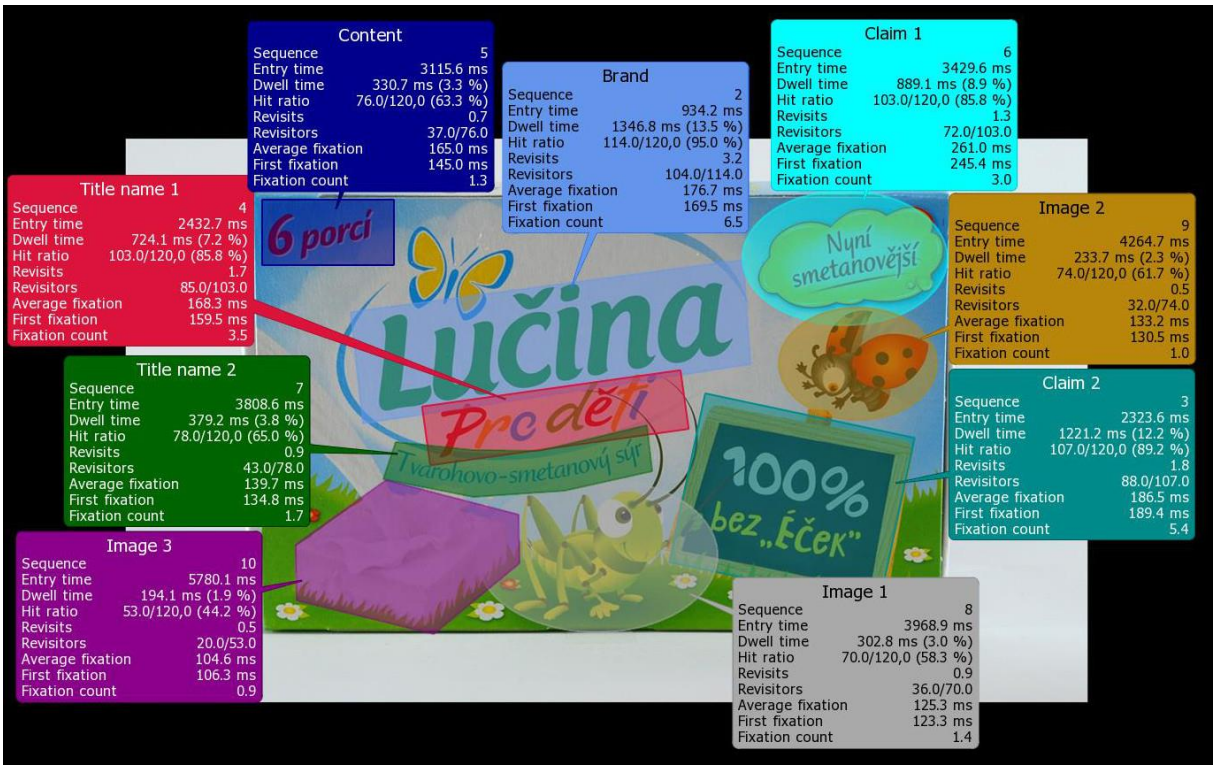

Fig. 6 – AOI processed chesse label

In determining the worst labels, the participants' opinions were heterogeneous. Very often they had a negative attitude to the red cheese labels. Namely the labels Pálivec (number 12), Samáčik from the Sama brand (number 5) and Deliko from the CBA brand (number 6). Pálivec was also chosen because some participants do not like hot cheeses. Both other cheeses have "different" design. The Liam Mix cheese label also evoked a negative attitude (number 1). The Participants do not really known what is inside the package. According to participants the labels of Excelent cheeses (cream flirt with cheddar (number 14), sausage dream (number 11)) under brand Želetava look like chocolate labels.

4.8 Attitude to sales promotion

It is difficult to determine which stimulus determines consumers' interest in new products. In this regard the participants mentioned references, beautiful packaging and imaginative advertising. Mostly were mentioned sales, price and experience with other products under the same brand.

In connection with new products it is necessary to mention food tasting. A lot of participants the tasting discourages, especially evening testing. Consumers are afraid of healthy, because tasted products could be displayed whole day. Some consumers thought that during food tasting products with different quality against products in shelves are offered. Different situation is in case of cheeses tasting in supermarkets counters or in specialized shops. Participants prefer these types of tasting.

Price doesn't indicate a higher quality. Consumers assume the higher price is paid for the package and the brand. They mentioned Actimel as an example. On the other hand, the brand is considered as an indicator of higher quality. In the case of products without lactose consumers prefer more expensive products. That is because cheaper products usually indicate "possible to include trace of lactose" on their label information.

Food products with higher price are regularly on fail. But most of the participants don't buy stocks of their favorite brand. They assume this promotion will be repeated in future. In case

of a price increase of their favorite products they would act rationally. In case of minor price increase they would still buy their favorite products. In contrast to a minor price increase, a significant price increase motivates the respondents to look for another option.

The participants were asked what is the most appealing promotion to buy products: a contest or a present. Most participants preferred a present, because through a present they have the certitude to receive something in addition to their purchase. In case of a contest there is still uncertainty. A contest would be chosen in case everyone wins. New taste of their favorite brand was determined as the best gift with purchase. Consumer contest was chosen by participants who likes risk and think the gift is something useless.

If consumers have to choose between a cheaper package, a bigger package or a 2+1 for free promotion, they mostly preferred the 2+1 for free promotion. When considering a bigger package the respondents feared that this package might be so large that they are unable to consume it completely. The 2+1 for free promotion is conditional on necessity to buy concrete product. Sale was mostly chosen by women, because smaller package is sufficient for them.

Consumers were also asked if they perceive difference between milk products and product with vegetable fat. Mostly they perceived this difference in the case of butter and they are ready to pay a higher price for a milk variant. A lot of consumers heard about this difference for the first time. According to Obermaier and Čejka plants fat is healthier and cheaper than milk fat. Products with vegetable fat can't be named cheese, but for example cheese products. It´s for discussion if these products shouldn´t be separated in shelves for different categories (Obermaier, Čejna, 2013).

Based on the fact that under "dairy foods products" consumers mostly categorize products made from cow milk, the participants were asked about their perception of dairy foods made from goat and sheep milk. These products are consumed just by a few consumers. For some goat and sheep milk are merely substitutions for products based on cow milk. For others it mainly serves as a diversification of their diet. However many consumers refuse these products because they stinks to them. At the same time they said the consumption of these products results from habits.

4 DISCUSSION AND CONCLUSIONS

Consumers assume the label isn't an important for their decision making process. But based on the researches it is possible to say it can influence the consumer's decision and perception. The main factor of success of milk labels is a pleasant and consistent design that evocates content of package. The label should not be crowded, but also not too simple. It´s necessary to give an attention to fact the label can remind products from other categories.

Most of the consumer's attention on front labels of most favorite brands of milk and white yoghurts was obtained by title name and main image. Contrarily, in the case of processed cheese, the most attention is given to the brand and the claim.

In the case of yoghurts it is possible to say in conclusion the factor determining the success of labels is an atypical design, which is pleasant for consumers. Another important factor is the brand of the yoghurts.

The brand is also the most important factor for processed cheese. These results are based on focus groups and were confirmed by eye-tracking research. It´s necessary to say that the color of processed cheese labels sometimes discourage the consumer from purchasing.

The preferred brand is the most important factor in the consumer's decision. Only a significant price increase might lead to brand switching.

The consumer's perception about healthiness of dairy food is mostly based on insufficient knowledge as we can see in case of milk vending machine.

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NEUROMARKETING USE IN THE PROCESS OF BRAND BUILDING

Jana Durďáková

Abstract

Currently the neuromarketing is growing and increasingly widespread tool of marketing communication. This article deals with an issue of the use of the neuromarketing in the process of brand building. The introductory part of the article is devoted to the psychology in marketing and the psychology of consumer defining customer's purchasing decision. In the following part there are characterized terms such as definition of the neuromarketing, neuromarketing methods, definition of the brand, the brand building and its possible actions and the brand management. The final part is a summary of the neuromarketing and the brand building with an emphasis on ethics in this area. Thus the main aim of this paper is to describe the current state of neuromarketing and brand building and define biometric methods by which customers are tested in the consumer market, respectively their brain and heart activity or activity on the surface of the skin.

Keywords: consumer psychology, neuromarketing, neuromarketing methods, brand, brand building

1 PSYCHOLOGY IN MARKETING

Use of psychological findings is very important for the purpose of marketing and almost everyone has ever heard predication that marketer should also be a bit psychologist. This opinion follows from the awareness of close relation of psychology as a science about human psyche and marketing. Use of psychological knowledge in marketing is not only related to market research, through which are influenced and managed the actions of the market, but also is used in various forms of marketing communications (e.g. advertising, sales promotion, PR etc.), whether it's from consumer perspective or marketer's. Consumers can be influenced during purchasing process by their attitudes, opinions, motives, knowledge etc., but also by visual perception of brands or scents. All this gives marketers an incentive to use marketing researches to find out what consumers need, want, what do the react on, so they can modify the policy of marketing communication. Such an example of the psychology use in marketing can be psychology of colors, when each color create different emotions for consumers and influence his decision making process. If the company knows how to use the colors to influence the consumer, it may use this information in effective form of advertisement in its communication. Another example may be product placement representing a form of advertisement which uses the psychology in the form of placing the products, names, logos etc. directly into the plot of a film, TV series, entertainment program etc. This gives no chance to the viewers to go away from television or to prepare for the advertisement when they are brought into the story. Similar example of the psychology usage in marketing is neuromarketing which monitors brain responses of consumers to certain stimuli placed in advertisement (brand, logo, etc.). That is also the core of this paper.

According to Ries (2006) psychology and marketing are closely related. If psychology is the systematic study of human behavior, then marketing can be considered as the systematic study of human behavior in the marketplace. Psychologists also often refer to "the halo effect". Representative example may be a situation when good-looking people tend to be considered by others as more intelligent, successful and popular. However, besides halo effect

every principle of psychology can be used in marketing. As an example can be seen design, when the first brand of new category is engraved in the human mind as the original, authentic or real thing (e.g. Kleenex, Heinz, etc.).

Vysekalová (2004) deals with the use of psychology in marketing from the point of view of consumer behavior and argues that motive of purchasing behavior is possible to define by simple question „Why did we by what we buy?“ and determine two aspects, which arise from this question: „Who do we buy something? And why do we buy this product instead of different one?“ First aspect represents motivating force that determines consumption behavior, i.e. what is the benefit of purchase decision. The second aspect focuses on making decision, i.e. why consumer decides for the product.

The author further argues that decision as what the customer buys, can be likened to problem solving situation, when a problem must be defined, followed by data collection phase, evaluation of concrete possibilities and finally the consumer decides for certain purchase.

Vysekalová (2004) also states that among the most important psychological mechanisms that play a key role in making purchasing decisions are mental characteristics and predispositions, life knowledge and experience, attitudes, opinions and social environment influences. Mental characteristics of human being appear in all psychical processes, among which belong attention, perception, memory, etc. and focus him in specific direction. Mental characteristics also influence concrete manifestations of purchasing behavior of consumer. Making these intellectual properties is influenced by dispositions which are innate and establish the boundaries of a change in the properties, which are influenced during consumption and purchasing behavior by all different forms of marketing communication. Life knowledge and experience help the consumer at a time in making purchasing decisions; also govern influence of stimuli which affect human from outside. The way of purchasing decision is also influenced by what the consumer buys, what he expects from the purchase or what kind of purchase it is.

As a result of marketing and human mind merging, it is important to realize that the study of marketing begins with the study of psychology, says Ries (2006).

2 NEUROMARKETING

Neuromarketing is according to Morin (2011), a relatively new evolving discipline which combines examined consumer behavior with neuroscience. Originally controversial field, which first appeared in 2002, is now becoming not only credible, but has also been ranked by specialists among advertising and marketing.

4.9 What is neuromarketing?

The combination of neuro and marketing expresses merge of two branches, namely neuroscience and marketing. This term, however cannot be attributed solely to individual, as was the case in 2002. At that time, several US companies began to provide research and consulting in the field of neuromarketing, which promoted the use of knowledge and technology derived from the field of cognitive neuroscience. In essence, it can be said that as neuromarketing is marketing, as well neuropsychology is psychology. While neuropsychology examines relation among the brain, human knowledge and psychological functions, so neuromarketing helps importance of looking at consumer behavior in terms of the brain (Morin, 2011).

Javor, Koller, Lee, Chamberlain and Ransmayr (2013) also describe neuromarketing as a discipline that is increasingly used in recent years in media as a theme and also add that these public discussions are generally directed on potential ethical aspects and point out

concerns about negative impact on society, especially on consumer. However, the positive contribution to the scientific debate from evolving biological model is mostly neglected. It tries to explain the context of human behavior, such as consumption.

In particular, the area of behavioral neurology could benefit from the collaboration with economists and marketing researchers because of it is their common interest and there is theoretical evidence that behavioral symptoms of neurological disease could have an impact on consumer behavior and economic decisions (Javor, Koller, Lee, Chamberlain & Ransmayr, 2013).

Ariely and Berns (2010) deal with neuromarketing from different perspective ad define it as application of neuroimaging methods in product marketing. They also show two main reasons for this trend. The first reason may be the possibility that neuroimaging is cheaper and faster that other marketing methods. The second reason may represent hope that neuroimaging provide such information, which cannot be obtained through conventional marketing methods. Although neuroimaging seems to be still more expensive than other tools, there is increasing number of evidences that it may provide hidden information about consumer experiences.

Despite many common beliefs that marketing is inherently evil, its main goal is to help connect people with the product. According to Ariely and Berns (2010) argue that marketers achieve such a goal by providing information to product designers. The information is about consumer values and what consumers want before the product is created. Once the product appears on the market, marketers try to maximize sales by introducing the menus, pricing, ads or promotion.

Authors also argue that marketers are excited from the brain imaging methods from two main reasons. Firstly, they hope that neuroimaging will provide them more effective trade-off between costs and revenues. This hope is based on assumption that people cannot fully express their preferences, only when they are asked to express themselves clearly and that brains of consumers contain hidden information about their real preferences. This hidden information could be theoretically used to influence purchasing behavior of consumers so the cost spent on neuroimaging studies were offset by revenues from improved product design and sales increase. In this theory it means that methods of brain imaging could explain not just what people like, but also what will people buy. The second reason why marketers are excited from brain imaging is expectation of getting accurate method of marketing research which may be realized even before product's existence as it can be seen in following figure (Fig. 1).

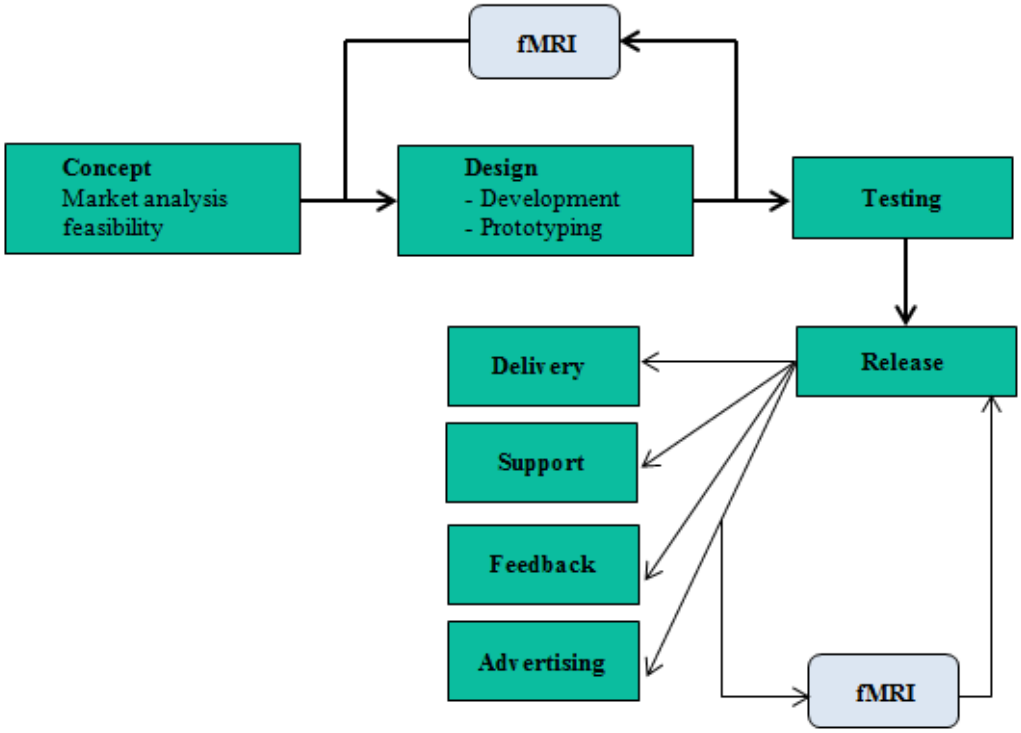

Fig. 7 – Product development cycle. Source: Ariely & Berns (2010, p. 286)

It shows that neuromarketing application of functional MRI (magnetic resonance imaging), respectively fMRI (functional magnetic resonance imaging) may potentially enter the product development cycle in two phases. First, when fMRI can be used as a part of construction process, where neural responses could be used to refine the product even before it leaves the production process. Second, fMRI can be used after the product is completely designed, which is typical for measuring neural responses as a part of advertising campaign to increase sales (Ariely & Berns, 2010).

4.10 Neuromarketing methods

„I know that half of the money I spend for advertising is wasted, I just do not know which half is that.“ was said by John Wanamaker, who created first department store in 1876. And since then marketing managers and politicians try to find tools which would help them sell their products or ideas to the public. Target group is currently fashionable trend between the advertiser and marketing personnel. That could change with the invention of neuromarketing, i.e. with the use of neuroscience cognitive methods, such as fMRI or EEG (electroencephalography), to assess whether a person will respond favorably to the brand name or product. Despite the fact, many independent experts doubt that fMRI may be meaningfully used in this way, but it is unlikely that this would involve marketing people who want to impress potential customers with spectacular imaging technique (Anonymous, 2004).

In the field of consumer purchasing behavior are used biometric methods that can discern on what stimuli consumer reacts, how he feels, at which time moments his cognitive brain activity arises and what suggestions he reacts on with external stimuli contact. These are therefore possible way of deeper recognition and prediction of consumer behavior. In comparison with questionnaires assuming correct interpretation, these biometrical methods may be more accurate due to elimination of distortion generated by customers e.g. their ego. Most of customer's mental processes take place unconsciously, and these processes have a direct impact on his behavior, i.e. they influence decision making process, loyalty, brand preference, estimate or orientation in space (Strategie.e15.cz, © 2015).

As the primary source of data are used mobile eye cameras (eye tracking), which record the eye movements of tested customers, thus mapping eye contact of purchaser with certain elements in the space that connects it real time with the reactions in brain, heart rate and skin response. Among commonly used methods of neuromarketing can be placed **EEG** method measuring brain activity, **ECG** method (electrocardiography) measuring heart rate or **GSR** method (galvanic skin response), which measures activity on the skin surface. Using the eye camera allows to identify on which visual elements (e.g. color, shape of the product, place in the store, lighting or interaction with product or hostess) the consumer's eye reacts. Furthermore, other techniques are used in neuromarketing such as **MEG** (magnetic encephalography) or **PET** (positron emission tomography). The most advanced techniques are **FMA** (facial movement analysis) or **FA** (facial coding), which are also very effective (Strategie.e15.cz, © 2015). All these methods are shown in the following figure (Fig. 2).

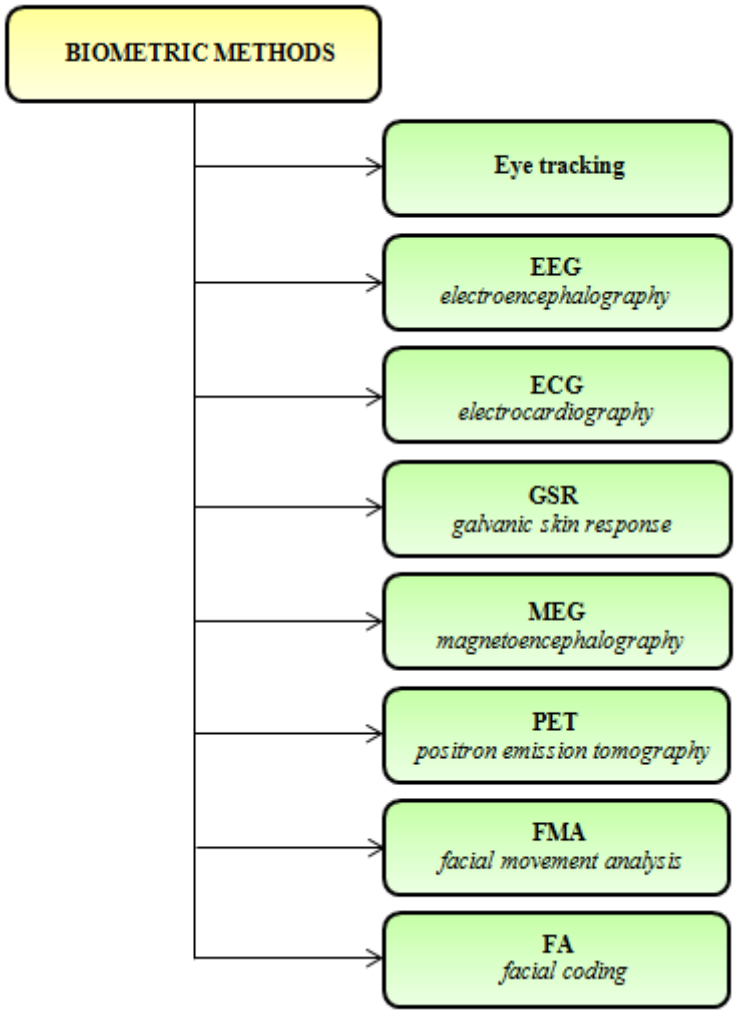

Fig. 8 – Biometric methods in neuromarketing. Source: Own compilation

3 BRAND BUILDING

Keller (2007) argues that brand has been used for centuries to distinguish the goods of individual producers from competition. The term „brand" comes from the word of old Nordic origin "brandr", which means "to burn" and is a testament of that brand or mark has previously been used and is still used for marking and identification of animals from the herd of specific owner.

A similar approach to brand definition have also Bárta, Pátík and Postler (2009) and state that the terms „brand“ and „brand building“ are currently the center of attention in any organization. Brand, which is an identification tool for goods or services and helps to differentiate the product from competitors, is not only a product. The product is produced, while the brand is created. The product changes over time, but the brand remains. The product is given by its observable characteristics (e.g. composition of the product), but the brand is characterized by so-called attributes that are associated with the brand image. All these attributes are perceived by consumers; the brand is created and then exists on the basis of communication. Differentiation from the competition makes a brand THE BRAND and competition helps the brand to gain its own identity.

The American Marketing Association defines brand as *„name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers"* (Kotler & Keller, 2007, p. 312).

Vysekalová (2004) characterizes the brand from a completely different perspective and argue that it can be understood also in terms of knowledge of cognitive psychology as complex scheme expressing mental map of a particular brand. Cognitive maps are collective mental images generating variable formations, are used to understand the brand communication and for interaction between brand and the set of elements that represent the brand image. The procedure for the process of mental mapping may be usually divided into three phases. First phase is about registration of all free associations connected with the brand. Second phase is about collecting ideas associated with elements based on the first phase. Third phase express the detection of ideas which were associated with associations in previous phase of the process.

With branding the product is filled with the force of brand and its foundation is to create differences. It is necessary to teach the consumer about „what is the product about", „what does the product do" and „why" the consumer should be interested in it. This all leads to that the product is labeled and is so-called branded. The essence of branding is therefore to get the consumers into position when they can perceive the differences among the brands in certain category and avoid the feeling that all products are the same (Kotler & Keller, 2007).

Nastišin and Mudrík (2013) in this context follow Kotler and Keller with their statement that brand is power. Nowadays, companies are judged not only by their tangible physical assets, but also by factors such as idea, reputation, intellectual property and customer relations. These mentioned factors can also include branding which influences the consumer in his everyday life.

Aaker (2003) argues that brand building is difficult, but doable. One of the essential steps of successful brand building is to create brand identity, thus understanding the importance of the brand and expression of its identity. Another important step of brand building is to handle internal forces and pressures, i.e. to resist the tendency of organization, which leads to short-term results, diversification or often changes of brand identity.

Aaker (2003) adds that building a strong brand requires concrete definition of brand identity and its position. To achieve this, identity must include not only basic identity, but also extended one including its symbols. Most of organizations perceive the brand as the basis of sustainable advantage, but they do not become powerful by the day. It is a result of long-term strategies creation and effective work done by the company.

Building a strong brand by Keller (2007) consists of 4 following steps:

- identification of consumer with the brand and brand association in his mind with certain group of products or with identified need;

- clear and precise characteristics of brand importance from consumer perspective through tangible and intangible associations with given properties of the product;
- evoke specific reactions of customers on this identification and brand importance;
- change the reaction on the brand so that the customer creates with the brand intensive, active and loyal relationship.

These mentioned steps together create a summary of the basic questions which –considering the brand– are interesting for every customer and are defined as follows:

- Who are you? – brand identity;
- What are you? – importance of the brand;
- What do I think or feel about you? What about you? – reaction to the brand;
- What kind of association or how strong connection I would like to have with you? How is it with you and me? – relationship to the brand (Keller, 2007).

On the area of brand building is also necessary to define the concept of brand management. Brand management is a process that involves activities aimed at brand building and subsequently to the management of the brand and its values. It may be characterized as *„strategic and integrated system of analytical, planning, budgeting and implementation activities that are part of the brand management process"* (Přibová, 2000, p. 15).

Vysekalová (2004) adds that part of the brand management is also called brand equity, which is a term expressing how consumers perceive the brand and how their knowledge affects their relationship towards it.

4 CONCLUSION

Neuromarketing researches cognitive, sensorimotor and affective reactions of consumers to various marketing initiatives and uses medical technologies such as EEG (electroencephalography), MRI (magnetic resonance imaging) and others. As reported by Kozel, Mynářová and Svobodová (2011) the main goal of neuromarketing is to determine how and why consumers decide as they do, which part of brain is activated and has influence on this behavior. This modern method of marketing is based on the fact, that the main part of human thinking (emotions included) and human activity (more than 90 %) takes place in the subconscious. And note that advertising unknowingly gets into the heads of consumers, could also influence the market research. The market research uses for many decades questionnaires for its purposes, but it only records conscious perception of people. Some researchers are not yet completely united in the opinion on neuromarketing and its classification among research methods. They still see it as a very new field and emphasize its ethical and moral dilemmas.

As marketers design their activity in order to sell more, neuromarketing research faces accusations that its aim is just commercial. Neuromarketing does not involve mind control techniques, but it is able to measure brain responses to marketing impulses. Marketers aim is to find out what triggers certain stimuli of consumers by using neuroimaging devices. These technologies do not invade their private life and their interests, but create a way to find answers to questions involving products and services. If we talk about neuroethics, neuroimaging devices can be used in a more positive marketing research area, e.g. to help consumers find what they want and guide them in living a healthy life. There is still much to explore on self-consciousness, understanding human emotions, reasoning, moral and free will and we can see an increasing number of neuromarketing studies and growing interest in this

area. Of course, we must think about ethics that needs to be delineated between its limitations and risks (Bercea Olteanu, 2015).

Brand building creates a relationship between the consumer and the brand through emotions that are part of it. A strong brand is an effective tool for building reputation and consumer loyalty, which also make greater profits for companies. The process of brand building is very important for companies, whether they are trying to succeed in any industry (Nastišin & Mudrík, 2013). Marketing manager can use methods of neuromarketing to find out why consumers are making such decisions and how consumers react to certain impulse. Results of neuromarketing can then be applied in the process of building a brand so marketing manager will know how the consumer reacts for example on the color packaging, on the sound or how much different are needs between consumers.

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A CONCEPTUAL MODELLING OF THE ORGANIZATIONAL DRIVERS OF BRAND ORIENTATION STRATEGY IN THE SMALL BUSINESS SETTING

Christian Nedu Osakwe

Abstract

The main objective of this study was to theorize and conceptualize a model that could be used by scholars and practitioners in understanding the contingent roles that certain organizational drivers and/or resources play in shaping the brand orientation strategy of small businesses, especially growth-aspiring small businesses in emerging economies. To this end, this paper explicates the critical roles that entrepreneurial capability, enterprise core values, market orientation, Internet technology orientation, and learning climate play as processual antecedents to brand orientation strategy in the small businesses setting considering the fact that today's marketplace is increasingly becoming more of an integrated global business community. Furthermore, we highlight the moderating effect of limited financial slack in attenuating the relationship between the aforementioned strategic variables and brand orientation strategy. Consequently, we argue strongly that brand orientation strategy is without a doubt, one of the key micro-foundations for small businesses to effectively achieving a high degree of customer-centric performance outcomes. Nonetheless, it is vitally important for small business entrepreneurs to be aware that brand orientation should not be treated as an isolated strategy, but rather as an integrated strategy that spans the enterprise value-chain(s).

Keywords: brand orientation strategy, emerging economies, processual antecedents, organizational drivers, small businesses, RBV

1 Introduction

In recent decades, the significant contributions of small businesses to the economic development of the various countries of the world have begun to receive tremendous attention from various policy makers (Cook & Nixson, 2000). Evidence abounds from a substantial body of literature (e.g., Ayyagari, Demirgüç-Kunt, & Maksimovic, 2011; Ishengoma & Kappel, 2008) that small enterprises are the backbone of the global economy given their immense contributions to wealth creation, innovation, indigenous entrepreneurship; and all these together add up to economic growth and economic development. On the other hand, evidence equally abounds that quite a majority of the small businesses operating in the global economy and particularly in developing economies are at a market-disadvantaged position in terms of their low level of brand competitiveness in the marketplace (Abimbola, 2001; Barbu, Ogarcă, & Barbu, 2010). Consequently, for small businesses to be able to effectively compete in the contemporary business environment it becomes more pertinent now than ever before for any growth-aspiring small business to seek unique ways of crafting its business strategy around its brand-oriented norms and values (Baumgarth, 2010). In fact, Urde (1994; 1999) in his seminal papers posits that brand orientation is a competitive strategic resource for survival in the business environment that has over the last three decades or so been constantly driven by the forces of market competition.

Therefore, given the central role that brand orientation strategy plays in today's marketplace, *the overriding goal of this study is to theorize and conceptualize a model that could be used*

by scholars and practitioners alike in understanding the contingent roles that certain organizational drivers and/or resources could possibly play in shaping the brand orientation strategy of small businesses, especially growth-aspiring small businesses in emerging economies. To this end, this paper explicates the critical roles that entrepreneurial capability, enterprise core values, market orientation, Internet technology orientation, and learning climate play as processual antecedents to brand orientation in the small businesses setting in light of the fact that today's marketplace has increasingly become more competitive-driven. Furthermore, we highlight the moderating effect of (limited) financial slack in attenuating the relationship between the aforementioned strategic variables and brand orientation strategy.

The research paper is further organized as follows. In the next section, we provide a snapshot of the relevant marketing literature while in the subsequent section we briefly discuss the materials and method of analysis. At the same time, we equally present the proposed conceptual framework and propositions in the next subsequent section. The conclusion and implications of the study are further highlighted in the final section of the article.

2 Prior Studies on Branding and Brand Orientation Strategy in the Small Business Setting

Krake (2005) surmised that branding, as an added value agent (Wood, 2000) in the business value chain is to a large extent alien to the core marketing practice(s) of small businesses. On one hand, Kotler and Keller (2006) together with van Raaij (2005) posits that for a profit-oriented firm to seek more effective ways of enhancing its customer profitability, it must seek unique ways of delivering superior customer value amidst the competition. As a corollary, branding is seen as one of the key strategic levers through which firms in general could capture more customer value in the marketplace (Aaker, 1996; Kapferer, 2008). It therefore becomes highly imperative for small businesses to develop their brands given the contingent value of branding in firms' customer-centric performance outcomes, especially as it relates to consumer-based brand equity (Aaker, 1991; Pappu, Quester & Coksey, 2005) and in turn marketplace equity (Brodie, Glynn & Durme, 2002). Moreover, several authors (e.g., Abimbola & Vallaster, 2007; Krake, 2005) assert that branding is one of the micro foundations through which small businesses can create a sustainable competitive advantage in the rapidly changing business landscape. Moreover, building on Urde's (1994,1999) seminal papers on brand orientation as an organizational mindset and importantly, as a strategic imperative for achieving competitive advantage in the marketplace, Wong & Merrilees (2005) acknowledged the critical role that brand orientation can play in the small business setting. In fact, the study reveals that for small businesses to achieve a higher level of brand orientation (which the authors supposedly referred to as integrated brand orientation), certain key marketing resources and/or capabilities (of which the authors referred to as pre-conditions) are expected to be in place within the organization (Wong & Merrilees, 2005).

3 Materials and method of analysis

A systematic review of previous studies was done in order to accomplish the main goal of this study. Consequently, relevant studies were sourced from reliable secondary sources, such as online databases, journals, working papers, and textbooks. Based on the extracted information from the secondary sources, the author builds a conceptual framework (or model) of the organizational drivers of brand orientation strategy in the small business setting while equally taking cognizance of the moderating role of two vitally important micro-foundational organizational drivers. In particular, the systematic review of literature that we have adopted for this study borrows extensively from the marketing strategy research stream, and more particularly from RBT.

4 Development of a conceptual framework with propositions

As earlier stated, the proposed framework is largely embedded in RBT (Barney, 1991, 2001; Barney, Ketchen & Wright, 2011, Wernerfelt, 1984) which in summary posits that for an organization to achieve competitive advantage, it must possess some unique organizational (or market)-based attributes that may be quite difficult for close rival firms to instantaneously replicate. In short, using the VRIO (valuable, rarity, inimitability, and organizational process) attributes of RBT (Barney, 1991, 2001; Kozlenkova, Samaha & Palmatier, 2014) in the marketing discipline, one could argue that an effective brand orientation strategy is definitely a branding strategy that encapsulates all the aforesaid VRIO characteristics. Conversely, and in reality, this is not always the case of small businesses bearing in mind that a majority of these enterprises are by default at a competitive disadvantaged position in the marketplace. Such a disadvantaged position is due largely in part to the inadequacies of these enterprises to fully develop valuable firm-based resources.

Consequently, the important question this conceptual paper seeks to address is this- what could be some of the core processual antecedents (or organizational drivers) of brand orientation strategy in growth-aspiring small businesses? To put it differently, how could small businesses develop a brand-oriented organizational mindset so that these enterprises should at least achieve a competitive parity in the marketplace? Thus, the current study presents a thematic viewpoint (based on past literature) of critical organizational drivers towards crafting an effective brand orientation strategy in the small business setting. Also note that in this study, the terms - cultural antecedents, processual antecedents, and organizational drivers are used interchangeably to express a common theme. Permit me to digress a bit, the use of the term prcocessual antecedent, illustrates the fact that a majority of these cultural antecedents (or organization drivers) are hardly discrete events but rather that they are process-driven activities (Pettigrew, 1997). Of course, it is always in the best interest of scholars to measure these antecedents, but in reality these process-driven strategic variables can only be captured by proxy variables. On the other hand, it is also in the best interest of business managers to possibly measure and model these processual antecedents since they are sources of competitive advantage in the marketplace. On one hand, we equally show in the conceptual model, that all these processual antecedents act as supporting capabilities for brand orientation strategy to effectively impact on customer-centric performance outcomes in the marketplace (see Fig.1).

Enterprise core values: The notion of enterprise (or business) core values has received tremendous attention in the extant literature, so there is no need to 'over flog' the same theme in this article. More specifically, eminent branding scholars and practitioners (e.g., Aaker, 1996; Balmer, 2013; Baumgarth, 2010; de Chernatony & Dall'Olmo Riley, 1998; Gelder, 2003; Heding, Knudtzen & Bjerre, 2009; Kapferer, 2008; Urde, 2009) key emphases have always been on the need for firms irrespective of their unique 'firmographics' to build their brands across their existing and objective core values. In short, these experts argue strongly that a firm's core values should be congruent with the expectations of the important stakeholders of the organization. Moreover, the aforementioned studies provide strong clues that successfully 'living the brand' is a direct consequence of the firm's internalized corporate core values. Briefly speaking, the core values of an enterprise should be clearly enshrined in its mission and/or vision statement, if any. In fact, for small businesses, we wish to add that it is the founder(s) core values that supposedly drive the enterprise's core values, so both terms can be used interchangeably in the case of a small business setting (Mitchell, Hutchinson &

Bishop, 2011; Spence & Essoussi, 2010). As a consequence, it is the same set of core values that can provide a strong basis for building a brand oriented culture, and in turn achieving a high degree of customer-centric performance outcomes within a firm's target market(s). Importantly, drawing from all these perspectives, this has enabled the author to come up with this proposition that:

P1: A clearly stated enterprise (or founder(s)) core values is a processual antecedent to the development of brand orientation in growth-aspiring small businesses.

Learning (workplace) climate: A learning climate (or culture) is often times conceptualized as the degree to which a firm is driven towards continuous improvement through learning, shared philosophical vision, and importantly receptiveness to new ideas; and all these add up to achieving superior organizational effectiveness (Che-Ha, Mavondo, & Mohd-Said, 2014; Kock & Ellström, 2011; Sinkula, Baker & Noordewier, 1997). An organizational learning culture is obviously a supportive climate for employees' ideas and initiatives to thrive, and as such, it is a culture that is not intolerant to errors on the part of employees (Che-Ha et al., 2014). Incontrovertibly, an organizational learning culture is a supportive workplace climate that fosters the development of employees' skills via training and other skills acquisition formats (ILO, 2013). More so, research has shown that a learning climate fosters a great deal of ideation, open-mindedness, and creativity in an organization, and in turn generates superior customer value in the marketplace (Che-Ha et al., 2014; Laukkanen et al., 2013; Weerawardena, O'Cass & Julian, 2006). Meanwhile at the heart of any branding strategy is both ideation and marketing creativity. This leads me to propose that:

P2: An enabling learning (workplace)climate directly provides a strong supporting-capability for brand orientation in growth-aspiring small businesses.

Entrepreneurial capability: The term, entrepreneurial capability could be looked at from the perspectives of the business owner (entrepreneur) willingness to engage in risk-taking venture(s) while being proactive and innovative at the same time (Rauch, et al., 2009; Lumpkin & Dess, 2001).Some authors (Filser & Eggers, 2014; Campos et al., 2013; Baker & Sinkula, 2009) further posit that entrepreneurial capability is a strategic necessity for relatively small enterprises to gain a foothold in the marketplace, and ultimately improve on their brand performance outcomes through innovativeness, proactiveness, and strategic resilience. Given the dominant role that small businesses' entrepreneurs play in their firms, it is almost a truism that the more entrepreneurially-focused the business owner is, in terms of having a fine-grained analysis of what it takes to differentiate itself from the competition, the higher would the enterprise leverage on brand orientation strategy. In the light of this background, the author proposes that:

P3: Entrepreneurial capability directly provides a strong basis for brand orientation in growth-aspiring small businesses.

Market orientation: By and large, the market orientation concept proposes that a firm should be totally focused on meeting the needs of its customers in a timely and satisfactory manner, while at the same time being on alert to its close competitors' activities in the marketplace (e.g., see Kohli & Jaworski, 1990, Narver & Slater, 1990). Besides, Urde (1999: 118) unequivocally postulates that "to be brand oriented is market orientation 'plus'". Corroborating Urde's assertion on the strategic relationship between market orientation and brand orientation strategy, some studies (e.g., O'Cass & Ngo, 2009; Tuominen, Laukkanen & Reijonen (2009) provide empirical support that brand orientation is a consequence of market orientation. Against this backdrop, the author proposes that:

P4: Market orientation directly enhances the development of brand orientation in growth-aspiring small businesses.

Internet technology orientation: Unarguably, the immense contribution of the Internet, and in particular, the World Wide Web, has made the Web to be seen as a 'web of immense opportunities' that could be unlocked to gain a strong foothold in the global marketplace (Boudreau & Watson, 2006). Although the Web is obviously not a strategy (Porter, 2001) but it is an information portal with manifold business opportunities for firms that are willing to tap into the enormous opportunities that it offers. In the context of the business world, the Web may be seen as a pipeline which seamlessly connects commerce with consumers. Meanwhile, in this digital age, small businesses that have recognized the strategic role that Internet-enabled tools play in today's marketing have not only adopted the Internet as a means of gathering information from their target consumers and/or potential business partners, but have also used these tools to deepen their marketing capabilities (Harrigan et al., 2010; Opoku, 2006; Sinkovics, Sinkovics & Jean, 2013). Some studies have even advocated for small businesses to leverage more on the Internet, especially as it pertains to the usage of Web 2.0 tools (specifically, online social platform sites) to build virtual brand community (Hassouneh & Brengman, 2011; Sasinovskaya & Anderson, 2011). Accordingly, the intensity of the usage of Internet-enabled tools could provide a strategic platform for these enterprises to promote their brand in a more cost-effective manner. Against this background, the author proposes that:

P5: Internet technology orientation directly provides a platform for brand orientation in growth-aspiring small businesses.

Moderating Effect of Financial Slack: Much emphasis in extant literature has been focused on the stagnated nature of small businesses given their lack of financial resources (Khalique et al., 2015; OECD, 2013). Such a stance that has been taken by extant literature is indisputable given that the inadequacies of these firms to develop certain key capabilities is to a large extent traceable to little or no financial slack (Lockett et al., 2013). For further reading on resource slack, please refer to Bradley, Wiklund & Shepherd (2011) as well as Dası, Iborra & Safon (2015). Debatably so, a greater number of small businesses in the developing world have so far failed in making provisions for idle financial resources due in part to limited working capital (OECD, 2013). In short, limited financial slack eventually ends up stifling even the few competencies level that some of these enterprises have over time strived to develop, which in turn impacts negatively on the firm's overall execution of their business strategies. Although it is beyond the scope of this article to go into further details of the consequences of limited financial slack (or resource availability as one may prefer to call it) but it is also important to highlight that such a consequence is also largely responsible for the low brand positioning and competitiveness of small businesses' products and/or services offerings. To sum up, the author argues in strong terms that inadequate financial slack is highly likely to slow down the impact of the highlighted key strategic on the firm's brand orientation strategy. Taken together, the author further proposes that:

P6: Little (or no) financial slack will attenuate the relationship between a) core values and brand orientation; b) between learning climate and brand orientation; c) between market orientation and brand orientation; d) between entrepreneurial capability and brand orientation; and e) between Internet technology orientation and brand orientation.

Most importantly, we show (see Fig.1) how these cultural antecedents (organizational drivers) and the moderating variable play out towards the development of brand orientation strategy in the small business setting. Although it is beyond the scope of this paper to consider the consequences of brand orientation strategy but we equally graphically illustrate how an

effective brand orientation strategy can lead to significant increase in a small firm's customer performance measures (see Fig. 1).

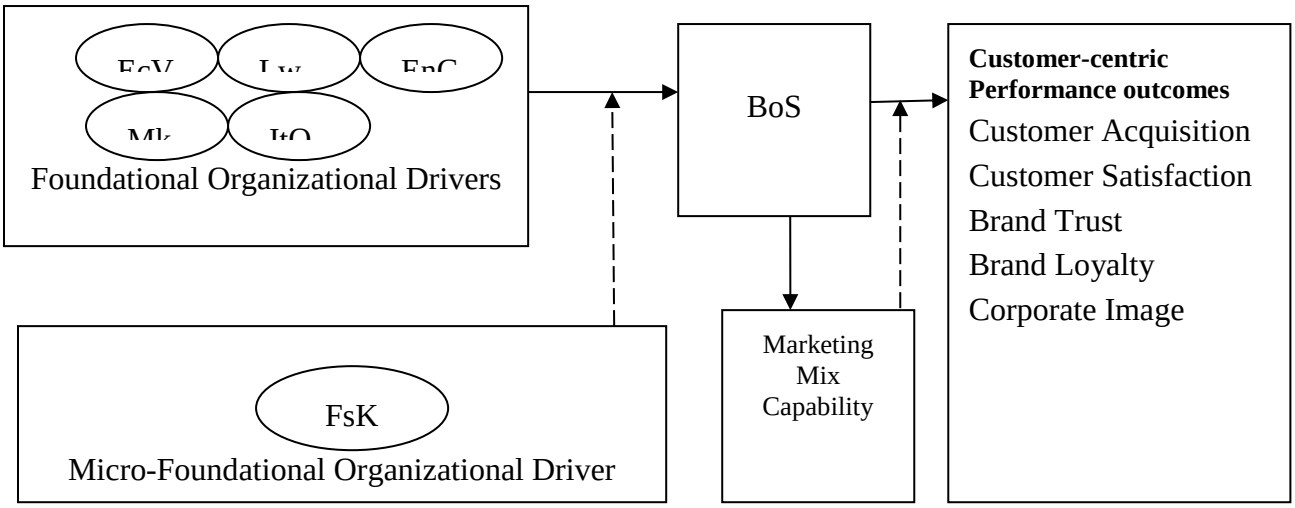

Figure 1- The Proposed Conceptual Framework

Notes: EcV-Enterprise Core Values; LwC-Learning (Workplace)Climate; ETC-Entrepreneurial Capability; MkO-Market Orientation; ItO-Internet Technology Orientation; FsK-Financial Slack; and BoS-Brand Orientation Strategy.

Where; ⟶ indicates direct effect, while – – – → indicates moderating effect.

5 Implications for theory, practice and concluding thoughts

This article has provided a framework which could improve general understanding of the critical sources of brand orientation strategy in the small business setting, and particularly in growth-aspiring small-sized enterprises. On top of that, the study has brought to the fore how certain organizational variables (more specifically, financial slack) can moderate the relationship between the highlighted processual antecedents and brand orientation strategy. This study has further extended SMEs branding research stream by taking cognizance of both tangible and intangible drivers of branding strategy. Based on the conceptualized model, the author advocates that small business practitioners should prioritize their scare resources by investing in brand-supporting capabilities. By and large, the author strongly believes that if these are done in the right measure, it will provide the mechanisms for building an effective brand orientation strategy that is highly likely to induce superior customer-centric performance outcomes of these enterprises in the marketplace. Notwithstanding the mileage that has been achieved through the research paper, this study is quick to point out one major limitation of the study. The main limitation of the proposed conceptual framework is that the themes used within the research model cannot be described as overly exhaustive given the limited coverage of extant literature in marketing, and specifically in the branding research stream. On a final note, the next step in this particular research stream will be to further examine these processual antecedents using empirical dataset. Therefore, the author invites interested scholars who might be willing to test the assumptions of this model by conducting an empirical analysis, particularly in the context of growth-aspiring small enterprises in emerging economies. In concluding, it is vitally important for small business entrepreneurs to be aware that brand orientation should not be treated as an isolated strategy, but rather as an integrated strategy that spans the whole enterprise value-chain(s).

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MULTI - DISCIPLINARY APPLICATIONS

INTRODUCTION OF THE BARRIER-BASED APPROACH TO THE SUPPLY CHAIN SECURITY

Martina Vitteková, Slobodan Stojić, Peter Vittek

Abstract

The paper aims to bring an overview of the new approach to supply chain security involving application of the purposely chosen and adjusted security barriers. These are based on the supply chain security general model representing a set of structured and aggregated elements directly influencing security. General model was recognized as useful research base primarily due to the fact that it focuses on supply chain security as a whole, including all essential elements. Barriers definitions derive from long-lasting researches and analysis of currently used security programmes. The focus of the research is placed on barriers definition, proper comprehension and finding relations between them and relevant categories of the general model. Beside the establishment of the different barrier sets for each element of the general model emphases are also placed on finding a way for making barriers more resistant. In that matter, they should not be taken as a rigid and fixed elements but a subject of the constant improvement.

Keywords: supply chain security, general model, barrier, security programmes, security index

1 INTRODUCTION

Experiencing different security or safety issues always represented, and still does, the unwanted challenge for the subjects operating in the different industry branches. Almost all actively operating subjects face some kind of security related issues. Majority of the industries, dealing with higher operational risk level on the daily bases developed their own methods or measures securing proper system functioning. Naturally, these differ according to the industry branches' requirements or attributes. Risk categorisation is recognised as an important topic in many studies, where e.g. Kleindorfer and Saad (2005) divide risks into two major categories, the risks arising from the problems of coordinating supply and demand, and risks arising from disruptions to normal activities.

Various natures or characteristics of the security hazards are in the most cases a good leading guides for the development of appropriate reaction approach enabling adequate response to the situation. Taking into account all aspects referring to security, it is quite easily comprehendible that there is not a universal way on how different issues should be treated. Following the same logic, the way how system behaves or reacts (or should react) in case of experienced issues should also be taken individually.

Individual approach to different kinds of challenges and security related issues is a logical approach ensuring that all important or relevant aspect having impact on the system will or at least should be covered. Each subject has its own specifics that could be closely determined by the performed operations. Besides the internal factors, external ones should also be taken into consideration (Trkman & McCormack, 2009). They primarily refer to the relations between the system and adjacent environment, external subjects, etc.

Finding a convenient and effective way in the risk recognition, treatment and mitigation process always represented a crucial element or basis for good security management. Researches conducted in the supply chain security field brought the new view on the system

and its functioning. Obviously, it is not an absolutely "new" approach but switch to a systematic and common way of system description and understanding.

Due to the fact that supply chains consist of various stakeholders and processes, they represent a good environment for potential risk realisation, resulting in unexpected damages and costs (Hendricks & Singhal, 2005). Different studies were conducted trying to bring better understanding of the possible impacts on stakeholders in case of supply chain disruption (Kleindorfer & Saad, 2005; Hendricks & Singhal, 2003; Blackhurst, Craighead, Elkins & Handfield, 2005).

Therefore, it is of a great concern for supply chain security to be treated adequately. Potential benefits that could be brought to the systems such as supply chains are in some cases fundamental for the integral elements functioning and effectiveness (Souter, 2000). Different approaches to the supply chain security issues are currently in place. In most cases they are represented through results of the long-lasting analysis or researches.

Constant developments and changes that are taking place in local and global economy put all kinds of the new requirements on the systems' stakeholders or involved elements. Supply chains as a dynamic systems must be therefore the subjects of constant changes as well.

From the security point of view, supply chains could be referred to as "interesting" systems primarily due to their complexity and elements involved. Few researches recognised supply chain complexity as an important factor, or as it is stated in the research of Speier, Whipple, Closs and Voss (2011), a one of the four key factors that may impact a firm's security efforts. Experiences gained through the years, show that supply chains could be really sensitive to unexpected or abnormal activities to which are exposed (Oke & Gopalakrishnan, 2009). In some cases such operational turbulences could be critical and could lead to complete operation stoppage.

Research in the field conducted by the authors has for a primer goal finding an approach that would help in better determination and definition of the critical spots and corrective measures application, or more precisely finding the critical elements allowing prevention of the unwanted events occurrences (Urciuoli, 2010). In further chapters reached results in barrier-based concept will be described.

2 CURRENT STATE OF SECURITY WITHIN SUPPLY CHAINS

Supply chains as such are considered one of the fundamental links in the production and other following processes. Their purpose and necessity of their existence led most of the companies, production facilities, distributors, sellers, etc. to base their operation on them. The constant need for reaching a higher level of customers' satisfaction pushes the whole system forward.

Year by year, meeting the markets expectations and needs is getting more demanding. Emphases in modern economy are, as it is commonly known, placed on financial aspects. Continuous race of finding a profitable and self-sustainable business model implies engagement of all involved stakeholders on the required level. Therefore, from the supply and distribution point of view, a fluent and flawless functioning of the supply chains is a number one priority. The collaboration between involved stakeholders according to the researches' results are considered to be essential and beneficial during inconvenient times (Liu & Wang, 2011).

Situation in this sector over last decades was not always bright and convenient. Facing different obstacles, threats, hazards or general issues was part of the everyday operations. Sometimes, passing through these phases was professional challenge for management,

requiring prompt and adequate reaction. The first decade of the 21 century was marked as time where higher attention was paid on the issue concerning risk increase (Minahan, 2005).

Considering the state level, some efforts in reaching a required level of security were made. As the evidence for that the specialised security programmes develop for different purposes and applications could be taken into account. Typical example are programmes C-TPAT primarily oriented on the issues related to terrorism (U.S. Customs and Border Protection, 2014), or programmes AEO (Taxation and customs union, 2015), TAPA (TAPA, 2014), etc. These, among many others, represent a tools helping in standardisation of the approach to the respective security related issues. Each programme is focusing on specific area while simultaneously share some common elements with other programmes.

The programmes put various requirements related to security, focusing on the respective subjects, objects, procedures, etc. Taking into account that risks as such could have different nature changing during the time, revision of the currently applied security plans should be performed in defined intervals (Thomas, 2010). Established as a step forward in dealing with supply chain security issues, programmes on other side could be considered as not sufficient for supply chains needs if taken individually. The reason for that lays in a fact that each programme has some unique aspects, which are not shared or differently interpreted in other available programmes. This fact most probably inspired researchers in finding a new standardised way in which security with all its aspects within supply chain systems could be understood and managed.

3 UTILIZATION OF THE ADEQUATE MODEL IN THE CONCEPT CONSTRUCTION PHASE

As mentioned before, researches in this area helped in better understanding of the supply chain security concept. Many efforts made in this area brought useful results, convenient for further application and development. A good example here is Supply Chain Security general model developed by Gutiérrez and Hintsa (2006). The model is well known for its systematic view on all aspects related to supply chain security.

The establishment of the general model is a result of comparison and finding the shared aspects of the previously mentioned security programmes. The model brought structured view on the supply chain security based on the gained knowledge. Imagined to bring understandable and common view on the issue the model consists of six different aspects of the system (Hintsa, Gutierrez, Wieser & Hameri, 2009). The basic structure is represented in following Fig. 1.

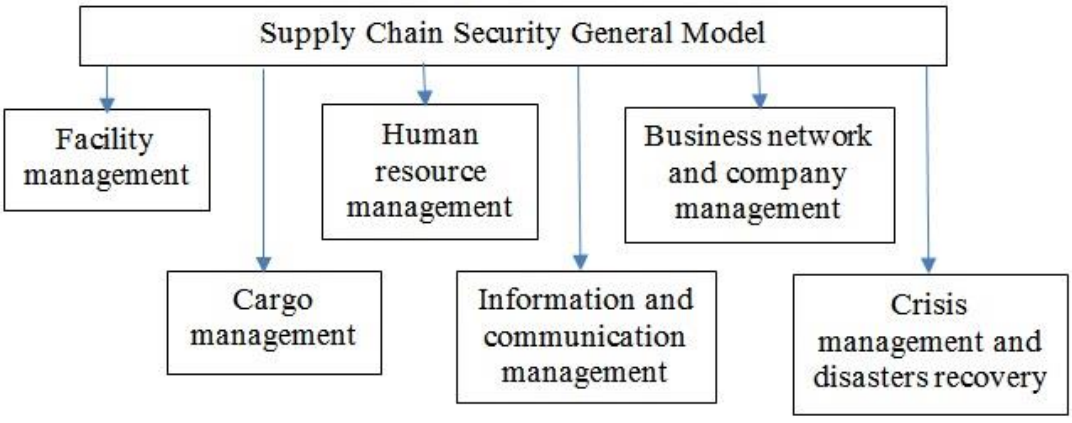

Fig. 1- Supply Chain Security General Model (first two layers). Source: Authors, 2014

Closer look at the core of the model revels which segments are recognised as directly influencing supply chain security. For instance, by focusing on the service provider's facilities and their management it is clear that emphases are placed on the physical security (Knight, 2003) of the premises, facilities layouts and management of the handled items.

Following the same logic, other elements as well focus on the critical spots. Besides the physical elements of supply chain system, attention is paid on nonphysical ones as well. Here are primarily meant managements of human resources, information and communication, business network, etc.

After analysing the current security programmes and processes within supply chains it can be claimed that stated elements more than sufficiently cover all components having impact on security.

Naturally, the model is not limited on these basic components only. Each of these has its own set of furtherly described elements grouped in the third layer, determining the elements from the previous layer in more detail. They represent more specific areas, items or processes giving the user a better overview and helping him to easily recognise potential spots for risks occurrence and their probable realisation.

The third layer elements are the ones on which the suggested barriers are based. More precisely said, for each of the element from this group, concept implies definition of the carefully chosen and adjusted barriers.

To briefly illustrate the structure of the third layer we could take a closer look at the model's Cargo Management element. The set of referring elements is shown in the following Fig. 2.

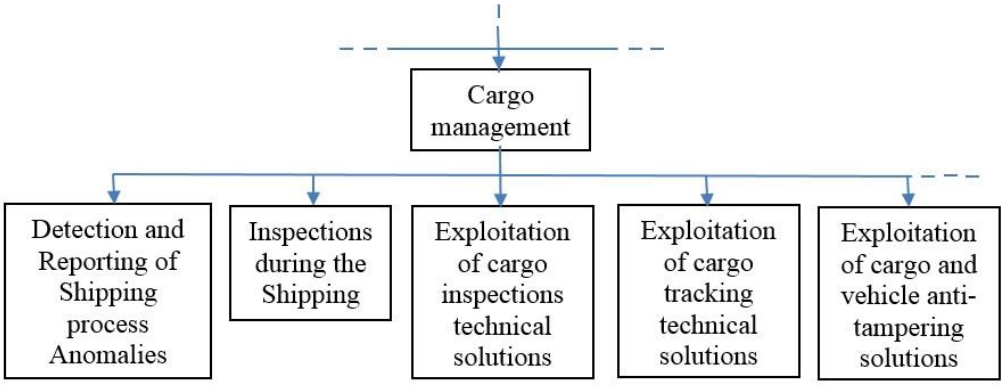

Fig. 2. Cargo management (second and third layer of the general model). Source: Authors, 2014

The main reasons for general model to be chosen as research object for further development are its characteristics and flexibility in eventual expansion. Properly analysed and ordered, segments contained in the model were recognised as a sufficient base, not requiring serious intervention for the following research use.

On the other side, the model user is not to be limited by model's structure. The coverage of the whole sector together with the logical possibility for further expansion made the general model a perfect solution for research needs.

4 BARRIER-BASED CONCEPT

Generally speaking, the concept's main idea was to enlarge current model by adding another layer, containing defined elements (for this purpose) called barriers. The motive for calling them barriers came from their assigned role in the concept. As the name suggests, these are

set to be the objects, places or procedures enabling on-time risk prevention. Designed to stop potential risk from realisation, a set of barriers could be comprehended as protection membrane whose disruption would most probably lead to system malfunction or obstruction.

The process of barrier setting requires sufficient experiences in the field as well as knowledge of currently applied security programmes. Setting barriers implies finding and definition of the specific objects, subjects, procedures or equipment related to individual subcategory from the general model.

Taking a look on the example of the cargo management, used as an illustration before, defined barriers for the subcategory elements could be as following:

- Detecting and rep. of shipment process anomalies – load inspections, warehouse management procedures, schedules and routes management,…
- Inspection during the shipping – reception (expedition) procedures, transport units integrity, proper training,…
- Exploitation of cargo inspection technical solutions – Load scanning, radiation detection, expertise inspection,…
- Exploitation of cargo tracking technical solutions – satellite tracking, vehicle monitoring system, escort of transport,…

The next (fifth) layer following the one containing defined barriers is the security measures one. These measures are actions or activities performed as a corrections after barrier disruption, or as a way how individual barriers to which are related could be actively straightened. These measures play an important role giving a support to the barriers and acting as a mechanism for system management in cases requiring appropriate corrective reactions.

The theoretical part of the presented model is a structure of particular blocks divided into functional categories and logically connected. Model as such brings an overview of the system as a whole, but does not provide a sufficient material for potential performance evaluation or similar analysis. Therefore, implementation of the mathematical description of the individual elements values and relations is a clear step in advanced utilization of the model.

5 ROBUSTNESS OF THE MODEL'S ELEMENTS

The following Fig. 3 shows a possibility for mathematical evaluation of the models element and their internal relations. By evaluation, it is primarily meant a finding a way on how the robustness of the defined elements could be represented.

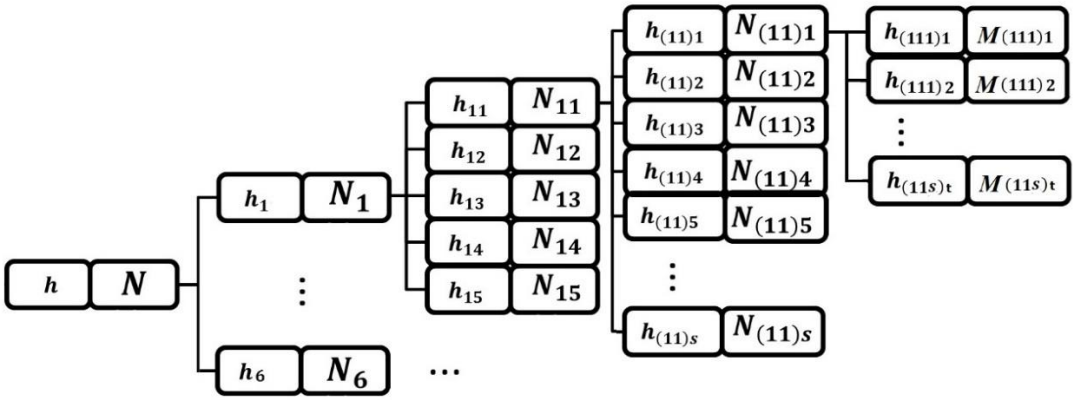

Fig. 3 – General model – (robustness labelling). Source: Authors, 2014

As it is shown in the Fig.3, each element has its own and unique identifier (h). Used indexes closely describe in which category and in which place in the order are particular elements placed. The fourth elements layer represents defined barriers.

The diagram shown in the Fig. 3. introduces a fifth (and the last) layer containing measures related to the individual barriers. Similarly to the other elements shown, measures are defined mathematically as well.

The weights of the individual measures from the fifth layer are labelled with letter M and belonging indexes ($M_{(111)1}$,$M_{(111)2}$,…$M_{(111)t}$, $M_{(112)t}$, …$M_{(111)2}$). As stated in the equitation (1), robustness of the particular barrier ($N_{(ij)s}$) is a Cartesian product of the measures weights (2).

$$
\begin{aligned}
&N_{(11)1} = M_{(111)1}, M_{(111)2}, \ldots, M_{(111)t} \\
&\ldots \\
&N_{(11)s} = M_{(11s)1}, M_{(11s)2}, \ldots, M_{(11s)t} \\
&N_{(12)1} = M_{(121)1}, M_{(121)2}, \ldots, M_{(121)t} \\
&\ldots \\
&N_{(12)s} = M_{(12s)1}, M_{(12s)2}, \ldots, M_{(12s)t} \\
&\ldots \\
&N_{(15)s} = M_{(15s)1}, M_{(15s)2}, \ldots, M_{(15s)t} \\
&\ldots \\
&N_{(65)s} = M_{(65s)1}, M_{(65s)2}, \ldots, M_{(65s)t}
\end{aligned}
\qquad (1)
$$

$$
\overline{N}_{(ij)s} \subseteq \left\{ \times N_{(ijs)t} \right\}_{t=1}^{k} \qquad (2)
$$

The next step is an evaluation of the third level elements robustness. The following equitation (3)(4) show how individual barriers' robustness influence robustness of the element that they are referring to.

$$
\begin{aligned}
&N_{11} = N_{(11)1}, N_{(11)2}, ..., N_{(11)s} \\
&N_{1j} = N_{(1j)1}, N_{(1j)2}, ..., N_{(1j)s} \\
&\dots \\
&N_{21} = N_{(21)1}, N_{(21)2}, ..., N_{(21)s} \\
&N_{2j} = N_{(2j)1}, N_{(2j)2}, ..., N_{(2j)s} \\
&\dots \\
&N_{61} = N_{(61)1}, N_{(62)2}, ..., N_{(61)s} \\
&N_{6j} = N_{(6j)1}, N_{(6j)2}, ..., N_{(6j)s}
\end{aligned} \quad (3)
$$

$$
\overline{N}_{ij} \subseteq \left\{ \times N_{(ij)s} \right\}_{s=1}^{k} \quad (4)
$$

The same principle applies on robustness evaluation at all layers. After calculations performed in the equitation (3) and (4) we are getting to the level representing a core of the model. Evaluation of the basic elements robustness is shown in the following equitation (5) and (6).

$$
\begin{aligned}
&N_1 = N_{11}, N_{12}, ..., N_{1j} \\
&N_2 = N_{21}, N_{22}, ..., N_{2j} \\
&... \\
&N_6 = N_{61}, N_{62}, ..., N_{6j}
\end{aligned} \quad (5)
$$

$$
\overline{N}_i \subseteq \left\{ \times N_{ij} \right\}_{j=1}^{m} \quad (6)
$$

Following the shown steps, we are now approaching the final phase implying the whole model security evaluation. For better comprehension of the terminology used for labelling result of the product calculation, a new term, security performance index was introduced. This value is labelled with the letter (R) – equitation (7)

$$
R = \prod_{i=1}^{6} N_i \quad (7)
$$

Security index is supposed to be final indicator providing mathematical evaluation of the whole system security performance. Applied index evaluation method represents an application of the methodology designed by Lánský (2011). It is known as Objectivised Methodology for technical systems conditions assessment.

6 CONCLUSION

Efforts made in direction securing the processes and objects within supply chains are logically welcomed by relevant stakeholders. The reason for that lays in effects that such action could bring, not only technical or organisational benefits but financial as well. Therefore, finding a convenient way on how such required level of performance or security could be reached represents a desirable activity leading to the needs' fulfilment.

Concept described in this paper implies a utilization of purposely defined barriers enabling an effective management of the relevant system parts. Barriers based on the Supply Chain Security general model developed by Gutiérrez and Hintsa (2006) are the results of the different security programmes analysis and experiences gained in the field. Each element of the Supply Chain general model has designated set of barriers defined according to the requirements of the particular element.

Support to the barriers is provided by security measures represented in the last layer of the model. Measures could be understood as a mechanism enabling effective management of the supply chain security thanks to the possibility of targeted action and focus on problematic areas.

Concept provides mathematical methodology for security performance evaluation. Objectivised Methodology for technical systems conditions assessment designed by Lansky provided mathematical foundation for security index evaluation. The index evaluation defines the relations between individual robustness of the model elements and shows how they are mutually influenced.

Reaching a higher level of supply chain security is a clear necessity especially in today's economic and political environment. Future researches will be focused more on methods enabling possibility for model robustness determination and its further applications.

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ECONOMIC COSTS OF COAL EMISSIONS FROM RENEWABLE ENERGY GENERATION

Šimon Buryan

Abstract

This article analysis the emissions of coal firing power plans during standby periods and their economic impact on Czech Republic. Since 2011 there was a significant growth of solar and wind power generating stations in Czech Republic. A key feature of these renewable energy power plants is a high volatility of their production due to their dependence on the weather situation. According to the Czech law these renewable energy power have the right for preferential connection to the grid. This means that coal firing power plants have to be disconnected from the grid in order to protect the grid from overload. During this time, when coal plants are put into this standby regime, they are still firing 45 % of regular coal fuel weight. Coal power plant cauldrons plants are not switched off, because it would take about two full working shifts to put the switched off cauldrons back into operation. This article estimates the economic impact of standby coal emissions, when renewable energy power plants are producing electricity. Per one such standby event, externalities costs of emissions, according to the modelled case, reach on average from 31,41 to 70,76 million CZK depending on the facility technology.

Keywords: electricity generation, renewable energy, emissions of CO_2 and SO_2

1 INTRODUCTION

Promotion of renewable sources of energy (RES) has been a concern of the European Union (EU) as well as of the EU member states. Member states started support RES through various instruments and measures ever since 1970s. At the level of the EU–policy agenda RES stated to be supported since late 1990s because of concerns of the environmental impact of conventional sources of energy. (Birchfield, 2011, s. 113-114)

Regarding key targets for energy policy in the EU, there were set three goals by the European Commission for the year 2020. These are known as "20-20-20 targets" and they include the following: (European Commission 2014)

- Target 1: a 20% reduction in EU greenhouse gas emissions from 1990 levels;
- Target 2: a rise of the share of EU energy consumption produced from renewable resources to 20%;
- Target 3: a 20% improvement in the EU's energy efficiency.

In order to reach these goals EU is promoting RES. For the Czech Republic (CR), the European Commission has set a minimum 13% share of energy from renewable sources in gross final energy consumption by 2020. (Ministry of Industry and Trade of the CR, 2012, s. 2)

2 RENEWABLE SOURCES OF ENERGY

There are various types of renewable energy generating power plants. This article focuses on solar power station, as this type of energy source has the highest average production volume of the RES group. According to table 1, average daily energy production of photovoltaic

plants was higher than produced more energy than alternative power plants, hydroenergetic power plants, pumped-storage hydroenergetic power plant and wind power plants. Another notable feature of photovoltaic power plant s their volatility, which goes hand in hand with it`s dependanci on the weather situation.

Other types of alternative energy power plants like water and biomass power plants are more benign in the sense, that they daily power production is not fluctuating that much as in the case of solar and wind power plants.

Tab. 1 - Daily production of electricity from 1.3.2014 to 4.3.2015. Source data: CEPS 2015.

Powerplant type	Average	Median	Minimum	Maximum	Variation coeficient
Coal p.p. [MW]	435 663	441 471	161 285	659 659	25,20%
Nuclear p.p. [MW]	336 125	346 034	185 103	414 456	15,30%
Industry production facility p.p. [MW]	46 997	70 982	0	94 787	54,20%
Gas turbine p.p. [MW]	27 798	24 417	12 695	80 078	44,30%
Photovoltaic p.p. [MW]	22 450	21 510	751	52 880	69,10%
Alternative p.p. [MW]	17 662	18 158	7 293	22 736	22,20%
Hydroenergetic p.p. [MW]	14 282	12 207	3 889	36 288	51,60%
Pumped-storage p.p. [MW]	11 870	13 327	10	19 419	37,10%
Wind p.p. [MW]	5 173	3 670	505	21 620	118,20%

Note: P.P …power plant

4.11 Conditions for photovoltaic energy production in Czech Republic

Currently the majority of installed photovoltaic cells are made from crystalline silicon of the monocrystalic form. Their efficiency ranges from 14 to 17 %. The performance of these cells depends on the intensity of sunlight, that`s why their performance has the form of peak perfomance, when the sunlight of 1000 W/m2 intensity hits the photovoltaic cell. A photovoltaic cell of 17 % efficiency and 1 m2 surface has a peak wattage (performance) of 170 W. (Buryan P. et al., 2015, s. 1)

On average in CR annually, there are from 1350 to 1850 hours of sunlight. The measured yearly sum of global irradiation for CR spreads from about 750 to 1200 kWh/m2. In the

Figure 1 we can see, that the region with the most hours of sunlight in CR is South Moravia. (Photovoltaic Geographical Information System 2012)

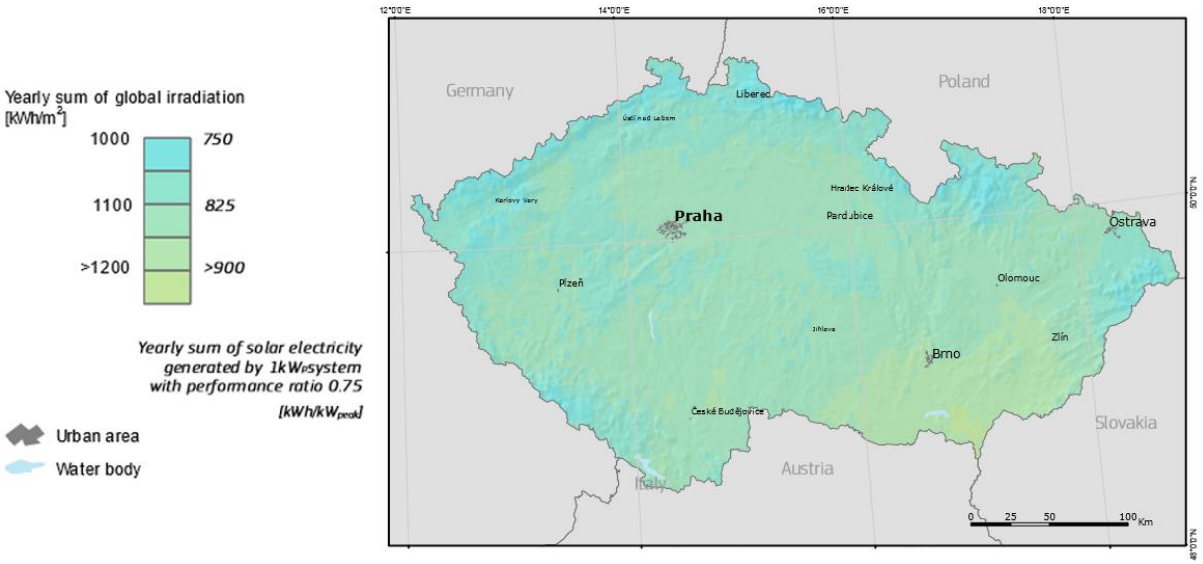

Fig. 1 – Global irradiation and solar electricity potential for horizontally mounted photovoltaic modules in Czech Republic [hours/year].
Source: Photovoltaic Geographical Information System 2012

4.12 Growing Solar Power Generating Production in Czech Republic

Since 2010 CR experienced a sharp increase of power generation from solar power plants. This increased happen due to established subsidies for photovoltaic power plants, that guaranteed feed-in-tariffs and preferential right to connect to the power grid. These regulations were introduced by the Czech government in Law of CR number 458/2000 on business conditions and public administration in the energy sector and amending certain laws, and Law number 180/2005 on the promotion of electricity from renewable energy sources. These laws were adjusted and introduced in reaction to the EU directive number 2001/77/ES of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market. (Law of CR number 458/2000, Law number 180/2005, Directive 2001/77/EC)

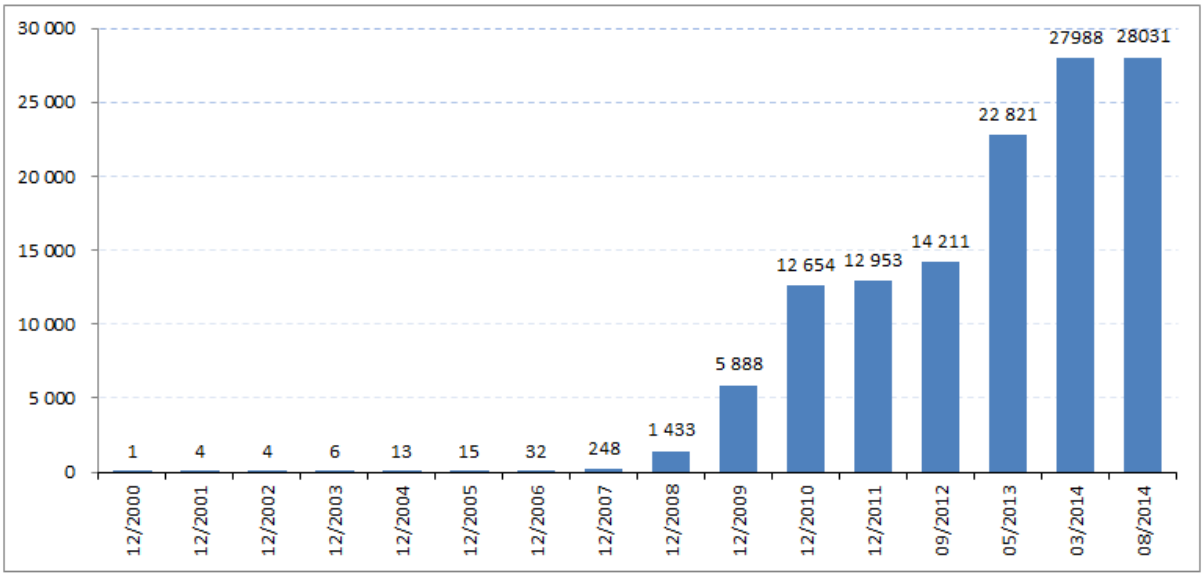

Fig. 2 – Number of photovoltaic power plants in Czech Republic.
Source: Energy Regulatory Office of Czech Republic 2015

The figure 2 shows, that number of photovoltaic power plants increased from 248 in December 2007 to 28 031 in August 2014. There was a significant increase from September 2009 to May 2015, when the number of new photovoltaic power plants increased by 8 610. Newly constructed photovoltaic power plants increased the overall installed wattage of photovoltaic power plants, as can be seen in figure 3. During the year 2010 the total installed wattage increased by 389 %. (Energy Regulatory Office of Czech Republic 2015)

4.13 Fluctuations in the grid

This sharp increase of the total wattage of photovoltaics has dramatically effected the energetic production of the Czech market. As photovoltaics have a preferential connection to the grid, other types of power plants, are disconnected from it. Very often that`s the case of coal power plants. But these power plants can`t switch off their cauldrons, because it would take about two working shifts to put them back into operation. Quite often the energy production of coal power plants have to be full restored within 6 hours, so cauldrons are put into standby mode. During that time they are not producing energy, but the facility operator keeps on burning coal in order to keep the cauldrons in optimal temperature. Only in this manner energy production can be restored within 8 hours or less after the forced disconnection from the grid. (Buryan P. et al., 2015, s. 5)

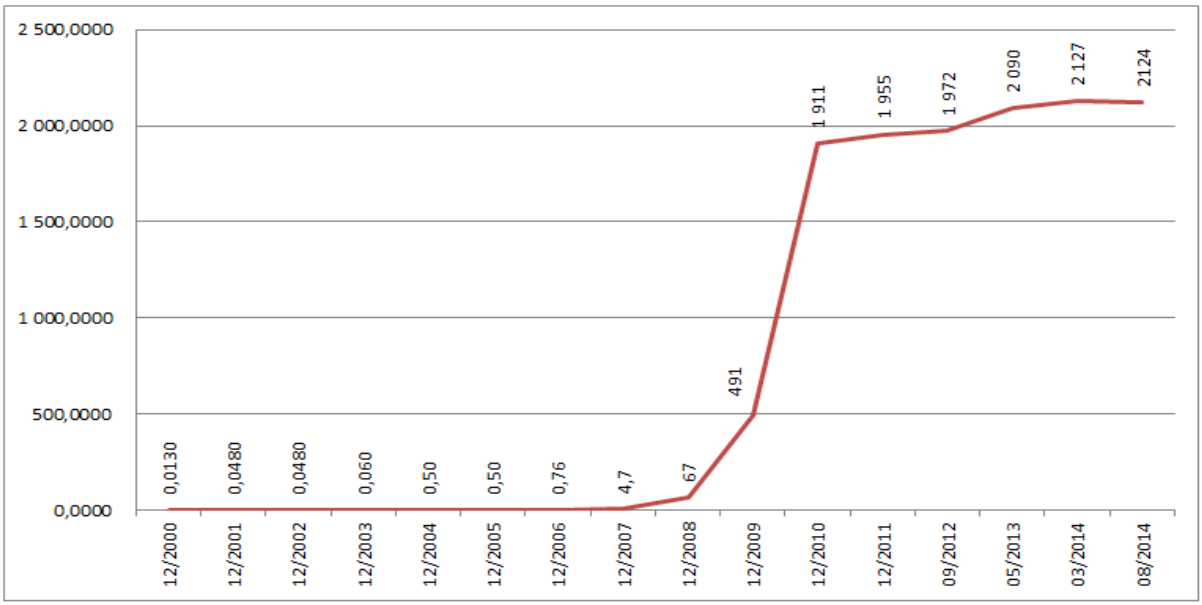

Fig. 3 – Total installed wattage of photovoltaic power plants in Czech Republic. Source: Energy Regulatory Office of Czech Republic 2015

The operation shifts between photovoltaics and conventional energy power plants can be seen in figure 4, which shows energy production on the 20th April 2014 which highlights actual production volumes in sums of MW per 15 minutes time frames. (CEPS 2015) The photovoltaic power plants started to produce energy after 6:15 am. The photovoltaics power production peaked at 11:45 to 1296,7 MW. This meant that conventional power stations decreased their production from 7790,4 MW in 10:00 am to 7033,8 MW in 11:45 pm. From 11:45 am to 16:00 pm the production of conventional power plants remained the same and after 16:00 pm their production increased up to 8531,5 MW in 21:00 pm. In the meantime energy production of photovoltaics decreased from 1296,7 MW in 11:45 am to 0 MW in 20:15 pm.

There might be claims that other types of conventional power plants than coal firing ones could be switched off or put to standby mode. But the energy power plant type with the lowest negative valued of Pearson correlation coefficient is coal power plant category. Table 2 on the next page shows that the negative relation between coal power production and solar power production was -0,68 and that day about 32 % of all the energy was produced from coal firing plants.

Tab. 2 –Production of electricity variability on the 20th April 2014. Source data: CEPS 2015.

	Coal p. p.	Gas turbine p. p.	Nuclear p. p.	Hydro-energetic p. p.	Alternative p. p.	Wind p. p.
Pearson corelation coefficient [value]	-0,68	-0,63	-0,44	-0,44	-0,53	0,06
Share of total production [%]	32,0	2,6	43,5	1,1	1,8	0,4

Note: p. p …power plant

On the 20th of April most of the energy (44 %) was produced in nuclear power plants, but their negative relation between their production and photovoltaic production was much

lower. Photovoltaics had a significant impact on the fluctuation in the grid and their share on the total daily production was only 7,84 %.

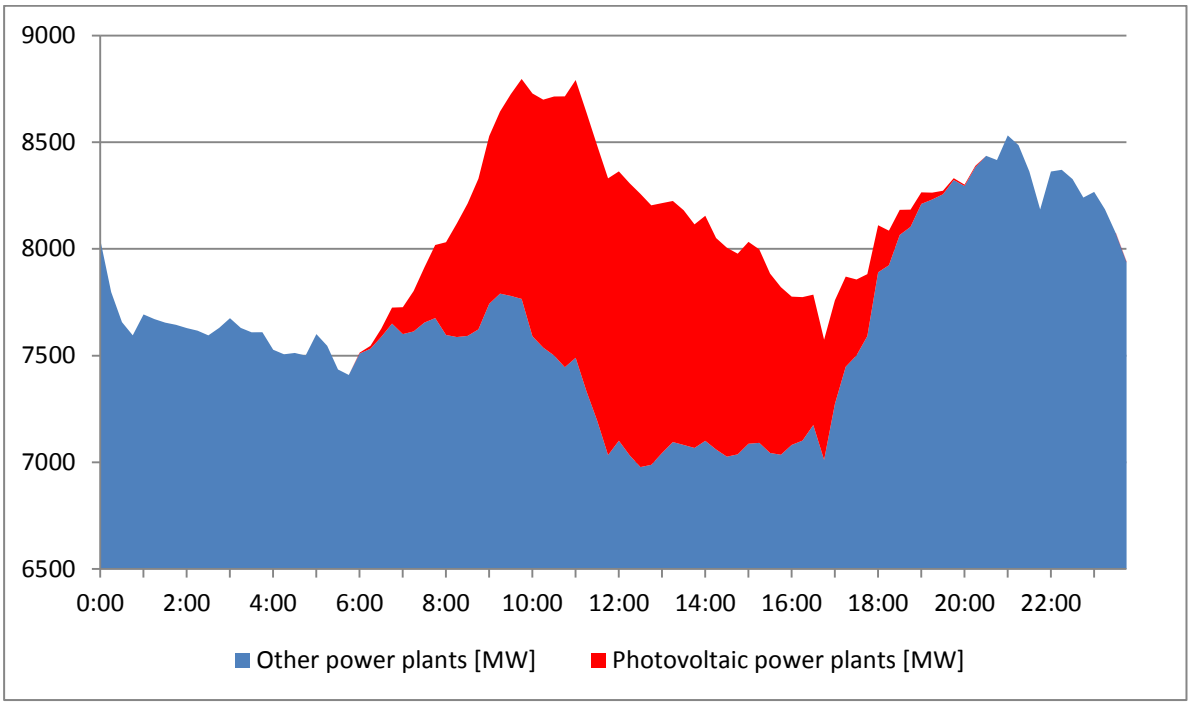

Fig. 4 – Energy production on 20th April 2014. Source: CEPS 2015

The main idea, why photovoltaics are being supported, is that photovoltaics should not generate any emissions compared to conventional energy power source like coal, which emits emissions during burning like carbon dioxide (CO_2), sulphur dioxide (SO_2), and nitrogen oxides (NO_X). But when photovoltaics are connected into the grid, because the sun rose up, coal power stations are but into standby mode and generate emissions. (Buryan P. et al., 2015, s. 6)

Volatility of this volume in the production is happening on a daily basis. Figure 5 shows the week production 11th August 2014 to 17th August 2014. High volatility of RES create difficulties for grid operators to manage the grid and avoid potential blackouts. (Buryan P. et al., 2015, s. 6)

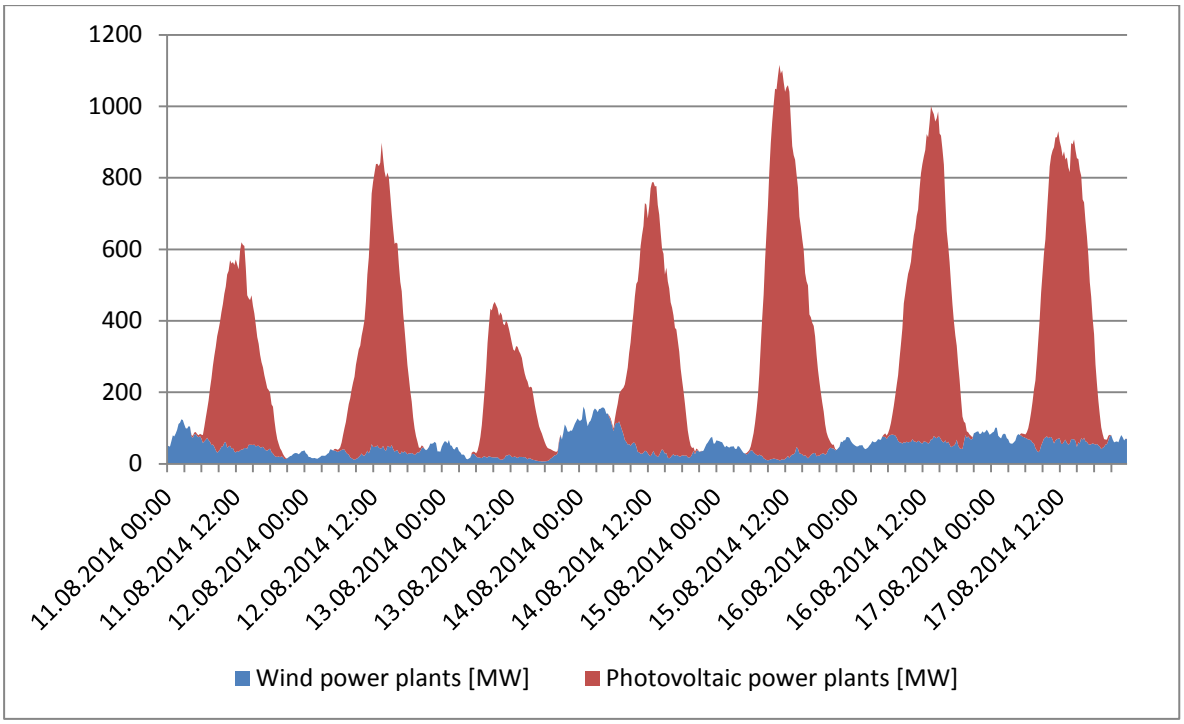

Fig. 5 – Energy production of photovoltaic and wind power plants from 11.8.2014 0:00 to 17.8.2014 23:59. Source: CEPS 2015

The daily variability of photovoltaic power plants due to its natural dependence on sunlight is high in all of the days of the studied time frame 1.3.2014 - 4.3.2015. The table 3 shows the composition of daily variation coefficients. The range of daily variability of photovoltaic power plants ranges from the daily value of variation coefficients of 94,64 % at minimum to 201,17% at maximum.

According to the statistical theory, values of variation coefficient of data series higher than 50 % (or 0,5 expressed in real numbers) means, that the data series is highly volatile. (Hindls et al., 2007, s. 42)

Tab. 3 – Composition of variation coefficients of daily production for each production type (1.3.2014 - 4.3.2015) Source data: CEPS 2015.

Characteristic	Minimum	Quantile 25	Median	Quantile 75	Maximum
Pumped-storage p. p. [%]	77,84	114,14	133,99	156,30	1058,04
Photovoltaic p. p. [%]	94,64	114,70	132,20	159,39	201,17
Hydroenergetic p. p. [%]	2,22	56,91	67,66	78,71	135,67
Wind p. p. [%]	2,03	25,80	38,86	54,62	138,81
Gas turbine p. p. [%]	1,67	4,46	6,19	8,52	83,04
Alternative p. p. [%]	2,88	4,81	5,87	6,79	23,30
Coal p. p. [%]	1,26	4,12	5,25	6,77	18,71
Industry production facility p. p. [%]	0,62	1,37	1,74	2,15	84,70

Nuclear p. p. [%]	0,04	0,11	0,24	0,50	19,50

Note: p. p …power plant

3 STANDBY MODE OF COAL POWER STATION AND THEIR EMISSIONS ECTERNALITIES COSTS

Standby mode during energy production of coal power plants is the mode of operation, when the power plants is not connected to the grid and it is not producing energy, but it is burning coal in the volumes of 45 % of their regular hourly consumption. The main idea of standby mode of coal power plants is the ability to keep the coal consumption low, when the power plan is disconnected from the grid, but is able to bring the energy production back to full operation within an hour or longer. If the facility operator decided switch the production off, it would take about two shifts to bring the power plant back into full operation. (Buryan P. et al., 2015, s. 7)

4.14 Cauldron without common vapour collector

Let`s discuss a power plant block firing brown coal with the power of 200 MW_e during a standby mode. During this period, which can last for 6 hours, coal plant fires about 45 % of regular load of brown coal. In standby mode the specific cauldron will fire 73 tons of brown coal every hour. In the 6 hour time frame it will fire 438 tons of brown coal. The composition of the fuel can be seen in table 4. The brown coal contains also water (21,3 % of coal weight) and coal ash (13,7 % of coal weight).

Tab. 4 – Brown coal composition. Source: Buryan et al., 2015, s. 7.

Element	Carbon*	Hydrogen*	Nitrogen*	Combustible sulphur*	Ash*
Content [% of weight]	50,5	5,1	0,9	0,8	13,7

Note: * … original content in fuel

In the standby mode of the coal power plants, because of the character of the operation, the facility operators are switching of emissions cleaning devices: denitrification and desulphurisation units. When coal power plants is producing energy and is connected to the grid, these cleaning would be in operation. But since coal power plant block is in standby mode, due to photovoltaic preferential grid connection, CO_2, SO_2 and NO_X emissions are being emitted. Currently this is the regular "modus operandi" in Czech energetics industry. (Buryan P. et al., 2015, s. 7)

According to estimates the 200 MW_e power plant block will produce 409 tons of CO_2. Provided that at a given daytime 6 hour time period, photovoltaics are using half of their installed power (1 063 MW_e), 2 174 tons of CO_2 are being produced during standby period. (Buryan P. et al., 2015, s. 7)

According to estimates in the standby mode the brow coal power plant block of 200 MW_e power will produce within 6 hours 7,01 tons of SO_2. Provided that at a given 6 hour time period, photovoltaics are using half of their installed power (1 063 MW_e) about 148,8 tons of SO_2 will be emitted. (Buryan P. et al., 2015, s. 7)

The volume of NO_x emissions is harder to estimated, because it is highly variable according to different cauldron type, firing procedure or fuel type. Also Nitrogen is present in the air in the form of N_2 gas. So there is a chance, more NO_x would be created from atmospheric N_2 in cauldrons during combustion. But since in the brown coal combustible sulphur

and nitrogen weight share were almost the same, lets estimate that the NO_x emission weight is equal to SO_2 emissions weight and fits an arbitrary interval +/– 33 %.

By using this estimate, we can suppose NO_x emission of 200 MWe during 6 hour standby mode is from 4,67 tons to 9,35 tons with median value of 7,01 tons. Provided that at a given 6 hour time period, photovoltaics are using half of their installed power (1 063 MWe) about 148,8 tons of NO_x (the used interval is 99,2 – 198,4 tons) will be emitted.

Not only CO_2, SO_2 and NO_X emissions are producing during standby mode of coal power plant blocks. Volatile organic compound and atmospheric particulate matter emissions are being produced as well.

4.15 Cauldron with common vapour collector

In case that neighbouring cauldrons in the same coal power plant have a common steam gatherer and one of these cauldrons is set into standby mode, which enables through a share of produced steam from other cauldrons to be heated. In this manner other cauldrons help to keep the standby cauldron in standby temperature. Fuel consumption of this standby cauldrons decreases to 20 % of its regular load. At this mode emissions from te cauldron will be 2,25-times lower. So during this 6 hour form of standby mode in regular 200 MW_e block 195 ton of brown coal will be burned. From this coal volume 181,8 tons of CO_2; 3,1 tons of SO_2 (Buryan et al., 2015, s. 7) and 3,1 tons of NO_x (with estimate interval 2,07 – 4,1 tons) will me emitted.

Provided that at a given 6 hour time frame, photovoltaics are using half of their installed power (1 063 MWe) about 966,3 tons of CO_2; 66,1 ton of SO_2 (Buryan P. et al., 2015, s. 7) and 66,1 tons of NO_x (the used interval will be 44,0 – 88,1 tons) will be emitted.

4.16 Estimates for relative costs of coal emissions

The analysis of costs of coal emissions is using the estimates of externalities attached to coal emissions in energetics. These relative estimates were calculated by the Environment Centre of Charles University in Prague using the ExternE methodology. By using this method, we can measure the change in concentration of substances from a particular source. This change is linked to impacts on human health, crops, materials or biodiversity through the dose-response function. These reactions are ultimately cash awards. The result is an externality expressed in Czech crowns (CZK) per unit of production (kWh). (Environment Center of Charles University 2014)

Using the above stated approach specific external costs for burning black coal were estimated at 1,22 CZK per kWh of energy produced. The value for brown coal was estimated to an interval 1,28 – 2,17 CZK/kWh. The highest unit external costs calculated per 1 ton of pollutant causes ammonia in the amount of 620 000 CZK. The value for SO_2 and NO_X is estimated to about 200 000 CZK/ton. (Environment Centre of Charles University 2014)

Tab. 5 – Costs of emissions externalities. Source: (Máca, 2011, s. 3)

Compound	NO_x	Particulate matter of size 2,5 μm	SO_2	Volatile organic compound	CO_2
Lower estimate [CZK/ton]	222 850	976 850	244 200	30 500	580
Higher estimate [CZK/ton]	610 500	2 777 900	702 100	91 600	580

Máca is estimating emissions in public transportation to very similar levels. When we look at his lower estimates for externalities costs from pollutants, we discover, that the externalities for NO_X reach value 222 850 CZK/t. For SO_2 the value is 244 200 CZK/t and for CO_2 it is 580 CZK/t. The table 5 shows estimates of emissions externalities per ton. The higher estimates characterize the costs in urban environment. The lower estimates characterize nonurban environment. (Máca, 2011, s. 3)

4.17 Fired coal and its during standby mode

This study is using also estimates of nominal externalities for brown coal energy production from the Environment Centre of Charles University. Their estimate indicate, that average brown coal externalities are between 1,28 and 2,17 CZK per kWh produced. (Environment Centre of Charles University 2014)

In order to calculate these estimates, it is necessary to estimate the energy of fired coal during standby mode. The following equation was used in order to estimate energy of burned coal: (Kabrhel et al., 2014, s. 1-2)

$$Q = mH\eta$$

The Q stands for the volume of energy in MJ, the m is weight in kg, the H is calorific value (for the calculations a value 11 MJ/kg for 200 MW_e according to Czech industry estimates was used) of brow coal and η (for the calculations a value 42 % for 200 MW_e according to Czech industry estimates was used) is the efficiency of the given power plant block. The relation between MJ of energy and kWh is as follows: (Kabrhel et al., 2014, s. 1-2)

$$1{,}0\ kWh\ =\ 3{,}6\ MJ$$

From these relations we can estimate the energy from the coal burned during standby mode. The results are in the table 6. As it was discussed in chapter 2.1 and 2.2 in case, that photovoltaics are operating with 50 % of their installed power, about 5,31 coal power plant blocks of 200 MW_e power are affected and put to standby mode. Depending on the installation of common vapour collector, 233 310 or 562 100 kWh would be produced from the burned coal.

Tab. 6 – Coal burned during standby mode. Data source: (Buryan P. et al., 2015, s. 7-8)

Common vapour collector	Coal burned in 1 block [ton]	Coal burned in 5,31 blocks [ton]	Energy from 1 block [kWh]	Energy from 5,31 blocks [kWh]
Not installed	438	2 325,78	562 100	2 984 220
Installed	195	1035,45	250 250	1 328 827

4.18 Estimation of externalities costs from coal power plant standby mode

In order to estimate externalities of brown coal firing power stations in standby mode the estimates of Environment Centre of Charles University were used. These externalities costs from energetic industry were estimated to in interval between 1,28 and 2,17 CZK/kWh, the medium rate was set to 1,725 CZK/kWh. (Environment Centre of Charles University 2014)

If we use these estimates we are able to calculate the externalities cost from power plants blocks that are forced to go into standby mode, when photovoltaics produce energy. The results can be seen in table 7. The results indicate that a common vapour collector lowers the externalities costs by 58,48 %. Standby mode of coal firing power plants in 6 hour time frame is producing emissions in the sum of 2 137 061 CZK or 5 147 780 CZK depending on

the presence of a common vapour collector. These are data for single such standby mode event.

Tab. 6 – Coal burned during 6 hour standby mode. Data source: (Buryan et al., 2015, s. 7-8)

Common vapour collector	Lower externalities estimate [CZK]	Median externalities estimate [CZK]	Higher externalities estimate [CZK]
Not installed	3 819 802	5 147 780	6 475 757
Installed	1 700 899	2 292 227	2 883 555

According to the studies sample of CEPS data from 1.3.2014 to 4.3.2015, there were about 120 cases of days, when the photovoltaic energy production reached above the benchmark 1 063 MW of energy production. (CEPS 2015)

The median annual externalities costs die to photovoltaics are about 256 or 617 million CZK depending on the presence of common vapour collector at the standby cauldrons. The lower externalities estimates are 190 or 458 million CZK, the higher estimates are 323 or 777 million CZK depending again on the presence of common vapour collector.

But these estimates can be used in energetics provided regular "modus operandi" is being followed. As it was stated in chapter 2.1, the coal power plant is switching off the denitrification and desulphurisation unit, so more SO_2 and NO_X emissions will be emitted then usually. Therefore we have to estimate the externalities costs according to volume of emission that are being emitted. The Table 7 summarizes the emissions from chapter 2.1 and 2.2.

Tab. 7 – Emissions in standby mode due to photovoltaics.
Data source: (Buryan et al., 2015, s. 7-8)

Common vapour collector	Total CO2 emissions atributed to photovoltaics [tons]	Total SO2 emissions atributed to photovoltaics [tons]	Total NOX emissions atributed to photovoltaics - low estimate [tons]	Total NOX emissions atributed to photovoltaics - medium estimate [tons]	Total NOX emissions atributed to photovoltaics - high estimate [tons]
Not installed	2 174,0	148,8	99,2	148,8	198,4
Installed	966,3	66,1	44,0	66,0	88,1

Estimates from Máca (2011, s. 3) are used in table 8 to estimate the externalities costs. Máca is using estimates for impact of emissions from transportation, but his lower estimates are close to the general estimates for energetics proposed by Environment Centre of Charles University (2014). Environment Centre of Charles University proposes that ton of SO_2 as well as a NO_X emissions has about the externalities attached to them to the sum of 200 000 CZK. (Environment Centre of Charles University 2014) Acording to Máca. a ton of NO_X causes 222 850 CZK worth of externalities and a ton of SO_2 causes 244 200 CZK worth of externalities. (Máca 2011, s. 3)

Tab. 8 – Externalities in standby mode due to photovoltaics.
Source: Authors calculations

Common vapour collector	Total CO2 externalities atributed to photovoltaics [CZK]	Total SO2 externalities atributed to photovoltaics [CZK]	Total NOX externalities atributed to photovoltaics - low estimate [CZK]	Total NOX externalities atributed to photovoltaics - medium estimate [CZK]	Total NOX externalities atributed to photovoltaics - high estimate [CZK]
Not installed	1 260 920	36 336 960	22 106 720	33 160 080	44 213 440
Installed	560 454	16 141 620	9 805 400	14 708 100	19 633 085

According to results in table 8, SO_2 emissions have the highest worth externalities out of all the exact known emissions. Exact estimates on the quantities of NOx have not been provided, but it is probable, the worth of NOX externalities could be even higher than value of SO_2. Never the less, if we again suppose that on average the medium estimate of daily externalities of emissions due to photovoltaics is 70 757 960 or 31 410 174 CZK depending on the installation of a common vapour collector.

Let suppose again that annually about 120 cases of coal power plant standby events, when photovoltaics are using half of their installed power (1 063 MWe) to produce electricity, occur. The worth of annual externalities of photovoltaics is 3,769 or 8,490 billion CZK depending on the installation of a common vapour.

4 CONCLUSION

This article studies the externalities costs from emissions from brown coal power plants, which are switched into standby mode, when volatile photovoltaics power plants are producing energy. Because the photovoltaics have preferential connection to the electricity grid, coal power plants have to be disconnected for about 6 hour time frames from the grid. At this stage the cauldrons can`t be switched of, because it would take the operators about 2 working shifts to restore the cauldron full operation. Due to this standby mode, cauldrons are burning coal and producing CO_2, SO_2, NO_X and other emissions. Per one such standby event, externality costs of emissions reach on average from 31,410 to 70,757 million CZK depending on the facility technology.

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FINANCE

THE CREDIBILITY OF CREDIT RATINGS

Emilia Klepczarek

Abstract

Credit rating agencies (CRAs) are found to strongly influence the market participants' decisions. Therefore it is essential to make their assessments credible and accurate. The financial crisis proved that this condition was not met relating to the US financial market. The paper focuses on the case of Lehman Brothers Holding which may be treated as a kind of 'natural experiment' – the collapse of this bank is an absolute evidence of its poor condition. Thus, verifying the credibility of ratings requires only reviewing the rating agencies' assessments in the pre-bankruptcy period. The author finds that, firstly, the grades didn't reflect the bad situation sufficiently and secondly, the CRAs responded with a great delay to the detoriating market circumstances.

Keywords: Credit ratings; Accuracy, Lehman Brothers, Risk assessment, Financial crisis, Corporate governance

1. INTRODUCTION

A great role that credit rating agencies (CRAs) played in the financial crisis is found to be incontestable. The reasons for miscalculation of the level of risk relating to the mortgage securities seem to be not so obvious however and are explained with a few theories. Firstly, there occurred a conflict of interest as the agencies' main customers were the large banks issuing the assessed instruments. Such an arrangement between credit rating firms and banks acting in the role of their prominent clients implied many abuses that took the form of underestimation of credibility of both the instruments and entities that issued them.

Another reason for the unreliable estimates was extremely complicated structure of synthetic collateralized debt obligations (CDOs), which were often rated on the basis of the invalidly calculated low volume of bad loans, resulting from the optimistic market moods. That could explain the significant increase in the number of instruments with the highest rating of AAA. Paradoxically, at the same time, there was a boom on the risky subprime sector, that in most cases was a basis of those AAA securities. It is worth noting that the AAA-rated CDOs in the United States are cataloged as the instruments admitted to trading by the pension funds, hence their buyers, apart from banks, investment funds and insurance companies were also the pension companies. Such a wide range of market players willing to buy the, in fact very risky, obligations inclined banks to their further issuance, and the rating agencies - to confer the highest ratings, guaranteeing a high level of demand among investors.

The aim of the paper is to analyse the integrity and credibility of the production and dissemination of the rating agencies' assesments regarding the Lehman Brothers Holding. Studying the case of this particular bank would be useful in terms of examining the ratings' solidarity as its bankruptcy evidences that the condition of the bank was unarguably bad. Therefore it is enough to check if ratings had reflected the danger and properly played the role of early warning system institutions.

2. RATING AGENCY AS THE IMPORTANT ELEMENT OF CORPORATE GOVERNANCE SYSTEM

2.1. The role of credit rating agencies in the financial markets

Credit rating agencies, as the professional capital market participants, should ensure information transparency and competitiveness of entities operating on it. Together with the auditors and another accounting regulators they act as the information intermediaries mitigating the asymetry information on the financial markets (see: Figure 1).

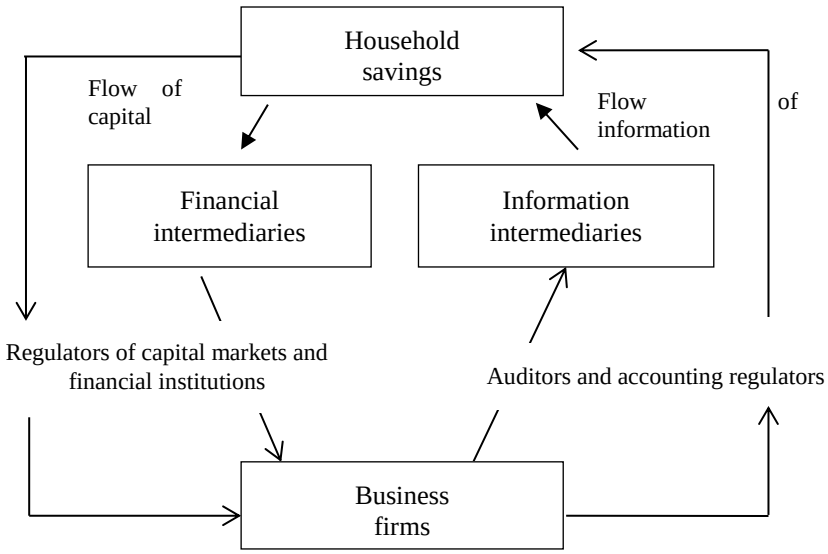


Fig. 1 – Financial and capital flow in the capital markets. Source: P. M. Healy, K. G. Palepu, 2001, *Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature*, Journal of Accounting and Economics 31, p.408

The analyses and assessments of the agencies should support the effective functioning of corporate governance by giving both the management and the investors a tool to make the right business decisions. OECD indicates explicitly that "the corporate governance framework should be complemented by an effective approach that addresses and promotes the provision of analysis or advice by analysts, brokers, rating agencies and others, that is relevant to decisions by investors, free from material conflicts of interest that might compromise the integrity of their analysis or advice" (OECD, 2004, p.23). The case of Lehman Brothers proves that the rating agencies have not lived up fully the tasks imposed on them. It is believed that they even made the situation worse by:

- wrongly estimating the risks associated with the structured instruments,

- negligent reaction to the deteriorating condition of the bank,

- paying attention only to the level of financial indicators neglecting the review of the methodology of their calculation and ignoring other relevant information included in the financial statements.

It should be noted that, although the regulatory changes introduced in the US after the Enron scandal led to an increase in the number of accredited rating agencies, the market is in fact

concentrated in the hands of the so-called “Big Three” - Moody's, Standard & Poor's and Fitch (Golec, 2012, p. 438). Their ratings were crucial for the external stakeholders and bank executives.

One could even argue that the bank's market position depends on the level of the ratings, although the rating is assumed only to reflect this position. It should be noted, however, that when the case of investment bank is concerned the decrease of rating results in a dramatic drop of demand for the company's shares and the increase in the cost of capital. That is why some contracts, especially those associated with derivative instruments, contain a direct record about the requirement of additional cash collateral in case of downgrading one of the parties.

2.2. The credibility of CRAs – literature review

The problem of credit ratings' accuracy has been often discussed after the 2007 Financial Crisis. The research focused mainly on the reasons of the poor quality of ratings. Bolton et al. (2012) paid attention to the three sources of conflict of interests in CRAs. These are: misunderstating risk to attract business, purchasing only the most favorable ratings by the issuers and the trusting nature of the investors.

Skreta and Veldkamp (2009) pointed out the phenomen of „shop for ratings“ meaning observing by the issuers the rating agencies‘ methodologies of giving the ratings and buing and disclosing only the most favorable ones, especially before auctioning the assets. White (2010) emphasizes that the agencies shifted their business model from "investor pays" to "issuer pays" mainly bacause of their interaction with regulatory authorities. Heski and Shapiro (2011) argue that the fluctuactions of CRAs accuracy are the result of the labour market for ratings analysts and their incentives to provide accurate ratings.

Carvalho et al. (2014) found that intensity of rating changes depends on the economic situation. The larger intensity occurs in bad times and moreover, these stronger rating changes are not associated with their higher accuracy. Cantor and Mann (2006) confirm that there is a kind of tradeoff between the rating accuracy and stability.

As it is shown above the literature suggests existing several theories regarding the CRAs motivation of providing the particular level of grades. Apart from those just cited there is also a 'coordination hypothesis', suggested by Boot et al. (2006) who convince that rating agencies coordinate the actions and beliefs of issuers and investors. Holden et al. (2014) and Manso (2013) agree with it pointing out that the threat of rating decrease may influence the issuer’s decision as it changes the likelihood of future funding. Nonetheless, the case of Lehman Brothers proves that this coordination is not in the way it should be. The issuer’s decisions seem to focus not on better management but rather on using the “accounting gimmick” or not disclosing the full information about the company condition due to reaching the better grades from the CRAs.

3. CREDIT RATINGS AS THE RISK ASSESSMENT INSTRUMENTS – THE LEHMAN BROTHERS CASE STUDY

3.1. Lehman Brothers’ ratings in comparison to other investment banks in US

In case of Lehman Brothers the importance of credit ratings was so great that, as it was later admitted by Richard Fuld (CEO), the quest for their increase was the main cause of conducting some transactions belonging to the so-called ‘creative accounting’ or ‘accounting

gimmick'4. Lowering the leverage ratio, which is one of the most important measures compared by the credit rating agencies, has become a priority for the management and carrying out of these transactions was the least expensive, but very risky method of reducing leverage and increasing the competitiveness of the bank.

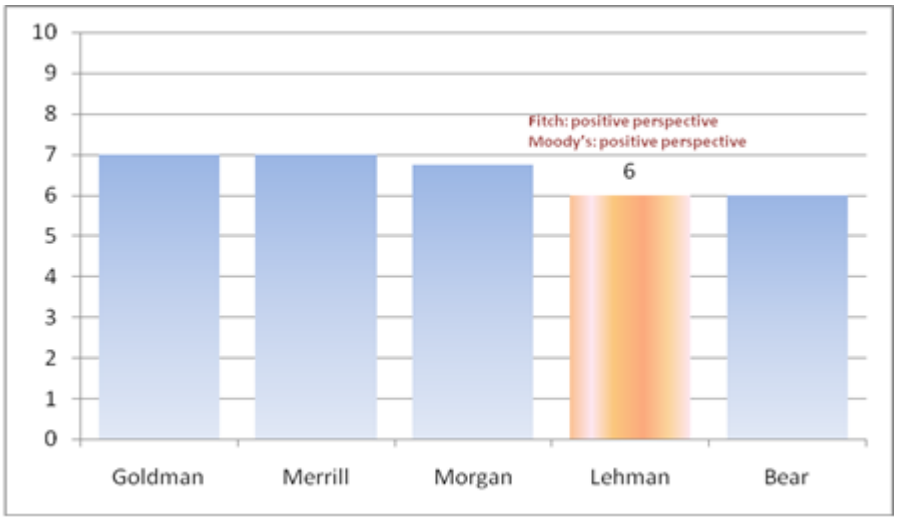
Despite conducting these operations and temporarily reducing the leverage ratio by Lehman Brothers, at the end of 2006 its main competitors were mostly better rated by rating agencies (see Table 1 and Graph 1). However, these differences were not very significant and in the sector analysis report released by Moody's in December 2006, Lehman Brothers was rated highest among the five leaders of investment banking at that time (Table 2).

Tab. 1 – Ratings assigned by the "Big Three" and LEH assessment at the end of 2006. Source: Confidential Presentation to Lehman Brothers, Credit Ratings Strategy, March 1, 2007, p. 5

Grade	S&P	Fitch	Moody's	
10	AAA	AAA	Aaa	Highest IG
9	AA+	AA+	Aa1	
8	AA	AA	Aa2	
7	AA-	AA-	Aa3	
6	A+	A+	A1	LEH Current Rating
5	A	A	A2	
4	A-	A-	A3	
3	BBB+	BBB+	Baa1	
2	BBB	BBB	Baa2	
1	BBB-	BBB-	Baa3	Lowest IG

Graph 1 - Average credit rating grade across agencies, February 2007. Source: Confidential Presentation… op. cit., p. 5

[4]It is mainly about the Repo 105/108 transactions - repurchase agreementsintended to temporarily remove liabilities from the balance sheet, thereby reducing leverage (the relative percentage of financial liabilities) and increasing the relative percentage of capital (or stockholders equity).



Tab. 2 – Moody's quantitative assessment of securities industry (December 2006). Source:Confidential Presentation… op. cit., p. 12

Factor	Factor weight	Goldman		Merrill		Morgan		Lehman		Bear	
		Rating	Grade	Rating	Grade	Rating	Grade	Rating	Grade	Rating	Grade
Earningsstrength&stability	25%	Aa3	21	Aa2	24	Aa3	21	Aa2	24	A1	21
Management quality&culture	20%	Aa2	8	A1	6	A1	6	Aa2	8	A1	6
Franchisestrength&diversification	17%	A1	6	A2	5	A2	5	A1	6	A3	4
Risk management	12%	Aaa	10	Aa2	8	Aa2	8	Aaa	10	Aa2	8
Operating environment	10%	Baa1	3	Baa1	3	Baa1	3	Baa1		Baa1	3
Liquidity	8%	A	5	Aa	8	A	5	A	5	A	5
Capital adequacy	8%	Baa	2	Baa	2	A	5	A	5	A	5
Total score	100%	6,5		6,1		6,0		6,9		5,5	
Scorecard rating		Aa3		A1		A1		Aa3		A1	
Current Moody's rating		Aa3		Aa3		Aa3		A1		A1	

- Scorecard rating higher than actual Moody's rating
-Scorecard rating lower than actual Moody's rating

The three best-rated by Moody's areas of activity of Lehman Brothers may raise far-reaching concerns. According to the rating agency Lehman received the highest grades for risk management, earnings strength and stability and management quality and culture. The serious problems experienced by the bank in 2007 followed by its collapse in 2008, proved irrefutably inadequate managerial competencies as well as bad construction of the payment

systems awarding short-term goals and a lack of transparency in the financial statements. These observations show significant weaknesses at all assessed by Moody's areas and largely discredit the reliability of ratings.

3.2. The CRA's response time to changing market conditions

Another important critisism to credit rating agencies is their slow response to the first symptoms of problems of the rated entities. Agencies explain this allegation by using the so-called 'through-the cycle methodology', which is meant to indicate the likelihood of bankruptcy in the long term horizon, without taking into account the temporary turmoil resulting from the economic cycles (Golec, 2012, p.446). The details of this methodology are confidential and has not been made public. It is only known that, according to it, the ratings should be updated only when the agency analysts conclude that the observed changes in the risk of an entity are long-term and sustainable. However, technically it is very difficult to judge if the changes in the condition of the assessed company are permanent. No straightforward method exists to forecast wheather the nature of a current credit-quality change is permanetnt or transitory. A combination of thorough analysis and expert judgement is needed to separate the permanent and transitory components (Altman, Rijnken, 2003, p.4). Thus, the through-the-cycle methodology could be found as stabilizing the system of ratings, but reducing the accuracy and reliability of the grades estimation (Löffler, 2004, p.697).

The outstanding payments regarding the subprime could already have been observed in 2006. Financial turmoil deepened considerably a year later as a result of disclosure of troubles of Bearn Stearns, IKB Deutsche Industriebank, Sachsen LB and West LB. Surprisingly, Lehman Brothers having the exposure to derivatives market reaching nearly 7 million USD in November 2006 maintained high ratings (US SEC, 2007, p.105). It is worth noting that although the exact actual value of the derivatives in the pre-bankruptcy period has not been notified, the Lehman Brothers' global portfolio of derivatives was estimated at 35 trillion, which is about 5% of all world derivative transactions (Summe, 2011, p.2). Moody's, Standard & Poor's and Fitch responded to this highly risky portfolio in March 2008. Then they lowered gradually the Lehman Brothers' perspective and ratings (see Figure 2).

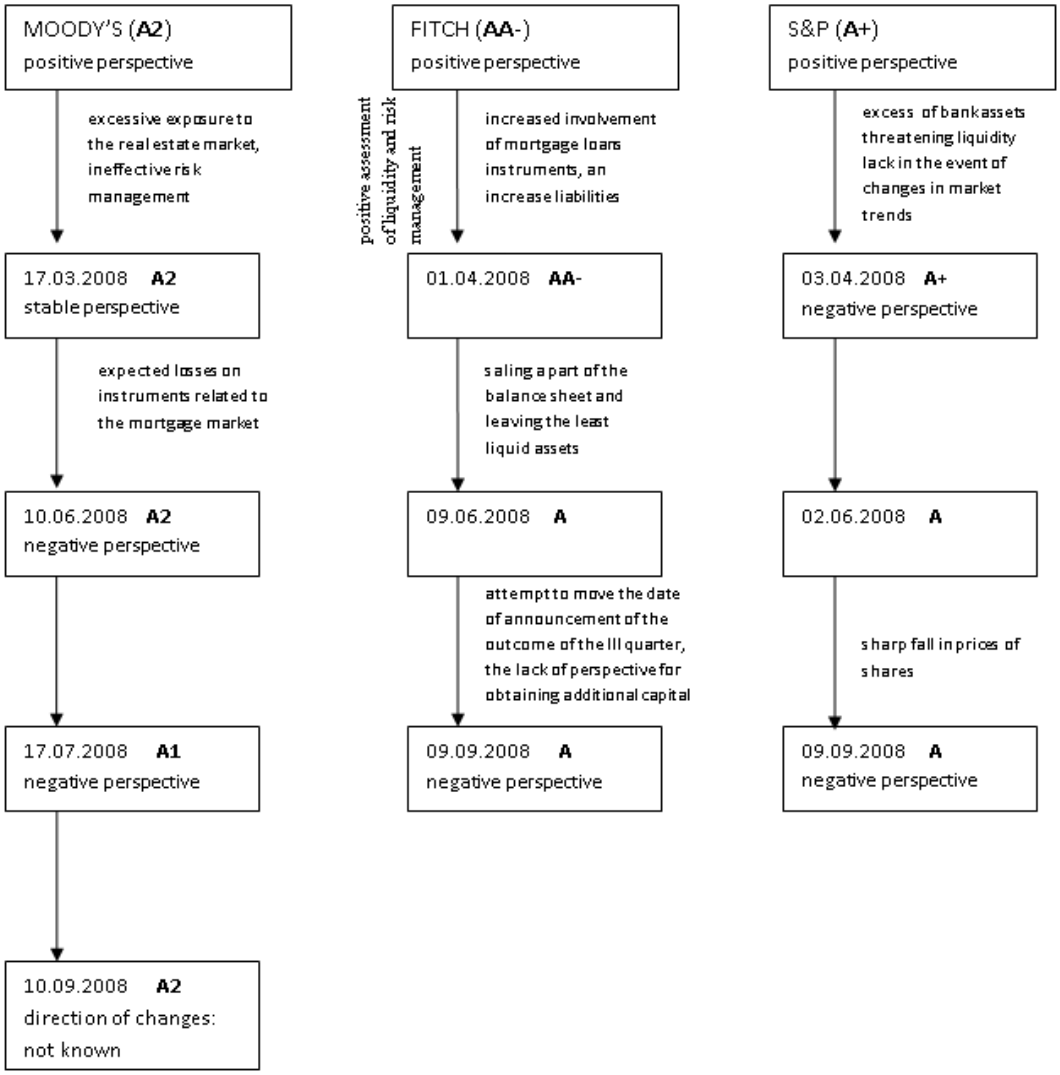


Fig. 2 – Credit ratings agencies' response for the detoriareting condition of Lehman Brothers. Source: Self study based on the Lehman Brothers Bankruptcy Court Records

Apart from significantly delayed reaction of the credit rating agencies one should also put the attention to the fact that a few days before the bankruptcy Lehman Brothers was still relatively highly rated (grades A2, A, A). In this situation an excessive optimism and the tendency for risky decisions of management could not be surprising. The credit rating agencies, designed as the one of the important mechanisms of early warning system definitely failed in case of Lehman Brothers, becoming at the same time one of the issues that contributed to the collapse of the company.

4. CONCLUSIONS

An analysis of the rating agencies activity draws attention to one addional problem, which is a kind of reciprocal action between the grade and the condition of the rated entity. The calculation submitted by management in July 2008 at a meeting of the board of directors, showed that the further rating downgrades by up to two degrees would cost the bank from 1,1 to 3,9 billion of additional collateral (Valukas, 2010, p. 10). It may be then considered if the

decisions of the board of directors and managers of Lehman Brothers were sovereign or were undertaken under the pressure of rating agencies. One can also look at this issue from a broader perspective and consider how strong is the position of the agencies in creating the company's image among market participants. The above analysis evidences the great importance of ratings, which in the case of Lehman Brothers seems to even surpass the importance of bank's prudential policy. Managers took care mostly about agencies' grades with completely ignoring the long-term safety issues, which de facto should be used as the basis of the provided ratings.

Summerizing, a number of irregularities in the functioning of credit rating agencies may be pointed up when the Lehman Brothers case is being concerned. Above all else, these are the incredibility of the assessment of particular evalueted areas and the delayed response for the bank's financial problems. That is why ratings cannot be treated as the corporate governance instruments supporting the information transparency. It even may be argued that the creadit rating agencies interfere with the functioning of the internal mechanisms of corporate governance by generating the excessive optimism, signaling irregularities with a great delay and forcing the management to focus only on the indicators instead of long-term sustainability of the institution.

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TAX BURDEN ON CAPITAL IN THE V4 COUNTRIES

Nikola Šimková

Abstract

There has been much interest in studying the capital taxation because capital is the driving force of the economy. Capital taxation systems have been developed in different conditions, which resulted in their heterogeneity. For comparison countries, it is important to determine the indicator reflecting the level of the tax burden on capital. The aim of this paper is the analysis and comparison of the tax burden imposed on capital among the V4 countries. For this purpose, we use the traditional indicator calculated as a share of revenue from capital taxes to GDP, the implicit tax rate on capital by Eurostat and the effective average tax rate by ZEW. Applying these methods helped us to the finding that the value of capital taxation in the V4 countries is lower than the EU average. Thanks to the EATR, we can describe the factors that caused the change in the tax burden on capital, so this approach is the most appropriate for comparing countries in this area.

Keywords: corporate income tax, effective average tax rate, implicit tax rate on capital, tax burden on capital, the V4 countries

1 INTRODUCTION

Capital is the driving force of the economy, therefore attention to the issue of taxation has been growing at a rapid rate. Tax policy, as a part of economic policy, serves to guide economic life and affects the amount of investment. In the paper, we deal also with other determinants affecting on investment activity to better understand this issue.

Capital tax systems have developed in different conditions, which led to their heterogeneity. To be able to compare countries with each other, it is important to determine the indicator reflecting the level of the tax burden on capital.

The aim of this paper is the analysis and comparison of the tax burden imposed on capital among the V4 countries. For this purpose, we use the traditional indicator calculated as a share of revenue from capital taxes in relation to GDP. Eurostat has modernized assessment of the tax burden on capital and introduced the implicit tax rate. The important step in the comparison of tax systems is the effective average tax rate by ZEW.

2 DETERMINANTS OF INVESTMENT

Economic entities do not consume all of their disposable income, they give up current consumption of goods. In this way, savings are incurred and used as investment for efficient production new capital goods, which can provide increased future economic production and consumption.

Investment activity is influenced by several aspects. Using of manufacturing resources is related to the economic cycle. During the expansion, there is a need to expand them, economic entities invest, which led to increasing in production and sales of products, or to reduce costs and product innovation. It appears as an increase in *revenues*, which belong to the factors affecting investment. The important role play *costs* of investment. Frequently, capital goods are very investment challenging projects, therefore firms finance them by loans and want low-interest rates. From this point of view, the better position has company that can

afford to finance projects from its own resources (profit, depreciation). The *expectations* of economic, social and political development play also the important role. Optimistic prospects motivate entrepreneurs to invest. The important factor is *taxes and tax system*. High tax burden may discourage economic entities from investing, low taxation can mean problems for the state in providing public goods. If the level of households' taxation is reduced, they increase their disposable income and can save more, thereby increasing supply of savings. The result is a decline in interest rates, causing growth in demand for investments (loans). In the case of unchanged tax burden on households, supply of savings does not change at the interest rate. However, it can occur a decrease in tax rate of companies, or granting tax relief. This can be seen in the increased demand for investment, which causes a rise in interest rates and, consequently, increase the supply of savings.

Countries differ in their historical development, especially in the current EU, where are original EU15 countries and newly acceding countries, among which are the transition economies such as the V4 countries. Kudina (2004) focused on these countries when analyzed the factors affecting foreign direct investment (FDI). She identified seven determinants such as *market size, political stability, economic growth rate, labor costs, economic openness, quality of infrastructure and tax incentives.*

To implement **investments** firms need **resources**. Company may use *internal (own)* resources. This means covering the needs of enterprise by resources obtained from the financial and economic activity. Firm may use profit (self-financing), depreciation, reserves and release of money due to changes in ownership structure. If an enterprise does not have sufficient own resources, capital may be increased by new (cash or in-kind) contribution to the company or enterprise use repayable forms of obtaining *external (foreign)* resources through a loan. (Bajus 2008)

4.19 International capital movements

International capital movements are affected by *real interest rate* on domestic and foreign assets while its high-level support means capital inflows and preference for holding domestic assets. Low real interest rate causes capital outflows from the country because investors will seek higher returns abroad. *Economic and political risks* also affect investment decisions. For example, if government restrictions are imposed on financial market in the domestic economy, foreign investors avoid buying the assets of the domestic economy and domestic entities prefer foreign assets, resulting in capital outflows. (Lisý et al. 2007)

Among the incentives of transferring certain value from one country to another with aim to evaluate it are effort to achieve higher profit rate or higher long-term interest rate, link with the movement of goods and other manufacturing resources, incentive for creation of joint ventures with international participation, possibility of acquisition of high technology, speculative reasons, changes in political situation, environmental reasons, avoiding trade barriers, possibility of obtaining raw material resources, as well as opportunity to obtain external resources to accelerate economic growth. (Kuzmišin et al. 2010)

International capital flows have been raised steeply in recent years, allowing alignment among countries in labor productivity and living standards. The volume of migrant capital exceeds several times the volume of world trade in goods and services. It leads to the creation of large transnational corporations, which symbolizes internationalization the process of capital accumulation. In countries exporting capital may exist relative technological lag of several industries. By contrast, FDI inflows are associated with the expected growth in employment, GDP, acquisition of technology and skilled professionals.

3 ANALYSIS OF TAX BURDEN ON CAPITAL IN THE V4 COUNTRIES

The traditional approach to the expression of the **tax burden on capital** in the economy is calculated a share of revenue from capital taxes in relation to GDP. If we focus on the V4 countries, that can be seen on the graph (Fig. 9), we find that the highest initial value in 1995 was reached in Slovakia (10.8% of GDP), which was gradually decreased. The opposite situation was in Hungary, where was appeared an upward trend. The Czech Republic and Poland maintained during the monitored period more or less stable value. Since 2001, values of the tax burden on capital in the V4 countries have been below the EU average. In 2012, the average value in the V4 countries was 6.1% of GDP while in the EU it is 6.8% of GDP. Poland reached a value of 7.7% of GDP while values of the other three countries were below 6% of GDP.

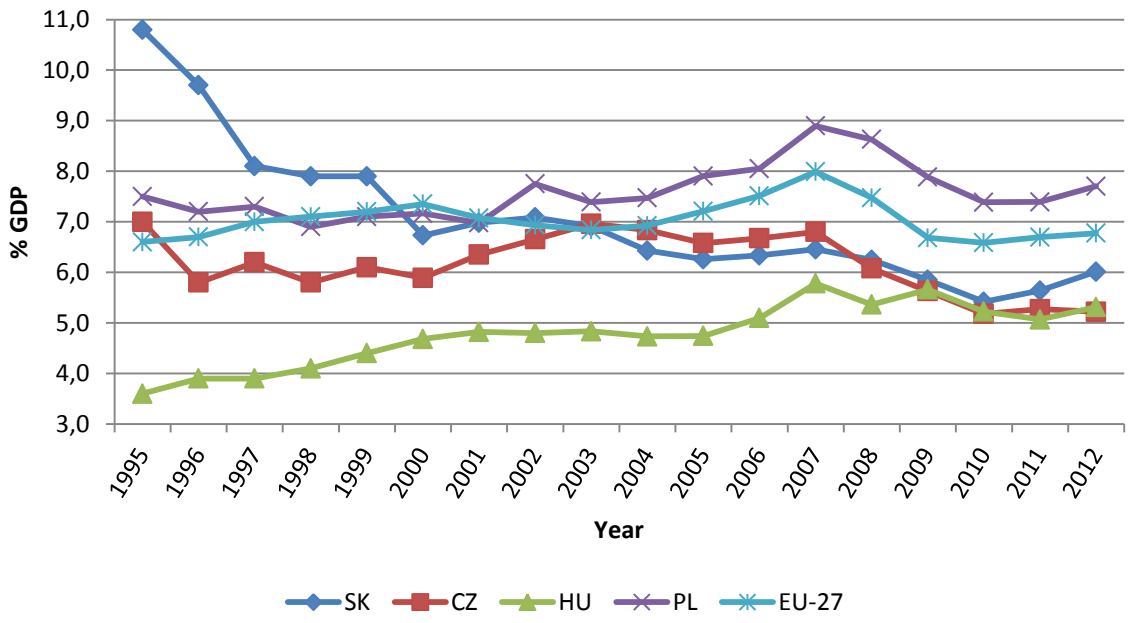

Fig. 9 - The tax burden on capital in the V4 countries. Source: Taxation trends in the EU 2014

This indicator is obtained relatively quickly due to easy availability of the required input data. However, its interpretation is questionable. It would be useful to know reasons for the calculated value. If the tax burden on capital is increased, it could be due to increasing the tax rate on capital, broadening the tax base or falling in GDP. During the recession, even with unchanged parameters of the tax system may reflect the influence of the last-mentioned factor. It may indicate that, it is appreciable higher taxation regards to the current performance of the economy. Therefore, different indicators have been created to assess the size of the tax burden imposed on capital.

4.20 Implicit tax rate

Eurostat has modernized assessment of the tax burden on capital through the **implicit tax rate (ITR).** The ITR on capital is calculated as a share of revenue from all capital taxes, and all potentially taxable capital and business income in the economy. They can be considered as taxes levied on the income that was earned by savings and investment of firms and households, possibly associated with the stock of capital that is a result of savings and

investment in the previous periods. The ITR on capital includes net operating surplus, imputed rents, net mixed income, interest, insurance property income, rents on land and dividends for the non-financial and financial corporations, households, self-employed, non-profit organizations, general government and the rest of the world. The goal is to establish the average tax burden imposed on capital income.

Comparison of the V4 countries provides the graph (Fig. 10). In 1995, Slovakia reached the maximum value (35.0%) for the monitored period and countries. Later it appeared a downward trend. Similarly, as the case in the graph (Fig. **9**) is the development of the ITR on capital in the other V4 countries. Therefore, we can say that the ITR on capital and the capital tax burden give similar results. However, the ITR on capital shows a clearer convergence of the V4 countries. They are similar from geographic, demographic, historical and economic perspective, which can cause that they are the highest competitors in this area.

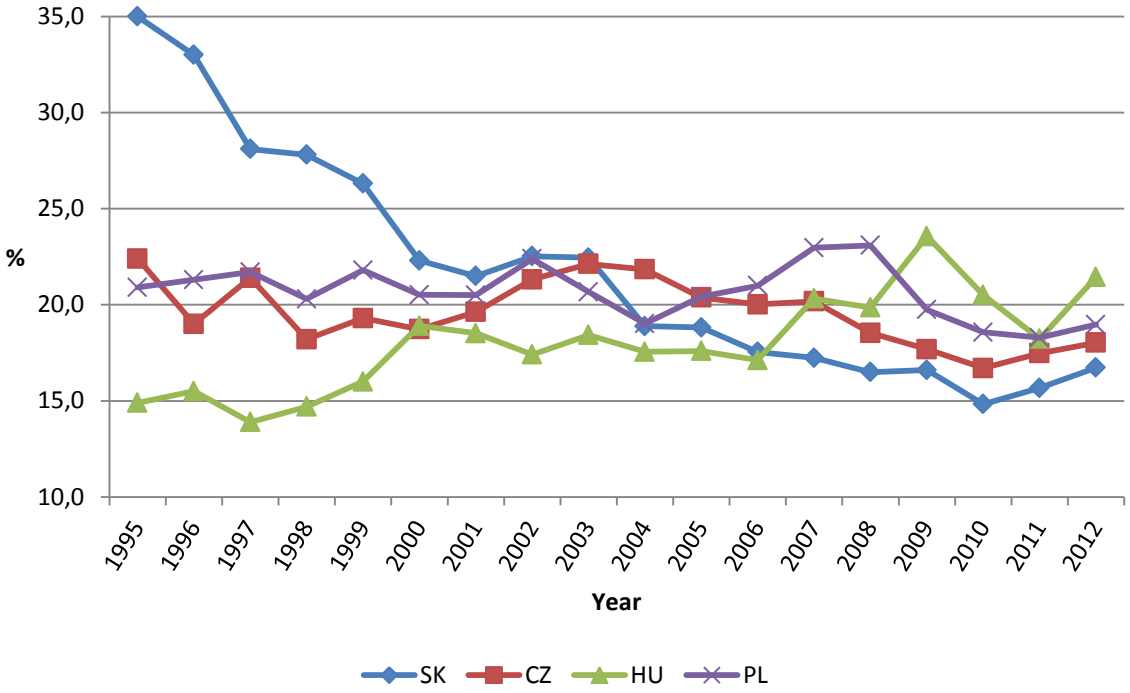

Fig. 10 - The ITR on capital in the V4 countries. Source: Taxation trends in the EU 2014

It is not possible to compare the ITR on capital with the EU average because the required data in some cases lacked.

4.21 Effective average tax rate

The important step in comparison of tax systems is **the effective average tax rate (EATR).** The Centre for European Economic Research (ZEW) deals with its calculation. In its study for the European Commission (2008), builds on the work of Devereux and Griffith (1999, 2003). The EATR reflects the statutory tax rate and the components of the tax base complemented by additional costs incurred for investment with the aim to evaluate the effective tax burden.

The model assumes the pre-tax real rate of return (20%), the post-tax real rate of return (5%), inflation (2%), investments in five different assets with different economic depreciation rate - intangibles (15.35%), industrial buildings (3.1%), machinery (17.5%), financial assets (0%),

inventories (0%) and three sources of finance with different weights - retained earnings (55%), new equity (10%) and debt (35%).

The ZEW analysis considers as the base year 1998. The table (Tab. 7) contains the required data for the calculation of the EATR which are country-specific.

Tab. 7 – The data summary of the V4 countries to calculate the EATR in 1998. Source: ZEW

Indicator	SK	CZ	PL	HU
1. Corporation income tax rate (CIT rate)	40.00%	34.00%	36.00%	19.148% (18% + local tax rate)
2. Effective real estate tax rate	0.07%	0.06%	0.10%	0.82%
3. Treatment of inventories	0.5 (weighted average)	0.5 (weighted average)	0 (LIFO)	0 (LIFO)
4. Capital allowances				
Intangibles	declining-balance, 15 years	declining-balance, 15 years	straight-line, 5 years	straight-line, 10 years
Industrial buildings	declining-balance, 40 years	declining-balance, 45 years	straight-line, 40 years	straight-line, 7 years
Machinery	declining-balance, 8 years	declining-balance, 6 years	straight-line, 1. year 20% and next 9 years 10%	straight-line, 7 years

Differences in these parameters among the countries resulted in different values of the EATR. The following table (Tab. 8) shows a development of the EATR in Slovakia together with the changes affecting its value.

Tab. 8 - The EATR in Slovakia for the period 1998-2013. Source: ZEW

1998-9	Default settings were reflected in the EATR at the level of 36.7%.
2000-1	The CIT rate was decreased by 11% to 29%, the method of capital allowances was changed for intangibles on a straight-line during 15 years, and the effective real estate tax rate was increased by 0.01% to 0.08%. The EATR was reduced by 10.9% (almost like a change in the CIT rate) to the level of 25.8%.
2002	A reduction in the CIT rate by 4% to 25% caused a decrease in EATR to 22.3%.
2003	The reduced number of years for capital allowances for industrial buildings by 10 years (to 30 years) resulted in a slight drop of the EATR.
2004	There was implemented 19% as the CIT rate (decrease by 6%). The number of years for capital allowances for industrial buildings was reduced by 10 years (to 20 years) and for machinery by 2 years (to 6 years). The effective real estate tax rate was increased by 0.01% to 0.09%. A decrease in the EATR by 5.4% to 16.5%

brought the lowest value in the monitored period.

2005-12 The effective real estate tax rate was quadrupled to the level of 0.36% in 2005, thereby the EATR was increased by 0.3% to 16.8%.

2013 An increase in the CIT rate to 23% represented an increase in the EATR by 3.5% to 20.3%.

In the Czech Republic was mainly recorded a decrease of the corporate income tax rate for the monitored period, which was also reflected in a downward trend of the EATR. This is confirmed in the overview table (Tab. 9).

Tab. 9 - The EATR in the Czech Republic for the period 1998-2013. Source: ZEW

1998 Initial parameters were showed as a value of 26.4% for the EATR.

1999 There was a change in the number of years in capital allowances for intangibles to 12 years and for industrial buildings to 30 years, thus the EATR was reduced by 1% to 25.4%.

2000-3 The CIT rate was reduced to 31% and the effective real estate tax rate was increased to 0.07%. The EATR reached a value of 23.6%.

In the following years the CIT rate was mainly changed:

2004 rate of 28% caused an increase in the EATR by 1% to 24.6%,

2005 rate of 26% reduced the EATR to 22.7%,

2006-7 rate of 24% led to a value of 21% in the EATR,

2008 rate of 21% decreased the EATR to 18.4% and the effective real estate tax rate was increased to 0.08%,

2009 rate of 20% decreased the EATR to 17.9%,

2010-3 rate of 19% reflected as a value of 16.7% for the EATR.

Similarly, a government in Poland decided to reduce the corporate income tax rate, so the EATR showed a similar trend as it is indicated in the following table (Tab. 10).

Tab. 10 - The EATR in Poland for the period 1998-2013. Source: ZEW

1998 Default data brought 32.4% as a value of the EATR. The effective real estate tax rate grew steadily in the following periods by at least 0.01%.

1999 There was a decrease in the CIT rate by 2% to 34%, thereby the EATR reduced by almost 2% to 30.6%.

2000 The CIT rate repeated a reduction, therefore the EATR dropped to 27.1%.

2001-2 The CIT rate reached 28%, the EATR decreased to 25.3%.

2003 In addition to reducing the CIT rate by 1% changed also the rate of capital allowances for machinery to 30% in the first year and 10% in the next seven years. This resulted in a decrease of the EATR to 24.2%.

2004-6 The most significant reduction was recorded when the CIT rate sharply fell to 19%

	(from this year was also introduced in Slovakia). There was a constancy of the effective real estate tax rate. The EATR reached its minimum at the level of 17.1%.
2007	A change in the rate of capital allowances for machinery to 10% during 10 years and an increase of the effective real estate tax rate resulted in an increase of the EATR by 0.3% to 17.4%.
2008-13	The effective real estate tax rate increased by 0.01% to 0.21%, thus the EATR increased by 0.1% to 17.5%.

Hungary had a different approach to the corporate income tax rate. In the beginning, a government supported a reduction of this rate, but due to the crisis decided to increase it. Later the rate was again decreased. The development of the EATR is illustrated in the table (Tab. 11).

Tab. 11 - The EATR in Hungary for the period 1998-2013. Source: ZEW

1998	Default parameters are expressed as a value of 19% for the EATR.
1999	An increase in the CIT rate by 0.3% at the local level caused an increase of the EATR also by 0.3%.
2000-3	The EATR reached its maximum value at 19.7% due to growth in the local CIT rate to 2%.
2004	There was a decline in the CIT rate to 16% while an increase by 0.2% was at the local level, thus the total effective CIT rate reached a value of 17.76%. The effective real estate tax rate raised to 0.84%, therefore, the EATR reduced by almost 2% to 17.8%.
2005	The CIT tax rates remained at approximately the same level, the system of capital allowances changed for industrial buildings (to 50 years) for intangibles and machinery (to 2 years). The EATR fell to 16.6%.
2006	A slight decrease in the effective CIT rate was caused by an increase at the local rate by 0.05%. This reflected as a slight decrease in the EATR by 0.3%.
2007-9	There was an increase in the EATR by 3.2% to 19.5% driven by a growth of effective CIT rate by almost 4% to 21.38% and by a decrease in the effective real estate tax rate by 0.04%.
2010	A reduction in the CIT rate to 20.3% resulted in a decrease in the EATR at the level of 19.1%.
2011-3	The EATR changed slightly to 19.3%.

The graph (Fig. 11) shows the summary of the EATR in the V4 countries and the EU27.

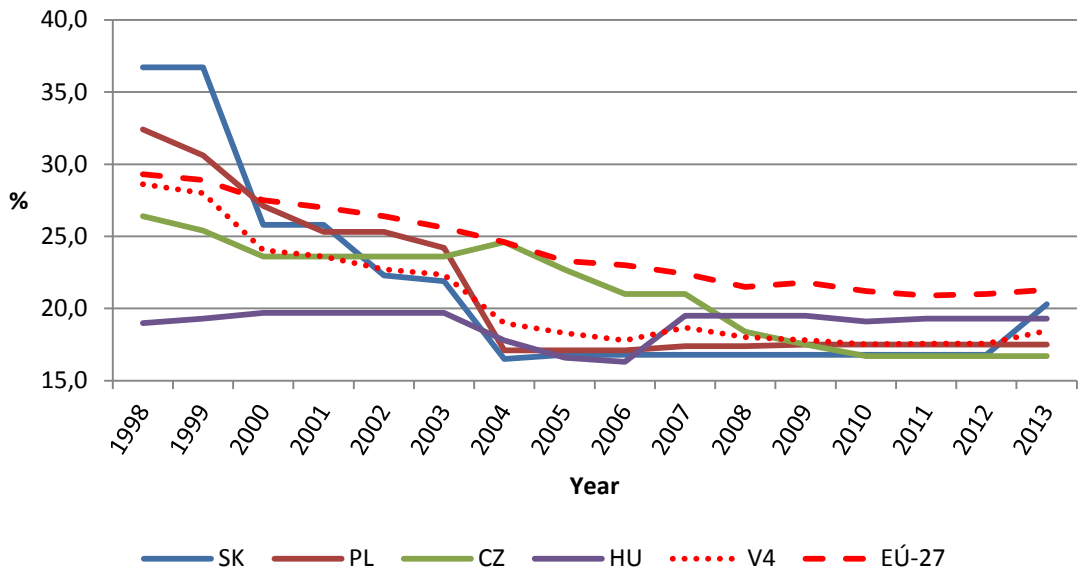

Fig. 11 - The EATR in the V4 countries. Source: ZEW

From the beginning, values of the V4 countries differed mainly due to different corporate income tax rates. The countries trace the path of their reduction, which in the period 2004-2006 values of the EATR for three countries (Slovakia, Poland, and Hungary) reached almost the same level. The Czech Republic still achieved a relatively high level of the EATR. Hungary started to increase the corporate income tax rate and the Czech Republic stayed in its reduction, so they exchanged role and a value of the EATR for Hungary began to grow. In 2013, also Slovakia decided to increase this rate, which resulted in an increase in the average value of the EATR in the V4 countries, while the other countries maintained their rates unchanged.

It is clear that the average values in the base year 1998 for the V4 countries and the EU-27 were very close. Over time, their divergence occurred when the EATR declined in the V4 countries much faster than in the EU-27. This was mainly due to the fact that in 2000 three of the V4 countries reduced their corporate income tax rate. In the case of the Czech Republic was a drop by 3%, Poland by 4% and Slovakia even by 11%. This year, values of the EATR for Slovakia and Poland fell below the EU average. The most significant deviation from the development in the EU was recorded in 2004, when Slovakia and Poland implemented the 19% rate, and Hungary also decreased its nominal rate to 16%. The Czech Republic reduced the rate again by 3%, but due to a change in the system of capital allowances for intangibles the EATR was increased. The lowest EATR value for the V4 countries appeared in 2006, when only the Czech Republic decided to reduce the corporate income tax rate. The following growth was accompanied by an increase in the rate in Hungary, after which there was a period of relative stagnation, with a slight downward trend due to the reduced rate in the Czech Republic to the current level of 19%. In 2013, the average value of the EATR was in the V4 countries lower by 2.8% than in the EU (21.3%).

4 CONCLUSION

Investments are the important factor for economic growth. Investment decisions are determined by interest rate, taxes on personal and corporation income, tax holidays, grants, subsidies for investment activities, national differences in labor prices, opportunities for reinvestment of profits and their transfer abroad.

The capital taxation affects decisions on production activity and also the country's wealth, so it is useful to know its level. In the case of assessment of the tax burden on capital as a share of revenue from capital taxes in relation to GDP, Slovakia in 1995 reached the highest value (10.8% of GDP) from the V4 countries. In 2012, the order of the V4 countries from the lowest value was the Czech Republic, Hungary, Slovakia, and Poland. Since 2001, the tax burden on capital has been in the V4 countries below the EU average. This indicator is obtained relatively quickly due to easy availability of the required input data. However, its interpretation is questionable. This approach is not very suitable for comparison of the tax systems because it does not include the size of the tax base and other aspects. For this reason, different indicators have been created to assess the size of the tax burden on capital.

Eurostat introduced the implicit tax rate on capital. The maximum value (35.0%) for the monitored period reached from the V4 countries Slovakia. In 2012, the values of the V4 countries were at about the same level and their order from the lowest value was Slovakia, the Czech Republic, Poland, and Hungary. The absence of data from some EU countries is a major disadvantage of this approach.

ZEW deals with the evaluation of the effective tax burden through the EATR. In the paper, we summarized the development in the V4 countries in the period 1998 – 2013. The Czech Republic and Poland recorded a downward trend of the EATR. In Hungary, the EATR also decreased from the beginning, but in 2006, a value was increased and then has stagnated. Slovakia from the maximum value (36.7%) in 1998 fell to its lowest value (16.5%) in 2004 due to the tax reform. In 2012, the order of the V4 countries from the lowest value was the Czech Republic, Slovakia, Poland, and Hungary. The average value in 1998 for the V4 countries and EU were very close. Over time, their divergence occurred when the EATR declined in the V4 countries much faster than in the EU. In 2013, the average value of the EATR was in the V4 countries by 2.8% lower than in the EU.

Expression of the tax burden on capital through the EATR represents a significant contribution to enabling comparison of the tax systems and it can also help to understand better the issue of tax competition in the future.

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NEW METHODS OF TRADING IN FINANCIAL MARKETS AND INCREASING FINANCIAL LITERACY

Eliška Kvapilová

Abstract

Financial market is a complex of institutions, their relationships and rules. It is constantly changing and evolving. Modern ways of trading are connected with computer technology – there are Automated Trading Systems, known as ATS, with their advantages, disadvantages and risks. The aim of this work is to find important points in the interpretation of the new specialized topic. It deals with issues as to how much students are interested in tough topics, how to motivate students and how the practical knowledge is beneficial in the context of increasing financial literacy. The base is the analysis of the current situation using the resources from the theory and practice.

Keywords: ATS, automated trading systems, financial literacy, job search, new technologies

1 INTRODUCTION

At present, we often feel the need to modify teaching methods during lessons by applying new technologies and integrating new trends and modern procedures used in practice while introducing the obtained knowledge. This trend is obvious both in terms of teaching students and in drafting education courses offered to the public. We have to consider how to efficiently motivate the students and participants of those courses and how the topic should be presented to them with sufficient additional practical information to make their studies interesting and beneficial. The paper focuses on the didactics of new methods of trading in financial markets.

The objective of this work is to find important points in the presentation of a new subject matter for the students and participants of courses in order to enhance financial literacy, based on the analysis of the present situation with the utilization of theoretical and practical sources.

2 PRESENT SITUATION – NEW METHODS OF TRADING IN FINANCIAL MARKETS

Generally speaking, the university should provide students with the following values:

- theoretical groundwork for the knowledge of the field of study, in the broadest possible scope within the field of study,

- introducing well-established methods, applied in practice, i.e. how the theory is applied

- familiarity with novelties and trends in practice

The complex of these values should (along with other concurrent aspects, such as environment, approach toward students or technological equipment) motivate students to study.

The complex of subjects and their relations, as in the case of the financial market, is constantly changing and developing. In the foreground we can´t help but notice the improving IT technology which has been widely used in the stock-market trading. Nowadays, there are independently working trading programmes capable of making a large number of deals in an extremely short time. In general, they are called automated trading systems (ATS); they differ

in their independence when making deals and in the speed of performed operations, and their benefits – mainly risks – are still heavily discussed by the expert public.

Trading by means of ATS is markedly used in commodity markets or Forex, however, it is also used by companies dealing with asset management, investment funds and brokers. They are especially popular with Hedge Funds as a tool for revenue optimization (Kuchta, 2006).

In order to understand these new methods of trading, we can approach this issue from different perspectives. The first one refers to the aspect of their utilization. This can be assessed from the practical perspective for the student– whether it is included in the curriculum or whether this course is part of another additional course, i.e. we are asking whether he is going to be ATS originator, whether he is going to trade with them (e.g. as the employee of the institutional investor) or whether he intends to use them only marginally as an individual participant of the market. The first obvious fact is that all three cases demonstrate it is beneficial for the student if he learns as much as possible about these trading methods at his economy-oriented university.

ATS originator can be a skilful trader with programming skills. In that case, students need to be informed that it is important to direct the program at a specific market or at an investment tool. Interesting motivation for students, who shall take interest in this direction, may be the possibility of remunerated projects within the school, resulting in functioning business programs. It is thus possible that different workplaces cooperate within the school, IT students are interlinked.

These activities require:

- necessary technological background

- informing students about possibilities and active search for those interested

- elimination of excessive administrative load during the project organization

If we consider the student´s viewpoint, who after finishing his studies may work as a trader utilizing ATC or just marginally utilizing these systems during his work, in both cases it is suitable to present this subject matter to students in a compact form.

As part of such a block, I suggest the following points:

- basic principle of ATS functioning

- reasons for ATS utilization – their advantages

- ATS risks – in this context possibly stressing the losses resulting from ATS utilization in the past,

- framework of regulation and supervision of the particular area of the financial market

These points can be summarized in a diagram.

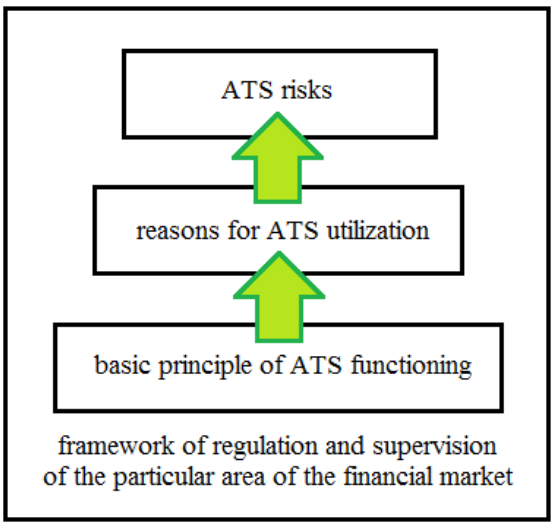

Fig. 1 – Concept of ATS topic presentation. Source: own elaboration

All principles of practical methods and procedures introduced to students in the course are basically:

- qualification enhancement

- a source for a prospective employer, thus promoting the school´s reputation

- providing a student with a broader perspective when searching for a suitable job

Additional lectures of called-in experts from practice are invaluable in terms of completing the contents of the courses and lessons. In this respect, it is often possible to start a long-lasting cooperation between the school and subjects from practice.

3 DIDACTICS OF PRINCIPLES OF APPLYING NEW METHODS OF TRADING IN FINANCIAL MARKETS

In order to present the issue of applying new methods of trading in financial markets as a whole to those interested in the study, it is essential that they have an idea of how to perceive the market as such and the role of relevant parts of the market system.

The best way to learn is real-life experience – one can remember as much as 90% of what one does (Krpálek, 2012), unlike reading a text or listening to a presentation. In order to allow the students to learn from their own experience, it is necessary to have sufficient technological equipment or to start cooperation with a workplace providing this option, which is not easy. However, it is possible to use the abovementioned cooperation with the subjects from practice. Some of the financial institutions from the investment area can even offer the option of extended access to their services („trading in rough outline“) for the participants of the study program. This usually refers to mutually beneficial projects motivating students in their studies.

It is most efficient to inform students about the risks related to applying new methods of trading in financial markets.

Since the programs are self-operated, I distinguish three basic risks in my papers:

- the program might detect an error

-the program works correctly, however, misinterprets the information which is presented by the market (or via the Internet)

- the program is used for trading the assets that it has not been developed for, or it is operated on an unsuitable market

These three types of risks now represent a challenge for the regulation and supervision in countries with advanced financial markets, where these new methods have been widely used. In future, it might be anticipated that they will be used on other markets as well. In these areas, the regulation and supervision should monitor the development on advanced markets and to learn from the practical steps of the local regulatory and supervisory bodies.

These correlation sallow students to connect theoretical knowledge with the events they may observe on financial markets.

Participants of the courses (but often full-time students as well) are usually employed during their studies. Combining the study with work is more demanding, however, it may also have a positive impact – whether in terms of applying practical experience at school or being better qualified for one´s work through additional study.

Through our interaction with students we observe that they are more and more focused on modern technologies, which should be used as regards the interconnection with new trends in the field.

However, it is less easy to capture the students´ attention for the presented subject matter. This phenomenon is slightly more difficult to deal with. In addition to the aforementioned approach to reduce it a little bit and to motivate students to practise most things by themselves, it is also important to stress the strong points of the presented subject matter – and its familiarity – for their professional life.

4 REGULATION AND SUPERVISION

New methods keep showing up on the market; sometimes they are not widely used but they are widely spread. In that case, it is necessary to ensure the supervision by a respective body and timely detection of possible risks. Proper regulation means defence against risks, flexibly responding to new procedures applied on the market (here most flexible regulation is achieved through the Central Bank regulations).

Full-time students are made familiar with a broad spectrum of the regulation and supervision theory with practical effects. As a result, they can get an idea about the foundations and principles of the regulation and supervision functioning, i.e. the principle of their responding to changes in existing methods of trading and used tools.

The familiarity with the regulation and supervision framework is suitable even for the participants of courses in order to enhance financial literacy. It is the regulation and supervision that largely make up the external environment of the market and related subjects.

Students might be motivated by being assigned a task to create drafts presenting how the regulation and supervision should approach the changes in financial markets and what would be the suitable way of informing and educating both the expert and lay public. It is possible to get involved in projects and development of comprehensive drafts similar to background materials usable in practice.

This creative work, along with emphasized functionality and usefulness of the obtained knowledge, might represent a substantial source of stimulation for students.

In my opinion, the education function of the supervisory body, i.e. providing the public with faster and available information about the market, is still a slightly neglected fact – although this function is most important. Another recommended part of the courses for the enhancement of financial literacy is to present the information sources that the participants

may obtain from the Czech National Bank, or rather as the information published on its website. One of the invaluable sources is the electronically available periodical Global Economic View (GEV). In addition to the analysis of markets development, it also includes readable information on global markets.

5 CONCLUSION

In order to ensure the latest and updated contents of the presented subject matter, it is necessary to follow modern trends from various perspectives. Especially in the area of financial markets as a rapidly developing and changeable system, it is important to work with updated information, legislative amendments as well as with options presented by new technologies. IT technology has a most important role in today´s functioning of financial markets and it can be easily anticipated that it will be more frequently used in the future if only allowed by the regulation and supervision.

Current topics and examples of practical use of theoretical knowledge are beneficial for students in terms of their qualification and subsequent evaluation during their job search. Last but not least, another positive effect lies in promoting the school´s reputation.

Another issue, however, refers to students´ strong motivation, which is more and more difficult to achieve. Students may take interest in the study if they get actively involved in the projects related to the practical application of the theory. It is often challenging to create conditions for students so that they can benefit from "first-hand experience". However, if it is possible to ensure such conditions, it is a great advantage. Ideal option would be the cooperation with subjects that operate in the respective area.

Students might also feel motivated if we sufficiently emphasize the usefulness of obtained knowledge for their practical application on the labour market – whether we choose the form of examples or we directly point out our successful graduates.

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CURRENT STATE OF CUSTOMER SATISFACTION IN KENYAN BANKS

Kombo Felix

Abstract

Commercial banks operate in a very competitive environment that is geared towards satisfying customers in order to create loyalty and hence lower switching of customers to other banks. Most banks have been pressed to provide more quality services, which is a key ingredient for customer satisfaction. It is from this perspective that the article investigates the satisfaction of Kenyan bank customers with services of their banks. Based on 403 respondents, the overall level of customer satisfaction in Kenya is above 50%. In addition, most customers are satisfied by the availability of branches across the country for their banks while majority of them are dissatisfied by high prices of products and services. This paper further outlines area for future research and gives managerial recommendation on possible areas to improve.

Keywords: *Customer satisfaction, bank customers, Kenya*

1 INTRODUCTION

Developing countries are growth markets for banks (Hu and Scholtens) and therefore they are considered as key players of financial and economic development (Beck et al., 2010). Sharma and Kumar (2013) are in support of the statement and they too mention that commercial banks are crucial in the development efforts and therefore banks are determinants of economic growth. Furthermore, majority of the banks are using customer satisfaction to differentiate their products and services from main competitors and this acts as a tool for gaining competitive advantage.

Chakrabarty (2006) define customer satisfaction as how a product or service surpasses customer expectation. This expectation is imperative for the long term success of any company. Many Kenyan banks have substantial monies allocated for designated activities that are geared towards achieving customer satisfaction. As a result, Kenyan bank customers continually increase their confidence with such service providers. According to a report by Ernst & Young (2014), though half of Kenyans encounter negative experiences in transactions in different banks, most of them have confidence with their banks. Furthermore, this has created trust and genuine loyalty between banks and clients.

KPMG (2013) conducted a research on customer satisfaction on a sample of 25 000 banking customers across 14 countries in Africa. They found that the overall level of customer satisfaction in Kenya is above 70%. Moreover, availability of branches (99%) is considered as the most important factor of satisfaction whereas high prices of products and services (70%) is considered as the main factor of dissatisfaction. Ernst & Young (2014) state that 62% of Kenyans express strong advocacy for their banks, which is more than countries such as South Africa (51%) and Nigeria (46%).

This article investigates customer satisfaction level and factors of satisfaction and dissatisfaction in the banking industry in Kenya. The rest of the article will have the following sections. Section 2 provides literature on customer satisfaction in commercial banks. Section

3 will discuss the methodology. Section 4 provides the research results. Section 5 will discuss the results and Section 6 will conclude this article.

2 CUSTOMER SATISFACTION IN COMMERCIAL BANKS

Customer satisfaction in banks refers to the valenced state of mind, concerning the bank, and evoked by the customer's experiences with the bank throughout time (Terpstra et al., 2014). Customer satisfaction is considered as the most important driver in commercial banks since higher customer satisfaction leads to a lower customer intention to switch banks (Hoq and Amin 2010). According to Hoyer and MacInnis (2001), satisfaction is associated with feelings of acceptance, happiness, relief, excitement, and delight. Szymanski and Henard (2001) argue that expectations, disconfirmation of expectations, performance, affect and equity are factors that cause effects on buyers' level of satisfaction. A research by Singh and Kaur (2011) shows that customer satisfaction in banks is influenced by seven factors: employee responsiveness, appearance of tangibles, social responsibility, service innovation, positive word-of-mouth, competence and reliability.

Chakrabarty (2006) mentions that assessment of customer satisfaction in banks can be on key services such as speed of services at branches, ATMs availability and reliability, bank charges, responsiveness to enquiries, opening hours and privacy. Furthermore, banks are also able to assess their relationships with customers because of satisfaction (Mandal and Bhattacharya, 2013). The authors further state that state higher competition calls for higher necessity to keep the customers satisfied. Satisfied customers tend to be loyal and recommend their banks to other potential customers (de Matos et al., 2009). According to Gupta and Dev (2012), satisfied customers are regarded as best ambassadors and salesmen and women for commercial banks since they bring in 100 new customers. In addition, loyal customers as a result of satisfaction increase profits, market shares and customer base (Karatepe et al., 2005).

On the other hand, dissatisfied customers react differently by for instance switching of banks, negative words-of-mouth or complain to the company (Abubakar et al., 2014). Therefore, dissatisfied customers can have the potential to influence 1,000 customers to have a negative feeling about businesses (Gupta and Dev, 2012). Return of items and complains to third parties are the other effects of dissatisfaction (Hoyer and MacInnis, 2001). Customer complaints should be solved through various service delivery strategies (Ramachandran and Chidambaram, 2012). The authors further argue that it is done because customer satisfaction not only means satisfying the customers, but also customer retention in case of service failure.

Service quality is the key to achieving customer satisfaction. This is because service quality enables banks to have a competitive advantage as a primary weapon in differentiating bank products (Kumar et al., 2010). The author further states that through service quality, customer retention, customer loyalty and higher revenue are achieved. The assessment of service quality can be in terms of interaction with service personnel, technology interface and physical evidence (Lenka et al., 2009). Motivation of employees is a significant component of ensuring the provision of quality services to customers because motivated employees ensure maximum customer satisfaction. (Mandhachitara and Poolthong, 2011). Arbore and Busacca (2009) mention quality of the relationships as the other key factor that contributes to customer satisfaction. According to the authors, quality of relationships include responsiveness, competences, assurance, trust, friendliness, courtesy, availability, commitment, flexibility, and communication.

3 MATERIALS AND METHODS

Questionnaire survey was administered between October and November 2014 to Kenyan bank customers. Questionnaire was used because it is a well-established tool within social

science research that enables acquiring information on participant social characteristics, present and past behaviour, standards of behaviour or attitudes and their beliefs and reasons for action with respect to the topic under investigation (Bulmer, 2004).

A total sample size of 403 respondents were valid. The structure of the respondents was as follows: 43% were men while 57% were women; 81% were under 30 years, 18% between 30-50 years and 1% above 50 years; 1% had primary education, 10% secondary education and 89% university education.

In order to progress with the article, the following hypotheses were set:

H1: The overall level of customer satisfaction in Kenya is above 60%. As a result, more women are satisfied than men.

H2: Availability of branches is the most important factor of satisfaction. People with university education prefer this factor more than other members in their social group of education.

H3: High prices of products and services is the most important factor of dissatisfaction. The factor is supported unanimously by more than 50% of the respondents in all the social groups.

SPSS 22.0 with special attention on descriptive statistics will analyze the data. The hypotheses will be verified by use of Pearson's chi-square test as indicated below. The significance level is 5%.

$$\chi^2 = \frac{\sum_i \sum_j (n_{ij} - \hat{n}_{ij})^2}{n_{ij}}, \qquad (1)$$

4 RESULTS

Figure 1 depicts the overall level of customer satisfaction in Kenya.

Fig. 1 – ***Overall level of customer satisfaction in Kenya. Source: own***

Note: Calculations are in percentage (%).

Based on the research results, 64% of Kenyan are satisfied with the services of their banks, 33% are dissatisfied and 33% do not know whether they are satisfied or dissatisfied.

Tab. 1 – ***Overall level of customer satisfaction in Kenya according to gender, age and education. Source: own***

Are you satisfied with your bank's products and services provided?	Gender		Age			Education level	
	Men	Women	Under 30 years	30 - 50 years	Over 50 years	University	Primary and secondary
Yes in %	58,70	67,50	64,40	63,90	20,00	63,70	64,10
No in %	39,00	28,10	31,90	33,30	80,00	32,70	35,90
Don't know in %	2,30	4,30	3,70	2,80	0,00	3,60	0,00
Critical values of $\chi 2$	5,990		9,488			5,990	
Calculated values of $\chi 2$	5,860		5,325			4,988	

Note: Secondary education has been used to also refer to respondents of primary education due to minimum number of responses.

As per the results, more women are satisfied than men. Figure 1 and table 1 have confirmed hypothesis No.1 that the overall level of customer satisfaction in Kenya is above 60% and more women are satisfied than men.

Tab. 2 – ***Most important factors of satisfaction for Kenyan bank customers. Source: own***

What satisfies you most in your bank? (you can list up to three reasons)		In total	Gender $\chi 2$=3,84000*		Age $\chi 2$=5,99000*			Education level $\chi 2$=3,84000*	
			Men	Women	Under 30 years	30 - 50 years	Over 50 years	University	Primary and secondary
Quick services at branches	%	27,79	27,33	28,14	26,38	34,11	0,00	25,70	44,44
	$\chi 2$		0,032		4,741			6,998	
Quality of products and services	%	23,57	22,09	24,68	23,31	25,00	20,00	23,74	22,22
	$\chi 2$		0,366		0,127			0,052	
Availability of branches	%	57,82	58,72	57,14	59,20	51,39	60,00	58,38	53,33
	$\chi 2$		0,101		1,488			0,419	
E-banking presence	%	45,41	48,84	42,86	43,87	55,56	0,00	46,64	35,56
	$\chi 2$		1,424		7,465			1,980	
Friendly services at branches	%	35,48	37,79	33,77	34,97	34,72	80,00	33,80	48,89
	$\chi 2$		0,698		4,405			3,973	
Developed network of ATMs	%	43,67	43,60	43,72	42,33	47,22	80,00	44,97	33,33
	$\chi 2$		0,0001		3,302			2,199	

Note: * critical values of $\chi 2$.

Availability of branches (58%) is the most important factor of satisfaction. People with university education prefer availability of branches more than people with primary and secondary education. Quality of products and services (24%) is the least important factor of satisfaction. People with primary and secondary education statistically prefer quick services at branches more than those with university education.

Table 2 has confirmed hypothesis No. 2 that availability of branches is the most important factor of satisfaction and this factor is preferred more by people with university education.

Tab. 3 – ***Most important factors of dissatisfaction for bank customers in Kenya. Source: own***

What dissatisfies you most in your bank? (you can list up to three reasons)		In total	Gender $\chi 2$=3,84000*		Age $\chi 2$=5,99000*			Education level $\chi 2$=3,84000*	
			Men	Women	Under 30 yrs.	30 - 50 years	Over 50 years	University	Primary and secondary
Slow services at branches	%	52,61	52,91	52,38	53,37	51,39	20,00	53,91	42,22
	$\chi 2$		0,011		2,252			2,190	
High prices of products and services	%	55,09	59,88	51,52	55,52	51,39	80,00	55,59	51,11
	$\chi 2$		2,791		1,677			0,324	
Impersonal approach	%	17,37	18,02	16,88	18,40	13,89	0,00	18,72	6,67
	$\chi 2$		0,089		1,902			4,043	
Poor quality of e-banking presence	%	34,00	31,98	35,50	32,82	37,50	60,00	32,12	48,89
	$\chi 2$		0,545		2,101			5,008	
Poor accessibility of branches	%	15,14	13,37	16,45	14,42	19,44	0,00	13,97	24,44
	$\chi 2$		0,727		2,063			3,417	
Low acceptance of my needs	%	42,43	45,93	39,83	44,17	36,11	20,00	44,13	28,89
	$\chi 2$		1,504		2,612			3,803	

Note: * critical values of $\chi 2$.

High prices of products and services (55%) is the most important factor of dissatisfaction. This factor is preferred by more than 50% of the respondents in the social groups. Poor accessibility of branches (15%) is the least important factor of dissatisfaction.

Table 3 has confirmed hypothesis No. 3 that high prices of products and services is the most important factor of dissatisfaction and is preferred by more than 50% of the respondents in all the social groups.

5 DISCUSSION

This research has shown some similarities and differences with other previous research done on customer satisfaction in Kenya. According to this research, the overall level of customer satisfaction is 64%. It was further observed that women are more satisfied than men. In addition, individuals with primary and secondary education are more satisfied than individuals with university education. Based on a research by KPMG (2013), the overall level of customer satisfaction in Kenya is above 70%.

Availability of branches (99%) is the most important reason of customer satisfaction in Africa (KPMG, 2013). In comparison to this research, availability of branches (59%) is also the most important reason of satisfaction in Kenya. Research results further showed that availability of branches is preferred more by people with university education.

Low prices of products and services are essential in creating customer loyalty in Africa (KPMG, 2013). It is further stated that high prices of products and services (70%) is the main reason of dissatisfaction in the banking industry in Africa. As per this research, high prices of products and services (55%) is the most important factor of dissatisfaction to bank customers in Kenya. The results further indicated that high prices of products and services is preferred by more than 50% of the respondents in the social groups.

The results are vital to Kenyan commercial banks that want to know the overall satisfaction level of Kenyan bank customers. Furthermore, by providing the research results on factors of satisfaction and dissatisfaction in Kenyan banks, this article provides the platform for bank managers and other decision makers to improve their services so as to enable maximum customer satisfaction thus improving their financial performances through retaining and attracting more customers.

6 CONCLUSION

This article has investigated the level of customer satisfaction and factors of satisfaction and dissatisfaction in Kenyan commercial banks. Literature on customer satisfaction in commercial banks has been provided. Questionnaires were employed as a method of data collection. A total of 403 respondents were valid.

Based on the findings, the overall level of customer satisfaction in Kenya is 64%. Furthermore, women are more satisfied than men. The findings confirmed hypothesis No. 1.

The respondents also indicated that availability of branches (59%) is the most important factor of satisfaction. People with university education preferred this factor more than people with primary and secondary education. These results confirmed hypothesis No. 2.

Prices being important in determining loyalty in Africa, the respondents indicated that high prices of products and services (55%) is the most important reason of dissatisfaction in Kenya. The factor was preferred by more than 50% of the respondents in all the social groups. These results confirmed hypothesis No. 3.

Based on the results, banks should reduce the prices of products and services in order to create loyalty. The banks should also advocate for the usage of e-banking due to its convenience in transactions at any time. Future research should focus on the ways that banks can reduce the prices of their products and services.

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APPLICATION OF MODERN PERFORMANCE EVALUATION METHODS IN A MANUFACTURING ENTERPRISE

Eva Malichová, Mária Ďurišová

Abstract

Dynamism and variability of the present economic environment do not provide only great number of business opportunities. They also bring conditions and obstacles for enterprises to overcome or to adapt to in an optimal case, thus maximizing their performance. Performance is becoming a primary factor of business successfulness measurement. Nowadays, many enterprises evaluate performance only on the basis of financial indicators. This article is focused on the application of modern performance evaluation methods in a manufacturing enterprise. Discussed business performance during studied periods and the sequence of steps in the calculation is based on the application of some modern performance evaluation methods. Use of these approaches could contribute to their future extension in other enterprises. That is how economic, not only financial, performance could be evaluated.

Keywords: economic performance, Economic Value Added, Net Operating Assets, Cash Return on Gross Assets

1 THEORETICAL FRAMEWORK

The term performance is mostly used in the context of the essence of business existence among competitors. It is also connected with the ability of an enterprise to successfully operate in the next period of time. Ďurišová (2012, p.7) defines performance as: „the ability of an enterprise to repeatedly give certain output in business activity at relatively stable level". According to Drucker, performance represents the final test of any organization and Bourne (2011, s. 10) sees it as „the ability of achieving set goals". Performance needs to be perceived in a complex manner in relationship to all stakeholders. Based on this statement, performance can be defined as the ability to use inputs in own operation, to increase the value constantly, to produce profit and thus ensure the future development of an enterprise (Wagner, 2009).

Throughout years, business performance was focused on various criteria of its evaluation from the owner's point of view. It shifted from monitoring of profit margin through profit maximization to setting cash revenue on gross assets. In 1980s, American professors Rappaport and Fruhan began to be interested in the value management. They were the first in formulating its theoretical concept. Using this theoretical basis, value management was applied under practical conditions. Its tools were created by enterprises like Alcar, Holt or Stern & Stewart. Afterwards, the whole Shareholder Value concept was brought to Europe. (Neumaierová & Neuimaier, 2002)

At present, enterprises can use many methods and indicators to measure their performance. There is an ongoing discussion among experts in the field concerning the measurement of performance and the selection of the best methods and tools to quantify it. Arguments about traditional and modern business performance evaluation indicators are frequent too (Pavelková & Knápková, 2005).

4.22 Modern methods of business performance evaluation

Traditional methods of business performance evaluation do not provide sufficient information value for an enterprise to perform its relevant economic assessment. Because of that, new

performance evaluation methods were created, which take economic benefit into account. They are focused on business performance evaluation in the long term while trying to predict future development and to assess an enterprise in various dimensions. The best known principles of performance measurement are described in the next paragraphs.

Economic Value Added – EVA represents a business performance indicator oriented on economic profit maximization. That is calculated as the difference of capital revenues and economic costs, which include opportunity costs. According to EVA's founder Stewart (1991, p. 137), it represents the difference of residual income or operating profit and cost related to capital needed to gain the income or profit. This method includes using only those categories of revenues and costs, which are related to the main business activity of an enterprise. While calculating the capital costs, method works only with capital from investors expecting revenue from its allocation into the enterprise. Net operating profit after taxes NOPAT is a foundation of EVA indicator's representation. Than it is needed to subtract the value of capital costs from NOPAT. The value of capital costs is determined by weighted average cost of capital WACC and the value of the capital C (Sheeba, 2011).

$$\boldsymbol{EVA = NOPAT - WACC} * C \tag{1}$$

Market Value Added – MVA allows setting business performance related to creation of value for shareholders at a certain time. This indicator is calculated as difference of market and accounting value of an enterprise in case that the market price of the enterprise is higher than the value of capital invested. Indicator defines assessment of enterprise's investors and its development concerning changes in profitability and risk of shares. High market value added provides information about wealth creation for shareholders.

Economic profit represents a variant of economic value added. It is applied to evaluate performance and profitability of an enterprise and its parts. However, it was originally created for use in business value measurement. It is based on the Profit or Loss from economic activity adjusted by taxes from assets value required for enterprise's operation. (Maříková & Mařík, 2001).

Cash Value Added – CVA was created by the Boston Consulting Group. This indicator shows capitalization of net revenues in excess of capital costs. Method does not work with the Profit or Loss but with cash flows. The formula for its calculation is:

$$\boldsymbol{CVA = (CFROI - WACC) * GIB} \tag{2}$$

where CFROI stands for cash flow return on investment, WACC weighted average cost of capital and GIB gross investments basis. This basis represents sum of total capital invested into business operation (Dressler, 2004).

INFA model represents a system of financial indicators in an enterprise organized into a shape of the pyramid. It fulfills function of financial map used to uncover financial performance of the enterprise. From enterprise owners' point of view, the main criterion in this model is net present value. This modern method is a basis of so called Tree of value creation, which is an appropriate construction for controlling and reporting in an enterprise. (Neumaierová & Neuimaier, 2002).

Cash Return on Gross Assets - CROGA indicator is focused on performance evaluation using cash flows. According to Marinič (2008, p. 45), use of cash flows in denominator of this indicator is more strict than in EVA indicator. Cash flows are quantified after adjustig by extraordinary and nonoperational operations. CROGA indicatior's formula is:

$$\boldsymbol{CROGA = \frac{OATCF}{GA}} \tag{3}$$

where OATCF is operating after tax cash flow calculated as Profit or Loss minus depreciations. GA represents gross assets consisting of long-term operating assets at procurement prices and working capital. Use of gross assets eliminates inaccuracies occurring when carrying values are used instead.

2 METHODOLOGY

Modern methods of business performance evaluation were applied in a manufacturing enterprise. The enterprise belongs to medium-sized enterprises with 200 employees. Its production is oriented on plastic products especially for automotive industry. Analysis, as a scientific method, was used to evaluate business performance. Information for quantification of modern methods of business performance evaluation and analysis were acquired from enterprise's accounting documents (Balance Sheet, Income Statement and Notes to the Financial Statements). Personal interviews with the economist of the enterprise were very useful too. These contributed to familiarization with the process in the enterprise and also with enterprise's accounting procedures. It enabled the adjustments of values acquired from documents for calculations of modern performance evaluation methods. Based on a search in professional literature, two modern methods of performance evaluation were selected for the studied enterprise:

- *Economic value added* as a tool of performance evaluation based on economic profit,
- *Cash Return on Gross Assets* indicator as a tool focused on business performance evaluation taking cash flows into account.

3 RESULTS AND DISCUSSION

Modern methods of performance evaluation are applied on the data of the manufacturing enterprise in this part. Enterprise's performance is evaluated here using methods mentioned earlier. The procedure of individual steps needed for application of the methods is also defined.

3.1 Performance evaluation based on EVA indicator

One of the selected methods for performance evaluation of the enterprise was economic value added. This method uses economic profit. The adjustment of the data for better representation of enterprise's economic situation is very important here. Three components are important for EVA indicator's calculation. First is total capital, which had to be adjusted by long-term assets being procured. Second is NOPAT, where interest expenses are added. Third is WACC. The calculation of weighted average cost of capital was difficult considering the identification of own capital costs. Modular method was used in this case. It is based on the sum of risk premiums. After identification of the last indicator's parameter it was possible to calculate indicator's values.

Tab. 1 – EVA indicator's calculation in the enterprise. Source: own.

	2007	2008	2009	2010	2011	2012	2013
NOPAT	965 945	740 470	507 579	785 463	725 712	1 291 271	1 174 340
C	1 832 404	2 943 072	3 489 796	3 765 627	4 227 745	5 398 157	6 055 129
WACC v %	8.30%	8.97%	9.37%	8.78%	9.88%	8.75%	7.48%
EVA	**813 856**	**476 476**	**180 585**	**454 841**	**308 011**	**818 932**	**721 416**

Based on indicator's calculation it is possible to make a statement, that the enterprise was creating value for its owners during all studied periods. In comparison with enterprise's earnings after taxes (EAT) the value of EVA is lower. The difference is caused by capital dedicated to economic activity of enterprises taken into account and also by the adjustment of earnings after taxes.

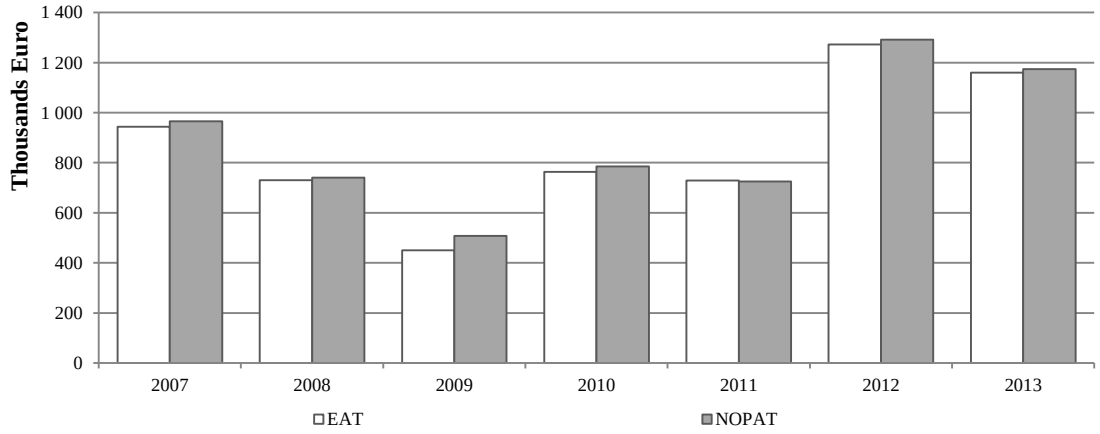

Fig. 1 – Comparison of EAT and EVA indicator in the enterprise. Source: own.

After calculating EVA indicator, enterprise can go further in the analysis of its performance using decomposition of the indicator or sensitivity analysis described in the next part.

3.2 Pyramidal decomposition of EVA indicator

If an enterprise seeks for revelation of those parameters, which create the value for it, pyramidal decomposition of EVA indicator can be helpful. While doing this, components of the indicator are examined with intention to identify those, which affect indicator's value the most. Figure 2 shows pyramidal decomposition of enterprise's economic value added in years 2012 and 2013.

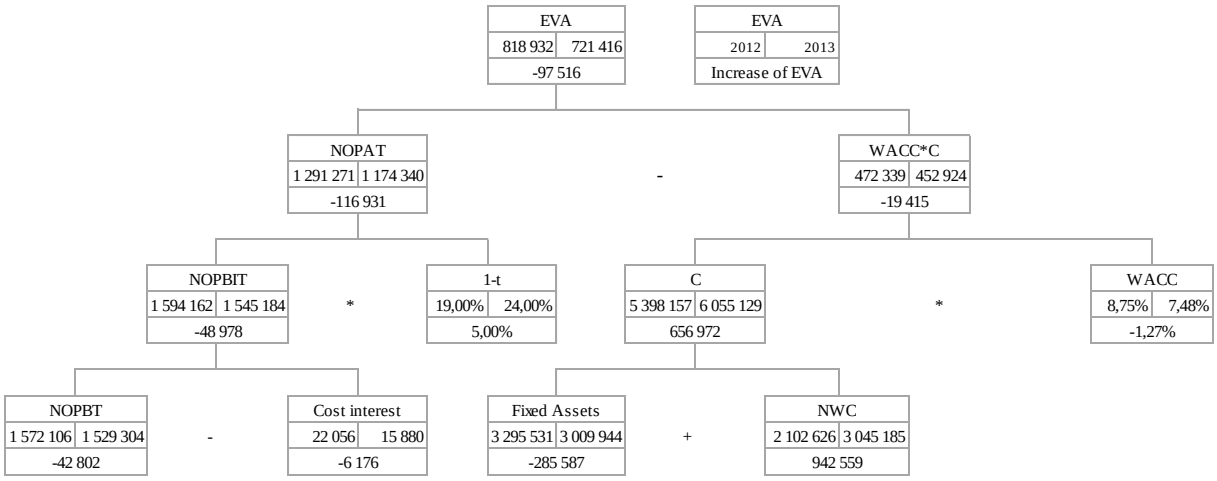

Fig. 2 – Pyramidal decomposition of EVA indicator in the enterprise. Source: own.

EVA indicator consists of the difference of two essential components – net operating profit after taxes and product of capital and weighted average cost of capital. In 2013 value of the enterprise fell more than by 97 000 euros. Decomposition also uncovers, that net profit also fell by 116 000 euros in comparison with 2012. It means, that total decrease of profit was reflected in the decrease of enterprise's value but not in the full extent. In 2013 value of the product of weighted average cost and total capital also dropped and that decreased the fall of value against profit.

Net operating profit after taxes is influenced by net operating profit before taxes and the tax rate. Tax rate was changed from 19 % to 23 % during studied periods. It increased the difference of NOPAT against previous year significantly. Net operating profit before taxes consists of Profit or Loss plus interest expenses. Cost interest was decreased by 6 176 euros in 2013. That also resulted in the decrease of net operating profit before taxes. Profit or Loss before addition of interest expenses was decreased by 42 802 euros. Cost of capital is gained as the product of weighted average cost of capital and capital's value. Total capital, which is adjusted while calculating EVA, increased in 2013 against 2012 almost by 657 thousand euros. This increase was caused especially by the increase of net working capital, because the value of fixed assets dropped almost by 286 000 euros. Net working capital was increased mainly by the rise of receivables and stock.

The pyramidal decomposition helped to identify those parameters, which are significant and influence the value. Here belongs mainly Profit or Loss, net working capital, but also fixed assets and weighted average cost with its individual components.

3.3 Sensitivity analysis of EVA indicator

After defining parameters, which create the value and have essential impact on performance, it is also possible to set the sensitivity of indicator to their change. Based on the sensitivity analyses the impact of increase or decrease of one factor on EVA indicator can be set. Sensitivity analysis is used to set future economic value added and dependence amongst parameters. Table 2 captures EVA indicator's parameters defined by the use of pyramidal decomposition. The value of each parameter is increased by 10 %, while the change of EVA indicator against its present value is examined. This is done on condition that all other parameters stay unchanged.

It is also needed to take into account, that some factors can be interdependent and the increase of one can significantly influence other, thus influence EVA indicator too. Examining EVA

indicator dependent on net operating profit after taxes it is possible to see, that just growth of net profit by 10 % can increase the value of enterprise by 16, 28 %.

Tab. 2 – Sensitivity analysis of EVA indicator. Source: own.

Indicator	*Indicator's value*	*Indicator's value increased by 10 %*	*Calculated EVA*	*New EVA*	*Indicator's change*	*% change*
WACC	7,48%	8,23%	721 416	676 124	-45 292	-6,28%
NOA	6 055 129	6 660 642	721 416	676 124	-45 292	-6,28%
NOPAT	1 174 340	1 291 774	721 416	838 850	117 434	16,28%
Own capital/Total interest bearing capital	96,95%	100%	721 416	707 531	-13 885	-1,92%
Own capital costs	7,51%	8,26%	721 416	677 293	-44 123	-6,12%
Foreign capital/ Total interest bearing capital	3,05%	3,35%	721 416	720 175	-1 241	-0,17%
Total capital costs *(1-t)	6,54%	7,20%	721 416	720 175	-1 241	-0,17%
Net working capital	3 045 185	3 349 704	721 416	698 638	-22 778	-3,16%
Stock	1 073 555	1 180 911	721 416	713 386	-8 030	-1,11%
Receivables	3 559 044	3 914 948	721 416	694 795	-26 622	-3,69%
Financial assets	145 934	160 527	721 416	720 325	-1 092	-0,15%
Accruals	39 558	43 514	721 416	721 120	-296	-0,04%
Non-interest bearing liabilities	1 772 906	1 950 197	721 416	734 678	13 261	1,84%
Interest expenses * (1-t)	12 069	13 276	721 416	742 005	20 589	2,85%
Costs* (1-t)	10 783 148	11 861 463	721 416	-337 517	-1 058 933	-146,79%
Revenues * (1-t)	11 964 801	13 161 281	721 416	1 937 278	1 215 862	168,54%

The fall can be seen by the rise of individual parts of weighted average costs. By the rise of costs of own capital the value of the enterprise is decreased by 6 %. In the case of foreign capital costs and the ratio of foreign capital and total interest bearing capital the fall is very low. However, the enterprise has high ratio of own capital, so it should focus on reduction of own capital costs in the future. It should also try to balance the ratio of own and foreign interest bearing capital. The reason is that the rise of foreign capital costs lowers the enterprise's value just minimally.

Based on previous paragraphs, the sequence of steps of EVA indicator's calculation can be defined. The first activity is preparation of materials for indicator's calculation. All documents relevant for quantification of indicator's input parameters have to be accessible. The second step is setting of net operating assets adjusted by those assets, which are not related with enterprise's main activity and misrepresent the value of net operating assets. Afterwards, net operating profit after taxes is set. It is also adjusted by revenues and costs, which are not related with economic activity of the enterprise. The last indicator's component is setting of weighted average costs of capital. This is usually the most difficult activity for enterprises, because it is needed to define the costs of own capital. There are several methods,

which can be used by enterprises to set the value of own capital costs. Foreign capital costs are represented by interest expenses of the enterprise.

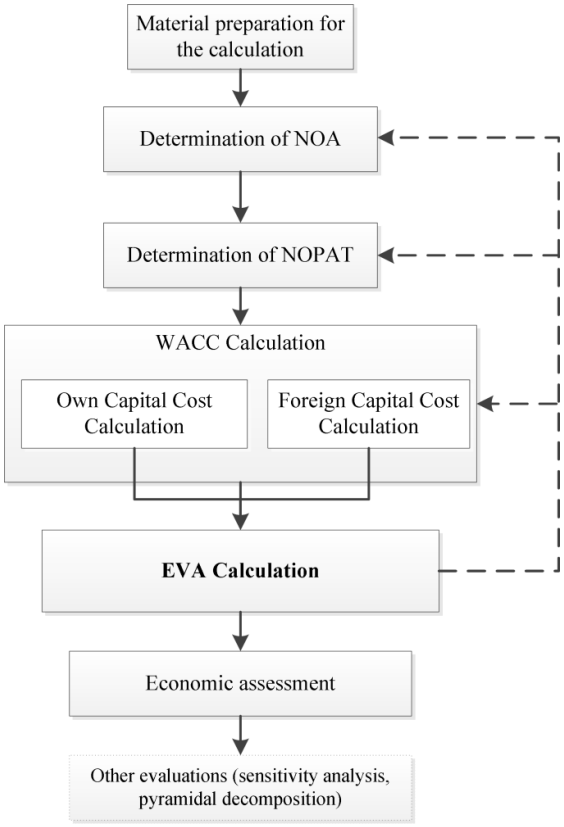

Fig. 3 – Procedure of EVA indicator's calculation. Source: own.

After defining all components of EVA indicator's formula, it is needed to calculate the indicator and subsequently to assess it economically. The enterprise can also use pyramidal decomposition or sensitivity analysis to analyze the indicator. These are tools for identification of value creating factors and their impact on the indicator.

4 PERFORMANCE EVALUATION BASED ON CROGA INDICATOR

CROGA indicator was selected to evaluate performance using cash flow. Based on the defined formula for indicator's calculation, cash flow after taxes and also gross assets were identified. Cash return on gross assets indicator was quantified as a ratio of these two entries (Tab. 3).

Tab. 3 – CROGA indicator's results. Source: own.

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*
Operating cash flow after taxes	1 214 466	1 038 073	751 649	1 127 262	1 056 153	1 699 422	1 877 520
Gross assets	813 051	1 075 284	1 331 154	1 233 331	1 534 604	2 170 307	3 219 474
CROGA	149,37%	96,54%	56,47%	91,40%	68,82%	78,30%	58,32%

When using CROGA indicator, business performance is evaluated by the comparison of indicator's result with the required rate of return of capital represented by weighted average cost of capital. Thus, the enterprise achieves performance in all studied periods, because weighted average cost of capital indicator's value is lower than cash flow return on gross

assets indicator (Fig. 4). It means that the enterprise's rate of return exceeded its owners' expectations.

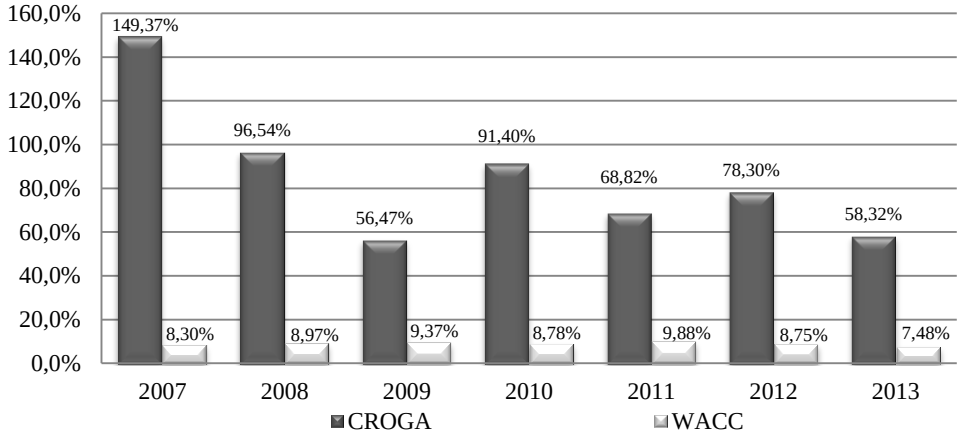

Fig. 4 – Comparison of weighted average cost of capital and cash flow return on gross assets of the enterprise. Source: own.

Application of this indicator in the enterprise was performed in three phases. The first was the preparation of materials and data for the calculation. Indicator's calculation required defining fundamental parts of the formula. Those are operating cash flow after taxes and gross assets.

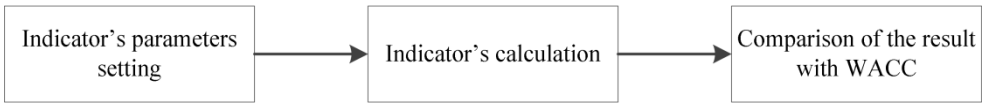

Fig. 5 – Procedure of CROGA indicator's calculation. Source: own.

After defining parameters, indicator's calculation was carried out using ratio and following change to percentages. This kind of performance evaluation requires comparing indicator's value with weighted average costs. That is why the third phase was needed. So finally, comparison was performed finding out whether the enterprise delivers value for its owners. All three phases of this method are summed up at Fig. 5.

5 CONCLUSION

Application of modern business performance evaluation methods is more difficult than use of traditional approaches to performance measurement. Defining the components needed for calculation of indicators is complicated, because it is necessary to adjust values from financial statements to gain relevant data and subsequently assess performance in a proper way. To quantify indicators properly, enterprises must have capable economists, which can adjust individual items and understand concepts applied. Conception of modern performance indicators is focused on revealing the true creation of value for enterprise's owners. It brings new indicators for performance evaluation, but more importantly, it represents a total change in enterprise's orientation from profit to value creation. Although modern methods deliver different view of business performance, it is possible to make a statement, that use of traditional performance evaluation methods is still justified too. Small enterprises can use traditional methods, because the use of modern methods would be too difficult for them. Other companies can use these traditional indicators to get additional information.

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COVERAGE OF UNINSURABLE RISKS BASED ON COMMERCIAL INSURANCE POOL

Hana Bártová, Karel Hanzlík

Abstract

Coverage of uninsurable risks belongs to actual issues of insurance industry. Excessive claims cause negative impacts on property, health and lives. Common objects of insurance are excluded from protection of commercial insurance products. Coverage of uninsurable risks is insufficient.

Uninsurable risks weaken the role of commercial insurance. Recent claims development influences negatively financial results of insurance companies. Insurers change a structure of commercial insurance products and make exceptions in coverage of excessive claims.

In order to look for an effective coverage of uninsurable risks the interest is focused on uninsurable risk of flood, which is significant non-life insurance risk in the Czech Republic. Coverage of uninsurable flood risk is based on commercial insurance pool. This effective pool system includes features of foreign approaches to uninsurable flood risk and is adjusted according to conditions of the Czech insurance market. Insurance pool provides cooperation between the state, insurers and insured objects with positive impact on public finance and insurance industry.

Keywords: insurance, uninsurable risk, pool, flood

1 INTRODUCTION

Uninsurable risks influence current trends in insurance industry. Negative development of enormous risks has significant impact on commercial insurers and public finance. In conclusion it affects prices of commercial insurance products and insurance consumers. Costs of insurance protection rise. Insurers adjust structure of insurance products to new conditions and make exceptions of insurance coverage. These results weaken the role of commercial insurance industry.

Typical feature of the Czech insurance market is risk exposure to floods. Historical development of flood risks confirms high probability of flood occurrence in the Czech territory. Floods cause claims in large scale. Heavy damage means impacts on property, health and also lives (Čamrová & Jílková, 2006).

Commercial insurance calculates with probability of risk, contingency and accidental loss. Commercial insurance companies offer appropriate insurance protection to insured objects by calculated premium. Excessive claims development and series of heavy damage can treat effective functions of insurance market. Nevertheless flood losses are repetitive in conditions of the Czech insurance market. Loss solutions on the side of insurers are exceptions of insurance protection or higher prices of insurance products. On the side of consumers we can observe insufficient cover and underinsurance. Excessive losses intervene in excepted loss development and cause financial losses in results of insurance companies. We can classify this type of excessive risks such as uninsurable risks (Daňhel & Ducháčková, 2010).

Present services of insurance protection are not adequate to frequency of uninsurable risks, which aren't covered by existing insurance system. In order to improve possibilities of

insurance industry it is introduced innovative system based on commercial insurance pool, which is able to cover excessive uninsurable risks.

Commercial insurance pool makes cooperation between the state, insurers and insured objects of insurance. Pool is free market compatible and gives consumers access to uninsurable flood risk coverage. Commercial insurance pool includes features of foreign approaches to uninsurable flood risk and is adjusted according to conditions of the Czech insurance market.

2 COVERAGE OF UNINSURABLE RISKS

Uninsurable risks cause significant impacts on private and public expenditures. Compensation for consequences of uninsurable risks is actual issue of insurance and other industries. In order to solve these problems it is introduced model coverage of uninsurable flood risk.

Coverage of uninsurable flood risk is provided by commercial insurance pool, which is a balanced mix of state, insurer and consumer interests appropriate to conditions of the Czech insurance market. This system is based on real development of flood claims in the Czech republic, on structure of the insurance market and on model simplifications.

4.23 Influence of Uninsurable Risks

Commercial insurance pool is based to prevent from unsustainable consequences of uninsurable risks. Model is focused on risk of flood, which is often excluded from risk portfolio of commercial insurers.

Floods are natural catastrophes, which caused excessive claims in 1997 and 2002 in the Czech republic. Insurers have started to use flood maps, which differ the Czech territory into 4 flood zones according to flood risk exposure. Nevertheless costs of insurance protection have risen and some real estates in the 4^{th} flood zone have got to the list of uninsurable objects. Influence of flood risks is still significant regardless of preventive flood measures.

Risk fluctuation can influence negatively small economy such as economy of the Czech republic. Floods realized in 1997 had affected all regions. Total claims were calculated on the level of 62.6 billion CZK, which had meant 3.3 % of GDP. Only 15 % of claims were covered by commercial insurance protection. Floods in 2002 caused claims in the amount of 73.14 billion CZK. It had meant 2.8 % of GDP (Česká asociace pojišťoven, 2007 – 2014).

Recurrent claims have also social impacts, because estates are selected according to flood areas. Claims development affects insurance premium rate of estates especially in case of the third and the fourth flood areas. The problem lays in application of several different flood maps, which aren't in mutual compliance. It can cause essential impacts on value of property.

Model of commercial insurance pool is dependent on correct calculations of gross and net premiums, which are able to provide appropriate claim payments and acceptable results of commercial insurance companies.

4.24 Calculations of Gross and Net Premiums

Flood claims development in the Czech republic is unfavourable. About 100 thousand real estates are situated in the riskiest flood zone. Other model simplifications correspond to the Czech conditions. Average value of estate is estimated on the level of 2 million CZK. Average loss equals to 201 thousand CZK, which corresponds to 1 % of loss history. Degree of loss of 10.05 % takes into account distribution of loss frequency and loss amount. Model defines fixed sum excess in the amount of 10 thousand CZK (min. 10 %). The excess removes minor losses. Modified degree of loss is calculated on the level of 8.09 %. Specified degree of loss within available information is determined on the level of 11.38 % (Bártová & Hanzlík, 2013).

Net premium (1) is finally determined on the level of 1,422 CZK (i.e. 0.071 ‰). Net premium follows rate calculation of net premium with excess participation in the amount of 0.0711 ‰.

(1) $${}^{S}_{EP}P^{H}_{(h)} = v \cdot q_1 \cdot \left[G_1 + (1-b_1)\cdot s - G_{0.1} - (1-b_{0.1})\cdot x_0\right]\cdot H\ ,$$

Net premium ($${}^{S}_{EP}P^{H}_{(h)}$$) is determined by discount rate in the amount of 0.990 (v), loss frequency (q_1), specified degree of loss (G_1), cumulative and relative frequency of loss in loss interval (b_1, $b_{0.1}$), full value insurance (s), wage amount of losses in loss interval ($G_{0.1}$), ratio of contracted sum insured and insurance value (x_0) and insurance value (H). The model supposes that (h) equals to (H) according to full value insurance (Cipra, 2006).

Calculations are based on real data of the Czech insurance market published by the Czech Insurance Association (Česká asociace pojišťoven, 2007 – 2014) and model simplifications.

Calculation of gross premium costs is relatively difficult. We assume, that additional costs (e.g. collection costs, costs of cancellation) are connected with main flood risk coverage. Amount of additional costs is limited. The model determines additional costs on the level about 11.7 %. It is necessary to restrict possibilities of insurers to increase costs.

Gross premium is determined as a result of ratio of risk premium with independent administrative costs and dependent administrative costs of gross premium with calculated profit of gross premium. Model gross premium rate is calculated in the amount of 3.016 ‰, which means total increase in premium rate of 0.37 ‰. Finally annual total gross premium (2) equals to 6,032 CZK in case of sum insured of 2 million CZK (Bártová & Hanzlík, 2013).

(2) $$b = \frac{rp \cdot cost\ rate}{1-(a_z+d_z+o_z+i_z+st_z+l_z+x_z)-p_z}$$

Gross premium rate (b) at risk premium rate (rp) per unit of sum insured depends on surcharge on risk premium (cost rate), acquisition costs (a_z), own administrative costs (d_z), organization costs (o_z), collection costs (i_z), cancellation costs (st_z), adjustment costs (l_z), other costs (x_z) and calculation of profit (p_z). (Cipra, 2006). Risk premium is calculated on the level of 5,327 CZK, which is determined by probability of excessive floods and occurrence of real estates in risk flood zones (Bártová & Hanzlík, 2013).

3 COMMERCIAL INSURANCE POOL IN CONDITIONS OF THE CZECH INSURANCE MARKET

Pool system is optimized according to conditions of the Czech insurance market. Insurance events of floods influence negatively hundreds of municipalities, infrastructure and change our countryside. Flood (in addition of storm) means a sole natural peril. Nevertheless the state can't provide full cover of claims. It is necessary to transfer risk to other subjects, which should basically be insurance companies.

From the point of risk transfer view uninsurable excessive risks aren't lucrative field. Absolute growth of losses was projected into claims payments. E.g. payment of claims in 2002 reached the amount of 32.9 billion CZK. Recovery of loss settlements was equivalent to the share of 87 % of total losses, i.e. 28.7 billion CZK (Česká asociace pojišťoven, 2007 – 2014). Commercial coverage is exposed to high risk. Insurance pool usually loses possibility of reinsurance and risk is transferred to own retention of insurer. Insurer refuses to cover risk or excludes risk through extension of flood zones.

The practice is also influenced by market diversification in the Czech republic. The biggest share of non-life insurance market is divided into 3 insurance companies. These insurers manage more than a half of insurance policies. Market concentration should have negative impact on sufficient risk diversification in the insurance pool in conditions of the small Czech

insurance market. Commercial insurance pool should join appropriate number of pool members.

4.25 Pool Structure

Structure of the commercial insurance pool requires optimal cooperation between commercial insurers, the state and participation of persons insured. This mix is able to reduce negative impacts on public expenditures. Pool structure also provides services of commercial insurance in spheres without reinsurance interests. Appropriate risk coverage is adequate to special needs of consumer of insurance product, who owns real estate in risk flood zone. Object of insurance is risk covered before claims occurrence.

The pool consists of several layers. Members of the pool are commercial insurance companies, the state authority, the supervisor and insurance consumers. The system is multilayered (Hanzlík & Bártová, 2015).

4.26 Role of the State and Supervisor

The state plays independent role of the authority, which introduces legal framework of the pool. Full participation of the state in risk coverage is unacceptable. Insurers have a risk aversion to flood territories and to risk coverage of objects in risk zones. Reinsurance markets generally don't cover selected risks or cover by excessive growth in reinsurance premium. Consumer has to participate in each claim by loss participation in order to prevent from new building development in flood territories. Increase in participation and reduction of minor losses contribute to reserve establishment, which is determined to total loss settlement.

Key role of the state is exposed to 2 possibilities – to legalize compulsory estates insurance or to provide reinsurance function by way of pool guarantee. Compulsory estates insurance in flood zones is typical for insurance market of Romania. The problem of this foreign approach lies in administrative barriers and subsequent controls. Flood maps abolition and implementation of global obligatory insurance are essential conditions of acceptance of this solution. Insufficient preventive measures and inappropriate actualization of flood zones lead to discriminations and incorrect premium calculations in risk exposed territories.

Because of reasons mentioned above convenient approach of the pool structure is a guarantee of the state. State guarantees require active cooperation with insurers, who accept adequate share of responsibility for risk realization caused by natural catastrophes.

Supervisor assumes independent control over the pool. Supervisor is responsible for transparency of the pool and compliance with pool rules, which have high impact on efficiency of the pool. Responsibility of supervisor in conditions of the Czech insurance pool overtakes central bank, which has institutional independence and provides support of insurers interest to participate in the pool. Integrated supervision is economic and contributes to pool safety. Legal framework and controls of compliance with pool rules are integral parameters of effective commercial insurance pool.

4.27 Participation of Insurers

Participation in the commercial insurance pool is compulsory for insurers, who offer non-life flood insurance products. Insurers are members of the pool, which meets requirements to be profitable in long term. But entrance of insurers with small market share into the pool should be risk. Pool doesn't primarily guarantee profit. Main function of the pool is to exclude uninsurable risk, which has negative impact on financial results of insurers. Members of the pool cover costs of claims development and guarantee inseparably insurance payments.

Advantage of pool members is a possibility of new clients acquisition. Insurers should also benefit from corporate social responsibility (CSR) or reach new business targets.

Insurers use own external and internal network of insurance intermediaries. This way eliminates administrative and other costs, which have neutral impact on premium. Model of uninsurable flood risk coverage enables insurers to offer innovative insurance product, which complements current portfolio of non-life insurance products through minimum of extra implementation costs.

4.28 Multilayered Pool System

Commercial insurance pool is based on multilayered basis. Balanced mix of interest groups builds the basis of successful pool system. Multilayered pool system is based on 4 key factors – insurance pool, compulsory attendance, profitability in long term and effective supervision.

Finally consumers and insured objects play major role. Structure of the pool and its functions offer insurance protection against appropriate premium. Effective pool system is able to cover excessive flood costs and support preventive measures to decrease future pool expenditures (e.g. anti-flood barriers) and also public expenditures.

Mutual relations of insurers, authorities of the state and supervisor, clients and insured objects are supported by cooperation of claims adjusters and pool administration ensured by own organization structures of insurers.

Multilayered pool system is adjusted according to specific Czech insurance market conditions. There are also a few comparable foreign approaches, which are based on the same aim to cover uninsurable flood risk. Multilayered pool system takes advantage of comparable foreign approaches, which participate in final arrangement of pool structure.

4 COMPARISON OF FOREIGN APPROACHES TO UNINSURABLE FLOOD RISK COVERAGE

Excessive uninsurable flood risk affects development of foreign insurance markets. The model of commercial pool takes in consideration approaches of American and British insurance markets. Both of foreign systems are based on cooperation of the state authorities, supervisors and commercial insurance companies in order to protect effectively insured objects against flood risks.

4.29 The National Flood Insurance Program

National Flood Insurance Program (NFIP) was introduced in the USA. The program is a substitute for insurance products in cases of poor commercial insurance protection. NFIP covers risks of floods.

NFIP was set up to solve consequences of flood risk realization, which include insurance exclusions, flood risk areas founding, increasing costs of commercial insurance protection. Insurance protection is guaranteed by the state and provided by insurance companies. Nearly 5.5 million of American households were members of the Program in 2010 (The National Flood Insurance Program, 2013).

Selected insurance companies are members of Federal Emergency Management Agency (FEMA), which provides insurance protection according to risk profile of insured objects. The Program distinguishes 2 groups of protected flood areas – high-risk area and medium and low risk area. Insurance agents offer insurance. Losses are settled by value of costs paid for loss remove or by value of property at the moment of risk realization. Minimum annual premium costs 129 USD (The National Flood Insurance Program, 2013).

The state also supports anti-flood barriers, which can decrease costs of insurance protection. Attendance in the Program is compulsory for objects located in high-risk area. Main advantages of the NFIP are simple differentiation of 2 risk profiles of risk areas and compulsory attendance. Important disadvantage of the Program is unprofitable development of Program results.

4.30 Flood Re Scheme

Flood Re is an approach of uninsurable excessive flood losses in Great Britain. Flood Re is a part of Flood Re Scheme, which has been implemented since 2014. Governmental organization DEFRA (Department for Environment, Food and Rural Affairs) prepares and provides regulation of Flood Re. Experts, insurance specialists, the British association of insurance companies, representatives of banks and brokers, members of the Parliament and other interest and lobby groups took attendance in a process of approach definition.

Aim of the British government is to reduce occurrence of uninsurable objects in risk areas and to influence trend of increasing costs of commercial insurance protection. The approach should be an effective solution, which offers protection for 350 thousand British households. Minimum costs of insurance protection were calculated on the level of 210 GBP annually (Department for Environment, Food & Rural Affairs, 2014).

Participants of Flood Re are DEFRA, the state (the Parliament), National Audit Office and supervisor. DEFRA is responsible for legislative framework and for ensuring main aim (i.e. an effective coverage of uninsurable flood risk). DEFRA monitors risk profile and risk assessment of floods. Flood Re subsequently participates in financial management and provides information to DEFRA, which analysis impacts on public finance and defines objects of insurance protection. DEFRA reports information to the British Parliament, which is connected with the National Audit Office (NAO). NAO controls compliance with rules of economy, effectiveness and efficiency. Authority of supervision takes care about legislation, prepares rules of insurance companies evaluation and analysis compliance with capital requirements of commercial insurers.

Positive effects of the Flood Re cause strengthened role of commercial insurance industry, unified legislation, clear definition of reserves establishment and reserves administration, changing reserves in case of risk development, compatibility of risk assessment and calculation of premium and prevention of increasing costs of insurance protection. Difficult legislation, unsolved role of insurance intermediaries and a number of the state administrative participants are disadvantages of the British Flood Re.

4.31 Comparison of Foreign Approaches and Commercial Insurance Pool

Commercial insurance pool has similar features such as selected foreign approaches. Insurance protection of NFIP is extended by protection of commercial objects. Attendance in the American NFIP is compulsory for specified group of estates (e.g. according to risk exposure per location). Participation in the British Flood Re is voluntary. Attendance in the Czech pool is also voluntary from the point of view of consumers.

Both foreign systems are based on insurance principles so as to the Czech insurance pool. Nevertheless American NFIP is unprofitable. On the other hand Flood Re is relatively new system. Both systems distinguish risk profile of uninsurable areas. The Czech pool provides protection to insured objects in the riskiest 4^{th} flood zone.

The role of supervision is also similar described. Certainly the number of participants is higher in USA than in Great Britain especially due to number of households and real estates.

The Czech commercial insurance pool calculates with a group of 100 thousand real estates in risk zones.

Significant difference lies between minimum premiums. Flood Re insurance premium is nearly 3-times higher than premium calculated by NFIP. Annual premium of Flood Re equals to 304 USD. Annual premium of NFIP equals to 120 USD. Annual premium of the Czech insurance pool is calculated on the level of 245 USD. We suppose FX rate of USD on the level of 24.585 CZK/USD (i.e. valid FX rate on the 30th of January 2015). It is necessary to notice, that NFIP is unprofitable approach and Flood Re depends on interest of participants influenced by their voluntary attendance in Flood Re system.

Both foreign systems have advantages and disadvantages. These solutions mean opportunities for basis of the Czech commercial insurance pool, which is modified according to specific conditions of the Czech insurance market. Comparison of main features of foreign approaches and commercial insurance pool is described in Table 1.

Tab. 1 – Comparison of Foreign Approaches and Commercial Insurance Pool. Source: DEFRA, The Flood Reinsurance Scheme – Regulations, Department for Environment, Food & Rural Afairs (2014); NFIP, Summary of Coverage (2013); own processing

Feature	NFIP (USA)	Flood Re (GB)	Commercial Insurance Pool (CZE)
Insured objects	Estates and equipment (private and commercial)	Estates (private and limitedly commercial)	Estates (private)
Participation of risk affected objects	Compulsory in high-risk area	Voluntary	Voluntary
Risk profile	High-risk area and medium/low-risk area	Risk determined areas according to historical development	4th flood zone (the riskiest)
Supervision	Federal Emergency Management Agency	Institutions of regulation, National Audit Office	Central Bank
Expected number of participants	5,500 thousand of objects	350 thousand of objects	100 thousand of objects
Annual minimum premium	120 USD	304 USD	245 USD

5 CONCLUSION

Commercial insurance pool in conditions of the Czech insurance market is introduced to cover uninsurable flood risk. The model of the pool is based on specific features and development in the Czech republic and on model assumptions.

Structure of the pool is described according to roles of pool members – the state, supervisor, insurers. This multilayered cooperation creates an effective system, which is able to cover excessive flood risk. The pool is compared with foreign approaches of uninsurable flood risk. Basis of the pool is tested in order to calculate adequate level of insurance premium.

The model of commercial insurance pool is ready for implementation, which offers effective solution for other uninsurable risks. Main advantage of the pool is exclusion of uninsurable risks from risk portfolio of insurers. The pool determines new business opportunities for insurers and potential profit in case of positive claims development in long term with the state guarantees. Positive effect of the pool is involved in better research and actualization of flood maps in order to provide more effective preventive measures in risk territories. Secondary effects influence positively appropriate insurance payments from reserves of the pool.

Commercial insurance pool transfers risk from uninsurable objects to commercial insurers, which has positive impact on public and also private expenditures. In conclusion commercial insurance pool provides efficient insurance coverage of uninsurable risks based on real conditions of the Czech insurance market.

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UTILIZING THE MONTE CARLO METHOD FOR THE ESTIMATION OF CAPITAL REQUIREMENT IN INSURANCE

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Abstract

The capital adequacy presents a very significant tool of regulation in the functioning of financial institutions and therefore also in the insurance sector. In the current years financial market development led to the increased regulations and to stricter requirements on capital in all the financial institutions. New regulatory directive, which should regulate insurance sector at the level of the European Union and which have been in the preparation for a long time, should be fully implemented in the year 2016. Solvency II should change the current approach in the risk management, capital adequacy and transparency in the insurance sector. Main aim of this paper is to simulate selected probability distribution, by using the Monte Carlo simulations, and based on those to estimate capital requirements for equity portfolio, denominated in various currencies according to Solvency II by using Value at Risk and Expected Shortfall. The capital requirements will be also estimated separately for equity and currency risk and the results will be compared.

Keywords: insurance, capital requirements, Monte Carlo simulation, Solvency II

1 INTRODUCTION

Insurance sector represents one of the most complex sectors of financial services which aim is to eliminate negative impact of unpredictable events. Financial market development in the current years led to the increased regulations and to stricter requirements on capital not only in the bank sector. In order to ensure the client's protection, credibility, transparency and stability, it is necessary to determine certain rules for the entrepreneurship in this area including the establishment of supervisory institutions. The capital adequacy presents a very important element in the functioning of financial institutions and therefore also in the insurance sector. The determination of adequate amount of capital that the insurance must hold presents a significant task for the risk management. Low level of capital entails the risk of violating the liabilities due. On the contrary its inadequate high level can lead to inefficient capital allocation.

Since the 70s of last century the regulation and supervision of the insurance market has been continuously harmonized by the implementation of three generation of directives and consequently by Solvency I regime. This legal solvency regime and the regulation are insufficient and it does not enable to detect all risks and it also does not require that the insurer takes into consideration the environment of low interest rates. Therefore it has been substituted in 2009 by legally amended Solvency II which is based on the regulation of risk management, balance approach and it implements more fundamental and more complex evaluation of a total financial situation of the insurer. Solvency II also provides the basic tool for risk management and is based on three pillars (requirements for sufficient capital of the insurance companies, rules for risk management and requirement for the insurance's activity transparency); it creates the preconditions for fulfilling basic philosophy of EU, meaning to protect the consumer in market conditions. New regulation of solvency is based on complex risk approach and therefore it newly includes the element of market and operational risk. Full implementation of Solvency II is assumed in 2016, see EIOPA (2015).

Main aim of this paper is to simulate selected probability distribution, by using the Monte Carlo simulations, and based on those to estimate capital requirements for equity portfolio, denominated in various currencies according to Solvency II by using Value at Risk and Expected Shortfall. Then will be estimate capital requirements separately for equity and currency risk and the results will be compared.

First part of this paper is aimed at theoretical basis of Value at Risk, Expected Shortfall and Monte Carlo simulations. Second part is an application part, where an illustrative example is defined and solved. Capital requirements are formulated according to Solvency II as Value at Risk at the significance level 85% and 99.5%. Last part contains an evaluation of the results.

2 VALUE AT RISK AND EXPECTED SHORTFALL

Value At Risk (VaR) is probably most used method for measuring and managing risks in practice. This method can be used to calculate capital requirements, financial risks management, integration of risks into one value etc. VaR represents the risk value, which with given probability α will not be exceeded during certain time period N, see Hull (2007). Mathematically VaR can be expressed as one sided quantile of distribution of profits and losses for certain time of holding, and it is determined based on certain historical period. It is a function which consists of two parameters: time horizon (N) and the significance level (α).

$$\Pr\left(\Delta\widetilde{\prod} \le -VaR\right) = \alpha. \tag{1}$$

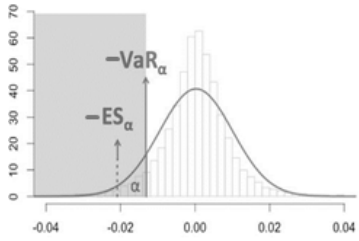
VaR is, from theoretical point of view, relatively simple and understandable conception; however, practical determination can be a significant statistical problem. No standard calculation method exists for the determination of VaR. Despite this fact, it is usually used to this calculation procedure: calculation Market-to-market Value, estimation probability distribution of portfolio´s returns. The differences among individual methods lie especially in the methods of simulating changes of risk factors and in methods transforming risk factors to change portfolio's value. Alexander (2008) shows, that there are three basic methods used to calculate VaR in practice: Variance and covariance method, which is used for estimation of potential portfolio's losses volatility and correlation, which are acquired from historical data, Historical simulation, where the potential future loss is estimated based on losses which happened in the past, Monte Carlo simulation, which works with large number of simulations of portfolio's value development and which will be further described in detail.

Expected Shortfall (ES) is second method, which is recommended by directive Solvency II. This method represents a coherent risk measure and captures extreme losses that are occurred with low probability, which is typical for insurance sector. ES can be defined as the average of expected losses that exceeding the Value at Risk on the confidence level α. The Expected Shortfall of X at confidence level $\alpha \in (0, 1)$ is defined as:

$$ES_\alpha = E(X \mid X > VAR_\alpha) \tag{2}$$

where ES is expected extreme loss, X is random variable with $E(|X|) < \infty$, VaR represent Value at Risk on confidence level α.

Fig. 1 - Value at Risk and Expected shortfall. Source: www.portfoliomason.com



Indisputable advantage of VaR method is that it determines one summary number which shows the risk rate that is the portfolio exposed to, which means that it is practically simple and easily understood method. Other advantage is that there is possibility to use this method at all levels and for all types of companies' activities; since it takes into the consideration the correlation among individual risk categories and at the same time also among the individual risk factors. On the other hand the VaR is static method which does not take into account the utility which derives from the diversification of various risks in the same portfolio and it does not react on the changes in the portfolio. In comparison with the ES method it is not coherent level of risk, since it does not fulfil the attribute of sub-additivity. Another disadvantage is the fact that VaR represents only one point on the probable function and therefore it does not show anything about possible losses beyond the VaR level. ES method is used especially because it presents coherent level of risk and compared to VaR it fulfils the attribute of sub-additivity. ES in comparison with VaR can detect damages which are above the VaR level. This attribute is very important especially in the insurance where it is probable that with a small probability there will be extreme damages. In comparison with general VaR method the ES supports diversification.

3 MONTE CARLO SIMULATION

Monte Carlo simulation (MC) is a flexible tool modelling stochastic processes and is used to determine the value of non-linear instruments or can be used where mathematical methods fail, see Alexander (2008). Method is deriving from the law of big numbers; where the large numbers of randomly generated risk factors with selected characteristics come close to theoretical assumption, see Tichý (2010). When executing Monte Carlo simulation the following procedure can be used; based on selected probability distribution (e.g. Gaussian, Poisson, Student's distribution etc.), a vector of random numbers is generated, see below. In case that the portfolio does not contain more files, it is necessary to estimate also correlation structure by e.g. Cholesky algorithm. Subsequently development of yield (x) of assets with selected model specifying behaviour of individual portfolio instruments is simulated e.g. Brownian motion, Levy's model etc. Specifically for Brownian motion, which will be used in the paper, the development of yields can be defined as Tichý (2010):

$$x^i = \mu \cdot \Delta t + \sigma \cdot \tilde{z}^i \cdot \sqrt{\Delta t}\,, \tag{3}$$

where μ is average yield, σ is standard deviation, $\tilde{z}$ is a random number from normalized normal distribution $N(0;1)$, Δt is increase of time, i expresses i-th asset.

For generation of random numbers can be selected various probability distributions. In this case will be used to normal and Student probability distribution. Normal distribution is characterized by two parameters; mean value (μ) and standard deviation (σ). The next will be used to Student distribution, which is used in finance as probabilistic models assets returns. This distribution is characterized by three parameters namely mean value (μ), standard deviation (σ) and degrees of freedom (υ). The Student distribution becomes closer to the normal distribution when the parameter υ increase. The parameter υ will be estimated by

method of moments, which is in principle a simple method for constructing estimates of unknown parameters in probability distributions. The principle of methods lies in comparison selection moments of the acquired data with the theoretical moments predicted distribution with density of probability *f (t).*

As it was mentioned above, MC is based on generating large numbers of random scenarios, whose selected characteristics will come close to theoretical assumption. Estimation's error than corresponds to standard deviation of result. In 1997 Boyle et al. (1997), introduced techniques, which are trying to lower estimation error (dispersion of result) and by this increasing simulation's Monte Carlo effectiveness. At the same time, it comes to reducing the number of generated scenarios and decreasing the time requirement of Monte Carlo simulation. Among these procedures of MC belong: Antithetic Sampling Monte Carlo, Stratified Sampling Monte Carlo, Control variants Monte Carlo, Moment matching Monte Carlo and others.

When applying **Primitive Monte Carlo simulation** (PMC) random elements are generated so that they correspond to characteristics of selected probability distribution. This technique is relatively quick, but the estimation will be sufficiently accurate only for large number of random scenarios. Large numbers of scenarios lead to higher time demand of simulation see Tichý (2010). From this reason technique which enables to improve effectiveness of PMC, can be applied; e.g. Glasserman (2004) or Jäckel (2002) are dealing with this.

Antithetic Sampling Monte Carlo (ASMC) is for its simplicity and comprehensibility used very often in finance. The method is based on negative correlation among vectors of random elements, meaning $\rho(X, \overline{X}) = -1$, see Tichý (2010). Supposing X random elements $\tilde{z}$ from normalized normal distribution then remaining components $\tilde{z}_i$ are obtained as opposites with respect to its mean value *m*, according to the relation:

$$2m - \tilde{z}_i \in \text{symmetric distribution}, \tag{4}$$

We can achieve double the amount of random elements, which better fulfil characteristics of selected distribution. It is a method, which leads to the decrease of the time consumption and achievement of zero mean, meaning the symmetry of probability distribution. The method's limitations lie in the fact that it can be used only when generating random elements from symmetric probability distributions.

Latin hypercube sampling (LHS) is a numerical simulation method. It was first introduced by McKay et al. in 1979 and it is based on stratified sampling. The entire scope of the input random variable is covered by uniformly with respect to the distribution function a real value is a priori excluded. The method principle lies in dividing domain of the cumulative distribution function *F(x)* (which is corresponded to the probability density function *f(x)*) into *N* disjunctive intervals (stratas). Individual stratas have a same probabilities of *1/N*. From each strata is selected one value, which represents the entire interval and is to be used only once in the simulation. By using inverse transformation of the distribution function is obtained the representative value of random variable. One of the methods for the selection samples from individual stratas is:

$$x_{i,k} = F_i^{-1}\left(\frac{n + (k-1)}{N}\right) \tag{5}$$

when F_i^{-1} is the inverse distribution function of random variable X_i, k is the kth strata of the ith random variable X_i, n is a randomly generated number from the interval (0;1) and N is the number of intervals.

After generating representative samples for all random variables taken into consideration samples for individual simulations are selected in the form of random permutations of whole numbers *1, 2, … N*. Usually, among the individual variables, it comes to the correlations which influence the accuracy of results and therefore this method is widened of recording also mutual relations among the elements (LHSD). More methods of selecting representative values for correlated random vectors exist. Most often the correlation is solved by simple change in ranking of representative samples in individual variables without changing their values.

This method enables its users to generate two or more mutually independent group of random numbers and it can be used in generating processes which are combined of random numbers from the distribution with various characteristics. With this method it comes to the significant decrease of generate scenarios without worsening the estimate accuracy by which the correct result is achieved much faster than with PMS.

4 ESTIMATION OF CAPITAL REQUIREMENTS

In the case of internationally oriented market subjects the role of currency risks plays an important role; this derives from unexpected changes of foreign currency exchange rates and as a result it changes the market price and also the subject market's position. Since insurers invest especially on European and American markets, the daily closing prices of three stock indexes, which are denominated in three different currencies, were used as input data: Down Jones Industrial Average (DJI) denominated in USD, Deutsche Aktien IndeX (DAX) denominated in EUR and FTSE 100 (FTSE) denominated in GBP. Prices of individual indexes were inquired on daily basis in the period of January 1st, 2003 to January 1st, 2015. For the same period exchange rates of foreign currencies to CZK were also inquired. The exchange rates announced by Czech National Bank were considered. In case that some stock markets did not trade, the missing data were substituted by the value from previous business day. We have available time line of 3110 daily logarithmic yields of stock markets and exchange rates. Further, we suppose portfolio with minimum risk (M), which was determined, based on conditions of Markowitz model and its composition is shown in Tab. 1.

Tab. 12 - Market portfolio´s composition Source: Own calculations

	DJI (%)	DAX (%)	FTSE (%)	$E(R_p)$ (%)	$\sigma(R_p)$ (%)	S	K
M	0.2827	0.3053	0.4120	0.0165	0.9947	0.1274	9.9446

From the aforementioned table it is evident that the portfolio do not has normal distribution. The mean value is approximately 0.02 % and standard deviation is 1 % for portfolio with minimum risk. The data are more or less symmetrically distributed around mean value; there is identified low positive skewness (S) and higher kurtosis (K) compared to normal distribution. Higher kurtosis is typical for financial assets. Between indexes there is dependence, the most correlation is between DJI/DAX about 0.51. Correlation between next indexes is slight. This information is used to for calculation of Cholesky´s matrix.

VaR and ES will be calculated at the significance levels and time horizon, which correspond to solvency capital requirement (SCR) and minimal capital requirement (MCR) according to Solvency II, meaning at 0.5% and 15% significance level for a yearlong time horizon. After the capital requirements will be calculated separately for equity risk and currency risk. We suppose that yields have multivariate normal distribution and multivariate Student distribution with 4.8157 degrees of freedom, which has been estimated by methods of moments. Furthermore, the analysis of sensitivity of degrees of freedom to kurtosis will be performed. Behaviour of individual portfolio's instrument follows Brownian motion and 100 000 random

scenarios are generated. Subsequently, used methods will be compared. Calculations were performed in Wolfram Mathematica 9.0.

By PMC, ASMC and LHSD are simulated probability distributions for portfolio with minimum risk and determined descriptive characteristics, which is shown in Tab. 2.

Tab. 13 - Descriptive characteristics for probability distribution. Source: Own calculations

	PMC		**ASMC**		**LHSD**	
	$E(R_p)^*$	**$\sigma(R_p)^*$**	**$E(R_p)^*$**	**$\sigma(R_p)^*$**	**$E(R_p)^*$**	**$\sigma(R_p)^*$**
N (μ.σ)	0.0199	0.9962	0.0165	0.9891	0.0199	0.9962
S (μ.σ.υ)	0.0203	1.2975	0.0166	1.3667	0.0203	1.2975
	S	**K**	**S**	**K**	**S**	**K**
N (μ.σ)	0.0069	3.0115	-0.000	3.0010	0.0069	3.0115
S (μ.σ.υ)	-0.120	9.2776	0.0000	8.4565	-0.120	9.2776

* in %

From the above table it can be seen that individual estimations of mean and standard deviation based on multivariate normal distribution is almost equal to the empirical mean and empirical standard deviation. But does not correspond with empirical kurtosis, which is very low. This estimation is very close to standard normal distribution, which is characterized by zero mean and standard deviation of one. Therefore Student distribution is applied. Individual estimation based on multivariate Student distribution more correspond with empirical kurtosis for all methods, but standard deviation increased by approximately 0.30 pp and also mildly increased mean value. The kurtosis can control by parameter υ (degree of freedom). In this case is used to υ = 4.8157, which has been estimated by method of moments. When should be selected lower value by 0.1 pp, the kurtosis increased only about 0.03. But when υ will be equals 4.4, the kurtosis will be 13.38. It follows slight decrease value of υ leads to multiple growth of kurtosis. On the other hand, slight increase degree of freedom leads to multiple decline of kurtosis. For example, when will be selected υ = 5.1, the kurtosis will be approximately 6.56. For estimation it is better to use multivariate Student distribution, which is able to capture higher kurtosis and heavy tails, which is characteristic for financial assets.

A comparison of different methods shows that we cannot state which method is the best. The best estimation of mean value is acquired by ASMC method for both probability distributions. This method is as well simple and low time consuming. Its limitations lie in the possibility to utilize it only for symmetric distribution of probability. More precise estimate of standard deviation is achieved by PMC and LHSD method which also better estimate the skewness. Better estimation of kurtosis for multivariate normal distribution is again provided by PMC and LHSD methods. ASMC method has better results for multivariate Student distribution. PMC and LHSD method in our case lead to the same results from which we can assume that with sufficient number of scenarios it will provide similar results as other used more sophisticated approaches LHSD method is more time consuming in comparison with the other methods and in this case it is the least appropriate.

Based on selected data and aforementioned procedures the capital requirements for equity portfolio were calculated by VaR and ES. The results are shown in Tab. 3.

Tab. 14 - Capital requirements for portfolio with minimum risk in %. Source: Own calculations

VALUE AT RISK											
Multivariate normal distribution						Multivariate Student distribution					
PMC		ASMC		LHSD		PMC		ASMC		LHSD	
SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR
35.64	11.34	36.12	12.06	35.64	11.34	59.27	13.22	64.24	14.90	59.27	13.22
EXPECTED SHORTFALL											
Multivariate normal distribution						Multivariate Student distribution					
PMC		ASMC		LHSD		PMC		ASMC		LHSD	
SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR
40.68	19.47	41.16	20.17	40.68	19.47	79.40	26.13	86.86	28.70	79.40	26.13

The principle of determine VaR is that with growing level of significance also grows the value of VaR and by this also capital requirements value. The same stands for time horizon, for which VaR is calculated, with growing time horizon the requirements for held capital are growing. As a result of this, SCR will always reach higher values then the MCR because it is computed at a higher significance level. Then value of ES will be higher, because it is calculated from losses which exceed VaR, as was recently analysed by Matušková (2014a).

From Tab. 3 it is evident that capital requirements calculated by VaR for multivariate normal distribution the SCR is oscillating at approx. 36 % and MCR at approx. 11 % for all used methods. SCR and MCR obtained by ES increased and oscillating at approx. 41 % and 19 %. With the multivariate Student distribution the values of SCR increased approx. about 24 pp and value MCR approx. about 2 pp for VaR method and 40 pp and 7 pp for ES method. Again it can be seen that the capital requirements obtained using by LHSD method correspond to estimation obtained by method PMS, which is simpler. It is clear, that capital requirements are higher acquired by utilizing the multivariate Student distribution and by utilizing ES method.

Capital requirements affect the items of insurance company's balance sheet, the fact if individual items will grow or decrease cannot be definitely stated, again it depends on the type of insurance company. It is possible that increase of capital requirement will most likely lead to increase of equity capital; changes in their own investment policies; improvement of hedging techniques or changes in cost of capital, as was recently analysed by Matušková (2014b).

Tab. 1 – Capital requirements for currency (C) and equity (E) risk. Source: own calculations

VALUE AT RISK												
	Multivariate normal distribution						Multivariate Student distribution					
	PMC		ASMC		LHSD		PMC		ASMC		LHSD	
	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR
E	30.41	8.07	30.87	8.72	30.41	8.07	53.72	10.24	56.54	10.62	53.72	10.24
C	5.23	3.27	5.25	3.34	5.23	3.27	5.55	2.98	4.8	3.5	5.55	2.98
EXPECTED SHORTFALL												
	Multivariate normal distribution						Multivariate Student distribution					
	PMC		ASMC		LHSD		PMC		ASMC		LHSD	
	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR	SCR	MCR
E	34.98	15.53	35.42	16.16	34.98	15.53	73.60	22.46	75.91	23.14	73.60	22.45
C	5.7	3.94	5.74	4.01	5.7	3.94	5.8	3.67	7.13	4.2	5.8	3.66

From the table above it can be seen that, the major part is equity risk from total capital requirements. The value of SCR for equity risk is approximately 30.5 % and for currency risk it is 5.23 % for multivariate normal distribution and for VaR method. The value of MCR for equity risk is 8 % and for currency risk it is 3.3 %. For multivariate Student distribution and VaR method, it can be seen that, SCR for equity risk has increased by 23 pp, but the SCR for currency risk has increased only by 0.3 pp. For same distribution and method, the MCR for equity risk has slightly increased by 2 pp and contribution of currency risk has decreased.

For ES method the part of equity risk has increased again. The SCR for equity risk is approximately 35 % and for currency risk it is 5.7 % for normal distribution. The total MCR to be composed of 16 % equity risk and 4 % currency risk. For multivariate Student distribution is SCR for equity risk is 74 % and for currency risk it is 6 %. Value of MCR for equity risk is 22.5 % and for currency risk it has increased to 4 %.

5 CONCLUSION

The current time of political and economic instability and also the development of European market lead to the fact that the emphasis is placed on credibility, transparency and the stability of financial institutions. Important role is played by the risk management process which includes identification, control, and financial risk coverage without which no financial institution can operate and therefore more attention is paid to this area. Insurance sector is currently preparing for the implementation of new solvency regime Solvency II, which should insure certain guarantee of risk of given financial subject. Important areas which the solvency framework is amending are the capital requirements and solvency, thus insurance company's ability to secure permanent fulfilment of liabilities by their own sources.

Main aim of this paper was to simulate selected probability distribution, by using the Monte Carlo simulations: Primitive Monte Carlo simulation, Antithetic Sampling Monte Carlo and Latin Hypercube Sampling Monte Carlo with dependence. Based on those, to estimate solvency capital requirements and minimum capital requirements for equity portfolio denominated in various currencies by using Value at Risk and Expected Shortfall. Then was to estimate capital requirements separately for equity and currency risk and the results will be compared.

From the comparison of individual probability distribution it is evident that the mean value and standard deviation is much better recorded by simulation which is based on multivariate normal distribution. On the other hand, simulation of multivariate of Student distribution better corresponded to a relatively high empirical value of kurtosis. Individual methods of simulation Monte Carlo brought very similar results. ASMC method is closer to the empirical mean value for both types of distribution. On the contrary, PMC and LHSD methods better record the empirical kurtosis. Due to the fact that sufficient number of scenarios was selected, the results of PMC and LHSD are identical. In this case the utilization of more sophisticated LHSD method does not seem to be useful. Nevertheless, the LHSD's task is to reduce the number of generated scenarios and by this also the estimation error, in case of lower number it would be better to choose this method.

Equity risk rather than currency risk take part in the capital requirement. The equity ones create nearly 90 % of capital requirements value.

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AFRICAN FLOATING CURRENCIES AND THE EUR/USD FLUCTUATION

Gábor Dávid Kiss

Abstract

Current paper analyzes the developments of extreme fluctuations of floating African currencies in the light of developments on Euro to US dollar market between 2000 and 2015. Sample countries trade destinations are well diversified nowadays, but the US and European trade relations are still significant. Currency fluctuations are evaluated by the developments in their foreign trade and monetary policy as well, but the existing political, real and financial links were not able to cause contagion under recession periods or at extreme trading days.

Keywords: Africa, floating regime, contagion, extreme fluctuation

1 INTRODUCTION

Current paper evaluates the consequences of floating on Sub-Saharan African currencies to see the possible trade-offs between price-competitiveness and foreign exchange (FX) exposure. Peg to a key currency eliminates FX exposure, but price-competitiveness can be biased by appreciating trends of the selected key currency – while the maintenance can be expensive under turbulent times as well. Floating regime has the advantage of adaption in our current two-key-currency world, but later defined contagions and divergences can ruin the profitability due to unexpected change in currency common movements.

After the definition of contagion and its background, special African trade-programs will be summarized in the theoretical chapter. Current study tested daily closing data of floating currencies from Kenya (KES), Ghana (GHS), South Africa (ZAR), Tanzania (TZS), Uganda (UGX), Gambia (GMD), Madagascar (MGA) and Mozambique (MZN) in USD denomination against EUR/USD rate between March 8 2000 and March 6 2015 acquired from Bloomberg database. The basic statistics and the ways to analyze their extreme fluctuation, volatility and correlation is the content of the data and methods chapter. Results are supporting the advantages of floating regime, which was remarkably robust on key currency developments.

2 THEORETICAL BACKGROUND

This chapter defines contagion channels to study vulnerability of sample countries. Floating exchange rate regime was applied in the selected countries, while their external balance is in focus of the presented international initiatives in the following paragraphs.

Contagions could be broadly defined as the cross-country transmission of shocks or the general cross-country spillover effects, which does not need to be related to crises. Current paper applies the World Bank's very restrictive definition[5]: a relative increase in cross-country correlations during "crisis times" to "tranquil times". Contagion is based on three fundamental links among countries, like financial, real and political links. Financial link is supported by connections through the international financial system (for example: cross-border commercial bank networks, lending, portfolio investments, etc.). Real links are in connection with international trade or FDI-driven cross-border division of labor. Political link is in connection with exchange rate arrangement country-groups. We can talk about

[5] see: http://go.worldbank.org/JIBDRK3YC0

interdependence, when the upper difference between correlations under extreme and normal conditions is insignificant – meaning that upper links has no significant impact on exchange rates.

The analyzed African country set followed free floating exchange rate mechanism combined with monetary aggregate target in the majority of the cases (Kenya, Tanzania, Uganda, Gambia, Madagascar, Mozambique) or inflation targeting framework (Ghana, South Africa) (IMF 2013). Main trading partners were the European Union, United States, China and India in 2012 (CIA 2015). Foreign trade was supported via a rich and chaotic net of regional integration agreements fostering trade of goods and services among selected countries and key economic areas (EU, US, Indian and Chinese markets) (Udvari 2012). Aid for Trade (AfT) initiative was created after the G8 Summit in 2005 to improve supply-side capacities of recipient countries instead of former "trade not aid" philosophy. The objective of this program was to integrate recipient countries in the world economy, to diversify their foreign trade and to maintain their price-competitiveness under current environment with decreasing tariffs – where former Generalized System of Preferences (GSP) became obsolete (Udvari 2011). The European Union focuses most of its international aid-activity on African countries since the first Lome Agreement in 1975 even in the current Cotonou Agreement between 2000 and 2020 trough its financial (European Development Fund, dedicated EIB credits, economic stability aid programs) and trade instruments (GSP, unilateral preferences, WTO agreements and European Partnership Agreements) (Udvari 2008, 2011, 2012). Project financing was a traditional field of World Bank Group, especially International Development Association (IDA) to provide interest-free loans for governments of Heavily Indebted Poor Countries (HIPC). Funding for corporate sector has a bigger variety: among another WB subridiaries and regional development banks, the China-Africa Development Fund was established in 2007 to finance development projects on commercial basis for corporate sector, supported by China Development Bank (CADF 2013).

Despite the upper presented wide range of support channels, Lomé and Cotonou Agreements had no significant impact on sigma (income deviations), beta (less developed has bigger growth-potential) and stochastic (entire country-group develops among a common trend) convergence (Gáspár - Udvari 2011) or trade with European countries (Udvari 2014).

Foreign exchange (FX) exposure can have a crucial impact on the competitiveness of analyzed African countries due to their floating currency regime framework. Combined with high dependence on euro and US dollar denominated markets (China is considered here, because of the 2% floating band of RMB against US dollar[6]) and diverse financial and trade support channels, contagion on currency market is a real option. This is the opposite strategy than followed by member states[7] of West African Economic and Monetary Union[8], where CFA franc has a fixed parity to the Euro (656 to 1).

3 DATA AND METHODS

Methods to capture temporal distribution of extreme FX fluctuations and contagions under recession periods in developed markets are presented in this chapter. Current study tested daily closing data of floating currencies from Kenya (KES), Ghana (GHS), South Africa (ZAR), Tanzania (TZS), Uganda (UGX), Gambia (GMD), Madagascar (MGA) and Mozambique (MZN) in USD denomination against EUR/USD rate between March 8 2000 and March 6 2015 acquired from Bloomberg database.

[6] http://www.pbc.gov.cn/publish/english/955/2014/20140317160839706274217/20140317160839706274217_.html

[7] Benin, Burkina-Faso, Côte d'Ivoire, Mali, Niger, Senegal, Togo, and Guinea-Bissau

[8] http://go.worldbank.org/FKHEP1VQF0

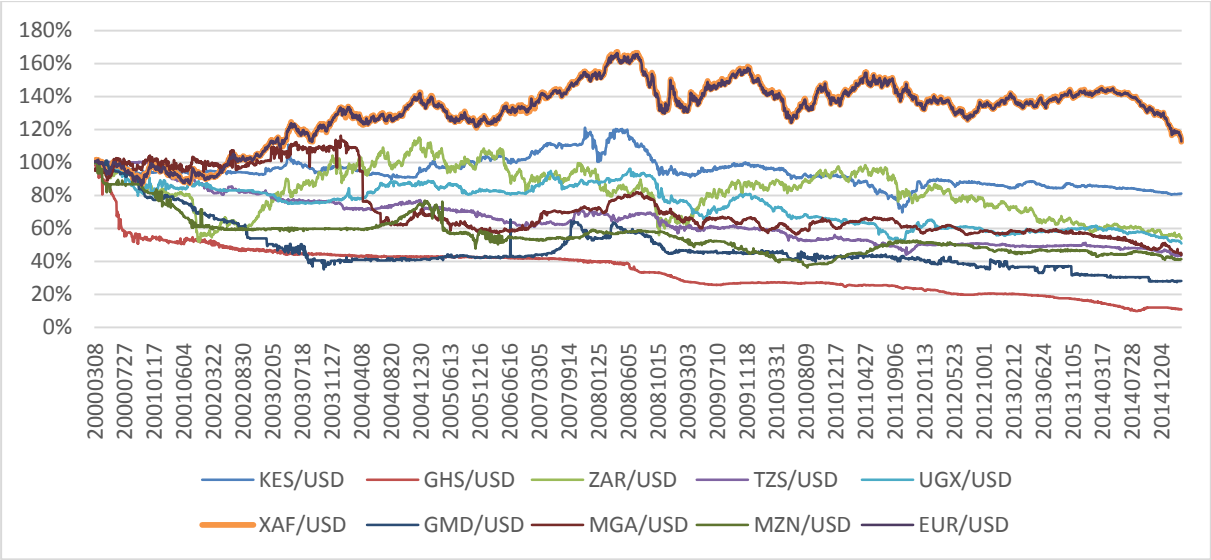

Fig. 1 – Developments of selected African currencies between 2000 and 2015 (March 8 2000=100%). Source: Bloomberg

CFA Franc (XAF) followed strictly the euro, due to its fixed regime, showing an appreciation against US dollar during the entire time set on Fig. 1. Kenyan Shilling (KES) and South African Rand (ZAR) presented an appreciating trend before the crisis only, otherwise all off the entire currency set depreciated against the US dollar – price-competitiveness improved from this aspect.

Tab. 1 – Basic statistics of currency logarithmic differentials. Source: author's calculations

					normal distribution	autocorrelation	heteroscedasticity	stationarity
currency	mean	std	skewness	kurtosis	Jarque-Bera (p)	Ljung-Box (p)	ARCH-LM (p)	ADF (p)
KES/USD	0,00	0,01	0,28	18,60	0,00*	0,00**	0,08	0,00
GHS/USD	0,00	0,01	1,78	39,88	0,00*	0,00**	0,00***	0,00
ZAR/USD	0,00	0,01	1,07	17,89	0,00*	0,22	0,50	0,00
TZS/USD	0,00	0,01	-0,87	30,73	0,00*	0,00**	0,00***	0,00
UGX/USD	0,00	0,01	0,46	16,63	0,00*	0,00**	0,07	0,00
XAF/USD	0,00	0,01	-0,06	5,08	0,00*	0,00**	0,00***	0,00
GMD/USD	0,00	0,02	-0,03	169,73	0,00*	0,00**	0,03***	0,00
MGA/USD	0,00	0,01	1,77	58,07	0,00*	0,00**	0,00***	0,00
MZN/USD	0,00	0,01	0,92	49,84	0,00*	0,00**	0,00***	0,00
EUR/USD	0,00	0,01	-0,05	4,59	0,00*	0,83	0,86	0,00

Notes: *: lack of normal distribution, **: autocorrelation at 2 lags, ***: heteroscedasticity at 2 lags, ****: unit root

Logarithmic differentials (1) of FX rates were tested to understand their basic characteristics on Tab. 1.

$$r_t = \ln\left(\frac{p_t}{p_{t-1}}\right) \quad (1)$$

Where r_t represents logarithmic return on trade day *t*, and *p* is FX rate.

Currencies had enormous fifth moments (kurtosis) compared to the ideal level of 3, suggesting that large magnitude fluctuations are more probable that they should be under the assumption of normal distribution. After this result the rejection of normal distribution by Jarque-Bera test was not a surprise. Time series were autocorrelated with 2 lag, falsifying the common assumption about weak market efficiency. The appearance of heteroscedasticity suggest the future application of Generalized Autoregression Heteroscedasticity (GARCH) models to avoid correlation bias following Forbes and Rigobon (2002). There was no unit root in the data by the ADF test.

Contagions were defined as significant increase in correlations due to some kind of shock (2)

$$\rho_{shock} \gg \rho_{tranqil}, \tag{2}$$

where ρ_{shock} represents correlation under shock periods and $\rho_{tranqil}$ are correlations under "normal" periods. Current paper analyses two forms of shocks on the selected currency set a short-run and a long-run approach will be applied.

Short-run shocks were defined by non-normal distributed unconditional quantile of empirical data, referred as *fat tailed extreme returns* ($r_{\mathbb{X}fat}$) computed by the difference on the tails between theoretical normal and empirical distribution utilizing its "S"-shaped from, described by Clauset (2007) and Gabaix et al. (2003) to see the difference between theoretical and empirical returns under p_L low probability (3).

$$r_{\mathbb{X}fat+,p_L} \gg r_{normal,p_L} \text{ or } r_{\mathbb{X}fat-,p_L} \ll r_{normal,p_L} \text{where } p_L \ll p_{E(r)} \tag{3}$$

Fat tailed extreme returns can appear both on negative ($r_{\mathbb{X}fat-,p_L}$) and positive ($r_{\mathbb{X}fat+,p_L}$) side of probability distribution under p_L low probable cases which are far from the probability of the expected value ($p_{E(r)}$).

Long-run shocks were defined by business cycles in the US and Eurozone following NBER[9] and CEPR Euro Area Business Cycle Dating Committee[10] data. Recession was defined by both of them as "a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales". US recession periods were defined by this method between Mach and November 2001 as well as between December 2007 and June 2009. Eurozone was in recession between January 2008 and April 2009 (which was really close to the US recession period) and after July 2011 and not ended yet.

Different GARCH models were fitted on data to manage heteroscedasticity of underlying data before later correlation fitting, following Cappeiello, Engle and Sheppard (2006). The applied GARCH(p,q), GJR GARCH(p,o,q), TARCH(p,o,q) and APARCH(p,o,q) (4-8) models can be useful to capture volatility developments and their clustering in time (heteroscedasticity).

GARCH (p,q): $$\sigma_t^2 = \omega + \sum_{i=1}^{p} \alpha_i \varepsilon_{t-i}^2 + \sum_{j=1}^{q} \beta_i \sigma_{t-j}^2. \tag{4}$$

where σ_t^2 represents present variance, ω is a constant term, p denotes the lag number of squared past ε_{t-i}^2 innovations with α_i parameters, while q denotes the lag number of past σ_{t-j}^2.variances with β_i parameters to represent volatility persistence. Asymmetric GARCH models can be introduced via

[9] http://www.nber.org/cycles.html
[10] http://www.cepr.org/content/euro-area-business-cycle-dating-committee

$\begin{cases} S_{t-i}^{-} = 1, if \varepsilon_{t-i} < 0 \\ S_{t-i}^{-} = 0, if\ \varepsilon_{t-i} \geq 0 \end{cases}$ to capture asymmetric reaction on losses. (5)

GJR GARCH (p,o,q): $\sigma_t^2 = \omega + \sum_{i=1}^{p} \alpha_i |\varepsilon_{t-i}| + \sum_{i=1}^{o} \gamma_i S_{t-i}^{-} |\varepsilon_{t-i}| + \sum_{j=1}^{q} \beta_i \sigma_{t-j}^2$, (6)

TARCH (p,o,q): $\sigma_t = \omega + \sum_{i=1}^{p} \alpha_i \varepsilon_{t-i}^2 + \sum_{i=1}^{o} \gamma_i S_{t-i}^{-} \varepsilon_{t-i}^2 + \sum_{j=1}^{q} \beta_i \sigma_{t-j}$, (7)

APARCH (p,o,q): $\sigma_t^{\delta} = \omega + \sum_{i=1}^{p} \alpha_i (|\varepsilon_{t-i}| - \gamma_i \varepsilon_{t-i})^{\delta} + \sum_{j=1}^{q} \beta_j \sigma_{t-j}^{\delta}$, (8)

where $\alpha_i > 0$ $(i=1,...,p)$, $\gamma_i + \alpha_i > 0$ $(i=1,...,o)$, $\beta_i \geq 0$ $(i=1,...,q)$, $\alpha_i + 0{,}5\ \gamma_j + \beta_k + < 1$ $(i=1,...,p,\ j=1,...,o,\ k=1,...,q)$ and δ index parameter can be between 1 and 2.

Modell selection was made with focus on homoscedastic residuals and minimal Akaike Information Criteria (AIC). This study applies DCC-GARCH[11] model, following Engle (2002), to analyze the daily common movements of the selected markets.

Sample countries directing their foreign trade into the direction of US dollar (or USD-pegged) and euro-denominated markets. A fixed exchange rate against euro endangers price-competitiveness under a period of euro-appreciation, while a floating regime is able to adapt. However, economic actors have to manage their FX exposure on both side of their balance sheets, where a sudden change in currency common movement can undermine project-profitability. For deeper understanding of the impact of shocks on common movements, contagion, divergence and interdependence was defined to capture all possible outcomes.

Contagion (9) occurs between $euro, c_k$currencies when the ρ^{euro,c_k}cross-market correlation becomes significantly higher due to a shock derived from EUR/USD market ($r_x^{EUR/USD}$) spreading to others or as a result of other external factors (Forbes and Rigobon, 2002; Campbell et al., 2002; Bekaert et al., 2005):

$$r_x^{EUR/USD} = 1 \rightarrow \rho_n^{euro,c_k} \ll \rho_x^{euro,c_k}, \quad (9)$$

Interdependence (10) occurs between $euro, c_k$currencies when the ρ^{euro,c_k}cross -market correlation is not significantly different, but the level of correlation is consistently high (Forbes and Rigobon, 2002):

$$r_x^{EUR/USD} = 1 \rightarrow \rho_n^{euro,c_k} \approx \rho_x^{euro,c_k}, \quad (10)$$

Divergence (11) occurs between $euro, c_k$currencies when the ρ^{euro,c_k}cross-market correlation becomes significantly lower due to a shock derived from one market ($r_x^{EUR/USD}$) spreading to others or as a result of other external factors (Bearce 2002):

$$r_x^{EUR/USD} = 1 \rightarrow \rho_n^{euro,c_k} \gg \rho_x^{euro,c_k}, \quad (11)$$

This chapter summarized the available information on data and the applied methodology to test, how selected African currencies behaved under market shocks.

4 RESULTS

The lack of normal distribution at the logarithmic returns suggested a success on the detection of fat tailed extreme fluctuations. Tab. 2 contains the results of the method, suggesting that the remaining *r(n)* truncated distribution converged closer to the ideal values of first four moments: 0,1,0,3. At the same time, the applied method was able to manage the asymmetric

[11]The estimation based on the Oxford MFE and UCSD toolboxs, developed by Kevin Sheppard: http://www.kevinsheppard.com/

appearance of extreme returns, while their overall mass remained lower than 10% in the entire data set.

Tab. 2 – Fat tailed extreme returns. Source: author's calculations

currency		KES	GHS	ZAR	TZS	UGX	XAF	GMD	MGA	MZN	EUR
mean	entire	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	r(n)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
standard deviation	entire	0,01	0,01	0,01	0,01	0,01	0,01	0,02	0,01	0,01	0,01
	r(n)	0,00	0,01	0,01	0,00	0,00	0,01	0,01	0,01	0,01	0,00
skewness	entire	0,28	1,78	1,07	-0,88	0,46	-0,06	-0,03	1,77	0,92	-0,05
	r(n)	-0,02	0,05	-0,01	0,01	-0,05	-0,07	-0,04	-0,01	-0,09	-0,09
kurtosis	entire	18,60	39,87	17,89	30,72	16,62	5,09	169,68	58,48	49,82	4,59
	r(n)	3,79	4,75	2,93	3,22	3,16	2,55	4,62	4,17	4,77	2,53
X+ treshold		0,0104	0,0209	0,0232	0,0115	0,0126	0,0118	0,0392	0,0267	0,0304	0,0106
X- treshold		-0,0101	-0,0193	-0,0261	-0,0114	-0,0130	-0,0128	-0,0402	-0,0263	-0,0299	-0,0121
No extreme positive		102	81	95	117	105	170	60	61	62	193
No extreme negative		101	83	47	93	77	131	44	60	47	126
No Normal		3209	3248	3270	3202	3230	3111	3308	3291	3303	3093

Temporal distribution of fat tailed extreme returns was tested in Tab. 3, to check the increase of their mass under recession. US recession benchmark seemed to be better, the post July 2011 crisis in the Eurozone had not so much impact on extreme currency fluctuations.

Tab. 3 – Fat tailed extreme returns. Source: author's calculations

	period	KES	GHS	ZAR	TZS	UGX	XAF	GMD	MGA	MZN	EUR	recession
US	March 2000 - February 2001	3%	16%	0%	3%	19%	14%	0%	5%	11%	19%	
	March 2001 - October 2001	**1%**	**13%**	**7%**	**13%**	**9%**	**14%**	**0%**	**11%**	**11%**	**17%**	**"+"**
	November 2001 - November 2007	5%	4%	5%	6%	4%	10%	5%	6%	4%	8%	
	December 2007 - May 2009	**21%**	**3%**	**10%**	**15%**	**10%**	**13%**	**1%**	**0%**	**1%**	**17%**	**"+"**
	June 2009 - February 2015	3%	3%	2%	4%	3%	5%	3%	2%	1%	6%	
EU	March 2000 - December 2007	5%	7%	5%	6%	6%	11%	4%	6%	5%	10%	
	January 2008 - March 2009	**21%**	**3%**	**13%**	**14%**	**10%**	**14%**	**1%**	**0%**	**2%**	**18%**	**"+"**
	April 2009 - June 2011	6%	0%	2%	6%	5%	8%	3%	1%	3%	10%	
	July 2011 - March 2015	**3%**	**5%**	**2%**	**4%**	**3%**	**4%**	**3%**	**2%**	**0%**	**5%**	**"+"**

Heteroscedasticity of time series were managed by different GACH models, where the selection was based on homoscedastic standardized residuals and lowest Akaike Information

Criteria (AIC). Alpha coefficient represented the importance of past innovations (with 1 or 2 lags), while gamma informs about asymmetric behavior (higher volatility under depreciation), as well as beta refers to the volatility persistence (Tab. 4). Traditionally the volatility persistence has the highest value, so the result at GMD/USD is quite exceptional.

Tab. 4 – GARCH model parameters. Source: author's calculations, UCSD toolbox

currency	model	constant	alpha 1	alpha 2	gamma	beta 1	beta 2	delta	AIC
KES/USD	TARCH(1,1,2)	0,00	0,23		0,04	0,40	0,36		-4,13
GHS/USD	APARCH(1,1,1)	0,00	0,07		-0,01	0,88		3,34	-3,68
ZAR/USD	APARCH(1,1,1)	0,00	0,08		-0,45	0,92		1,41	-3,14
TZS/USD	GJR GARCH(1,1,2)	0,00	0,26		0,07	0,47	0,23		-3,97
UGX/USD	APARCH(1,1,1)	0,00	0,20		-0,08	0,80		1,60	-3,81
XAF/USD	GJR GARCH(1,1,1)	0,00	0,03		0,02	0,95			-3,57
GMD/USD	TARCH(2,1,1)	0,01	0,15	0,38	0,10	0,42			-2,77
MGA/USD	APARCH(1,1,1)	0,00	0,02		0,05	0,94		3,98	-3,23
MZN/USD	GJR GARCH(1,1,2)	0,00	0,18		0,09	0,28	0,49		-3,37
EUR/USD	TARCH(2,1,1)	0,00	0,01	0,04	0,00	0,94			-3,64

Dynamic conditional correlation between euro and regional currencies proved to be strong only for XAF due to the pegged regime (Tab. 5). Other African floating currencies were uncorrelated, only the South African Rand (ZAR) showed some weak common movement. These results suggesting weaker dependence, compared to the historically strong relations of Central-Eastern European currencies to euro Stavarek (2010) or Babetskaia-Kukharchuk et al. (2008). Therefore we can say that long-term correlation was not affected by business cycles in key economies (or by monetary responses on these developments).

Tab. 5 – Average dynamic conditional correlation. Source: author's calculations, UCSD toolbox

	period	KES	GHS	ZAR	TZS	UGX	XAF	GMD	MGA	MZN	recession
	March 2000 - February 2001	-0,02	0,00	0,43	0,00	0,07	0,74	-0,02	0,05	0,03	
	March 2001 - October 2001	**0,01**	**0,00**	**0,08**	**-0,01**	**0,07**	**0,71**	**-0,02**	**0,09**	**0,03**	**"+"**
	November 2001 - November 2007	0,03	0,00	0,42	0,00	0,07	0,70	-0,03	0,06	0,01	
	December 2007 - May 2009	**0,11**	**0,00**	**0,41**	**-0,01**	**0,08**	**0,94**	**-0,04**	**0,08**	**0,00**	**"+"**
US	June 2009 - February 2015	0,05	0,00	0,47	0,00	0,09	0,95	-0,05	0,07	-0,03	
	March 2000 - December 2007	0,02	0,00	0,40	0,00	0,07	0,71	-0,02	0,06	0,01	
	January 2008 - March 2009	**0,10**	**0,00**	**0,38**	**-0,01**	**0,08**	**0,93**	**-0,04**	**0,08**	**0,00**	**"+"**
	April 2009 - June 2011	0,11	0,00	0,54	-0,01	0,08	0,99	-0,04	0,08	-0,02	
EU	July 2011 - March 2015	**0,02**	**0,00**	**0,43**	**0,00**	**0,09**	**0,93**	**-0,06**	**0,06**	**-0,04**	**"+"**

Short-term currency market developments were captured in several cases when extreme and normal subsets of dynamic conditional correlations (DCCs) were compared with two-sided t-tests to capture contagions, divergences or interdependence. UGX presented significantly lower correlations on extreme trading days, compared to normal periods, while GMD and MZN suffered significant increase – but these results are biased, due to overall uncorrelation. EUR-pegged XAF had strong common movement which weakened under turbulent times, presenting a real divergence – and a vulnerability of the monetary framework.

Tab. 6 – Difference between dynamic conditional correlations under extreme (x) and normal (n) trading days. Source: author's calculations, UCSD toolbox

	KES	GHS	ZAR	TZS	UGX	XAF	GMD	MGA	MZN
avg. corr.(n)-avg. corr.(x+)	-0,0057	0,0014	-0,0231	0,0028	**0,0024 ****	0,0138	**-0,0042 ***	-0,0038	**-0,0061 ***
avg. corr.(n)-avg. corr.(x-)	-0,0036	0,0015	-0,0119	0,0003	**0,0038 ****	**0,0329 ****	**-0,0066 ***	-0,0041	**-0,0104 ***

Notes: *: contagion, **: divergence

5 CONCLUSION

Current article evaluated the FX exposure of the African countries with floating exchange rate regimes to compare them the pegged alternative, like XAF. Analyzed countries have many bounds to the developed countries: among ordinary trade relations, their integration into world economy is promoted via preferential tariff agreements, aid and discounted credit programs. Economic actors in sample countries had to pay the price of floating regimes as the results about fat tailed extreme fluctuations and volatility models suggested, but their currencies were uncorrelated with euro. Therefore contagions were not able to emerge on these markets despite the real, political and financial links among these countries and the Eurozone or US market, but the flexibility of the FX regimes allowed the depreciation against euro to maintain price-competitiveness.

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QUANTIFICATION OF INFLUENCE OF A PARTIAL INDICATIORS VARIANCE TO ROE

Barbora Ptáčková

Abstract

This paper is dedicated to analysis of the variance of partial indicators to ROE using the methods of variance decomposition and Taylor series. In this paper, firstly, the methodology is deduced and then this method is applied to selected company. In application part the effect of partial indicators is measured to ROE indicator. The aim of this paper is to determine how each partial indicator can influence the variance of the ROE indicator.

Keywords: ROE, decomposition of variance, Taylor series

1 INTRODUCTION

Now, the business sector is affected by globalization trends, increasing of competition, arising of new markets or by mergers and acquisitions. Next characteristic of the current economy is moving to communication, development and application of new technologies. The development of the Czech economy, which is small open economy, is influenced by stronger integration into European Economic Area and enforcing of market advancements and tools of financial management and decision making.

One of the most important financial tasks is to identify and analyze the deviations of indicators and find and quantify factors, whose most contribute to the deviations. The application of methods of pyramidal decomposition is one of the ways, how to make this analysis. The basic idea of this method is gradual breakdown of the top indicator on the sub-indicators and quantifies the impact of partial factor on the top indicator.

Generally a number of methods are used. These are gradual change method, method of deviation with residuals, logarithmic method and functional method, see Dluhošová (2010). A new approach, how to quantify the influence of partial indicators into top factor, is method of decomposition of variance using the Taylor series. The aim of this paper is to verify applying of the Taylor series in the analysis of variance of ROE indicator on the selected company.

2 DECOMPOSITION OF A VARIANCE BY APPLYING TAYLOR SERIES

In this chapter the methodology of variance decomposition by applying Taylor series is described. First, Taylor series is explained and then relations for the quantifying of the variance are derived, firstly for one variable, then for three variables.

4.32 Derivation of the decomposition of variance by applying Taylor series

Taylor series will be used for analysis of the decomposition of variance. Taylor series is a mathematical tool in which the function is replaced by an infinite power series. In the case of polynomial of the first degree, linear approximation is used and given function is replaced in the tangent point. In the case of polynomial of second-degree, the function is replaced in the chosen point by parabola. A higher degree of polynomial means better approximation of the selected function, for more information see Cipra (2013), Zmeškal (2013). The general form of Taylor series can be expressed as follows

$$\Delta f(F_1, F_2, \cdots, F_n) = \sum_i \frac{\partial f(\cdot)}{\partial F_i} \cdot \Delta F_j + \frac{1}{2} \sum_j \sum_k \frac{\partial^2 f(\cdot)}{\partial F_j \cdot \partial F_k} \cdot \Delta F_j \cdot \Delta F_k + \cdots. \tag{1}$$

In this case the linear part is expressed as follows

$$\Delta f(F_1, F_2, \cdots, F_n) = \sum_i \frac{\partial f(\cdot)}{\partial F_i} \cdot \Delta F_i \tag{2}$$

Next, Taylor series is applied to the variance change of the indicator. It is expressed as follows

$$\mathrm{var}\left(\Delta f(F_1, F_2, \cdots, F_n)\right) = (\Delta f)^2 = \left(\sum_i \frac{\partial E\left(f(\cdot)\right)}{\partial E\left(F_i\right)} \cdot \Delta F_i \right)^2. \tag{3}$$

If

$$\Delta F_j = F_j - E\left(F_j\right), \tag{4}$$

then the variance of the indicator is possible to expressed as follows

$$\mathrm{var}\left(\Delta f(F_1, F_2, \cdots, F_n)\right) = (\Delta f)^2 = \left(\sum_i a_i \cdot \Delta F_i \right)^2 = \sum_i a_i^2 \cdot \Delta F_i^2 + \sum_{\substack{i \\ i \neq j}} \sum_j a_i \cdot a_j \cdot \Delta F_i \cdot \Delta F_j, \tag{5}$$

where

$$a_i = \frac{\partial E\left(f(\cdot)\right)}{\partial E\left(F_i\right)}, \tag{6}$$

$$\Delta F_i^2 = \mathrm{var}\left(F_i\right), \tag{7}$$

$$\Delta F_i \cdot \Delta F_j = \mathrm{cov}\left(F_i, F_j\right). \tag{8}$$

Finally, the variance of the top indicator is possible to expressed as a sum of the individual variance change of a partial indicators. The formula is

$$\mathrm{var}\left(\Delta f(F_1, F_2, \cdots, F_n)\right) = \sum_i a_i^2 \cdot \mathrm{var}\left(F_i\right) + \sum_{\substack{i \\ i \neq j}} \sum_j a_i \cdot a_j \cdot \mathrm{cov}\left(F_i, F_j\right) \tag{9}$$

After all these changes it is possible to determine the influence of the variance of each partial indicator to the top indicator as follows

$$z_i = a_i^2 \cdot \mathrm{var}\left(F_i\right) + \sum_{\substack{j \\ i \neq j}} a_i \cdot a_j \cdot \mathrm{cov}\left(F_i, F_j\right). \tag{10}$$

In the case of several variables, respectively three, the change is calculated as follows

$$\Delta f\left(F_1, F_2, F_3\right) = \frac{\partial E\left(f(\cdot)\right)}{\partial E\left(F_1\right)} \Delta F_1 + \frac{\partial E\left(f(\cdot)\right)}{\partial E\left(F_2\right)} \Delta F_2 + \frac{\partial E\left(f(\cdot)\right)}{\partial E\left(F_3\right)} \Delta F_3, \tag{11}$$

$$\Delta f(F_1, F_2, F_3) = a_1 \cdot \Delta F_1 + a_2 \cdot \Delta F_2 + a_3 \cdot \Delta F_3, \tag{12}$$

$$z_i = a_i^2 \cdot \mathrm{var}(F_i) + \sum_j a_i \cdot a_j \cdot \mathrm{cov}(F_i, F_j) \quad . \tag{13}$$

The effect of variance of partial indicator on the top indicator, in case of three variables, is then determined as follows

$$z_1 = a_1^2 \cdot \mathrm{var}(F_1) + a_1 \cdot a_2 \cdot \mathrm{cov}(F_1, F_2) + a_1 \cdot a_3 \cdot \mathrm{cov}(F_1, F_3), \tag{14}$$

$$z_2 = a_2^2 \cdot \mathrm{var}(F_2) + a_2 \cdot a_1 \cdot \mathrm{cov}(F_2, F_1) + a_2 \cdot a_3 \cdot \mathrm{cov}(F_2, F_3), \tag{15}$$

$$z_3 = a_3^2 \cdot \mathrm{var}(F_3) + a_3 \cdot a_1 \cdot \mathrm{cov}(F_3, F_1) + a_3 \cdot a_2 \cdot \mathrm{cov}(F_3, F_2). \tag{16}$$

According to the general Taylor series assumptions derivation can be applied to indicators which are stationary. It means that analyzed indicator can´t have a trend. If there is a trend in analyzed time, it is necessary to replace this indicator with another indicator or make a simulation of this indicator. In this paper it is assumed that data are stationary. Furthermore, it is necessary to distinguish additive and multiplicative bind between indicators. In this paper the decomposition of a variance is applied to a multiplicative bind.

3 APLICATION OF THE VARIANCE DECOMPOSITION IN THE ANALYSIS OF THE ROE INDICATOR

This chapter is dedicated to the application of the method described in the chapter two in the analysis of partial indicators to ROE indicator. First part of this chapter is dedicated to the decomposition of ROE. Then the impact of variance of individual indicators is quantified by the method of the variance decomposition.

4.33 Return on equity

Return on equity reflects the total profitability of own resources. The amount of return on equity depends on the profitability of the total capital and interest rate of the debt, see Dluhošová (2010). Generally, the return on equity can be written as

$$ROE = \frac{EAT}{VK}, \tag{17}$$

where EAT is net profit and VK is equity.

The return on equity can be decomposed into individual sub-indicators as follows

$$ROE = \frac{EAT}{T} \cdot \frac{T}{A} \cdot \frac{A}{VK}, \tag{18}$$

where $\frac{EAT}{T}$ is return on sales, $\frac{T}{A}$ is an indicator of an assets turn and $\frac{A}{VK}$ is financial leverage.

4.34 Input data

Analysis of variance decomposition of the ROE indicator is performed on the company, which belongs among the market's top companies mainly in the field of sound. The primary business activity is the manufacture, installation and repair of electronic equipment. It is a Danish company. This company became an icon of international design and a worldwide symbol of audio - visual perfection. Today the company is known mainly for its wide range of quality televisions, music systems and powerful speakers.

Quarterly data for the entire company based in Denmark are used as an input data. These values are in millions DKK. Input data were obtained primarily from the annual reports of the company. Input data are quarterly since the first quarter of fiscal year 2000/2001. In Fig. 1 quarterly values of return on equity in the period 2000/2001 to 2014/2015 are shown.

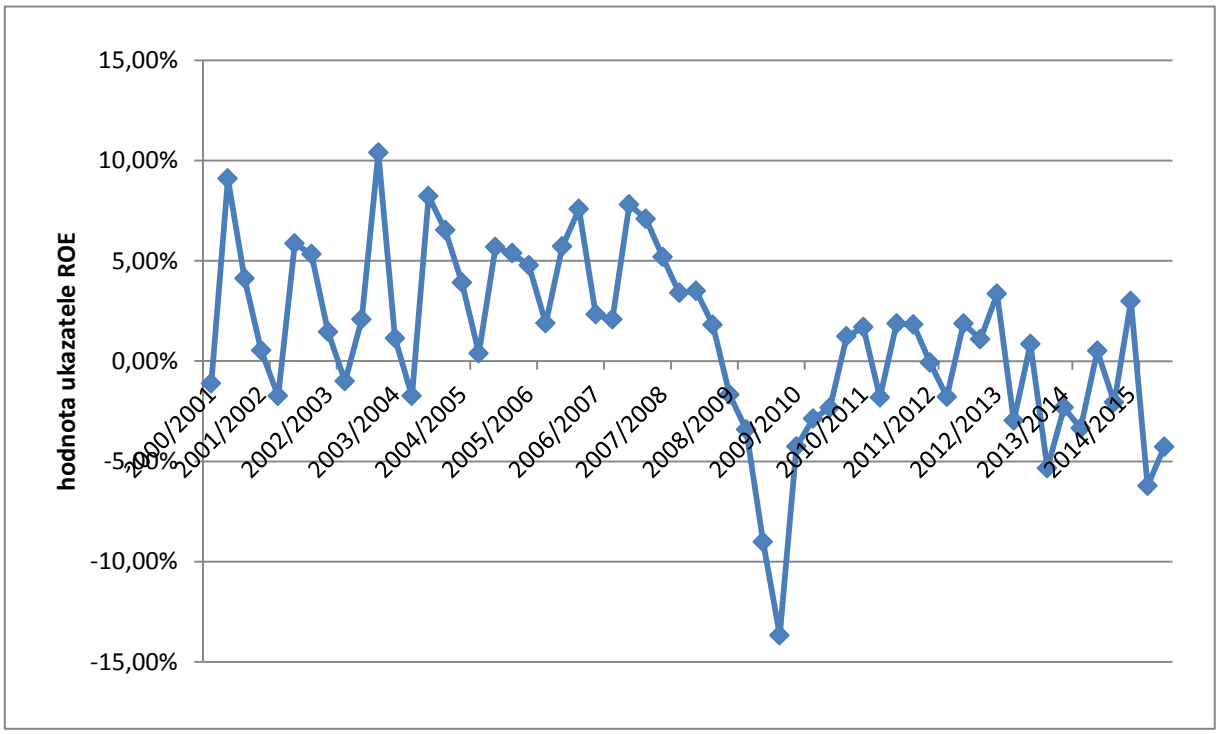

Fig. 1 – quarterly values of return on equity in the period 2000/2001 to 2014/2015

The values of each sub-indicators, which was the return on equity is divided, are shown in Fig. 2.

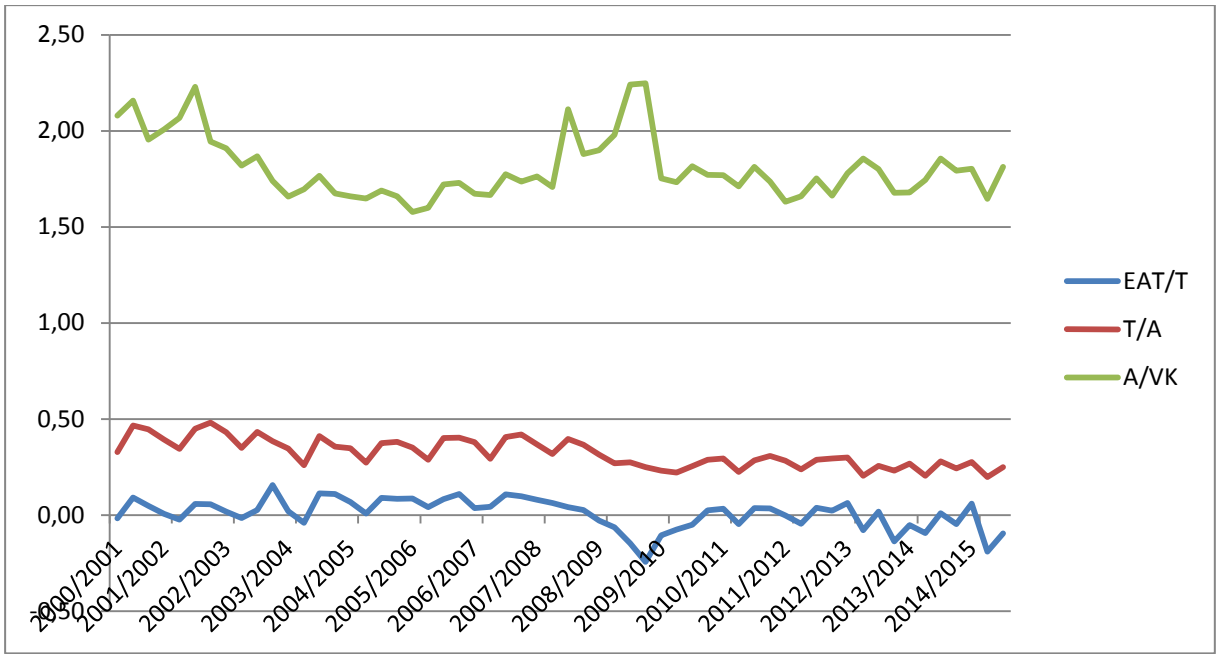

Fig. 2 – Quarterly values of partial indicators in the period 2000/2001 to 2013/2014

4.35 Quantification of the effect of the variance of partial indicators on ROE

First, the ROE was decomposed into individual sub-indicators according to (18), while the return on sales is marked as F1, F2 as asset turn and financial leverage as F3. Subsequently, the mean value of each sub - indicators was calculated. Then the partial derivations were calculated according to (6) and the covariance matrix calculated according to (8). Finally, the variance of the partial indicators was calculated according to (9).

Mean values and the values of the partial derivatives are listed in Tab. 1 One important step was the calculation of the covariance matrix. This matrix is shown in Tab. 2.

Tab. 1 - The mean values of of partial indicators and values of the partial derivatives

E(F1)	**E(F2)**	**E(F3)**
-0,001375	-0,001390	-0,004664
$\mathbf{a_1}$	$\mathbf{a_2}$	$\mathbf{a_3}$
0,000006	0,000006	0,000002

Tab. 2 - Covariance matrix

	F1	**F2**	**F3**
F1	0,004250	0,002647	-0,000991
F2	0,002647	0,004255	0,003390
F3	-0,000991	0,003390	0,020129

Further, the effect of the individual partial indicators was calculated according to (14), (15) and (16). Results are shown in Fig. 2.

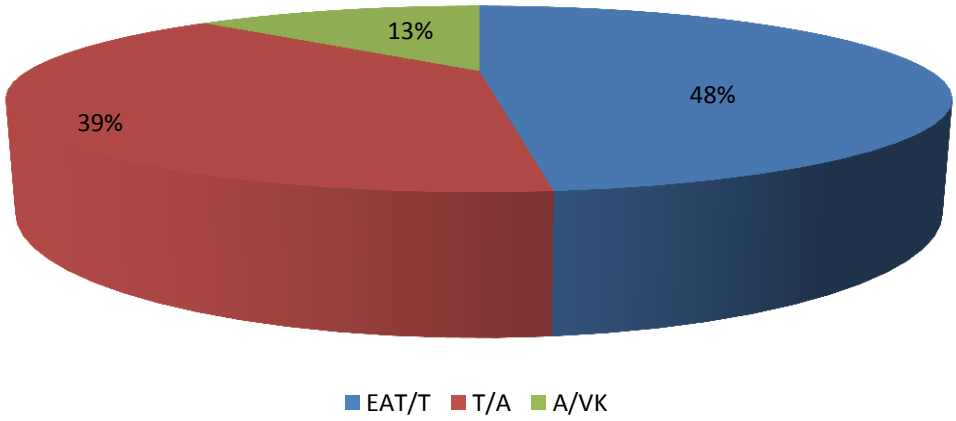

Fig. 3 - The resulting values of variances of partial indicators

In Fig. 3 the variance of each sub – indicators are shown. The largest share of the total variance of the ROE variance has the return on sales, which make up 48% of the total variance of the ROE. Of the 39% of the total variance of the return on equity consists of sub-indicators asset turn. Little effect on the variance of ROE has partial indicator of financial leverage, which is the total the variance of return on equity accounts for 13%.

Total change of the variance of the ROE is relatively low, the company had significant differences in terms of return on equity for the analyzed period. The total variance change of return on equity is 00000000000084.

4 CONCLUSION

This paper is dedicated to the analysis of variance of partial indicators on the top indicator using the method of decomposition of variance. The aim of this paper is to verify on the chosen company application of Taylor series in the analysis of variance of the ROE indicator. The introduction describes the various methods that are commonly used in practice to quantify the effect of deviations of partial indicators on the top indicator. Subsequently, the method of variance decomposition by applying Taylor series is derived. This method is in the next section applied to the decomposition of return on equity of the selected company.

As input data quarterly data of the selected company in the period 2000/2001 - 2014/2015 were taken. The largest contribution to the total variance of the ROE is the return on sales, which make up 48% of the total variance of the ROE. Of the 39% of the total variance of the return on equity consists of sub-indicators of turnaround assets. Little effect on the variance of ROE has partial indicator of financial leverage, which is the total the variance of return on equity accounts for 13%.

It can be concluded that this method is suitable for the analysis of variance and selected indicators. It is possible to apply Taylor series in this method.

One of the prerequisite, which was reflected in this work is the assumption that the relationship of partial indicators can be described by a multiplicative links. It is also necessary to keep the assumption that indicators are stationary.

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THE RELATIONSHIP BETWEEN FINACIAL AND NON-FINANCIAL MEASURES IN CORPORATES´ PERFORMANCE REPORT. THE EXPLORATORY STUDY OF INTEGRATED REPORT

Vu Minh Ngo

Abstract

The relationship between non-financial and financial measures has drawn a great deal of research toward this topic. Researchers have provided empirical studies about the topic as well as developed the conceptual frameworks for explaining how non-financial and financial measures can be linked together. Recently, there is also a rising need for incorporating both non-financial and financial measures into a single firm's performance report. This paper make an attempt to examine the relationship between non-financial and financial information in the integrated report which is the first type of report included both non-financial and financial information. More specific, this paper tries to investigate whether conceptual frameworks for the relationship between the non-financial measures and financial measures can be used to explain the use of non-financial measure and financial measures in the integrated report. Moreover, this paper also explores some insights about how non-financial and financial measures in integrated reports are presented in different industries.

Key words: non-financial and financial measures, integrated report, The Balanced Scorecard, the Service-Profit model.

1. INTRODUCTION

It is well accepted that the intensively competitive, dynamic technological environments and new approaches to manufacturing management (Just in time, for example) have pushed firms toward to the customer-focused strategy (Perera, Harrison, & Poole, 1997). It means that firms must now focus on those factors which are not only low cost but also outstanding product quality, flexible purchasing process and reliable after-sale service to create value for customers. As a result, organizations in today market have paid attention on achieving the excellent business process and intellectual capital as the sustainable competitive advantages (Roos & Roos, 1997). These changes have raised the question of whether traditional cost and financially-oriented performance measurements systems remain appropriate contemporarily. It is believed that comprehensive performance measurement systems for the new era should incorporate both financial and non-financial measures (Kaplan & Norton, 1992). With regard to that point, there are quite a lot performance measurement systems which have been developed to combine both financial and non-financial measures (Bourne, Mills, Wilcox, Neely, & Platts, 2000). The main objective of these integrated performance measures system is to encourage a more balanced view which help and facilitate managers in strategic decision making. Therefore, in order to manage the most deeply rooted sources of creating the value and financial outcomes for stakeholders in long-term, the new concept of management system advises that the premium set of non-financial measures need to be identified and evaluated regularly for each organization. The fundamental assumption of the new value based management system is that there is an association between non-financial and financial measures. Moreover, another stronger assumption claims that non-financial measures have the capability to drive the financial measures. Assessing these assumptions of the relationship between non-financial and financial measures has been attracting considerable attention from

researchers. Beside the number of empirical research about the relationship between non-financial measures and financial measures, a number of conceptual frameworks which describe the principals for linking between these two types of measures were also developed such as the Balanced Scorecard, Service-Profit chain model and Action-Profit Linkage model.

In addition to the relationship between non-financial and financial measures, corporate's reporting has been also drawing a great deal of interest from researchers. To some extent, the corporate performance reporting activities can be seen as the tool for communicating firms' performance measurement and management systems to stakeholders. As the traditional management and performance measurement systems, the traditional financial statement report has been criticized about the lack of forward-looking, sustainable and strategic management implication. Financial crises, accounting and remuneration scandals, and suspicion about the social and environmental implications of business have led to growing demand for transparency about corporate behavior on a whole range of issues (Kolk, 2008). In order to meeting this need, some companies have disclosed a sustainable report in addition to the finance-focused reports. But the link between the sustainable reports and the financial one is still missing. Therefore, in order to face the strategic challenge related to the management of stakeholder relationships and meet the managerial needs, it is believed that there is a strong need for a clear methodology for a sustainability accounting system (Perrini & Tencati, 2006). With respect to this point, the International Integrated Reporting framework has been introduced in late 2013 by The IIRC became the first official framework which incorporate all the sustainable issue, strategic management, risk evaluation and performance into one single report. According to The IIRC, an integrated report is a concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term.

This paper embraces the aforementioned assumption about the relationship between non-financial and financial measures. Furthermore, this paper explores how the non-financial measures and financial measures are presented in the integrated report. Then, comparing the result to the conceptual frameworks for the relationship between non-financial measures and financial measures such as the Balanced Scorecard and Service-Profit chain to find the common ground between them. The hypothesis for investigating in this paper is whether conceptual frameworks for the relationship between the non-financial measures and financial measures can be used to explain the use of non-financial measure and financial measures in the integrated report. In addition, if we loosely assume that the information about non-financial and financial measures in integrated report can serve as the proxy for the use of these performance measures in the practices, through this paper we can get some insight about how the link between non-financial and financial measures express in the practice and whether the conceptual framework for the relationship between the non-financial and financial measures closely align with the practices.

The remainder of the paper is organized as follows. Section 2 is the literature review about the conceptual frameworks and empirical studies on the relationship of non-financial and financial measures. Section 3 is about the methodology for study about the relationship of non-financial and financial measures in the integrated report. This part also defined the sample reports which is used for this exploratory study. Section 4 provides the finding and discussion about the relationship of non-financial and financial measures in the selected sample of integrated report. Section 5 is conclusion and propose agenda for future study.

2. LITERATURE REVIEW

2.1 The empirical studies on relationship between non-financial and financial measures

Researchers have two different approaches with regard to the type of financial measures to evaluate the relationship of non-financial and financial measures: (1) establish a direct link between nonfinancial measures and equity values and (2) demonstrate a link between current nonfinancial measures and future financial information, indicating that nonfinancial information should be useful to investors and creditors (Maines, Bartov, Fairfield, Hirst, & et al, 2002). The first linkage typically is considered as *value relevance tests*, while the second one is termed *predictive ability tests*.

In the other hand, we also can categorize the relationship between non-financial and financial measures based on the type of non-financial measures. For example, researchers have studied about the impact of quality-related measures, customer-related measures on the financial performance. There are also different studies on the employee-related measures like managers' compensation plan or employee trainings. This paper bases on two approaches with regard to the financial outcome for categorizing the previous studies on the issue.

Value relevance studies

Amir and Lev (1996) examine two nonfinancial measures used in the cellular telephone industry: total population in a service area, which is a measure of potential growth, and the ratio of subscribers to total population, which measures operating and competitive success. They found that both measures are positively associated with stock prices. They also found a complementary relation between nonfinancial and financial information, with the value relevance of financial measures such as earnings and book value emerging only when combined with the nonfinancial information. Hughes II (2000) examines the relation between the market value of equity and nonfinancial pollution measures (sulfur dioxide emissions) that capture firms' exposure to future environmental liabilities. He found that this relation varies over time in response to changes in both environmental regulation and utilities' production processes. Hirschey, Richardson and Scholz (2001) examine whether nonfinancial information on the quality of patents influences the relation between R&D expense and market value. They found that the number of patents and information on the quality of patents have consistently positive effects on stock prices. Xu, Magnan and André, (2007) also assessed whether a firm's research and development (R&D) expenditures in biotech industry can significantly enhance the relevance of a valuation model based solely on traditional financial reporting variables and improve equity value predictions. They found that R&D expenditures are incrementally value-relevant over the baseline financial reporting model (book value and earnings). They also found that adding R&D expenditures generally improves equity value predictive ability. Ittner and Larcker (1998) used customer satisfaction data to evaluate the value relevance of non-financial information by answering the question: Does the release of customer satisfaction measures provide new or incremental information to the stock market? They found that customer satisfaction measures to be positively related to market value, and that this relation varies by industry.

Predictive Ability Studies

The second category investigates the ability of non-financial performance measures to predict future financial measures. Anderson, Fornell and Lehmann (1994) tested the widespread belief that whether customer satisfaction can lead to economic return with the sample from Sweden firms. They found that firms that actually achieve high customer satisfaction also enjoy superior economic returns and economic returns from improving customer satisfaction are not immediately realized because efforts to increase current customers' satisfaction

primary affect future purchasing behavior. Ittner and Larcker (1998) examined whether current satisfaction levels for individual customers in a telecommunication firm are associated with changes in their future purchase behavior and firm revenues. They documented a statistically significant relation between customer satisfaction in one year and the next year's revenue and customer retention rates. They also found the support for the association between customer satisfaction and accounting financial performance (revenues, profit margins, and return on sales) on the business unit level. However, some of the tests suggested that customer behavior and financial results are relatively constant over broad ranges of customer satisfaction, changing only after satisfaction moves through various "threshold" values, and diminishing at high satisfaction level. Banker, Potter and Srinivasan (2000) provided evidence on how the inclusion of customer satisfaction into an incentive plan can enhance a firm's profitability. They concluded that the implementation of a new incentive plan that includes customer satisfaction increases a firm's profitability six months after the adoption of the new plan. Firms with such incentive plans outperformed firms without such incentive plans, in terms of financial performance. Nagar and Rajan (2001) examined the future sales implications of product quality measures for 11 plants of a manufacturing group in a Fortune 500 firm. They found that both nonfinancial (defect rates and on-time deliveries) and financial measures (external failure costs incurred due to product failures at customer sites) significantly predict one-quarter-ahead sales, however, the nonfinancial measures dominate the effects of financial measures when both are included in the regression. For four-quarter-ahead sales, both measures had explanatory power in a combined regression, suggesting that they complement each other. Behn & Riley (1999) examined the association between nonfinancial performance variables and financial performance in the U.S. airline industry and examined whether this nonfinancial information can be used to predict quarterly financial performance. They documented an association between nonfinancial quality measures published for airlines and contemporaneous revenues, future revenues, and future operating income. Said, HassabElnaby and Wier (2003) evaluated the implications of nonfinancial performance measures included in compensation contracts on current and future financial performance. Their finding supported the contention that firms that employ a combination of financial and nonfinancial performance measures have significantly higher mean levels of returns on assets and higher levels of market returns. Although they found some evidence for future accounting-based performance, the overall evidence on nonfinancial measures' impact on accounting-based performance is mixed.

2.2 The conceptual frameworks for the relationship between non-financial and financial measures.

Reason for using non-financial measures

There are several reasons why non-financial measures are used to support and augment financial measures. Non-financial measures are well accepted to be more forward-looking than short-term profit figures as indicators of progress towards a firm's long-term goals. The increasingly popular of non-financial measures is attributed to the fact that they deal with causes and not effects. Profit and other financial measures show the effects of nonfinancial activities and achievements, whereas, operational measures of customer satisfaction, internal processes, and the organization's innovation and improvement activities are believed to be the drivers of future financial performance (Kaplan & Norton, 1992). As a result, non-financial metrics such as orders received, backlog of unfilled orders, and on-time delivery may become good predictors of financial consequences.

Nonfinancial measures are believed to be less susceptible to manipulation. Non-financial measures can often be produced almost instantly and give an early warning if there is a

problem about to come up (Singleton-Green, 1993). In a similar vein, Amir and Lev (1996) found that the value-relevance of nonfinancial information overwhelms that of traditional financial indicators in fast changing technology-based industries.

In addition, the use of non-financial measures is also justified by the desired of firms to focus on and leverage their core competencies. In order to remain competitive, firms have to focus on quality and customer responsiveness. This actually leads to the requirement and development of new type of performance measurement system such as Balanced Scorecard (Kaplan & Norton, 1992).

The Balanced Scorecard

The Balanced Scorecard (BSC) was designed and introduced by Kaplan and Norton (1992). It is distinct from other strategic measurement systems in that it is more than an ad hoc collection of financial and non-financial measures which are allocate into four perspectives. The financial perspective identifies how the company wishes to be viewed by its shareholders. The customer perspective determines how the company wishes to be viewed by its customers. The internal-business-process perspective describes the business processes at which the company has to be particularly adept in order to satisfy its shareholders and customers. The organizational learning and growth perspective involves the changes and improvements which the company needs to realize if it is to make its vision come true (Kaplan and Norton, 1996). The balanced scorecard is intended not only as a strategic measurement system but also as a strategic control system which can align departmental and personal goals to overall strategy. The most important concept of the BSC is the connection of the measure of the four perspective in a causal chain which pass through all four perspective (Nørreklit, 2000).

There were a great deal of research about the application of the BSC into practice. Figge, Hahn, Schaltegger and Wagner (2002) raised the question about integrating the non-market perspective into the traditional BSC because business units do not only operate in the commercial market environment. They suggested the process for incorporating environmental and social issues into the BSC to form the Sustainable Balanced Scorecard (SBSC). Davis and Albright (2004) investigated the effectiveness of the BSC in improving financial performance by comparing bank branches implementing the BSC and the ones without BSC. They found evidence of superior financial performance for branches implemented the BSC when compared to non-BSC implemented branches. Braam and Nijssen (2004) developed a model to test the effectiveness of using the BSC in the Dutch organizations. They found empirical evidence from Dutch firms suggesting that the BSC use will not automatically improve company performance, but that the manner of its use matters: the BSC use that complements corporate strategy positively influences company performance, while the BSC use that is not related to the strategy may decrease it. Speckbacher, Bischof and Pfeiffer (2003) investigated the implementation of BSC in German-Speaking countries and categorized the use of BSC into three groups. Type I BSCs: BSC as a specific strategic performance measurement system containing financial and non-financial strategic measures and/or objectives grouped into perspectives. Type II BSCs: Type I BSCs that employ a specific approach to describe the company's strategy using a sequential cause-and-effect logic to link tangible and intangible assets. Type III BSCs: Type II BSCs that additionally implement the organization's strategy through action plans and/or target setting and by linked incentives. Beside the studies which advocate for the use of the BSC, some researchers find evidence that BSC still have some limitations when applying. Rompho (2011) evaluated a company as a case study about using the BSC and found that frequent changes in strategy was a major factor leading to the failure of the Balanced Scorecard in SMEs.

Service-profit chain

The service-profit chain (SPC) integrates service operation, employee management and customer management into a single framework for achieving firm's profitability (Heskett, Jones, Loveman, Sasser Jr., & Schlesinger, 2008). The links in the chain can be seen as: Profit and growth are gained from customer loyalty. Loyalty is the direct result of customer satisfaction. Customer satisfaction is largely influenced by the excellent value of the service provided. Value is provided by the satisfied, loyal and productive employees. Employee satisfaction, in turn, results primarily from high-quality support services and policies that enable employees to deliver result to customers (Heskett et al., 2008). Silvestro and Cross (2000) applied the SPC to a single organization to test the links inside the framework. They found that there were correlations to support most of the links in the chain. But they also suggested the contingency approach to apply SPC into a specific context. Gelade and Young (2005) examined the relationships between organizational climate, employee attitudes, customer satisfaction, and sales performance in the retail-banking sector, especially they tested the role of customer satisfaction as a mediator between employee attitudes and sales performance. They documented that the mediator are found but the effect is not significant. In similar vein, Chi and Gursoy (2009) also examined the link between employee satisfaction and customer satisfaction, and to examine the impact of both on a hospitality company's financial performance utilizing service-profit-chain framework as the theoretical base. They found that while customer satisfaction has positive significant impact on financial performance, employee satisfaction has no direct significant impact on financial performance. Instead, there is an indirect relationship between employee satisfaction and financial performance, which is mediated by customer satisfaction.

Other frameworks

There are some others frameworks which can help to serve as the theoretical concept for the relationship between non-financial and financial measures in an organization. Epstein and Westbrook (2001) proposed the Action-Profit Linkage model (APL) which helps firm to identify, measure and understand the causal links between action and profits. The APL model begins with corporate strategy and move to four main components: company actions, delivered product, service, customer action and economic impact. The APL model suggests the variables which should be considered for tracking the link from actions to profit in each components.

Rust, Zahorik and Keiningham (1995) proposed a new approach and framework for linking the service quality with financial accountability. The Return on Quality (ROQ) framework helps to evaluate the financial impact of quality improvement efforts; thus enables quality to be considered as an investment. The chain of effects can be describe as follows: The improvement effort, if successful, results in an improvement in service quality. Improved service quality results in increased perceived quality and customer satisfaction and perhaps reduced costs. Increased customer satisfaction in turn leads to higher levels of customer retention, and also positive word-of-mouth. Revenues and market share go up. The increased revenues, combined with the decreased costs, lead to greater profitability.

3 METHODOLOGY AND DATA

This paper uses the qualitative content analysis technique (CA) for exploring how the non-financial and financial measures are presented in the integrated report in term of explaining the value creation process. The main objective of qualitative content analysis is to investigate the contextual meaning of the text (Hsieh & Shannon, 2005). Text data might be in verbal, print, or electronic form and might have been obtained from narrative responses, open-ended survey questions, interviews, focus groups, observations, or print media such as articles, books, or manuals. Qualitative content analysis goes beyond merely counting words to

examining language intensely for the purpose of classifying large amounts of text into an efficient number of categories that represent similar meanings. Kondracki, Wellman and Amundson (2002) classified CA technique into two approaches: inductive or deductive. With an inductive approach, the researcher first examines the communication messages in question without preconceived notions or categories. Researchers note applicable content categories, key words, themes, etc. that can be used on their own or as the basis for forming categories for later quantitative analysis. With a deductive approach, the researcher begins with predetermined key words, categories, or variables (based on relevant literature or other resources) and sifts the data using these variables.

This exploratory paper takes the inductive CA approach for evaluating the data from the integrated report. First, the paper uses CA technique for evaluating each firm's integrated report to delineate the types of non-financial and financial measures used by the firm. The author reviews all the integrated report carefully, highlighting all the text that appears to describe the non-financial or financial measures. Then the collected text is examined again to derive the categories based on their similar and difference in term of what they measure. Second, comparing with the pre-defined conceptual frameworks such as the BSC and SPC frameworks mentioned above, the paper continue to assess the match between these frameworks and the categories which are defined in the previous step. The basic assumption for this research lies in the claim that the more non-financial and financial measures from the integrated report well fit into these frameworks, the more that these frameworks align with the use of non-financial and financial measures in the real business environment. From analyzing the match between the conceptual frameworks and the derived categories, we can evaluate the hypothesis that whether conceptual frameworks for the relationship between the non-financial measures and financial measures can be used to explain the use of non-financial measure and financial measures in the integrated report.

This paper investigates the 2013 integrated report from top 40 JSE-listed companies from Johannesburg Stock Exchange (JSE), South Africa. JSE is the first stock exchange officially requires listed companies to prepare the integrated report. The list of companies are based on the report "Value creation: The journey continues A survey of JSE Top-40 companies' integrated reports" prepared by PricewaterhouseCoopers (PwC) (PricewaterhouseCoopers, 2014)

4 FINDING AND DISCUSSION

After carefully scrutinizing for the integrated reports, a set of categories can be derived for grouping similar measures together. These main categories are: Strategy/business model, Financial measures, Customer-related measures, Operational measures, Strategic processes, Employee-related measures, Social and environmental measures, Remuneration Plan and Macro/Micro economics measures. The description about these main categories can be seen in Table 1.

Tab. 1 – The derived categories about measures. Source: Own research

Category	Description
Strategy/ business model	Mention to the strategic issues, risk and how to create value to stakeholders.
Financial measures	Measure the outcome like profitability, revenue, return on investment, etc. or the effectiveness of operation in term of monetary value such as liquidity ratio, debt ratio, etc.

Customer-related measures	Measure the quantity of customers (e.g. market share) or the quality of customers (e.g. customer satisfaction, customer loyalty)
Operational measures	Measure the productivity of daily business activities that transform inputs to outputs.(e.g. total outputs)
Strategic processes	Measure the result and cost of the processes which are invested in for the future growth (e.g. innovation in IT, spending on exploration program)
Employee-related measures	Measures the quantity and quality of employees (e.g. number of employees, the diversity of skilled).
Social and environmental measures	Measure the non-market impact of the business activities (e.g. spending on social development program, CO2 emissions, energy efficient)
Remuneration plan	The measures which related to the earning (salary and bonus) of the top manager and employees.
Macro/Micro economics	Measures the current situation of an economy (GDP, inflation, price, etc.)

There are 22 of 40 firms' integrated report which include Remuneration plans show clear relation to their key performance measures. The average number of measures of each category for one company in the integrated report can be seen from the Figure 1. The Financial measures are used the most with average 4 measures for each company. Then Strategy/business model, Operational/Strategic processes and Employee-related measures are at the second, third and fourth ranks with 3.5, 3.4 and 3.3 average measures respectively for each firm. Social and environmental measures and Customer measures are the least used measures with average 2.6 and 1.3 measures.

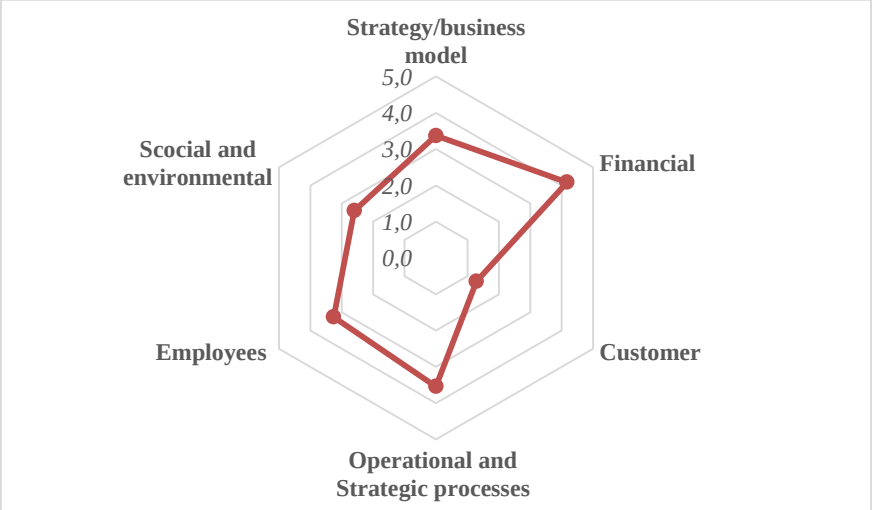

Fig. 1 – The average number of measures for each categories. Source: Own research

Comparing to the measures in the BSC, the SPC model and the APL model, these derived non-financial measures and financial measures categories in the integrated report show the close relation which can be seen in Table 2. The author notes that there only 1 firm among 40 firms which claims to use the Balanced Scorecard to formulate the set of non-financial and financial measures. Thus, this paper can make a loose assumption that the set of non-financial and financial measures used in integrated reports are chosen not by any fixed frameworks but by meeting the need of real business activities. Therefore, the convergence between the derived categories and the proposed ones from those framework can arguably suggest that the relationships between non-financial measures and financial measures suggested in these framework align with the use of these measures in practice to some extent. It means that the links between these categories of measures proposed in these conceptual frameworks can be applied for analyzing the information in the integrated report to get more insights about the relationship between them in term of creating value for stakeholders.

Tab. 2 – The categories of performance measures. Source: Own research

Derived Categories	**The Balanced Scorecard**	**The Service Profit Chain**	**The Action-Profit Linkage**
• Strategy /business model • Financial measures • Customer-related measures • Operational measures • Strategic processes • Employee-related measures • Social and environmental measures • Remuneration plan • Macro and micro economics	• Strategy • Financial perspective • Customer perspective • Internal process perspective • Learning and Growth perspective	• Financial measures • Customer loyalty/satisfaction • Service/Product value • Loyalty/satisfaction employees • Internal support service	• Company Action • Deliver product/Service • Customer action • Economic impact

With regard to this point, the papers can suggest that the top down causal relationships from the financial outcomes to other non-financial measures described in general as: Financial outcomes ← Customer-related measures ← Operational measures + Strategic processes ← employee-related measures + Social and environmental measures. This frame should be used to design or explain the value creation processes in most companies which follow the long-term value objective. The social and environmental measures which are not mentioned in conceptual frameworks should be considered as the vital elements as well. Because firms do not only operate in market environments but also have impacts on non-market environments like natural environment or community. The influence of social and environmental issues on others groups of measures are usually not directly and too long-term to be considered but it still has strong effect in term of sustainable development for the firm performance, whole industry and society. Moreover, if firms can create positive result on these issues, they can

take advantage of this positive effect to influence on employees or customers who start to look for firms with the sustainable development philosophy. Therefore, the holistic approach for building competitive advantage for a firm should include also social and environmental measures.

As mention before that this study makes an assumption that the set of non-financial and financial measures used in integrated reports are chosen by meeting the need of real business activities. With regard to this point, this paper attempts to examine the differences in using performance measures in different industries to get more insights about the relationship between the non-financial and financial measures in the practice. The Figure 2 show the average measures across the main industries from top 40 JSE listed companies.

In most of the selected industries except for Consumer goods and Telecommunication & IT, financial is always the categories which have the most number of measures. This reflects the fact that financial outcomes are still one of the most important and final objective regardless of industry's characteristics. Creating value for shareholder through good return on investment or good market value of share is one of the main reason why the firm exits. The second category which all the industries pay attention to is Operational and Strategic processes. Especially, those industry with technology-oriented and mass production-oriented characteristics like Mining, Telecommunication and Consumer Goods put a great deal of efforts on measuring and continuously improve the processes by which they transfer inputs into outputs and create value for customers. The fast changing pace in technology field make these industry always look for the new and innovative way to compete and sustain their competitive advantage.

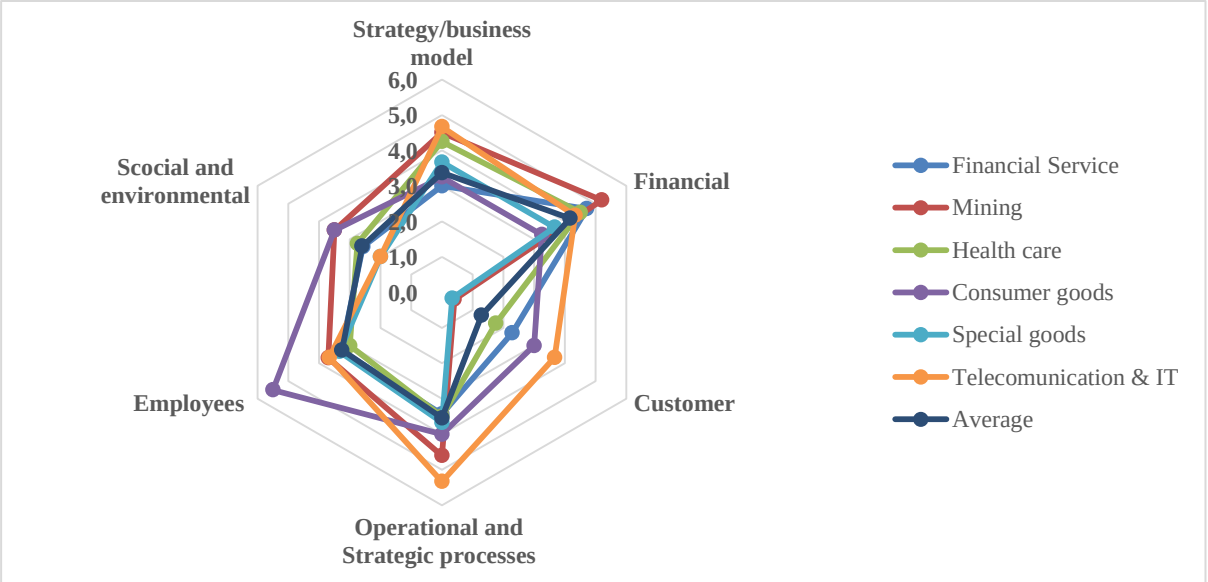

Fig. 2 – The average number of mentions for each categories. Source: Own research

As the same cases to the processes-focused industries, the consumer-focused industries show the most interest in the measures which might have the most impact on their business. Three industries named Telecommunication, Consumer Goods, Financial Service and Health Care have the highest number of customer-related measures which are all above the average score. This can be easily understood because their products and services are in very highly competitive markets and customers have more power of bargain in these industries as compared to other industries such as Mining. As a result, firms in these industries need to keep the records of their customer satisfaction to response proactively to the customers 'needs

and demands. They consider customer satisfaction, loyalty and retention are the key for successful in the long-term.

In addition, there is also a notable difference in how firms in Business to Business and Business to Customer (B2C) sectors approach to customer-related measures. These firms in Mining and Real estate industries which mainly deal with business customers do not have much attention and motivation on measuring customer-related indicators. They might do not have a too big customer base so that they can manage their customer individually and do not need to overall customer index. This is definitely not the case for the business to customer industries such as Financial Service or Consumer Goods. These industries have to serve thousands of customers so that they need an overall index of customer-related measures to manage and response to the major trend in their customers.

The differences in treating the non-financial measures from different industries can give us a clue about how the relationships between non-financial and financial measures behave in the practice. It is clear that the general causal relationship which is suggested in this paper should be used in a contingent approach.

5 CONCLUSION

The relationship between non-financial and financial measures has been an interesting topic for a great deal of research. This paper serves as the exploratory study to examine the relationship between non-financial and financial measures in the context of firm's performance reporting by using information from the integrated report which includes both non-financial and financial measures. The findings from this paper support the hypothesis that conceptual frameworks of the relationship between the non-financial measures and financial measures such as the Balance Scorecard, the Service-Profit chain can be used to explain the use of non-financial measure and financial measures in the integrated report. This finding suggest that these conceptual frameworks for the relationship between non-financial and financial measures have closely aligned with the use of non-financial and financial measures in the practice and it can be applied to explained these relationships to some extent. Furthermore, this paper also finds some insights about how the relationship between non-financial and financial measures expresses in different industries. This supports the norm that causal relationship between non-financial and financial measures should be used in a contingent approach. One of the limitation of this paper is the small number of integrated reports which are under investigation. Another limitation is that this paper just examine the match between the conceptual frameworks for the relationship between non-financial and financial measures and the information from the firm's performance report, it does not proposed the way how to use these conceptual frameworks for effectively incorporating financial and non-financial information in firm's report. This limitation can be serve as the topic for future study.

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THE OPTIMAL CAPITAL STRUCTURE FOR SMALL AND MEDIUM ENTERPRISES (SMEs)

Thi Thanh Nhan Do

Abstract

The importance of the firms is financial management and building the capital structure of the business. In addition, the businesses should determine the amount of common equity, debt and preference shares in order to maximize the firmed value. It is an interesting problem for both in theoretical research and in practical application. The main aim of this paper is to establish the optimal capital structure for SMEs within 5 steps which base on EBIT and EPS method.

Key words: EBIT (Earning before interest and tax); EPS (Earning per share); optimal capital structure; firm value.

1 Introduction

Recently, the small and medium enterprises (SMEs) play an important role in the world economy, especially creating jobs which stimulate the investments in social development, poverty reduction. However, the economy has faced lot of challenges due to the impact of the global economic downturn. As a result, SMEs are subject to the most severely affected by the crisis because they are lack of capital as well as the management skills which are weaker than the other sector.

Therefore, if SMEs may overcome the crisis and has developed in the future, funding is one of the important things. In addition, SMEs need to select the most appropriate funding and an optimal capital structure for the businesses to grow sustainable in the crisis.

In the Pecking order theory (Myers and Majluf 1984) offers explanation on the determinants of capital structure, leading to the conclusion that there is an optimal capital structure. This theory indicates that the structure of capital would be the result of the financing and investment decisions and the information asymmetries is very costly for firms in flotation new equities because of information asymmetries. Therefore, the enterprises will finance their investments primarily with internal funds, then with debt and finally with equities.

The capital structure of firms typically explained by one of three main theories: tradeoff theory (Myers, 1977), pecking order theory (Myers and Majluf, 1984), and free cash flow theory (Jensen, 1986).

By using the trade off theory (Myers, 1977) states that the optimal cash holding is the tradeoff between the costs and benefits of cash holding. The important benefit of holding cash which could reduce the sensitivity of financial risks does not obstruct investment decisions, and avoiding the cost of raising external finance.

Secondly, the pecking order theory of Myers and Majluf (1984) describes a hierarchical system which minimizes cost in issuing new equities due to asymmetric information. As a result, this theory represents that the internal funding as cash is the most preferred, followed by debt and lastly equity.

Thirdly, the Free Cash Flow Theory (Jensen, 1986) reveals that managers have an incentive to store cash to accelerate the amount of assets under their control and to take full advantages of the firm investment decision. Moreover, the companies do not need to raise external funds and could carry out the investment decisions that have a negative influence on shareholders' wealth.

Furthermore, the capital structure is defined as the consideration of using short-term debt, long-term debt, preferred equity and equity to finance the investment decisions of a business. And an optimal capital structure of a firm's satisfies 03 following objectives:

- Maximize wealth of shareholders
- Minimize risk
- Minimize the cost of capital

2 The method to determine the optimal capital structure

In overall, the companies can be funded by 3 main types of capital:

 Common equity

 Debt

 Preference shares

Therefore, when we build capital structure in practice we choose a capital structure consisting of 03 categories according to three criteria on which: (1) Maximize wealth of shareholders, (2) Minimizing Risk, (3) Minimize the cost of capital. As the result, the process of choosing the optimal capital structure includes 5 steps.

Step 1: Calculate the expected EBIT of the company

This step requires managers to obtain EBIT (earnings before interest and taxes) is expected by the company, this is the result which can be estimated from the operations as well as the sales of enterprises in the future.

Step 2: Calculate variation of EBIT expected

EBIT which is expected in step 1 cannot completely accurate because the business operations are affected by many factors, risks, changes which cannot be anticipated. Therefore, we should forecast the ranges for EBIT and this fluctuation also greatly impact on the financial planning. Moreover, the financial planners or managers need to realize the level of this variation.

Step 3: Establish an optimal capital structure to maximize the shareholder wealth.

To achieve this goal, the capital structure brings in the highest EPS (earning per share) for the shareholders which corresponds to EBIT. So, the first thing we compute EPS for each funding option. We can sum up formula to calculate EPS which depend on different finance options as follows:

- ***100% common shares***

$$EPS = \frac{EBIT(1 - Tax)}{Numbers\ of\ shares}$$

- ***Common shares and Debt***

$$EPS = \frac{(EBIT - Interest\ payment)(1 - Tax)}{Numbers\ of\ shares}$$

- ***Common shares and preferred shares***

$$EPS = \frac{EBIT(1 - Tax) - Dividend\ of\ preferred\ shares}{Numbers\ of\ shares}$$

- ***Common shares, debt and preferred shares***

$$EPS = \frac{(EBIT - Interest\ payment)(1 - Tax) - Dividend\ of\ preferred\ shares}{Numbers\ of\ shares}$$

In the case of one financing option is chosen:

- EPS> 0: the plan is a good evaluation, we choose this option $\rightarrow$switch to step 4 of the process
- EPS <0: the plan is not good, stop the process and look for other processes

In the case of financing options are chosen:

For each option, we will find the breakeven point of EBIT to have EPS equal zero. Compared EBIT breakeven ($EBIT_{bp}$) with expected EBIT:

- Expected EBIT< EBIT breakeven (meaning that shareholders do not receive earnings) $\rightarrow$we cancel the plan
- Expected EBIT> EBIT breakeven $\rightarrow$we choose the plan

After selecting the plans have expected EBIT which are larger than EBIT breakeven. We compare each pair of schemes to choose the best financial plan. Firstly, we find the breakeven EBIT points of each pair that make EPS is equal.

If expected EBIT is smaller than EBIT breakeven, we will use less financial leverage (using debt). However, if expected EBIT is bigger than EBIT breakeven, we will utilize more debt.

Step 4: Minimize the risk

In the case of one financing option is chosen:

EBIT expected may change in the future due to business risks, we need to calculate the probability of the alterations which makes a different EBIT and as a result, EPS moves from positive to negative. In addition, corresponds to the financing options we have EBIT which makes EPS equal to zero ($EBIT_0$):

- ***100% common shares:***

$EBIT_0 =$ 0

- ***Common shares and debt:***

$EBIT_0 =$ Interest payment

- ***Common shares and preferred shares:***

$$EBIT_0 = \frac{\text{Dividend of preferred shares}}{(1 - \text{Tax})}$$

- ***Common shares, debt and preferred shares:***

$$EBIT_0 = \frac{\text{Dividend of preferred shares}}{(1 - \text{Tax})} + \text{interest payment}$$

We use the standard deviation method. With this method, $EBIT_0$ is the point where EPS is equal to 0. Besides, the probability of EBIT is smaller than $EBIT_0$will be calculated at z point:

$$z = \frac{EBIT_0 - EBIT_{expected}}{\text{Range on } EBIT_{expected}}$$

Based on the value of z, we obtain the probability P and then we will compare the probability P with the risk tolerance level of the company

- If the probability P is calculated within the risk tolerance level, the plan will be selected.
- If the probability P is calculated in excess the risk tolerance level, the plan will be rejected, we stop the process.

In the case of financing options are chosen

If the plans are selected from step 3, we will calculate the probability of the unintended cases as following steps:

** EPS is from positive to negative*

If the probability of this situation exceeds its tolerance, we will move to the "next plan" and conduct next probability. Furthermore, we will continue to calculate and compare to find the financing plan which is in the risk tolerance and it can be getting the highest EPS as much as possible.

** EPS is moved below the rate which shareholder shall be entitled to:*

This is the cases that would have higher/smaller EBIT than the breakeven point ($EBIT_{bp}$). Netherless, there is an opposite result which make the scheme is no

longer the best option. To calculate the probability of these cases, we use the normal distribution with 2 ways in 2 cases as follows:

- The probability of the change from "EBIT > $EBIT_{bp}$" to "EBIT < $EBIT_{bp}$" according to z points:

$$z = \frac{EBIT_{bp} - EBIT_{expected}}{\text{Range on } EBIT_{expected}}$$

From this z value to infer the probability

- The probability of the change "EBIT < $EBIT_{bp}$" to "EBIT > $EBIT_{bp}$" is also calculated according to z as above, but the probability is P'will be equal to (1 - P) with P is obtained corresponding z value.

With the best financing options have been selected from step 3 and the calculation as described above, we will calculate the probability of the best option is chosen in step 3. Compared this with the probability of the risk tolerance of shareholders, if the plan is within the risk tolerance, we will continue this option. On the other hand, if it is outside the risk tolerance, we will eliminate it and we will choose a different plan from step 3.

Step 5: Minimize the cost of capital

Cost of capital is usually calculated by WACC; however, the calculation of WACC will give incorrect results when the company changes the capital structure. As the result, the changes of company risk lead to the cost each component will be different and WACC will be no longer true. Instead of this, we will assess the cost of capital for financing plans base on the risk that this plan brings.

Firstly, we will compare financing options which have been selected after step 4 with the competitors in order to know whether we are using the financial plan is riskier than others and it may lead to a high cost of capital.

We can use the financial ratios to compare with other competitors:

- Debt / Equity.
- Debt / Total assets.
- Quick ratio.
- Current ratios.
- And etc…..

Selecting a different capital structure and riskier than other competitors in the industry. Thus, there will lead the market to have more rigorous evaluation of the company with lower P/E which decreases the market value of the firms. And it is against the goal of maximizing the enterprise value of the capital structure choices.

However, a different capital structure in comparision with industry standards and riskier are giving lower P/E. If the company can convince the market by reputation, ability to operate its business, then it is possible to be a better P / E.

III. Expanding the problem:

To increase the market value, we calculate to maximize not only EPS but aslo capital structure. Besides, we need to consider impacts of the capital structure on the assessment of the market for the company valuation. These appraisals will directly affect the value of shares that are traded on the financial market (represented by P / E).

As the results, rather than using EBIT breakeven point as calculated above, we can use EBIT breakeven point with the market value. The way to calculate as follows:

With each plan has P / E, we can compute the price of share by the formula P = EPS x P / E.

This measure is express completely the impact of capital structure to the company's value but it has the fault in this method. This defect is located in P / E ratio, which is very difficult to determine precisely which can only be determined through the assumption and it depends largely on the study. Thus, the capital structure is determined by EBIT breakeven at the market value is not high.

Calculate the level of financial leverage

Using financial leverage in the capital structure will add an interest payment in cash flow of the business, increasing the pressure on liquidity. To prevent the loss of payment ability, we need to calculate the probability of exhaustion of cash will occur when we choose the capital structure especially in difficult times (recession).

The formula for calculating the value of the cash flow in recession time:

$$B_R = CB_0 + FCF_R$$

CBR: cash balance in the period.

CB0: beginning cash balance in the period.

FCFR: free cash flow generated during the period.

In these factors, there is one factor that is a fluctuation of FCFR. There always exist the probability of FCFR will not reach value as prediction.

When the company decided to use financial leverage, the company will incur a burden to maintain cash to pay (principal and interest of loans, preference dividends ...). This amount is symbol D, the company will lose liquidity in case of **CBR <D**. Probability of this case is calculated as follows:

$$z = \frac{D - CB_R}{\sigma}$$

σ is standard deviation of CBR.

Following z value, we calculate the probability of occurrence of "empty cash" during the operation of the company. Based on the risk management of the owners, financial manager will choose appropriate financing options.

Alternatively, you can rely on risk tolerance of owners to compute the z value, thus we get D with the maximum value which companies will accept, afterthat we can build capital structure with an appropriate financial leverage.

In conclusion, for using analytical methods EBIT - EPS and ability to pay cash as above, we will determine the optimal capital structure in order to satisfy the long-term development goals and sustainable during the developing period of the firms. Because the capital structure will bring not only the highest value to the enterprise, but also minimizing

the risk and cost. In consequences, the determination of an appropriate capital structure for the business is not simply a sensible judgment and it should be a process of careful calculations. If SMEs apply calculation method as well as assumptions, they will have an optimal capital structure which will help the operation of the businesses to be stronger in the future.

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THE RELATIONSHIP BETWEEN CASH HOLDING AND FIRM VALUE FOR VIETNAM'S LISTED FIRMS: A LITERATURE REVIEW

Thi Thanh Nhan Do

Abstract

This paper aims to understand the previous studies on the relationship between cash holding and firm value as well as the factors which affect the optimal level of cash. The relevant literature is provided and update the papers for this topic. Based on the information, the paper has supplied some suggestions for future researches.

According to findings, the majority of papers indicated the determinants of cash holding such as leverage, cash flow, inventory, liquidity, dividend payment, return on equity, and return on assets, firm size and growth opportunity. Besides, this also clarifies the optimal cash level can be a tool to create firm value. Moreover, it also will brief the situations of Vietnam's economy in order to find out the relationship between cash holding and firm value.

Key words: Cash holding, firm value, optimal cash level

1. Introduction:

In recent years, there has been a growing interest in the relationship between corporate cash holdings and the firm value. Most studies have used three theoretical models to explain the reasons for level of cash holding: Trade off Model (Myers, 1977), the Pecking Order Theory (Myers and Maljuf, 1984) and Free Cash Flow Theory (Jensen, 1986).

Most of studies were examined in developed countries and some emerging markets such as Europeans, United State, Australia, Turkey, Korea, France, New Zealand, Switzerland, Belgian, Brazilians, Nigeria, Tehran et al which indicated the relationship between cash holding and firm value as well as the determinants impact the firm value. Moreover, they also showed the optimal cash holding level in some papers as 9.9% in UK (Ozkan et al,. 2004) while in US with the sample from 1971 to 1994 with 17% by Opler et al., 1999. Furthermore, Cristina et al (2010) conducted the US industrial firms during the period 2001-2007 with the optimal level around 14%, whereas in Italian firms with the average cash holding with 10% of total assets by Marco et al., 2011 and Turkish firms hold 9.1% of their total assets as cash and cash equivalents from 1997 to 2011 by Ali et al, .2014.

In addition, some of papers investigated the determinants influence on the firm value which have the negative or positive relationship between cash holding and firm size, net working capital, leverage, inventories, growth opportunities, financial distress, cash flow, dividend payment.

As a result, it is paid more and more attention by academics and practitioners seeking for:

- Whether cash holding impacts corporate value
- The determinants influenced firms' cash holdings
- Determine the optimal level of cash holdings.

2. Theory and Hypothesis:

According to ***Agency Theory*** (Jensen, 1986) reveals that managers have an incentive to store cash to accelerate the amount of assets under their control and to take full advantages of the firm investment decision. Moreover, the companies do not need to raise external funds and could carry out the investment decisions that have a negative influence on shareholders' wealth.

Secondly, Myers and Majluf (1984) with ***Pecking off Theory*** indicated that the cash level would be the result of the financing and investment decisions and the information asymmetries is very costly for firms in flotation new equities. Therefore, the enterprises will finance their investments primarily with internal funds than having the difficulty in finding external funds.

Besides that, by using the ***Tradeoff Theory*** (Myers, 1977) on the case of cash holdings states that the optimal cash holding is the tradeoff between the costs and benefits of cash holding. The important benefit of holding cash which could reduce the sensitivity of financial risks does not obstruct investment decisions, and avoiding the cost of raising external finance.

Leverage

The corporations which have the higher leverage will deal with the financial distress and bankruptcy. Therefore, Ferreira and Vilela, 2004; Hardin, 2009; Rizwan and Javel, 2011; Ali and Cemil, 2014 found that the companies hold more cash to reduce the leverage level to get more profit in the future. In addition, it is consistent with the majority of previous papers and pecking off theory.

H1: The relationship between leverage and cash holding is negative.

Size

According to Ferreira and Vilela, 2004; Saddour, 2006; Sungsin Kim, 2014; Megginson and Wei, 2010 indicated that the larger firms will be easier to get the capital from external sourses than smaller firms. Besides that, the bigger corporations are better in broaden ways to gain more cash and cope with the financial crisis.

H2: It is a negative correlation between cash holding and firm size.

Liquidity

Enterprises have more cash and more liquid assets easily convert into cash when it is necessary, and hence, there will reduce the demand for cash. Thus, firms with higher liquidity are holding less cash likelihood (Ferreira and Vilela, 2004; Saddour, 2006; Sungsin Kim, 2014).

H3: There is a negative association between cash holding and liquidity.

Cash flow

In the past, the paper from Kim et al. (1998) pointed the negative relationship between the level of cash holding and firm value. However, Ferreira and Vilela, 2004; Hardin, 2009; Rizwan and Javel, 2011; Ali and Cemil, 2014; Rizwan and Javed (2011) revealed an opposite way for this matter.

H4: The positive effect will be expected in the paper.

ROE

Dino Palazzo, 2011; Sami and Jamalludin, 2014 expressed that the corporation hold more cash which can manage to solve problems in the business while less cash holding may cause some trouble in earning profit.

H5: The positive correlation between ROE and cash holding will be conducted.

3. Empirical Evidence

First of all, the decision of cash holding which is important to business operations is the most vital factor in company's health and their value. According to Free Cash Flow Theory, the firm will hold high amount of cash in order to deal with severe agency problems and Harford (1999) said that the corporations hold more cash have a greater opportunity to compromise than others.

Edward et al., 2014 shows the explanation of cash holdings in Australian firms by Trade off Theory which affects shareholder value. Besides that, Cristina et al., 2010 represented that the cash holding has a strong effect on firm value by collecting publicly traded US firms belong to SIC Code from 3000 to 5999 during the period 2001 to 2007.

Likewise, Lee et al (2012) showed that the reduction of excess cash holding contribute to increasing the firm value and the change of excess cash react differently in determining firm value. Moreover, Harford et al. (2008) and Derek et al. (2014) examined that the insufficient or excess cash will affect the future stock returns and the firm valuation can be explained by the implications of current and level of cash holding on the future profitability. Similarly, Cheng and Thomas (2006) and Hafzalla et al (2011) represented the buildup of cash flow have influences on the firm value.

Secondly, it has been some studies which indicated some determinants effect the cash holding in the capital structure of the corporations from different countries.

Ferreira and Vilela (2004) studied the factors affect cash holding of enterprises using a sample of 400 firms in 12 countries in EMU in the period 1987-2000. Their results show that the cash holding level which is a positive impact in investment opportunities and cash flow, but it negatively impacts by asset liquidity, leverage and firm size. In addition, bank debt and cash holdings have a negative correlation. Furthermore,

Saddour (2006) used regression analysis to investigate the cash holding relied on the trade-off theory and the Pecking Order Theory and the data includes 297 enterprises in France from 1998 to 2002. He found that the developing businesses hold more cash level than developed businesses. For growing businesses, the study found a negative relationship between cash holding and the characteristics of the enterprise such as size, degree of liquid assets and current liabilities. Meanwhile, the level of cash holding in mature firms which increases with the size, level of investment, dividend payments reduces with your credit ranking and the expenditure on capital development.

Hardin, Highfeild, Hill and Kelly (2009) using a sample of 1114 observations for 194 Real estate investment trusts (REITs) in the United States between 1998 and 2006. Through regression analysis by the method of Ordinary Least Square (OLS) found that the cash holding of REITs correlate inversely with funds from operations and leverage, and there is have positively correlation with cost external financing and growth opportunities. The results of their study suggest that the managers of the REIT holds less cash holding to reduce the agency problems, thereby increasing transparency and reducing the cost of external financing in the future.

Kim son and Wei (2010) examined the elements which impact on the level of cash holding and firm value in China from 2003 to 2007. Through regression analysis, they found that firms with higher growth, higher profitability, and smaller size hold more cash. The debt and net working capital are a negative relationship with cash holdings.

J. Kim, H. Kim and Woods (2011) studied a sample including 125 listed companies in the restaurant business in the United States between 1997 and 2008 and found that firms with greater investment opportunities tend to keep more profits. The larger businesses who keep liquid assets other than holding cash spend more capital and pay more dividends.

Rizwan and Javed (2011) collected 300 listed companies on the Karachi stock market (KSE) in Pakistan from 1998 to 2007. They indicated that cash holding accelerates with the increase in the cash flow and the ratio of market value. In addition, working capital and net leverage have a negative correlation with cash holding.

Ogundipe L., S. Ogundipe, and Ajao (2012) found that the cash holding has a positive correlation with cash flow, leverage and return rate on assets. In addition, they also revealed that a negative correlation net working capital and the net cash holdings; this implies that businesses have a large amount of net working capital will retain less cash.

Sara et al., 2013 determined that the size of firm, networking of capital, leverage, cash conversion cycle and sales growth impact the cash holding by selected 395 firms non-financial companies of Pakistan listed stock exchange from 2005 to 2011.

In Turkey, Ali and Cemil (2014) showed that cash flow and growth opportunities have the positive impact on cash holding but the debt ratio, capital expenditure, size, noncash liquid assets and leverage affect negatively.

Moreover, Sungsin Kim (2014) concentrated on the negative relationship between cash holding and leverage in SME which also discussed about the firms characteristics affect cash holding level such as leverage, cash flow, liquidity, growth opportunities have positive or negative relationship. However, the growth opportunities have positive impact while the size and dividend have opposite sign.

The paper from Lawrencia et al., 2012 aims at the relationship between cash holding and firm characteristics of 54 Nigerian firms listed on the stock exchange from 1995 to 2010. Furthermore, the cash flow, net working capital, leverage, profitability affect the level of cash in the corporations.

Thirdly, most of researches investigated the average of cash holding in different countries as follows: In Italian private firm hold about 10.6% of total assets in 2005 in comparison with lower rate 9.8% in 1996 by Marco et al., 2009 and Bigellie (2012) found out the similar number at about 10% of cash holding. There is almost the same percentage of cash holding level in UK by Ozkan et al., 2004 while Garcia et al. (2008) indicated that the companies in Spain maintain from 7.14-8.8% of cash out of total assets.

On the other hand, the average cash holding level in Japan is about 18.5% by Pinkowitz et al., 2001 and 17% in United State during 1971-1994 by Opler et al., 1999.

The optimal level of cash holding can be determined at $\beta 1/-2* \beta 2$ in Cristina et al.,2010 and the rate is about 13.81% which the level of cash target to maximize the firm value from US industrial firms over the period 2001-2007.

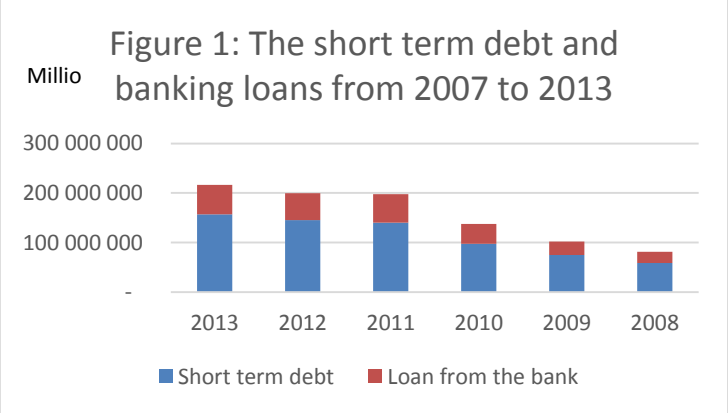
This paper will investigate the optimal cash level of the listed corporation and the determinants affect the firm value in Vietnam from 2008 to 2013.

4. Brief economic outlook of Vietnam:

Vietnam economy which has continue to recover with its stable growth over last period with GDP about 6 % is interested in as a typical example in the international economy during the financial crisis. Furthermore, the inflation rate is reducing every year reaches the bottom at under 5 % in 2014 as estimation from Statistic Office in Vietnam. As a result, the foreign direct investment has grown steadily at 17.000 projects with 240 billion USD has contributed 18% GDP with 1, 7 million jobs. In addition, Vietnam has become member of WB, IMF, AFTA, APEC, WCO as well as have an important role in ASEAN. As a result, production capacity, sales and export activities are expanded with greater efficiency.

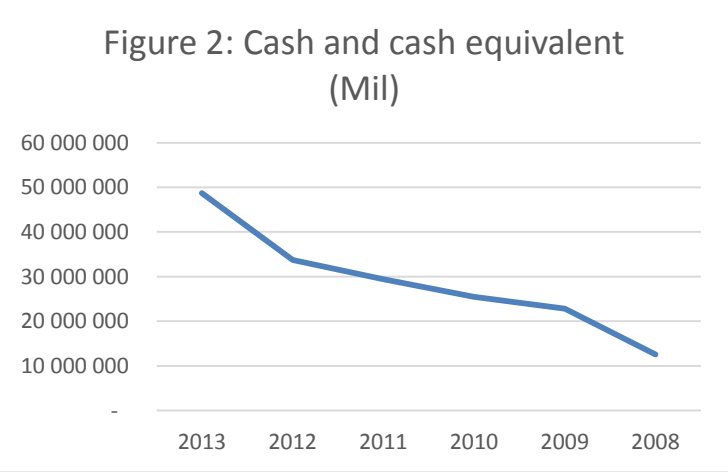
As few countries in the emerging economies in Asia did not have recession during global crisis period 2007 - 2008, but the macroeconomic indicators show that the crisis has affected the economy of Vietnam. In addition, many businesses in the country have difficulties in the operations and cash holdings decision has become a growing interest and attention from companies, investors and researchers in Vietnam.

Looking at Figure 1, we find the majority of Vietnam enterprises tend to increase debt and seek funding from external sources.



Source: financial statements from 2008 to 2013 (www.cafef.vn)

According to the chart, the debt as well as the banking loans has risen from 2008 which can be explained by the enterprises want to ensure cash flow to cope with the financial constraints in the future.



Source: financial statements from 2008 to 2013 (www.cafef.vn)

Figure 2 gives us an overview of changes in the cash holding of 120 listed firms from 2008 to 2013. The cash holding of the listed firms in Vietnam has gone up every year which is becoming the interest for researchers to find out whether it will affect the performance of the business as well as the firm value.

5. Discussion, the ideas for further research and conclusion:

Firstly, most of recent studies has focused on finding the determinants affect the cash holding in different countries such as EMU, United State, China and Pakistan.

Secondly, some of papers has concentrated on the association between the firm value and cash holding in US firms, Australian listed firms, European countries and Nigerian.

The previous papers also pointed the optimal level cash holding can create the firm value as well as the market value for the firms in United State market, United Kingdom and some countries in Europe. Most of them used the data in the past, so they need to be update with the new economic situations.

Following researches on the relation between cash holdings and firm value, this research will focus on the unique characteristics of the Vietnamese economy. A sample of 120 companies listed on both stock exchanges will be chosen to conduct a study with panel data during the period 2008-2013 to investigate the determinants impact the cash holding and the optimal level of cash holding to create the firm value. In addition, it will study to indicate whether the cash holding is higher or lower than the optimal level will reduce the firm value.

This result can be useful for administrators and researchers, financial advisors, because it will find out whether companies can increase market value of holding cash at the optimal level or not associate.

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ECONOMICS

MICROECONOMIC ANALYSIS OF THE ICT SECTOR IN THE REGIONS OF THE CZECH REPUBLIC FROM THE PERSPECTIVE OF CORPORATE STRUCTURE

Kamila Turečková

Abstract

This article deals with microeconomic analysis of the information and communication technology sector's corporate structure in regions of the Czech Republic. Sector of information and communication technology is defined by European standard classification of economic activities NACE Rev. 2., while regions of Czech Republic are defined by territorial level NUTS3. The analysis of regional corporate structure included in Section J, Information and communication, and their regional comparison is performed at the level of analysis of number of economic subjects (number of corporations) for the period 2008-2013, the number of companies under the category of the employees for the period 2010 - 2013 and by the number of companies by type of institutional sectors for the period 2010-2013. This short analysis in this present article is based on data from Czech Statistical Office, concretely from the Registry of Economic Subjects.

Keywords: corporate structure, information and communication sector, region

1 INTRODUCTION

The sector of information and communication technology (ICT) is recently one of the most potential branches of economic activities. ICT sector generates weighty gross value added which is an important source of economic development and ICT production contribute to stable qualitative economic growth of all economies at present and also in the future. ICT sector is characterized by multiplier economic effects when the activities and operations in this sector directly or indirectly affect performance in other sectors, contribute to significant savings and productivity growth, to increase of intellectual capital, especially human capital, growth of social value created by the synergy of knowledge, information and technology that are being created in this economical sector, developed and supported. All of these aforementioned positive effects associated with the activities of companies in the ICT sector, improve the competitiveness of the regions in which they operate and contribute to improving in quality of life and growth of standard of living. (Turečková, 2014a)

The aim of this short article is to analyse ICT corporate structure in regions of Czech Republic between years 2008(2010) and 2013 with emphasis on interregional differences in the microeconomic area of ICT sector. It focused on three factors, namely (i) annual number of firms according to NACE Rev. 2, section J, for NUTS3 for the period 2008 - 2013, (ii) annual number of firms according to NACE Rev. 2, section J, for NUTS3 for the period 2010 to 2013 according to the number of employees and (iii) annual number of firms according to NACE Rev. 2, section J, for NUTS3 for the period 2010-2013 according to the type of institutional sector. With use of this short analysis there also comparison of the countries between each other further in the text. Analysis of regional ICT corporates structure is based on non-free data from the Registry of Economic Subjects provided by Czech Statistical Office. From this point of view, this microeconomic analysis of regional corporate structure, is part of an author´s research of interregional disparities in the area of ICT economic activities in the Czech Republic.

The text of this submitted article below Section 1, Introduction, will be organized as follows. Section 2 is oriented on methodology and it characterizes used data. Section 3 contains the microeconomic analysis of ICT corporate structure in selected 14 regions of Czech Republic. There are monitored already mentioned 3 available indicators. Finally the Section 4, Conclusion, highlights some major information resulting from analysis of regional ICT corporate structure during specified period of time.

2 METHODOLOGY AND DATA

ICT sector definition based on classification NACE rev. 2. that is used in European Community as standard classification of economic activities. ICT sector is there determined through Section J, Information and communication. The ICT sector consists of all enterprises/units (including both natural and legal persons) which principal activity (principal activity contributes 50 and more percent to the value added) belongs to following divisions and groups (classes) of NACE rev. 2 classification: ICT manufacturing industries, ICT trade industries and ICT services industries. Generally information and communication technology covers all technical means used to handle information and aid communication. This includes computer and network hardware, as well as their software. (Turečková, 2014b)

The empirical calculation and analysis in this paper are based on take-over paid data from statistical database of Czech Statistical Office, concretely from the Registry of Economic Subjects. This data was purchased from university Institutional Support for Long-term Development provided implicitly by School of Business Administration in Karviná, Silesian University in Opava. We are consequently interested in detail of numbers of corporate disaggregated from different perspectives (3) included in section J - Information and communication. The covered period includes the years 2008(2010) - 2013. Credible data is not available for a longer period because the Czech Statistical Office did not inquire it earlier. The selected 14 regions are defined by Nomenclature of Units for Territorial Statistics as level NUTS3: Prague, Central Bohemia Region, South Bohemia Region, The Plzen Region, The Karlovy Vary Region, The Usti Region, The Liberec Region, The Hradec Kralove Region, The Pardubice Region, The Vysocina Region, The South Moravian Region, The Olomouc Region, The Zlin Region and The Moravian-Silesian Region.

From a methodological perspective the work is based on a sectoral corporate (firm) analysis and interregional comparison. The software used was MS Excel. All calculations and graphical analysis is author´s own.

3 ANALYSIS OF ICT CORPORATE STRUCTURE IN REGIONS OF THE CZECH REPUBLIC

Table 1 shows the development of number of economic subjects – firms in Czech Republic between year 2008 and 2013. As it is shown in the first table, numbers of firms rose during analyzed 5 years, number of all companies across all industries increased by 5.6% while the number of companies operating in the ICT sector increased less, only by 4.5%. The share of ICT firms on total was about 2%. It is necessary to remind here that the ICT sector created more than 5% of total Gross Value Added (2013) in Czech Republic. That is why we can claim that the ICT sector, concretely ICT firms, are highly productive. For more information about macroeconomic analysis of ICT sector in Czech Republic and its regions see Turečková (2014a).

Tab. 1 – Number of firms in Czech Republic in years 2008 - 2013. Source: Czech Statistical Office, adjusted by author

Firms/Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
All (total)	2552149	2570611	2637551	2703444	2727654	2694737
ICT (total)	49113	54549	58573	56010	53238	51344
ICT (%)	1.92%	2.12%	2.22%	2.07%	1.95%	1.91%

Table 2 shows the percentage share of ICT firms in selected regions on total ICT firms in Czech Republic during analysed time. Most of these companies are located in Prague, about 36%, followed by Central Bohemia Region (about 11%-12%) and The South Moravian Region (10.7%). Good representation of ICT companies are also in the Moravian-Silesian Region, where are allocated approximately 7% of total Czech ICT companies. In Table 2, there are highlighted values that are higher than the overall average (7.143%). We can see, that the ICT activities and operations between years 2008 and 2013 are produced by ICT firms concentrated in 3-4 regions of Czech Republic.

Tab. 2 – Percentage of ICT firms in each region of Czech Republic in years 2008 - 2013. Source: Czech Statistical Office, adjusted by author

Region/Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Prague	36.06%	35.62%	35.07%	35.64%	36.64%	37.49%
Central Bohemia Region	10.99%	11.19%	11.50%	11.69%	11.97%	12.09%
South Bohemia Region	4.11%	4.07%	4.05%	3.92%	3.85%	3.73%
The Plzen Region	3.58%	3.59%	3.55%	3.55%	3.43%	3.27%
The Karlovy Vary Region	1.48%	1.58%	1.60%	1.57%	1.50%	1.39%
The Usti Region	4.64%	4.66%	4.58%	4.71%	4.82%	4.66%
The Liberec Region	3.22%	3.16%	3.11%	3.08%	2.99%	2.98%
The Hradec Kralove Region	3.78%	3.79%	3.86%	3.79%	3.66%	3.51%
The Pardubice Region	3.20%	3.23%	3.29%	3.20%	3.13%	3.02%
The Vysocina Region	2.42%	2.47%	2.57%	2.51%	2.46%	2.42%
The South Moravian Region	10.87%	10.69%	10.69%	10.60%	10.57%	10.79%
The Olomouc Region	3.99%	4.14%	4.20%	4.14%	3.91%	3.78%
The Zlin Region	4.48%	4.40%	4.39%	4.27%	4.13%	4.14%
The Moravian-Silesian Region	7.19%	7.41%	7.54%	7.33%	6.93%	6.72%

There were only 3 regions where the percentage share of ICT firms on total grew up between analyzed 6 years. It was Prague, Central Bohemia Region and The Usti region as it is illustrated on Figure 1. In all other regions, the percentage of ICT companies dropped. A decrease by more than 0.3% was observed in 4 regions, namely in The Moravian-Silesian Region, South Bohemian Region, Zlin Region and Plzen Region.

The total number of companies during those 6 years increased in 5 regions: in Prague (+1540), in Central Bohemian Region (+812), in The Usti Region (+114), in The Vysocina (+53) and in The South Moravian Region (+202) while, for example, the number of ICT firm in South Bohemian Region decreased by 104, in The Moravian-Silesian Region by 80 and in The Plzen Region by 78 firms. Overall, the change in the number of ICT companies in the Czech Republic between 2008 and 2013 was in the amount of +2231. Most of the firms (58573) producing in the ICT sector in the Czech Republic was in 2010.

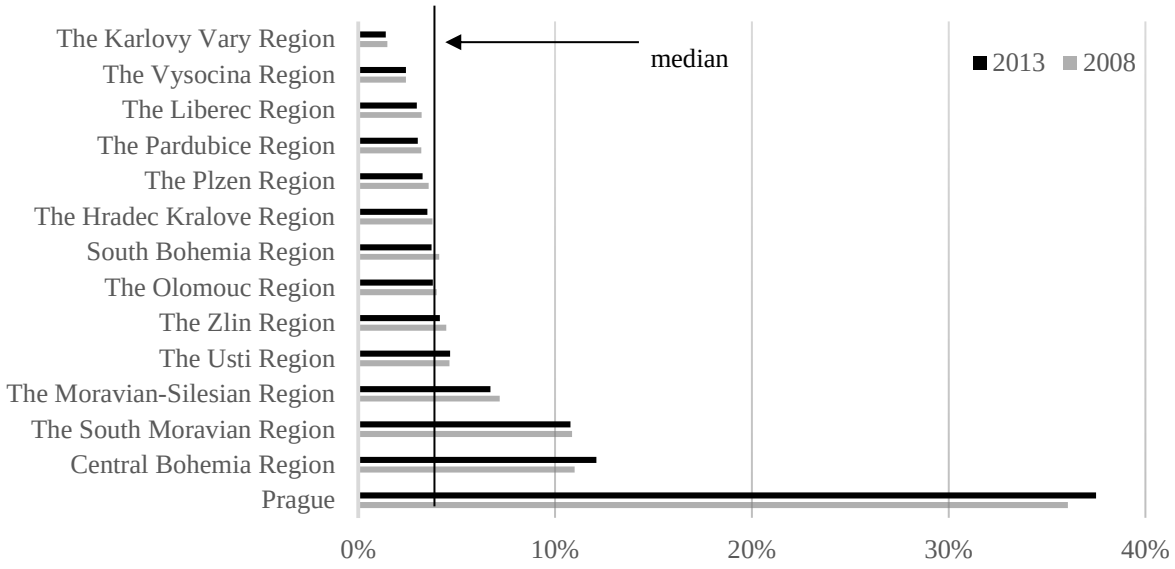

Fig. 1 - Percentage of ICT firms in each region of Czech Republic in years 2008 and 2013. Source: Czech Statistical Office, adjusted by author

Table 3 shows the percentage distribution of ICT companies in Czech Republic according to EU standard breakdown by size in years 2010 – 2013. For this short period of time is typical process of increasing the number of employees in companies and their growth which is positive for economy. The number of small enterprises went up by 27 and the numbers of medium enterprises increased by 20 while the number of unclassified companies decreased by 3389 and the companies without employees by 3839.

Tab. 3 – Percentage distribution of ICT firms in Czech Republic by size in years 2010 - 2013. Source: Czech Statistical Office, adjusted by author

Type of firm/Year	2010	2011	2012	2013
Unknown	46.49%	45.38%	37.45%	46.44%
Without employees	43.30%	43.95%	51.23%	41.92%
Microenterprises (1-9 employees)	8.03%	8.31%	8.80%	9.07%

Small enterprises (10-99 employees)	1.94%	2.09%	2.21%	2.26%
Medium enterprises (100-499 employees)	0.19%	0.22%	0.24%	0.25%
Large enterprises (500 and more employees)	0.05%	0.06%	0.06%	0.06%

The numbers of ICT firms in selected regions of Czech Republic by relevant size type for 2013 is shown in Table 4. The number of firms larger than the respective median (for numeric series) for each size type is highlighted in this table. Based on this analysis shows that there were formed only 3-4 regions which achieved positive number of firms in all their categories in the Czech Republic in 2013. It was the region Prague, Central Bohemian Region, The South Moravian Region and The Moravian-Silesian Region. This corporate structure based on company size is positive for this region because of its diversification that should ensure greater stability of the ICT sector in the region.

Tab. 4 – Numbers of ICT firms in each regions of Czech Republic by size in years 2013. Source: Czech Statistical Office, adjusted by author

Type of firm/2013	**Unknown**	**Without employees**	**Micro-enterprises**	**Small enterprises**	**Medium enterprises**	**Large enterprises**
Prague	9267	7271	2046	547	97	23
Central Bohemia Region	2640	3166	338	63	3	0
South Bohemia Region	862	847	168	35	1	1
The Plzen Region	772	723	144	38	3	0
The Karlovy Vary Region	330	310	68	6	0	0
The Usti Region	1180	1003	184	25	0	0
The Liberec Region	780	610	113	28	0	0
The Hradec Kralove Region	790	830	151	29	1	0
The Pardubice Region	682	702	138	28	3	0
The Vysocina Region	498	644	77	19	3	0
The South Moravian Region	2651	2138	573	160	13	4
The Olomouc Region	851	869	170	49	2	0
The Zlin Region	969	926	175	55	1	0
The Moravian-Silesian Region	1572	1484	311	79	3	2

The last made microeconomic analysis of the numbers of ICT companies in terms of their classification into institutional sectors is performed below. Institutional sectors and subsectors (ESA 2010) are in Czech Republic divided into 5 groups: Non-financial corporations,

Financial corporations, General government, Households and Non-profit institutions serving households. (CSO, 2015) There was no ICT firm classified into Financial corporations institutional sector in analyzed period of time. The number of ICT companies categorized according to particular institutional sectors in Czech Republic between years 2010 - 2013 are shown in Table 5. There is also shown the percentage share of each institutional sector on total. How we can see from Table 5 there is a considerable share of ICT companies belonging to the institutional sector Households (over 75%) in the Czech Republic.

Tab. 5 – Numbers and percentage of ICT firms of Czech Republic by institutional sector in years 2010 - 2013. Source: Czech Statistical Office, adjusted by author

Institutional sector/Years	**2010**	**2011**	**2012**	**2013**	**2010**	**2011**	**2012**	**2013**
Non-financial corporations	12294	12351	12695	12730	20.99%	22.05%	23.84%	24.79%
General government	8	17	18	17	0.01%	0.03%	0.03%	0.03%
Households	46193	43561	40438	38512	78.86%	77.76%	75.94%	75.00%
Non-profit institutions serving households	78	88	96	93	0.13%	0.16%	0.18%	0.18%

Tab. 6 –Percentage of ICT firms in 14 regions of Czech Republic by institutional sector in years 2010 and 2013 (in %). Source: Czech Statistical Office, adjusted by author

Region/Institutional sector	**2010**				**2013**			
	Non-financial corporations	**General government**	**Households**	**Non-profit institutions serving households**	**Non-financial corporations**	**General government**	**Households**	**Non-profit institutions serving households**
Prague	29.98	0.00	69.87	0.15	33.92	0.01	65.88	0.19
Central Bohemia Region	13.07	0.00	86.80	0.13	13.51	0.02	86.28	0.19
South Bohemia Region	16.06	0.00	83.73	0.21	19.60	0.47	79.67	0.26
The Plzen Region	19.89	0.05	79.96	0.10	23.53	0.00	76.30	0.18
The Karlovy Vary Region	16.06	0.00	83.72	0.21	18.60	0.14	80.70	0.56
The Usti Region	14.62	0.00	85.20	0.19	16.72	0.00	83.03	0.25
The Liberec Region	13.08	0.00	86.75	0.16	16.32	0.07	83.42	0.20
The Hradec Kralove Region	15.49	0.09	84.24	0.18	18.72	0.00	81.06	0.22

The Pardubice Region	13.82	0.10	85.92	0.16	16.63	0.00	83.24	0.13
The Vysocina Region	10.17	0.00	89.76	0.07	13.38	0.00	86.54	0.08
The South Moravian Region	22.84	0.02	77.03	0.11	28.27	0.02	71.57	0.14
The Olomouc Region	14.13	0.04	85.74	0.08	17.40	0.10	82.39	0.10
The Zlin Region	16.23	0.00	83.61	0.16	19.29	0.00	80.52	0.19
The Moravian-Silesian Region	16.16	0.00	83.82	0.02	21.15	0.03	78.76	0.06

Table 6 shows percentage structure of institutional sector of ICT firms in selected regions of Czech Republic in 2010 and 2013. The percentage share of representations of non-financial corporations on total was higher in Prague, The Plzen Region and The South Moravian Region, in Households it was in Central Bohemia Region, The Liberec Region and the Vysocina region while in the sector of Non-profit institutions serving households it was in South Bohemia Region, The Karlovy Vary Region and The Usti Region in both set years. The institutional sector General government was higher in The Plzen Region, The Hradec Kralove Region and The Pardubice Region in 2010 and in South Bohemian Region, The Karlovy Vary Region and The Olomouc Region in 2013. Based on this simple analysis we can thus determine the institutional structure of ICT companies in the regions and the positives and negatives of this structure.

Here it is necessary to add that the share of Non-financial foreign ICT corporations on total amount of ICT firms in Czech Republic represents about 4.8% during the analyzed period. Most foreign companies are located in Prague, where they make up more than 9% of local ICT companies and in the South Moravian Region, where their share of local firms is around 4.5%. Third region with the highest number of foreign ICT companies was Central Bohemian Region.

4 CONCLUSION

The aim of this present paper was to provide a small microeconomics analysis of Czech ICT firms in context of interregional comparison. Because of lack of relevant data was this analysis done only for years 2008(2010) – 2013 and based only on 3 indicators. This analysis is an integral part of wider research focused on regional disparities in ICT sector in the Czech Republic.

The result of the analysis clearly confirmed that the centre of ICT economic activities and operations in Czech Republic was Prague where with around 36%-37% of all Czech ICT companies. This region also produced more than 60% (2012) of total Czech ICT Gross Value Added (see Turečková, 2014a). ICT firms were also concentrating in other 3 regions: Central Bohemia Region, The South Moravian Region and The Moravian-Silesian Region. These four regions were accounted for more than 65% of all corporate in ICT-producing sector.

Regarding the structure of companies according to their size determined by the number of employees, the biggest ICT company is in the category Unknown, closely followed by group Without employees. These two categories covered around 90% of the ICT companies. Firms with 500 or more employees are found only in four regions - in the Prague, South Bohemia Region, The South Moravian Region and The Moravian-Silesian Region. If we look

at the inclusion of ICT companies according to their institutional sector of belonging, then clearly the most ICT companies are included in the sector Household, more than 75%. Non-financial corporations accounted for ICT during the analyzed period only less than 25%. Companies included in the category of General Government and Non-profit Institutions serving Households accounted for only a tiny fraction of the total number of ICT companies. This nationwide structure is identical to the regional distribution of ICT companies according to institutional sector.

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CHANGING NATURE OF US TRADING POSITION IN ENERGY SOURCES

Jana Vránková

Abstract

The article focuses on the development of the US trading position in energy sources as an important part of the total US trade. Considering the latest development in domestic production of natural gas and crude oil, special attention is dedicated to the changes in this field. At first, trend of decreasing net importer position is described and explained. It corresponds with the latest predictions of EIA and comes to a conclusion that the USA shall become a net exporter of natural gas not later than in 2020. The identified reasons are two. Firstly, the US consumption of natural gas and crude oil is decreasing in the long run. Secondly, domestic production is increasing due to newly discovered and utilized domestic sources, especially shale gas and offshore oil. In the second part, the international development due to this trend is projected. As the most likely scenario, massive export of LNG (liquefied natural gas) is expected. Thanks to considerable price difference of natural gas in the USA compared to Europe and South-East Asia, a great opportunity is seen in such area. As the main disadvantage, unpredictable cost of transportation due to lack of experience is identified. On the other hand, the trade via pipeline is a safe business, however limited by geographical position of the USA and Canadian domestic supply of the commodity.

Keywords: balance of payments, natural gas, unconventional gas, LNG

1 INTRODUCTION

Energy trade is one of key aspects of trade flows of every open economy. In case of the United States, the situation has been changing in the last years dramatically. From a net importer, predicted by many to deepen its deficit, is becoming less dependent on foreign imports of energy sources. The main cause is the rapid growth of tight oil and shale gas production. Also consumption trends play its role, reflecting increasing efficiency of vehicles and other production equipment as well as changing structure of the economy as a whole.

The US development is highly unconventional in the world scale. The traditional net importing countries, such as Japan, China, and the EU increase their dependence on external sources rather than utilizing their own domestic sources, if there are any. The reasons for such behavior are various, but mainly lie in environmental protection (case of the EU), total lack of domestic sources (case of Japan) and strategy of owning foreign sources (case of China). The USA has found another way and thus utilizing their own sources considered until recently as economically unrecoverable. With the development of new technology and growing world price of crude oil (at least in the years of introducing the new production methods), the situation changed and enabled new sources to be involved in domestic production.

The aim of the article is to examine the current position of the United States in energy trade with special attention to natural gas and crude oil and to set a clear trend, if there is any. The international consequences of such a trend shall then be described.

The article is divided into two chapters. First, the position of the United Stated in trade is examined. The share of energy trade is described as a part of the current account of the US balance of payments. Then, the development of net trade position is discussed in crude oil and

natural gas trade. Also the effect of dollar value is reflected. The second chapter focused on international consequences of greater domestic production of natural gas from trading point of view. The potential of LNG and pipeline export is taken into account.

2 ENERGY TRADE AS A KEYSTONE OF US TRADE FLOWS

The US current account is traditionally in deficit. Overall trade in goods and services reached in net values around -700 bil. USD in 2013 (see Fig. 1), whereas the USA is a net importer of goods and net exporter of services. Energy accounted for 15% of gross US goods imports in the same year. Energy exports, with their growing trend, accounted for 7% of all US goods exports (EIA, 2014b).

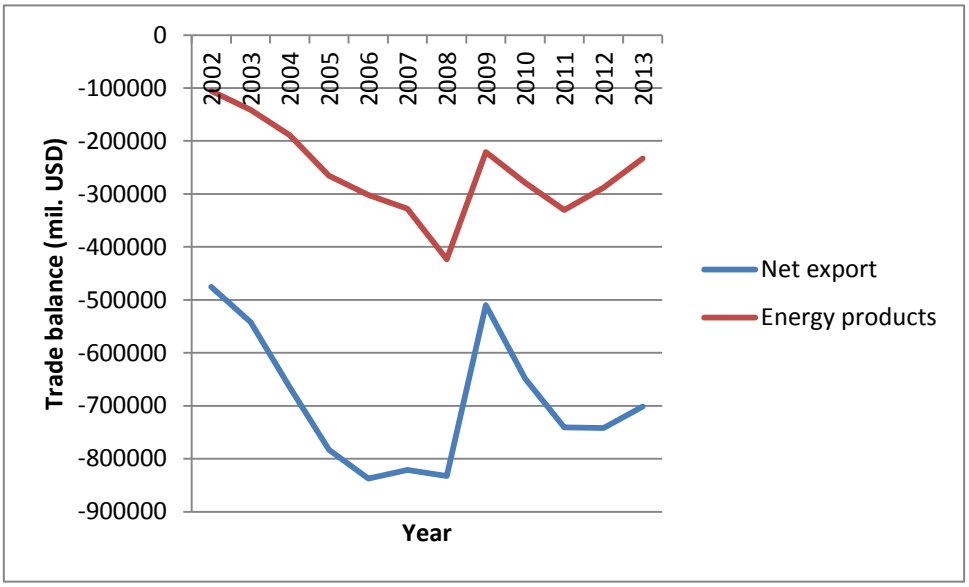

Fig. 12: Trade balance for goods and services as a total and for energy products. Source: US Department of Commerce, 2014

The US net imports of energy as a share of energy consumption fell to their lowest level in 29 years for the first six months of 2014 (EIA, 2014a). In spite of this, in 2013 net energy imports accounted for nearly half of the total US trade deficit in goods and services (EIA, 2014b). The total consumption grew in comparison to 2013, but it was outplaced by increase in total energy production. It in total led to a 17 % reduction in net imports. The increase in total energy production was almost completely caused by the growth in petroleum and natural gas production sectors. Total energy imports fell 6 % in the first half of 2014, compared to the same time period in 2013. The import of natural gas and petroleum decreased 5 % and 6 % respectively. Total energy exports increased 8 %. This shift resulted in the lowest deficit of the US trade in four years.

In 2013, the value of US net energy imports was 19 % lower than in 2012. The main four factors were identified in EIA (2014b). Firstly, the value of net crude oil imports decreased 16 %. Secondly, the value of net exports of fuel oil and other refinery petroleum products increased 55 %. Thirdly, the value of net natural gas imports decreased 14 %. And fourthly, the value of net coal exports decreased 16 %. As a total, net energy imports as share of total US energy consumption has been reduced from 30 % in 2006 to less than 20 % in 2012. By 2020, this share should reach not more than 6 % in 2020 and 3 % in 2035, due to further development of onshore oil and natural gas production, supported by horizontal drilling and hydraulic fracturing (EIA, 2013).

2.1 Natural gas and crude oil situation

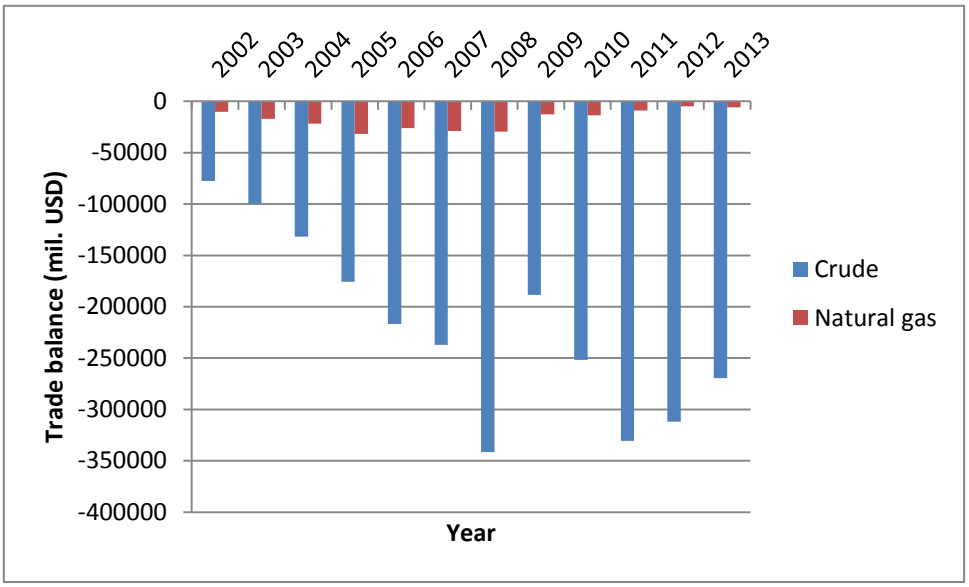

Fig. 13: Trade balance (net export) for crude and natural gas, seasonally adjusted). Source: US Department of Commerce, 2014

As can be seen from Fig. 2, lower net gas imports helped to improve the US balance of payments (Taylor, 2013). In 2005, net imports accounted for almost 30 bil. USD (nominal prices, seasonally adjusted). By 2013, the cost of net gas import had fallen to less than 6 bil. USD. The effect of lower import prices helped to narrow the gap, but volume is still important. The USA has been net gas importer in the last 40 years, but the situation is changing rapidly. By 2020, the USA is expected to become a net exporter of gas (EIA, 2012), which is also confirmed by the trend in Fig. 2. This can be seen as a surprise by many, because as late as by 2000, EIA predicted substantial growth in net imports. The forecast was set to 4 640 Bcf (10^9 cubic feet) in 2012 and 5 140 in 2020 (EIA, 2000). The infrastructure was constructed mainly for import and is now abandoned or refitted for export.

Crude oil accounted for the largest single US import by value in 2013. This is nothing new, as it has already been so for many years. Crude oil holds its prominent position in trade with energy source before natural gas, electricity, nuclear fuels and coal (EIA, 2014b). This position can be seen also in Fig. 2, as the trade balance is much worse in comparison with natural gas.

As the net position in trade is calculated as value, the price of a commodity is also of great influence. From 2008, the price of natural gas has generally declined, decreasing the resulting deficit of US natural gas imports. The consumption trend is on its upswing in the later years. Therefore, the decline in net importing position is particularly noteworthy from this point of view. However, oil price has been overall growing in the same period of time and the net imported volume has been decreasing, therefore the deficit changes can be quite modest despite significant changes of net trade flows (EIA, 2014b). In comparison to natural gas consumption, the consumption of oil has been flat or decreasing since 2005, when the boom in shale gas production started, well ahead of the upturn in tight oil production.

The effect of rapidly dropping oil price in the latter months shall reflect in two fields. First, on the import side, the net position calculated in USD shall be decreasing faster, though only virtually. Second, on the production/export side, the effect shall be quite opposite. It will hit

production at the most, for the profitability of the investment was calculated with slight growth estimate. With the crude oil price plummeting to its roughly one third comparing to the same period of the last year, the payback period can be crucially longer than expected, if returned at all. The OPEC countries are not willing to intervene via production cut for their production costs are ten times lower than those of the USA. The ultimate effect shall also depend on the time frame of the current price drop. The eventual effect will be highly dependent on the period in which the price drop shall continue. According to the latest news (e.g. Čermák & Bureš, 2015), it looks like the through has been already hit and the crude oil price starts its slow increase. The main cause of the price increase can be seen in the dataset publicized by Baker Hughes Company regarding figures about new drilling and exploration activity in North America besides others. The data show that worries exist about US production growth that can, by the end of this year, become slower than expected or even slightly decrease. The fact that the US domestic crude oil production is a reaction to high world oil prices must be taken into account.

The difference between gas and oil can be seen in the settlement of prices as well. When oil price is mainly given in the world market for relative ease in oil transport, the price of natural gas is settled on domestic markets and reflects rather domestic relation between supply and demand. It is the main reason why the difference in prices in the USA and Asia or Europe, respectively, is so high and attracts plans for LNG trade (see below).

The opportunity to export natural gas based solely on the price differential in selected regions is shown in Fig. 3. The Henry Hub price has been decreasing since 2009. The main reasons are two – continuing economic crisis and growing domestic supply. As the crisis was diminishing, the effect of growing supply started to become prevailing. European prices were growing due to growing demand and also uncertainty about Russian deliveries via Ukraine, starting with the gas crisis in 2008/2009. However, due to two warm winters in a row in 2013 and 2014, the gas price has plummeted in spite of the uncertain situation in Ukraine and safe transport of Russian gas to Europe. Japan LNG prices have been steadily growing due to its utter dependence on foreign sources. Together with South Korea, Japan is the greatest export opportunity for the US natural gas export.

Fig. 14: Selected Global Natural Gas Prices. Source: BP, 2013

However, arguments against the growth in natural gas exports can be heard as well. Low gas price gave rise to calls for greater use of natural gas in the US fuel mix, replacing especially coal (Ratner, Parfomak, Fergusson, & Luther, 2013) and helping to fulfill environmental

requirements for exhalations in power and heat production. Also in transportation, oil could be displaced by natural gas. It is highly unlikely, though, that such arguments shall prevail and cease the natural export developmental trend.

3 EXPORT OPPORTUNITIES IN CHANGING STRUCTURE OF US TRADE POSITION IN NATURAL GAS

Shale gas, especially the US export to the international market, has its profound impact to the balance in international trade with energy commodities. Few countries have nowadays available technology to produce natural gas from shale at a reasonable economic price. The experts (Economic Affairs Committee, 2014) estimate that fracking efficiency is going to double in the next few years and then double again in the next decade. The technology is developing very fast and is using less and less chemicals and limited amount of water.

As of today, 80 % of natural gas and oil comes from OPEC and Russia, another 10 % is produced in OECD countries and China. "The shale gas revolution potentially implodes that ration and changes the geo-strategic energy balance of the planet." (Economic Affairs Committee, 2014). Natural gas production increases almost everywhere, with exception of Europe (IEA, 2014) and 60 % of the growth comes from unconventional gas.

Demand for natural gas grows the fastest from all fossil fuels. Together with increasing flexibility of the world trade with LNG, the supply of natural gas becomes more reliable. The number of global liquefaction sites has nearly tripled in recent years helping to ensure supply when short-term needed in the increasingly interconnected global market. Natural gas is expected to become a leading fuel in OECD countries by 2030 (IEA, 2014).

However, US domestic entrepreneurs express their concerns regarding increase in US natural gas export. The main issue is the danger of increase in gas prices on domestic market due to higher total demand on natural gas. The entrepreneurs agents are worries of almost tripling the domestic gas price by 2030 (Koch, 2014). On the other hand, the export proponents claim that the maximum increase shall reach 1 USD per MBTU by 2038. An average US household consumes about 40 MBTU per year, so the additional costs are not going to be so dramatic. Moreover, the economy as a whole shall profit from natural gas export through boosting the USD value and thus reducing US imports costs (Koch, 2014).

3.1 LNG trade

Before 2008, the USA had been expected to import significant volumes of gas in the form of LNG (usually delivered in specially equipped ships to properly fitted ports). The flows are now diverted to Asia and Europe, where the increased competition changes the fundaments of the market. Also, the effect of coal being displaced by natural gas in the USA influences its consumption not only in Europe. The main reason is the dropping price as US exports are growing.

As mentioned above, the main reason for LNG exports is relatively high difference in prices in the USA compared to those in Asia and Europe. This difference can be partially explained by transportation costs. Crude oil can be shipped cheaply across oceans, but it is not valid for gas transportation. Both liquefaction and shipping of natural gas require considerable initial investments together with higher energy costs in transportation itself. The natural gas prices are then less likely to converge to the same extent as global oil prices (EIA, 2014b).

The permission to export gas from the USA and Canada freely is expected to greatly influence the global market. The majority of applications to export gas from the USA is currently in the status approved by the US Department of Energy (DOE, 32 from 36 in 2014; Resnik, 2014). Obtaining of such an approval by DOE is virtually automatic when the target

country is one of those that signed a Free Trade Agreement (FTA) with the USA. Those countries are currently 16 – besides countries of Americas also Australia and South Korea, which is the second world largest consumer of LNG.

For all other countries, the export facilities are required to obtain a permission based upon a public interest approval – including all European countries, China and Japan (Koch, 2014). These countries create a substantial part of the total demand on LNG and the administrative hinders can bring additional costs and thus increase in export prices which will have an impact on exporters' profitability.

Another problem is seen in export infrastructure, as already mentioned above. The companies were building mainly import, not export infrastructure until a few years ago (Koch, 2014). Currently, 31 facilities for gas liquefaction have applied for DOE approval, but only seven of them received one, of six only conditional. If those facilities were built, it would allow to export 9,3 Bcf daily. As of today, the USA produces and consumes about 70 Bcf a day (EIA, 2013). According to EIA's predictions of becoming a net exporter of natural gas in 2018, the administrative burden can make it impossible to export as much as needed to export more than import. Also, the construction process itself takes time, usually about two years per terminal. Considering the fact that only one terminal is now under construction, the concerns about export capacity in 2018 become more actual.

By 2020, the USA and Canada are likely to be exporting 67 Bcf a year. The LNG export could begin as soon as in 2016. In the average, the USA is expected to be a net exporter of 50 Bcf a year by 2045 (Societe Generale, 2013).

The global gas demand is going to grow at a greatest rate from all fossil fuels (see Fig. 4), mostly in the electricity generation sector.

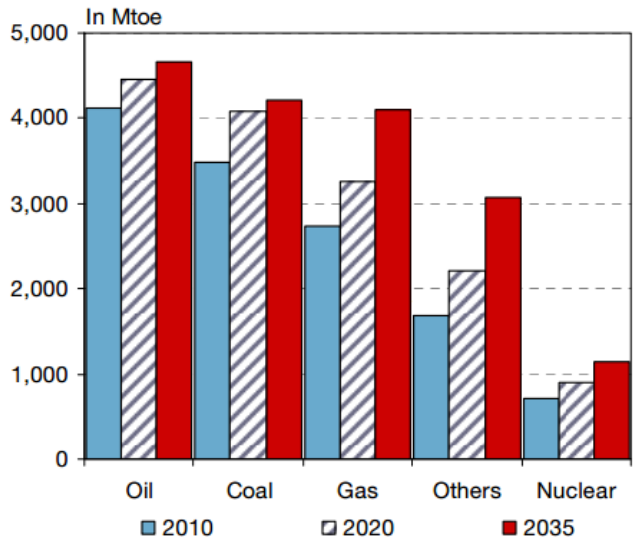

Fig. 15: World Primary Energy Demand. Source:

Societe Generale, 2013

The natural gas and thus LNG success is highly dependent on gas-for-oil substitution in transportation. The majority of gas fueled vehicles are on the roads in Pakistan, Brazil, Argentina and India (Societe Generale, 2013). This creates space for greater demand in those

regions. Together with oil price in the long term and pollution worries, the growth of use in transportation is estimated to increase significantly. The European Union is projected to have the most growing general demand and thus increase of more than 30 % by 2020, but Asia shall receive the biggest share of the natural gas production growth with its projected demand increase of 40 %. The argument for source diversification and security of supply is the political reason for import from political stable countries, as for example the USA.

3.2 Natural Gas Pipeline Trade Exchange

The pipeline trade exchange includes the US neighboring countries. The division of trade is simple and easy to predict. Canada is a net exporter of energy sources to the USA, mainly of gas. Mexico, on the other hand, is a net importer from the USA. The division is given not only by economic development but also by geographic reasons. Main US supplies of crude oil and traditional natural gas sources are located in the south of the country, so the pipeline construction appears to be the most economic option to export the production. On the northern borders to Canada, the trade is traditionally more intense.

Almost all Canadian gas exports are delivered to the USA via pipeline. The LNG trade becomes to develop as well, directed to New England by truck. In 2013, the USA imported 2,8 Tcf (10^{12} cubic feet) of natural gas from Canada and LNG created less than 1 %. The Canadian western provinces are the main source of natural gas export to the USA, accounting for 97 % of US natural gas import. The share is expected to decline as the US domestic production is going to cover more of the domestic demand. The interconnectedness of the pipeline system is on a very high level, allowing transportation of 14 Bcf/day through 13 main pipelines (CEPA, 2013).

Mexico represents a great opportunity for future pipeline export for its natural consumption is steadily growing due to greater demand in power generation. Despite the fact that Mexico has its own shale gas supply, the development of such production is slow. Main natural gas trading partner are the USA, but the import of LNG from other countries is becoming more important. It is expected that the exports to Mexico shall increase from 2 Bcf/day in 2013 to 6 Bcf/day in 2020 as several pipelines are currently under construction (Scheid, 2014).

Also in trade via pipeline, the USA are a net importer. The dollar net value is increasing due to the growth in natural gas prices in 2013 (EIA, 2014). In 2012, the Henry Hub price reached its minimum (Vránková, 2014). If solely volume is taken into account, the net pipeline import in 2013 reached its lowest level since 1995 and was lower 7 % than in 2012.

4 CONCLUSION

The growth in domestic production, as predicted in EIA's reference scenario, mainly caused by onshore natural gas and oil production together with horizontal drilling and hydraulic fracturing, will allow the USA to continue in decreasing its deficit of net trade balance. Reducing of net crude oil imports and increasing refined products exports will let the USA become a net natural gas exporter by the end of this decade.

The impact of the changes of the balance of payment situation in the USA, mainly in the field of natural gas, has effect on the international market, too. Between the most noticeable impacts belong:

- the growing consumption of coal in the UK and Germany, as US coal have displaced to other markets, given low US gas prices due to increased domestic production;
- the domestic production of the USA influenced international price of gas. The inflow of US gas have limited the price growth;

- the patterns of international trade are likely to change due to the US gas. The shale gas boom also influences other countries to develop their own production;
- the production of shale gas and shale oil are likely to change the international balance, where the main player are so far the Middle East and Russia. Their dominant role is likely to be decreased, as the pattern of production and trade in oil and gas is rebuilt.

The main export opportunities are seen in pipeline and LNG export. Pipeline trade is possibly the easiest way how to export since the infrastructure is operative and brings only maintenance costs. LNG export brings together also costs for building the infrastructure both in the USA and in a receiving country and risks connected with transportation of highly cooled and pressurized gas. Despite all the problems with gas export compared to oil trade, the LNG export capability of the USA increases.

However, uncertainty regarding fast and unproblematic development in direction to net exporter position exists. First, the price of crude oil on world markets is today on 1/3 of its last year level. Considering the fact that US crude oil production is an answer to high oil prices, low crude oil price might endanger the future development and slow down the positive trend. Second, domestic entrepreneurs emphasize their concerns regarding gas price change on domestic market if export should increase in the predicted manner. It could lead to decrease in competitiveness of US products on world markets. Third, export infrastructure is not ready yet and not entirely prepared to dispatch such volumes of gas and oil. Together with administrative barriers to export to non-FTA countries, it may hinder development of export base and slow down the transformation to a net exporting country.

The change shall reflect in the international position of the United States and shall enable greater independence of such an important international player. The consequences shall also have an impact on US energy security and thus its perception of international threat. The biggest question of the current development is the world price of crude oil. Although gas price is not directly bound to the one of oil, the price trend seems to be similar. The profitability of production of both natural gas and crude oil shall be highly dependent on its future values.

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ADDITIVEES TO THE ECONOMIC EVALUATION OF HEALTHCARE SECTOR

Lajos Bánhegyesi

Abstract

The mentality must be abandoned which handles the healthcare as a simple item of the budgetary expenditures. Instead, the health should be treated as a branch of business which satisfies one of the basic human needs and at the same time promotes the economic growth and the creation of new jobs. The paper investigates the Hungarian example of relations between healthcare and economic system. The aim is to justifying and designate the necessity of healthcare investments in order to improve well-being.

Keywords: healthcare management, healthcare investment, health economics, well-being

1 INTRODCUTION

At the end of the 19th century, it was Otto Eduard Leopold von Bismarck (1815-1898) who first recognized that a society's economic growth depended also on the development of its health sector. A well-known and verified fact is that the improvement of a country's health also affects its economic rise positively. Alike, the economic well-being affects the health by means of its direct effect on the financial circumstances influencing the biological survival and health positively (Woode, Nourry, & Ventelou, 2014). Moreover, it also takes its effect by means of improving the social participation, the life circumstances and the sense of security (ESKI, 2010). In Hungary, the quantitative as well as the qualitative value of health fall below the expectations and the European standards. Its effectiveness cannot be raised by the proper applying the conventional and plausible finance approaches any longer. To investigate the focus must be on how a competitive paying healthcare could be constructed in a budgetary institution. To my view for the proper function of a modern healthcare, a paying patient service is essential and unavoidable.

The paper enlightens why the investments in health are necessary, moreover, how a healthy society affects the economy of particular country. A methodological approach is applied for surveying the plausible answers detailed in the literature, a glossary and the logic of economics.

2 HEALTHCARE AS A PART OF THE ECONOMY

4.36 System structure

According to the definition provided by the National Institute for Strategic Health Research (ESKI), the health economics is a relatively novel applied science which focuses on the healthcare, its demand and supply (e.g. costs, supply system), its inputs (e.g. human resources, health technology), as well as its outputs and outcomes (e.g. health benefits). (Jacobs & Rapopor, 2004)

A lot more besides, it may help in the assessment of the effectiveness of health policy interventions and how the supports can be used to optimize the allocation of resources, moreover, also in the evaluation of the role of factors affecting the health and the quality of healthcare (Medicines, National Institute for Quality and Organizational Development of Healthcare and, 2010)

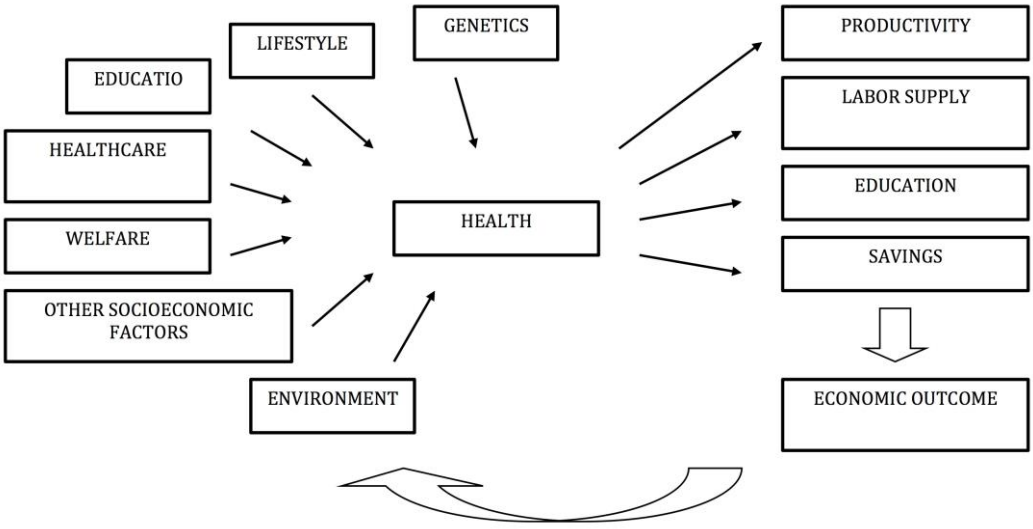

Fig. 1 – The contribution of health to the economic growth. Source: National Institute for Quality and Organizational Development of Healthcare and Medicines, 2010

4.37 Contribution to economic growth

Health contribute to economic growth (see Figure 1) in four important issues. The followings discuss them.

1. The productivity is seen as the total entity of all goods produced by one employee. The illness as well as the poor health status entail additional costs, which are to be summarised by using expense analysis studies where the deleterious effects and risk factors of illnesses are translated into financial categories. Basically the costs of diseases can be divided into three major components, such as
   - direct costs which include for example the cost of EMS, inpatient and outpatient care, rehabilitation, medicaments,
   - indirect costs which are typically the patient's personal productivity potential losses and
   - intangible costs which are the psychological impact of the illness on the individuals and on his/her family.

   The health expenditures have an impact on the health status of the society as a whole, which also affects the changes of GDP. (Penner, 2004)
2. The labour market effect can be interpreted as the factor which influences the aggregated labour force of both the individual and the economy. An individual's health condition greatly affects his/her personal productivity and his/her value as a labour supply (Penner, 2004). It does not only have an impact on working hours but may also modify the date of his/her retirement. The state of health will de termine the date of retirement. According to a study conducted in 1987 (ESKI, 2010), the workers in poor health would likely ask for their retirement 1-3 years earlier. An individual's health problems have a definite impact on the labour market situation of the ones living in the same household, e.g. the men are willing to significantly reduce the

number of their work hours if their spouse is in need of care. (Feldstein, 2012)

3. The health status influences the magnitude of savings of a given individual too. It is obvious that the longer and healthier life prospects increase the willingness for saving. The retirement planning and consequently the savings for the retired life period will turn up when the death rate is low enough so that the reaching of retirement age appears to be a fairly realistic perspective. The savings fall with the disimprovement of health because of poor health reduces the current income and increases consumption, the latter especially applies for medical expenses (ESKI, 2010)
4. The effectivity of education is subject to change in proportion of the capacity of its participants. The childhood good health stimulates cognitive (surveillance, sensory) functions, reduces school absences and thus the chances of dropping out of school. A healthy child is expected to achieve a better performance in school, so he/she is likely to be more productive in the future as well (ESKI, 2010)

3 NEED FOR HEALTHCARE INVESTMENTS

4.38 National health status in Hungary

The national health expenditure in Hungary is around 7-8% of GDP (Tab. 1), which falls short of the developed Western European countries.

Tab. 1 – Health expenditures between 2003-2012. Source: (KSH, 2012)

Year	Total health expenditure in billion HUF	Health expenditure as the proportion of GDP in percentage
2003	1605.7	8.4
2004	1698.5	8.1
2005	1859.6	8.3
2006	1955.2	8.1
2007	1917.8	7.5
2008	1980.9	7.4
2009	1982.4	7.6
2010	2136.6	8.0
2011	2219.3	7.9
2012	2234.1	7.8

All this proves that the health expenditure acts as a single heading in the budget and not as a conscious calculated economic developmental target.

Summing up, all the evidences support the hypothesis that health has a clear positive effect on the economic achievements at the individual and at the household level alike.

4.39 Healthcare investments

The definition of health as a form of the human capital investments must be clarified. One of the basic human rights is the right for health, which is stated as a fundamental right in our country's constitution, The Fundamental Law of Hungary. In addition, it is a rather peculiar thing from an economic point of view, as being a non-substitutable good, the lack of which deteriorates the personal ability to generate income. The demand for health, however, is not determined by the individual financial liquidity, and although the need for health reconstruction can be foreseen but not its timing, quantity and duration.

According to the results on the relationship between health and economic growth (Wiese, 2014), the good health and the consecutive improvement of life expectancy significantly contribute to the growth of GDP. After having analysed the data sequence going back as long as 100-125 years in ten developed country, Fogel, who received the prestigious Nobel- prize for his research on healthcare history concluded that the improvement of health could raise the economic growth by as much as 30-40 percent (W. Fogel R.). According to the research carried out by Bloom and Canning in 1996 (Bloom, 2001), 1 percent increase in the adults' survival rate contributes to a 2.8% increase in the labour productivity. As Róna at al (2010) demonstrated by the results of their 1996 research, if there were two countries which were identical in all factors but the people's life expectancy, the annual growth rate of GDP would be 0.3-0.5% higher in the country with the 5 percent higher life expectancy.

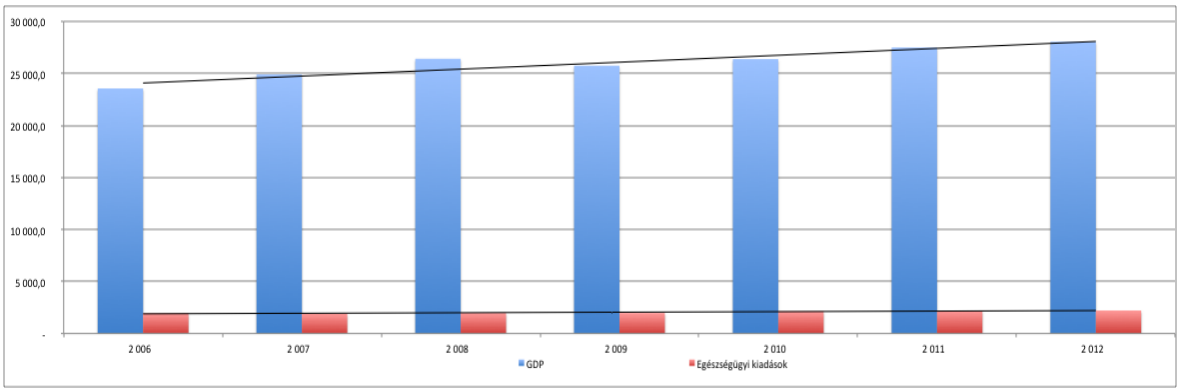

Fig. 2 – The interrelationship between GDP and health expenditures in Hungary (2006-2012). Source: (KSH, 2012)

As it is also shown in Figure 2, the interrelationship between GDP and health expenditures in Hungary (2006-2012), the increase of health investment results in GDP growth, therefore, in order to achieve the economic development, the raise of health investments is essential. Lesser increase of health investments as a ratio of the GDP leads to a higher rate of GDP growth.

4. SUMMARY

"The Hungarian health needs development and changes in many variable respect: investments to modernise the equipment, improvement of the training of health professionals and extensive campaigns that should contribute to the public's sanitary and health self-defense." (Kornai, 1988). Every modern state aims at improving the general health of the society. That can be achieved by increasing the spending on prevention and by improving the education on the healthy way of living (Feldstein, 2012). That kind of intervention yields in

higher average life span, in the improvement of the general health and the quality of life, which all results in the improvement of the state economic situation as well. Being healthy and preserving one's health would be kept to be important by the people, so they were willing to spend for it. The initial assumptions of the study, that the health investments are indeed important for the proper economic development of a society and that a healthy society has a significant positive effect on the state's economic revenue is proven and verified.

Thus, the attitudes in the Hungarian healthcare are clearly to be changed basically. The mentality must be abandoned which handles the healthcare as a simple item of the budgetary expenditures. Instead, the health should be treated as a branch of business which satisfies one of the basic human needs and at the same time promotes the economic growth and the creation of new jobs.

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GOVERNMENT DEBT MANAGEMENT AND POLICY

Peter Baďo, Ondřej Komínek

Abstract

This paper looks at current government debt management policy and examines trends over the time in government debt financing as a response to debt crises. The emphasis is put on the structure of government debt, debt service and on distinction of debt holders. Due to these descriptions we are able to distinguish changes in debt management policies and show consequences of these changes at the aggregate level. Moreover we investigate evidence of these debt management policies and changes in debt structure based on data of Czech Republic during last two decades. And also we represent our findings in context of European debt crisis and outline plausible future development of government debt management policy.

Keywords: fiscal policy, government debt, balanced budget

1 INTRODUCTION

This paper is focused on the current problem of many countries, which is how to manage their debt problem. Many believe that the European debt crisis, which led to serious adjustment programs sponsored by International Monetary fund and by the European Union, was caused by fiscal profligacy of the peripheral or noncore countries and of course by the common currency, the euro.

4.40 Debt management

Public debt management is the process of establishing and executing a strategy for managing the government´s debt in order to raise the required amount of funding at the lowest possible cost. The debt management deals with the medium to long run government debt and it's related to certain degree of the risk. In terms of macroeconomic theory the public policy is a form of management instrument to ensuring governments to have an optimal rate of economy growth and also to have sustainable rate of growth in their public debt. The debt can be serviced under a wide range of circumstances, including economic and financial market stress, while meeting cost and risk objectives. While the responsibility for compliance with debt ceilings and for conducting debt sustainability analysis lies with the fiscal authorities, public debt managers should share fiscal and monetary policy authorities concerns that public sector debt remains on a sustainable path. Debt managers should ensure that the fiscal authorities are aware of impact of government´s financing requirements and debt levels on borrowing costs. (International Monetary Fund, 2001)

Every government faces policy choices concerning debt management objectives, in particular its preferred risk tolerance, the management of contingent liabilities and the establishment of governance for public debt management. Next problem is poorly structured debt portfolios in terms of maturity, currency, debt holders or interest rates composition. Another important task in debt management is managing the government debt´s portfolio, because it is usually the largest portfolio in the country containing complex and risky financial structures, which have the potential to generate substantial risk to the government´s balance sheet and financial stability. Last but not negligible function is the sound risk management. Debt crises have highlighted the importance and the need for and efficient and liquid domestic capital market. Impropriate debt management is not the sole or the main reason of crises, but the maturity

structure, interest rates and currency composition of the government´s debt portfolio together with the substantial obligations in respect of explicit and implicit contingent liabilities have contributed to the severity of the debt crises. (International Monetary Fund, 2001)

2 BALANCING OF GOVERNMENT DEBT

Some economic textbook presenting macroeconomic models implicitly assume that debt management should hold principles of sound finance management. The concept of sound finance could be easily understood as balanced budget approach. Sound finance principles made increasing government spending difficult and forced government to face the costs of a spending decision simultaneously with the benefits of that spending decision, something that bond finance did not do. Economists recognized that government spending could impact the state of the economy and that, at times, unbalanced budgets could make sense, but they felt that long-run fiscal integrity of the government should override such concerns in peacetime. (Matthews and Colander, 2004)

Functional finance introduced in Lerner´s work rejects the traditional doctrines of sound finance, principle of balance government's budget and adjustment of total spending to eliminate both unemployment and inflation. The main idea in functional finance can be summarized as (Forstater, 1999);

1. Government intervenes to the economy, regarding to inability of self-regulation and ensuring a prosperous economy.

2. Money is creature of the state.

3. Government spending is directed by desired level of activity, the budget balance itself is not important.

4. Taxes should never be imposed for the sake of the tax revenues

Aspromourgos (2014) in his paper also rejects completely the principle of balancing the budget deficit over a solar year or any other arbitrary period. As he pointed out the only purpose of issuing and extinguishing debt is to achieve the rate of interest which results in the most desirable level of investments and furthermore to desirable level of output. But this intention can turn into problematical part of debt management.

An unappropriated debt management might result in a continually increasing national debt, which mainly relies on economic situation of financial markets and global economy and not only on political decisions. Therefore in some cases governments might be force to raise their heights of the national debt. It is compatible to Lerner (1943),when he adds that principles of functional finance can provide an automatic tendency for the budget and to be balanced in the long run. This proposition is based on arguments how functional finance will increase private spending, via full-employment policy generating higher private investment, and the growth of private holdings of money and government bonds inducing higher private expenditure. The rise in private spending from rising public debt is attributed to a positive wealth effect (in contrast to Ricardian equivalence[12]) so that private spending is key factor required to provide the total spending needed for full employment, afterwards deficit financing becomes unnecessary and leads to situation, when the national debt automatically stops growing (Lerner 1943).

[12] An economic theory that suggests that when a government tries to stimulate demand by increasing debt-financed government spending, demand remains unchanged. This is because the public will save its excess money in order to pay for future tax increases that will be initiated to pay off the debt.

Fiscal policy should maintain aggregate expenditure on level required for achieving full employment, by varying public expenditure and taxation. If policy reaching to full employment generate to public sector deficits, it might be covered by issuing debt or printing money. In the case government should concentrate on keeping the total rate of spending adequate to prevent both unemployment and inflation. The only essential purpose of taxation is to reduce private expenditures, since government expenditure can be financed by issuing bonds or printing money. On the other hand government debt should be issued only if it is really desirable. In reasons of fiscal policy conviction, the public should keep less money and hold more government bonds. One of the reasons for this possibility is being that the rate of interest would be reduced too low and therefore would be undesirable high private investment expenditures (Davidson, 2012).

3 STRUCTURE OF DEBT

The main objective of public debt management is to ensure that the government's financing needs and its payment obligations are met at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk.

Poorly structured debt portfolios, in terms of maturity, currency denomination, or debt holders and interest rate composition, have been important factors in inducing or propagating economic crises in many countries throughout history. (International Monetary Fund, 2001)

Public debt which is either foreign-owned or denominated in foreign currency have potential liability to make payment in something else other than fiat domestic currency (notably, a gold-convertible domestic currency), and it´s raising additional difficulties and constraints, primarily because involving assets that government cannot freely create ex nihilo. As indicated above (this section), Lerner allows that foreign-held public debt compromises functional finance.

The possibility of debt growth placing upward pressure on interest rates may be due to false consciousness. But it may also be grounded in objective potential difficulties; in particular, a rising debt/GDP ratio that implies the private sector holding more public debt relative to its income and other assets (Aspromourgos, Rees and White, 2010). A rapid growth of debt relative to private sector aggregate income and other assets might meet resistance on the demand side of the debt market.

4 EUROPEAN EXPERIENCE

In an international setting, such as that of the Euro, if the ECB does not act as the market maker of last resort to restore order in the markets where Eurozone government bonds are traded, then whichever government is under attack and will find its cost of borrowing excessively high. To avoid this problem, such a nation must strive for an over-abundant accumulation of foreign reserves if it wants to be sure of having enough liquidity to meet all possible future international contractual obligations (Caldentey and Vernengo, 2012).

Due to the fact that in a time of crisis, governments must increase expenditure (even if only through automatic stabilizers) in order to mitigate its impact. While at the same time revenues tend to decline (due to output contraction or outright recession. As shown in Figure 1 below, government deficit was relatively fluctuating in the case of both core and noncore countries, especially a huge decline can be observed in time of beginning of crisis 2007-2008.

The debate on austerity in Europe has focused exclusively on government budget deficits and public debt as a percentage of GDP. As an obvious case it might be pointed to one of the important EU monetary regulation, based on Stability and Growth Pact. That determines the allowed ratio of government deficit to gross domestic product (GDP). The ratio must not

exceed 3% and also debt levels higher than 60 percent at the end of the preceding fiscal year. The aim of this restriction was to restrict the capacity of each member state to run government deficits. Most of them (with the exception of Germany) fail to meet these criteria.

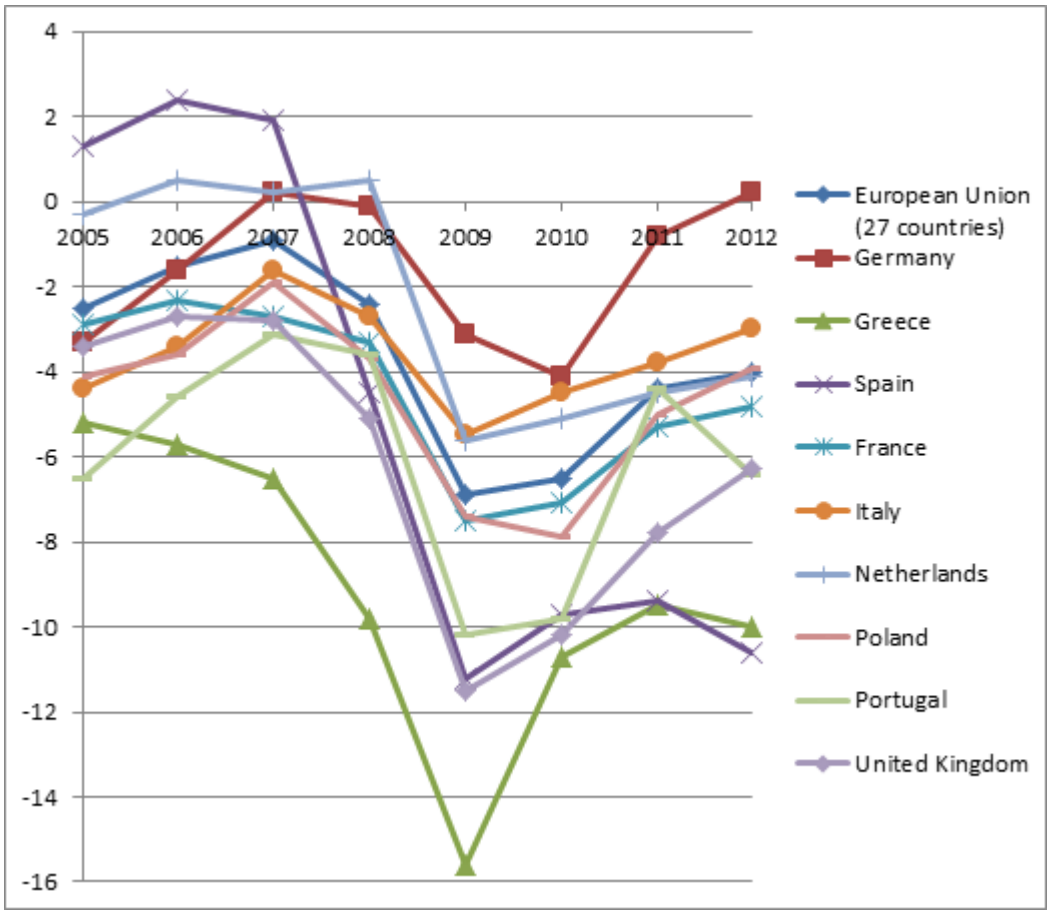

Fig. 16 General Government Deficit as a Percentage of GDP (Eurostat)

In context of the European situation, some authors believe that the crisis in the Europe is the results of the imbalance between core and noncore countries inherent to the euro economic model. We agree with the work of Papadimitriou and Wray (2011), which say that this problem is not due to profligate spending of some nations but rather the setup of the European Monetary Union itself. Underpinned by a process of monetary unification and financial deregulation, core countries in the Eurozone followed export-led growth policies at the expenses of mounting disequilibria and debt accumulation in the noncore countries. This imbalance became unsustainable after some time and end as a Global Crisis (2007-2008). Unfortunately, because of the crisis, government must increase expenditures in order to mitigate its impact, while revenues are likely to decline, budget deficits are unavoidable and emerge as a favorite cause of the crisis itself.

5 POSITIONS OF CZECH GOVERNMENT´S DEBT

In this section we will describe the current debt situation on Czech economy data. We worked with annual data from 1995 till 2013. Choice of this sample is based on availability of high quality data. These data were mostly obtained from Czech National Bank (CNB) and Eurostat. Most of the figures has the time period on x-axis and on y-axis we measure high of the debt in millions of Czech crown.

In the following figure (2) we can see the consolidated public debt of Czech Republic from 1997 till 2013. In the period 1995-2001 we observe the normal evolution of individual component of liabilities. Only noticeable increase is in short and long-term bonds, which we can identify as "flood" bonds, which were firstly issued in 1997. These "flood" bonds had maturities in 2002 with right to interest lasting ten years. From 2002-2003 we can see a major increase in a long-term bonds, in 2002 where long-term bonds cross a border of 200 000 million Czech crown, we observe an increase of 100 000 million Czech crown in bonds per year. Probably the main reason of such large increase is end of maturity of bonds issued in 1990s and paying off interest from bonds and loans. Also we can see the impact of the financial crisis in 2008 at the increase of short-term bonds and loans. Interesting fact is that Czech Republic has zero loans from Central Bank from its foundation.

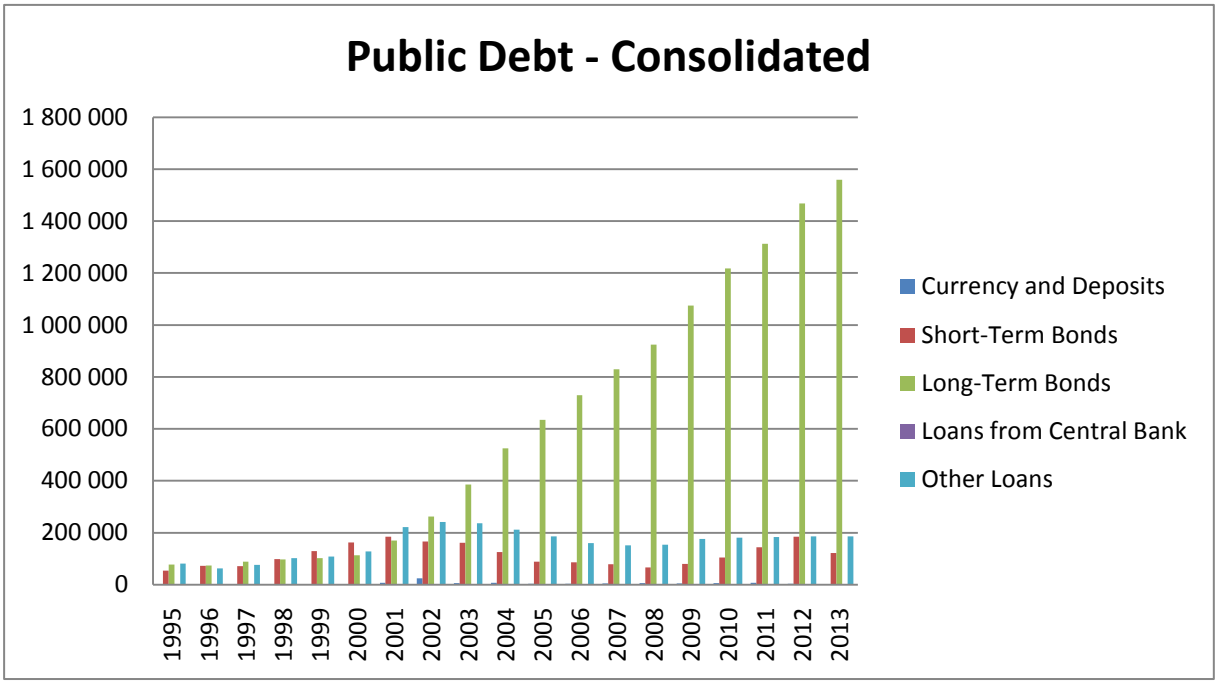

Fig. 17 Public Debt – Consolidated

At the next figure (3) we are distinguishing debt holders to two main groups, residents of the observed state and nonresidents. At the first look it is obvious that the majority of the debt is held by state residents. However from the 2004, next year after the admission of Czech Republic to European Union, we can see steady increase in holders of nonresidents. We can safely confirm that this increase is caused by being the member of European Union. After 2010 we can observe a large decrease in debt held by nonresidents by almost a half and we can also see a proportionally increase in debt held by residents. From annual report of Ministry of Finance of the Czech Republic, more than eighty-eight percent of residents' debt is hold by domestic banks and more than forty percent of nonresidents debt is held by Luxemburg and United Kingdom.

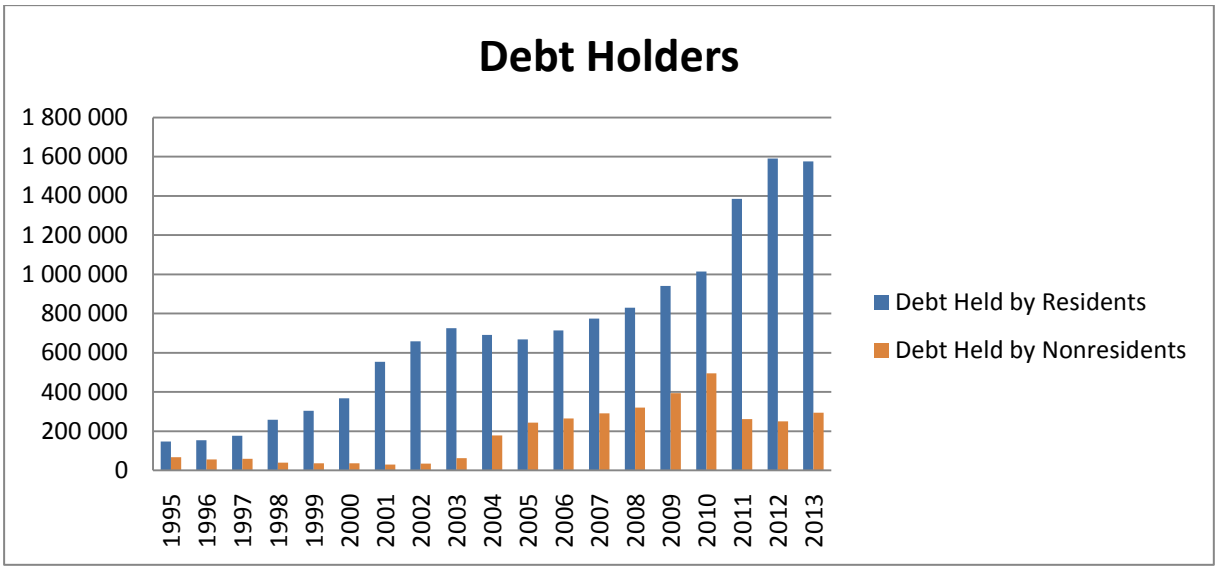

Fig. 18 Debt Holders

Good advantage of Czech debt is that it is mostly denominated in national currency. The main advantage of debt in national currency other than euro is that national bank can devaluate currency to lower the debt. As we can see at the observed sample from 1995 in figure (4), more than ninety percent of debt was denominated in Czech crown. Again, after the acceptance of Czech Republic to the European Union we noticed increase in debt denomination in other currencies, mostly in Euro. We observe this increase from less than ten percent to almost twenty-five percent in 2013. On the other hand, debt denominated in other foreign currencies had opposite trend. It was decreasing until the financial crisis, where it starts rising again, but from 2010 we can again saw tendencies of decreasing.

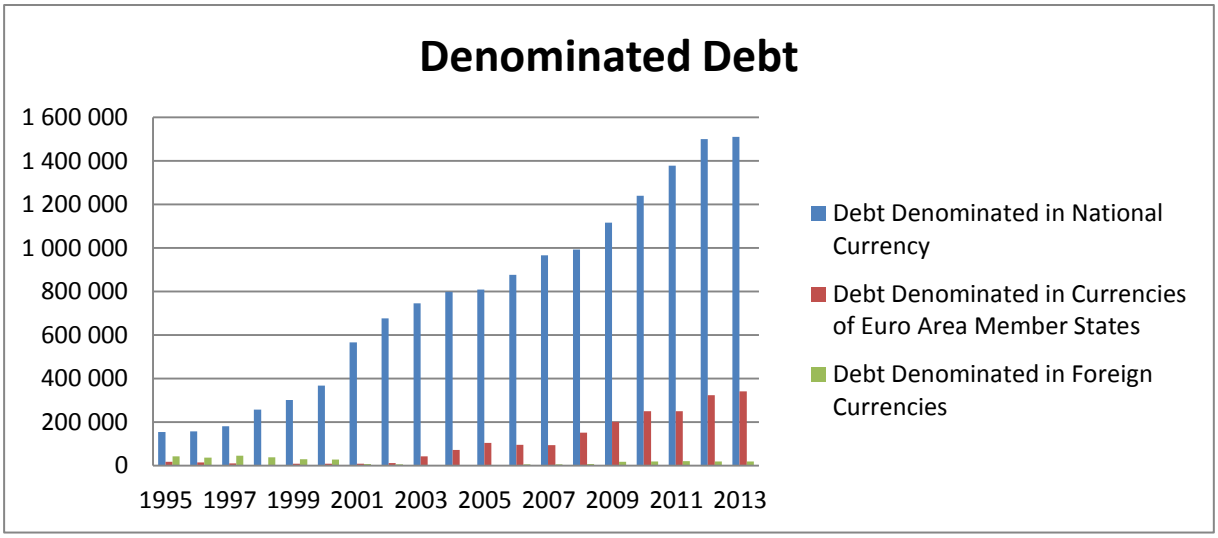

Fig. 19 Denomination of Debt in Currencies

In the figure (5) we have focused at the maturity of the Czech debt. From the period of 1995 – 2000 almost whole debt is held in short-term bonds with maturity up to five years. Also we noticed increase in short-term bonds after the floods in 1997, which were used to reconstruct damage caused by this natural disaster. Right before acceptance in the Euro area, we observed

a large increase in long-term bonds as well. The reason behind issuing long-term bonds was paying of interests from loans and also paying out the end of maturity of short-term bonds. During the crisis and in years followed we can also observed an increase in issuing bonds to cover deficits in state budget.

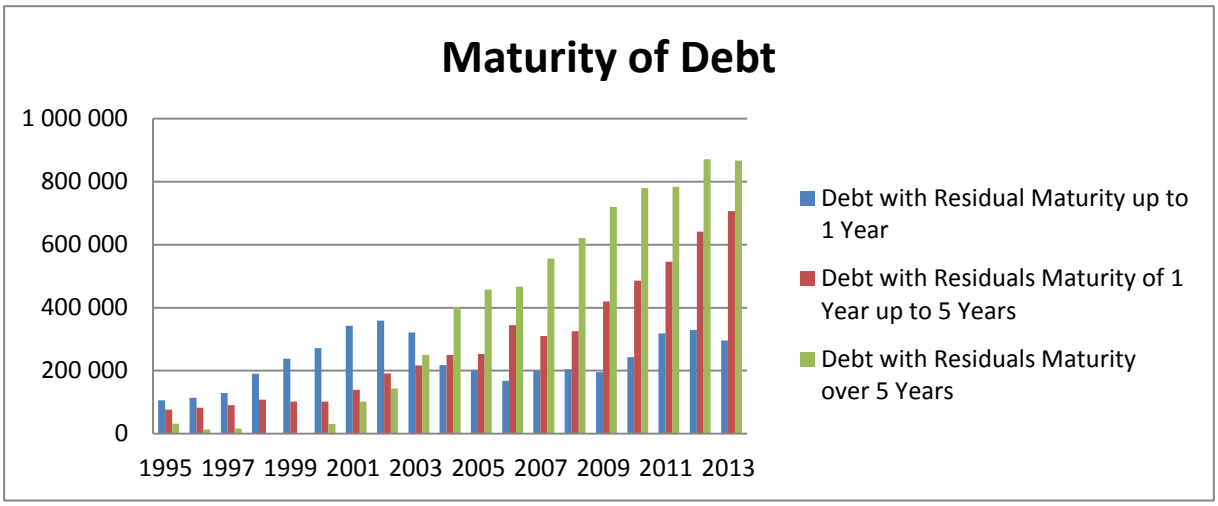

Fig. 20 Maturity of Debt

In figure (6) we can see the evolution of Czech Republic GDP from the year 1995 – 2014. Except the years 2008 and 2009 we can see the growing trend of GDP. In previous figures we also showed that debt was increasing as well in this time period, which suggest an unbalanced state budget over these years.

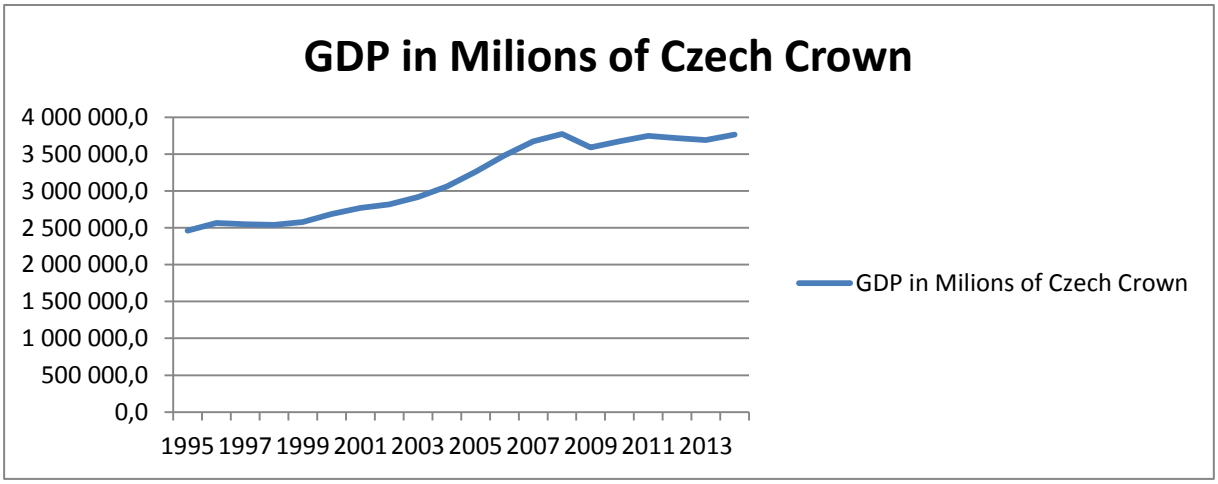

Fig. 21 GDP in Milions of Czech Crown

6 CONCLUSION

In this paper we discussed the two main approaches to state budgets. The first approach described in the most of economic literature is that state budget should be balanced in a long run. It is possible to increase governments spending in short time period, to enhance the state economic, but it should converge to balanced budget in a long run. On the other hand the

second approach firstly mentioned by Lerner, who rejects the traditional doctrines of balanced state budget, mention that government can increase spending to eliminate both inflation and unemployment. Aspromourgos completely rejects the theory of balanced state budget over a solar year or any other arbitrary period. He said that only reason to lower or extinguish debt is to increase the rate of interest, which results in better level of investment.

As we can see at Czech Republic debt data in previous section, the level of public debt is far from balanced growth path. This is in a conflict with the previous mentioned literature expect Lerner and Aspromourgos. We can see the steady increase in debt level over the years and also we can see increasing trend in GDP as well. From acquired data we can say that Czech Republic debt situation is better explain by the Lerner and Aspromourgos theories than older theories in most economic literature.

After these results we want to continue our research in greater scale. We want to investigate the relationship between GDP and debt level and to make the same analysis for other countries. More concrete we want to investigate some countries in European Union and also some others e.g. Japan.

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THE ANALYSIS OF THE IMPACT OF INVESTMENT SUBSIDIES ON THE PERFORMANCE DEVELOPMENT OF SLOVAK FARMS

Peter Zbranek, Peter Fandel

Abstract

Common agricultural policy of the EU covers a wide range of schemes and mechanisms to support farms. Its Pillar II. measurements concerning rural development are, inter alia, investment subsidies. Their purpose is to facilitate the introduction of new technologies in the sector, which could help to increase the productivity of farms in the EU. The aim of this paper was to analyze the impact of receiving this type of payments on the performance development of Slovak crop and livestock farms. In the first phase of the research we measured the total factor productivity change, technical efficiency change and technical change of Slovak farms using an innovative approach for the assessment of development of decision making units' performance through the Luenberger Productivity Indicators. The impact of the investment support on development of the estimated rates were then in the second phase of our paper analyzed using panel data random effects models. The results of the first part showed a slight average increase in the total factor productivity of Slovak crop and livestock farms in the period 2000-2012, while the driving force in both cases was technical progress and its slowdown was caused by the regress of technical efficiency of farms. When examining the impact of the investment payments, we found that while in livestock farms these subsidies had immediate positive effect in the form of better development in the total factor productivity and technical efficiency in the upcoming year as compared to farms that have not received this support, the performance of crop farms in the short term evolved worse because of the adaptation to new technologies. When comparing four year periods before and after the receiving of the investment payments in 2005, we found that these subsidies had a significant positive effect on technical change in both types of farms in the period after the receiving of subsidies, which also led to a better development of their total factor productivity compared with the previous period.

Keywords: Luenberger Productivity Indicators, productivity change, technical efficiency change, technical change, investment subsidies, Slovak farms

1 INTRODUCTION

Common Agricultural Policy (CAP) is the oldest policy of the European Union. Since its inception, it has undergone a long development and some substantial reforms. It currently covers several subsidy mechanisms and schemes for EU farms, starting with the direct payments that are part of its Pillar I. and ending with supporting measures for rural development that form the second pillar. Among other payments, here also belong investment payments. Their aim is to encourage investments in agriculture, which should contribute to the increased performance of enterprises in the sector. But is it really so? Is this type of subsidies truly effective tool when improving the performance and technical progress of individual farms?

The existing literature provides relatively few answers to these questions. Steitieh (1971) argues that although investment support provides farmers with the possibility to invest in more modern capital inputs, there is no certainty that these inputs are used effectively, thus allowing farmers to implement output revenues in full. Important are also additional factors

such as better management, information and use of resources, and therefore the same emphasis should be put on those factors, if we expect benefits from increased spending on capital inputs. Lakner (2009) states, that in the short term we can expect a negative effect of the investment support on the performance of farms due to their adaptation to new technologies. This assumption is supported by several empirical studies. Brümmer and Loy (2000) observed a negative impact of investment loan programs on the performance of North German conventional dairy farms in the period 1987-1994. Lakner (2009) examined the technical efficiency of German organic dairy farms in the period 1994/1995 - 2004/2005. The author came to the conclusion that farms showed lower efficiency than before receiving investment support. Rezitis, Tsiboukas, and Tsoukalas (2003) analyzed the impact of the EU Farm Credit Program in 1994 on the Greek farms, and found that the average technical efficiency of farms three years after joining this program was lower than the average technical efficiency of these farms a year before they had participated in the program. Some researches even revealed no conclusive impact of investment support on the performance of farms. Taylor, Drummond, and Gomes (1986) examined the impact of the credit program, subsidized by the World Bank, on the performance of the Brazilian traditional farms and found no conclusive effect on their technical efficiency. Similarly, Manevska-Tasevska, Rabinowicz, and Surry (2013) revealed that the investment subsidies did not show any significant effect on the performance of Swedish farms. All of these studies, however, capture only a short-term effect of such investment support. That should have a positive effect on the performance of farms in the medium and long term (Fertö, Bojnec, Bakucs & Latruffe, 2012). Farms involved in investment programs should be in the long-term more productive than those that do not participate in them (Lakner, 2009).

The aim of our research was to analyze the impact of investment subsidies on the development of Slovak crop and live stock farms' performance measured over the period 2000-2012. The research consists of two stages. In the first stage of our research we calculated the so called Luenberger indicators of total factor productivity change, technical efficiency change and technical change of all farms per each year using an innovative approach based on estimates of distance functions values. In the second stage we examined the impact of the investment support on the calculated indicators by applying the random effects models for panel data analysis. The article is further organized as follows. In the second chapter we summarize the methods applied in our research, focusing on the calculation of Luenberger indicators of the total factor productivity change and their components. It also describes the data on which our research was conducted. Subsequently, we list the results of our research which we then summarize in the conclusion of this paper.

2 DATA AND METHODOLOGY

4.41 Luenberger productivity indicators

Luenberger Productivity Indicators (LPI) represent an innovative approach to measure performance development of decision-making units. Their calculation was proposed by Chambers, Färe and Grosskopf (1996) by estimating the values of the so called directional distance functions. For a given directional vector "g" is such a function defined based on the production possibilities set T and expressed as follows:

$$D_T(x, y; g) = D_T(x, y; -g_x, g_y) = sup\{\beta: x - \beta g_x, y + \beta g_y\} \quad (1)$$

where $x = (x_1,...,x_M)$ is the vector of M inputs, $y = (y_1,...,y_S)$ is the vector of S inputs, $T = \{(x, y)$: x produces $y\}$ is a convex, a closed set of production possibilities with a free availability of inputs and outputs, $g = (-g_x, g_y)$ is a directional vector orienting the input reduction and the

output expansion towards given direction, $-g_x$ is a subvector for input reduction, g_y is a subvector for output expansion and β is a value of the directional distance function

The directional distance function shall only acquire non-negative values, thus $\beta \geq 0$. It expresses the maximum possible simultaneous input reduction and output expansion in a given direction, determined by the directional vector g in which the evaluated DMU reaches production frontier. If $\beta = 0$, evaluated DMU is efficient and, therefore, lies at the production frontier. If $\beta > 0$, evaluated DMU is inefficient, and to achieve production frontier it must reduce the used inputs by βg_x and simultaneously expand produced outputs by βg_y.

An important issue is the choice of an appropriate directional vector g, which must be chosen by the author alone. As Färe and Grosskopf (2000) mentioned in their work, in practice, the most common selected values are that of directional vector $g = (-g_x, g_y) = (-x, y)$, ie output values and the opposite input values of the evaluated DMU. The literature often uses input and output versions of directional vectors $g = (-g_x, g_y) = (-x, 0)$, or. $g = (-g_x, g_y) = (0, y)$, and also unit directional vectors $g = (-g_x, g_y) = (-1,1)$. Due to the reference to our previous studies, in which we applied output-oriented Malmquist indices, in this paper we calculate output-oriented Luenberger indicators.

By setting a directional vector with values of 0 for inputs and output values for outputs, thus $g = (-g_x, g_y) = (0, y)$, we expand only output values. It is therefore the so called output-oriented directional distance function:

$$D_o(x,y;g) = D_o(x,y; 0,y) \tag{2}$$

Inefficient enterprise thus proportionally expands its outputs y to the level $y + \beta y$ at an unchanged level of inputs.

The relationship of Shephard's output distance function and output directional distance function is as follows. If $D_o(x, y) = \inf \{\varphi: x, y / \varphi) \in T\}$ is Shephard's output distance function and φ is the inverse value, known as Farrel output measure of technical efficiency. Then:

$$D_o(x, y; g) = [D_o(x, y)]^{-1} - 1 = \varphi - 1 \tag{3}$$

The difference between Shephard's distance functions and directional distance functions is in their structure, which is in the first case multiplicative, and additive in the second case.

Chambers et al. (1996) defined Luenberger Productivity Indicator (LPI), based on the values of the directional distance functions in the time t/t+1, as follows:

$$\begin{aligned} L(x^t, y^t, x^{t+1}, y^{t+1}) = \frac{1}{2} (D_{T^{t+1}}(x^t, y^t; g) - D_{T^{t+1}}(x^{t+1}, y^{t+1}; g) \\ + D_{T^t}(x^t, y^t; g) - D_{T^t}(x^{t+1}, y^{t+1}; g)) \end{aligned} \tag{4}$$

Improved productivity is indicated by positive values, deteriorated is indicated, on the contrary, by negative values. If the value is 0, the productivity has not changed.

Luenberger Productivity Indicator, according to Chambers et al. (1996), can be further decomposed into two components, namely the technical efficiency change and technical change:

$$TECH = D_{T^t}(x^t, y^t; g) - D_{T^{t+1}}(x^{t+1}, y^{t+1}; g) \tag{5}$$

$$TCH = \frac{1}{2}\left(D_{T^{t+1}}(x^{t+1}, y^{t+1}; g) - D_{T^{t}}(x^{t+1}, y^{t+1}; g) + D_{T^{t+1}}(x^{t}, y^{t}; g) - D_{T^{t}}(x^{t}, y^{t}; g)\right) \quad (6)$$

We can see that the sum of the indicators of technical efficiency change and technical change gives the value of Luenberger indicator of total factor productivity change:

If the TECH value is greater than zero, then the given enterprise experienced an improvement of technical efficiency in the period t/t+1, and catches up to other businesses. If the TECH value is negative, then the technical efficiency of the business deteriorated in the period t/t+1, and other businesses are leaving it behind. In the case of the zero value of this indicator, the technical efficiency of the business remained unchanged. Regarding the indicator of technical change, in the case that this shall have a positive value, the business has achieved technical progress. In the case of negative TCH value, the technology of the given business has deteriorated. If the value of the variable is zero, the technology has stagnated.

Let us have N decision-making units producing S outputs and M inputs. The linear programming model with the constant returns to scale for the calculation of the value of the directional distance function β with the directional vector $g = (-g_x, g_y)$ is as follows:

Objective function

$$D_T(x_0, y_0, g) = \max \beta \quad (7)$$

Subject to:

$$\sum_{j=1}^{n} \lambda_j x_{ij} \leq x_{i0} - \beta\, g_{x_i}, i = 1, \dots, M$$

$$\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{r0} + \beta\, g_{y_r}, r = 1,2, \dots, S$$

$$\lambda_j \geq 0, j = 1,2, \dots, N$$

where x_{ij} is i-th input of j-th DMU, x_{i0} is i-th input of evaluated DMU, y_{rj} is r-th output of j-th DMU, y_{r0} is r-th output of evaluated DMU, λ_j is intensity variable of j-th DMU, g_{xi} is the value of directional vector for i-th input, g_{yr} is the value of directional vector for r-th output and β is the value of directional distance function.

In this paper we focused on the calculation of output-oriented Luenberger indicator of total factor productivity change and its components of technical efficiency change and technical change. We needed the calculation of the four models of linear programming:

- A model with inputs and outputs of the evaluated farm at the time t with respect to the technology at the time t
- A model with inputs and outputs of the evaluated farm at the time t + 1 with respect to the technology at the time t + 1
- A model with inputs and outputs of the evaluated farm at the time t with respect to the technology at the time t +1
- A model with inputs and outputs of the evaluated farm at the time t + 1 with respect to the technology at the time t.

4.42 Data and variables

The source of the data utilized in our research was the Database of Information Sheets of the Ministry of Agriculture and Rural Development of the SR. Given that the production technology of various types of enterprises is different, the performance was evaluated separately for farms specialized in crop and livestock production. Their input and output variables were as follows:

Crop farm:

- Input 1: Work (annual personnel costs in €)
- Input 2: Stock (annual depreciation + amortization of tangible assets of farms in €)
- Input 3: Land (cultivated farming land in use in hectares)
- Input 4: Seeds (annual expenditures on seed in €)
- Input 5: Fertilizers (annual expenditures on fertilizers in €)
- Input 6: Other (annual expenditures on other materials and energy in €)
- Output 1: Revenues from crop production (annual revenues from the sale of crop production in €)
- Output 2: Other revenues (annual revenues from the sale of other own products and services in €)

Live stock farms:

- Input 1: Work (annual personnel costs in €)
- Input 2: Stock (annual depreciation + amortization of tangible assets of farms in €)
- Input 3: Land (cultivated farming land in use in hectares)
- Input 4: Feeds (annual expenditures on feed in €)
- Input 5: Other (annual expenditures on other materials and energy in €)
- Output 1: Revenues from live stock production (annual revenues from the sale of livestock production in €)
- Output 2: Other revenues (annual revenues from the sale of other own products and services in €)

Individual monetary variables were deflated according to the corresponding price indices relative toyear 2005. Indices were obtained from the database SLOVSTAT from the Statistical Office of the Slovak Republic.

In the second phase of the research we evaluated the impact of investment subsidies on the calculated variables of total factor productivity change, technical efficiency change and technical change of farms through dummy variable. When we compared the development of performance of farms that have received / have not received investment payments, this variable had 0 value in the case they have not received such payments and 1 if they have received them. Next, we compared the development of the performance of farms in the four years before and after their received the subsidies. In this case the 0 value of the dummy variable marked the period before and value 1 after receiving investment payments.

We investigated the effect of investment subsidies by using panel data analysis models. The first step was the application of Hausman test, based on which we decided between the choice

of the model with fixed or random effects. As we rejected the null hypothesis in all cases, we considered random effects model to be a better option.

3 RESULTS AND DISCUSSION

In the Database of Information Sheets of the Ministry of Agriculture and Rural Development of the SR, we identified a total of 73 farms specialized in crop production and 97 farms with prevailing livestock production throughout the whole period 2000-2012. The descriptive characteristics of input and output variables for the entire period are presented in Table 1 for crop and Table 2 for livestock farms.

Tab.1 – The descriptive characteristics of input and output variables of crop farms throughout the whole period 2000-2012. Source: own calculations

Variable	Mean	S. dev.	Minimum	Maximum	Mode	Median
Labour (€)	230006	209784	230	1604149	150448	172357
Capital (€)	121118	122931	35	995090	1290	79264
Land (ha)	1154	837	20	4169	205	969
Seeds (€)	76718	65671	227	390167	17532	58885
Fertilizers (€)	92760	112507	108	1339860	14062	59468
Other costs (€)	231895	196342	5900	1024978	-	173649
Crop revenues (€)	628675	532149	12671	3334059	-	487086
Other revenues (€)	159540	209105	0	1780995	0	71039

Tab.2 – The descriptive characteristics of input and output variables of livestock farms throughout the whole period 2000-2012. Source: own calculations

Variable	Mean	S. dev.	Minimum	Maximum	Mode	Median
Labour (€)	355561	342251	360	2479564	468277	246830
Capital (€)	198357	195753	700	1299119	136158	138805
Land (ha)	1398	1059	13	6530	374	1038
Feeds (€)	201286	590138	220	9473049	827	79090
Other costs (€)	190659	208270	190	1311565	168560	109277
Livestock revenues (€)	608180	1129611	1176	12263317	32387	361972
Other revenues (€)	213936	393226	0	3262053	0	68038

In the first stage of our research we measured productivity development of crop and livestock farms. Based on the calculation of Luenberger indicators we came to the finding that, in the case of crop farms, on average, there was only a slight increase in the total factor productivity throughout the whole period, and the average value of Luenberger indicator of total factor productivity change reached 0,003. The driving force behind this development has been progress in the technology of these farms with an average indicator value of 0.009. On the

contrary, the halt in the development was caused by the deterioration of their technical efficiency, when the average value of the indicator of technical efficiency change reached level -0.006.

As for livestock farms, the average value of the Luenberger Productivity Indicator for the total period reached 0.025, indicating a relatively significant increase in productivity compared to crop farms. In this case, the driving force behind productivity growth was also technological progress of livestock farms (average 0.099). Because of the relatively strong deterioration of technical efficiency (-0.075), the progress in the performance of these farms was not so significant. Results showed that during the period 2000-2012 Slovak crop and livestock farms innovated and introduced new technologies in the sector, which allowed the best performing farms to produce more output with the same volume of inputs. The most efficient farms increasingly distanced from the average ones, so the technical efficiency of the sector declined in average. The average values for the productivity change, technical efficiency change and technical change of crop and livestock farms are given in Table 3.

Tab.3 – The average values of Luenberger indicators of total factor productivity change, technical efficiency change and technical change of farms for each year in 2000-2012.

Source: own calculations

Years	LPI		TECH		TCH	
	CF	LF	CF	LF	CF	LF
2000/2001	0.194	0.127	0.020	-0.144	0.174	0.270
2001/2002	-0.067	0.157	0.006	0.076	-0.073	0.081
2002/2003	-0.085	-0.078	-0.055	-0.073	-0.030	-0.005
2003/2004	0.057	0.102	-0.097	-0.052	0.153	0.154
2004/2005	0.039	-0.139	0.170	-0.172	-0.132	0.032
2005/2006	0.054	0.000	-0.069	-0.307	0.123	0.307
2006/2007	-0.244	-0.109	-0.012	-0.240	-0.232	0.123
2007/2008	-0.035	0.065	-0.086	0.034	0.051	0.031
2008/2009	0.348	0.162	0.013	0.042	0.335	0.121
2009/2010	-0.294	-0.013	0.086	0.208	-0.380	-0.221
2010/2011	0.031	-0.203	-0.133	-0.080	0.164	-0.124
2011/2012	0.042	0.230	0.088	-0.189	-0.046	0.417
Average	0.003	0.025	-0.006	-0.075	0.009	0.099

In the second stage of our research we address the analysis of the impact of the investment payments on the indicators of total factor productivity change, technical efficiency change and technical change. Table 4 presents the percentage frequency of both types of farms that in the period after the accession to the EU received or did not receive investment support.

Tab.4 – The percentage frequency of both types of farms that in the period from 2004 to 2012 received or did not receive investment support.

Year	Receipt of investment subsidies					
	CF yes	CF no	LF yes	LF no	All yes	All no
2004	**5.48%**	**94.52%**	**14.43%**	**85.57%**	**10.59%**	**89.41%**
2005	34.25%	65.75%	35.05%	64.95%	34.71%	65.29%
2006	17.81%	82.19%	29.90%	70.10%	24.71%	75.29%
2007	17.81%	82.19%	25.77%	74.23%	22.35%	77.65%
2008	19.18%	80.82%	25.77%	74.23%	22.94%	77.06%
2009	31.51%	68.49%	52.58%	47.42%	43.53%	56.47%
2010	32.88%	67.12%	50.52%	49.48%	42.94%	57.06%
2011	19.18%	80.82%	40.21%	59.79%	31.18%	68.82%
2012	13.70%	86.30%	22.68%	77.32%	18.82%	81.18%
Overall	**21.31%**	**78.69%**	**32.99%**	**67.01%**	**27.97%**	**72.03%**

As we can see, livestock farms made a greater use of investment subsidies, while at a time of global economic crisis in 2009 and 2010, more than half of them make use of those subsidies. The least number of livestock farms, only less than 15%, received investment subsidies in 2004. The largest share of crop farms received investment payments in 2005, when over one third of these enterprises received this type of subsidies. These shares were relatively high at the time of the raging economic crisis in 2009 and 2010, when nearly a third of crop farms received investment aid. On the contrary, the least number of crop farms, just over 5%, received investment support in 2004.

The following Table 5 presents results of panel analysis of the impact of receiving/ not receiving investment subsidies on the total factor productivity change, technical efficiency change and technical change of crop and livestock farms between the current and following year.

Tab.5 – The analysis of the impact of receiving/ not receiving investment subsidies on the total factor productivity change, technical efficiency change and technical change of crop and livestock farms between the year when subsidies were received and following year. Source: own calculations

Variable	Crop farms		Livestock farms	
	Coeff.	P-value	Coeff.	P-value
LPI	-0.063	0.252	0.162	0.026
TECH	-0.058	0.277	0.238	0.002
TCH	-0.005	0.876	-0.074	0.032

The coefficient values represent differences in average values of each indicator between farms that received or did not receive investment subsidies. Positive values indicate a positive impact of receiving of such payments on the reference indicator, negative values represent the opposite effect. P-value, in turn, indicates statistical significance for the individual coefficients. For values lower than 0.05, the impact of the investment subsidies on the given indicator was statistically significant. In case P-value is greater than 0.05, investment payments did not have a statistically significant impact on the monitored indicator.

As we can see, receiving investment subsidies had a significant positive impact on the productivity development of livestock farms. However, their better development of the total factor productivity between the year when investment aid was received and the following year was not caused by more favorable technological progress, as indicator of technical change showed better values in farms that did not receive investment payments. Receiving investment subsidies, however, resulted in a significantly better development of livestock farms' technical efficiency. Thus we conclude that in the short term, these payments helped particularly inefficient farms to achieve production frontier, where operated farms which already had introduced new technologies.

With regard to the crop farms, the differences between individual indicators of farms that received or did not receive investment subsidies were not statistically significant. Their negative values show a negative effect of investment subsidies on the total factor productivity change, technical efficiency change and technical change between the year when such subsidies were received and the following year.

As we can see, receiving investment subsidies had an immediate effect on the productivity of livestock farms, which, thanks to the possibility to catch on efficient farms, developed better. Negative results in the case of crop farms, in turn, correspond to the findings of the theoretical literature, according to which we can expect a negative effect of the investment support on the performance of such farms in the short term, due to their adaptation to new technologies (Lakner, 2009), which was also confirmed in the studies by Brümmer and Loy (2000), Lakner (2009) and Rezitis et al. (2003).

In the final part of our research we investigated the effect of receiving investment aid on the development of farm performance in the longer term. Specifically, we compared the development of the total factor productivity, technical efficiency and technology of farms in the four years

before and four years after receiving investment support. We selected the year 2005, since the percentage of farms that have received investment payments was the highest among the years 2004-2008. The results of the analysis of differences in the mentioned indicators between the period before and after receiving of investment payments are given in Table 6.

Tab.6 – The analysis of differences in the total factor productivity change, technical efficiency change and technical change of farms between the period before and after the adoption of investment payments in 2005. Source: own calculations

Variable	**Crop farms**		**Livestock farms**	
	Coeff.	**P-value**	**Coeff.**	**P-value**
LPI	0.042	0.464	0.037	0.563
TECH	-0.046	0.405	-0.049	0.476
TCH	0.087	0.002	0.087	0.003

The coefficient values given in the first and third columns indicate the difference in the average values of individual parameters between the period after and the period prior to receiving investment payments. P-value expresses the statistical significance of the difference between these periods. For values lower than 0.05, the impact of the investment subsidies on the monitored indicator was statistically significant, otherwise investment payments did not have a statistically significant effect on the monitored indicator.

As we can see, receiving investment subsidies in 2005 had statistically insignificant positive effect on the development of the total factor productivity of crop and livestock farms. The reason for this fact was in both cases significantly better development of the technology after receiving such subsidy. On the other hand, the technical efficiency of crop and livestock farms developed worse after receiving investment support, and this effect was not statistically significant. Thus we can say that the investment support in crop and livestock farms had, in the long-term, positive effect on the development of their total factor productivity through the introduction of innovations which meant significantly more favorable development in farms' technology after receiving such subsidies in comparison with the previous period.

4 CONCLUSION

The aim of this paper was to analyze the impact of the investment subsidies on the development of performance of Slovak crop and livestock farms. In the first phase of the research we revealed the average growth in the total factor productivity of both types of farms in the years 2000-2012, when the driving force behind this development was the average technological progress and slowing factor average deterioration of technical efficiency for both types of farms. The analysis of the impact of receiving the investment payments on the total factor productivity change, technical efficiency change and technical change in short run showed that these payments had an immediate positive effect on the total factor productivity of livestock farms. This indicator significantly better developed in the following year at the farms which received investment payments thanks to a significantly better development of the technical efficiency compared to farms that did not receive subsidies. In the case of crop farms, on the contrary, we identified worse development in their total factor productivity in the first year after receiving the payments, mainly due to adaptation to new technologies. The comparison of indicators development in the period of four years before and after receiving investment support showed more favorable development in the total factor productivity of both types of farms four years after receiving the payment than in the previous period. This was caused by a significantly improved technical change in these farms, which means that investment subsidies in the long term contribute to innovations and new technologies introduction in the agricultural sector of the Slovak Republic, and thus the long-term improvement in total factor productivity of Slovak farms.

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ACTIVE LABOUR MARKET POLICY AND ITS EFFECT ON UNEMPLOYMENT

Ľubica Koňušíková

Abstract

The aim of the economic policy in the Slovak Republic consists in finding the solutions for unemployment by means of active labour market policy. A number of countries in Europe, not only Slovakia, have to deal with the issue of unemployment. Therefore, active labour market policy plays very important part in solving the question of unemployment. This article is devoted to the issues of active labour market policy and its particular tools within the context of the Slovak Republic.

Keywords: unemployment, labour market, active labour market

1 ACTIVE LABOUR MARKET POLICY –THEORETICAL APPROACH

The unemployment rate has become a major problem with respect to the Slovak economy. High unemployment rate in Slovakia is a great challenge for us and for the economic policy of the country. Within the frame of the European Union countries, the unemployment rate is about 8.6%. However, this figure represents an increase of 3 percentage points in comparison to the period before the economic crisis. The rate of unemployment is also considerably influenced by the economic policy setting in the respective country. Active labour market policy is thus becoming an integral part of the labour market policy.

The diversity of labour market policy can be expressed by three main models. (Blanchard et al., 2013):

- Anglo-Saxon model - according to this model, the functioning of the labour market is based on the neoclassical understanding of the labour market functioning, i.e. free functioning of the labour market without any intervention by the state authority. This model is known as the model of minimal job protecting interventions which would lead to lower unemployment rate and higher activation rate.
- English – Continental model - this model is based on the European social model and is applied by the majority of European countries. Its characteristic features involve the following: high protection of working places and high support of funds attributed to the support of the unemployed.
- Scandinavian model - is characterized by high protection of working places but also by high and at the same time conditional support during the time of unemployment. It puts great emphasis on active labour market policy leading to low unemployment rates.The success in the Nordic countries is in protecting of workers not the jobs. An important role plays the reform of labour market institutions.

In general, active labour market policy has undergone certain developments. It was developing as a response to the irregularities arising in the labour market. Specialized literature mentions the following: (Bonoli, 2010)

- The first period - is characteristic of the 1950s and 1960s of the previous century. This period was characterized by economic growth and high demand for labour. The idea of active policy consisted in ensuring skilled workforce to fill the available vacancies.

- The second period - the period of the 1970s and 1980 of the previous century, typical of the oil shocks and, consequently, a decline in economic growth and higher inflation rates and subsequently increased unemployment. OECD has published seven categories of employment policies: (Schoman, 1995):
    - employment services, including consultancy services,
    - trainings for job seekers,
    - other measures taken in favour of young people,
    - special measures in favour of groups of the disabled,
    - occupation for the long-term unemployed and creation of working places in public and private sectors.
- The third period - the period from the mid 1990s. This period is characterized by the features such as: globalization, rapid development of communication and technological changes but also the emergence of the European Union and the Euro zone. According to various statistics, unemployment is a major problem for the economies of the countries at present and in the future. Rapid progress of innovative changes throughout the world cannot be stopped and it thus becomes a part of the changes on the labour market.

Many empirical studies suggest that despite the pursuit of the consensus, there are different opinions about the ideal types of the active labour market policy. Each country is specific as for its characteristics and therefore, the active labour market policy should be set in accordance with the specificities of each country.

Tab. 1 – The title of the table. Types of ideal active labour market policy

Type	Objective	Tools
Incentive reinforcement	Strengthen positive and negative work incentives for people on benefits	- Tax credits, in work benefits, - time limits on reception, - benefit reductions, - benefit conditionality, - sanctions
Employment assistance	Remove obstacles to employment and facilitate (re-)entry into the labour market	- placement services, - job subsidies, - counselling - job search programmes
Occupation	Keep jobless people occupied, limit human capital depletion during unemployment	- job creation schemes in the public sector, - non employment-related training,
Human capital investment	Improve the chances of finding employment by upskilling jobless people	- basic education, - vocational training

Source: Bonoli (2010)

Specialized literature suggests that the active labour market policy has no positive effect on reducing unemployment.

Active labour market policy brings many effects on unemployment. Some of the effects are intended in advance and have become the reason for the creation of the tools of active labour market policies, but there are as well some effects, which were not foreseen in advance.

The positive effects have been identified by Calmfors et al. (2002)

- The effect on the process of job seeking – the aim of the consulting activity provided by the state and addressed to the unemployed is to streamline this process. It means, to increase the number of successful candidates applying for one vacancy. This effect is usually referred to as the primary objective of active labour market policy
- The effect on competition among working positions - any candidate who has completed a retraining program, can become significantly more attractive for employers.
- The effect on the allocation of labour among the particular sectors in the economy - via ALMP, the possibility of promoting the labour force transfer from a stagnating sector into a prospering sector with better productivity

A different view on the effects decreasing the efficiency of active labour market policy has been outlined by Fraser (1999)

- Deadweight effect – this effect means that a part of the candidates would be hired despite of their non-participation in the program of active labour market policy
- Substitution effect – this effect means that the subsidized employees receive an occupation at the expense of those benefiting neither from a subsidized work place nor incorporation in the program of ALMP.
- Expelling effect – companies receiving a wage subsidy thus gain an advantage over the other companies as they can increase their market share on the market.

2 ACTIVE LABOUR MARKET POLICY AND UNEMPLOYMENT

The trend in the unemployment rates is constantly rising except for the district of Banská Bystrica, where the unemployment rate has dropped by 0.18% and the district of Trenčín, where the unemployment rate has also dropped by 0.04%. The unemployment rate shall be understood as an indicator of the predictive value on the economic development of the country.

Tab. 2 Ranking of the districts according to the registered unemployment rate – January 2015. Source: Own processing, ÚPSVaR

kraj	End of monitored period %	End of the previous period %	Difference
Prešovský	17,67	17,45	0,22
Bansko Bystrický	17,04	17,22	0,18
Košičký	15,99	15,92	0,07
Nitrianský	11,46	11,21	0,25
Žilinský	10,98	10,91	0,07
Trenčianský	9,52	9,56	0,04
Trnavský	8,32	8,03	0,29
Bratislavský	6,16	6,13	0,03

The role of the active labour market policy primarily consists in facilitating and accelerating the transition towards paid work as well as in using specific programs in order to keep people's ability to work with the aim of finding their permanent place on the labour market.

The active policy and its active labour market measures are dealt with by means of the Employment Services Act no. 5/2004 as amended. This legislation came into force in February 2004 and was abolished by Act no. 387/1996 Coll. on employment. In 2004, the law passed several changes, which affected a number of areas including the labour market and the increase of the employment rate.

4.43 Tools of the active labour market policy

Office of Labour, Social Affairs and Family distinguishes the instruments of active labour market policy as follows:

- **Tools of the active measures - citizen,**

Reimbursement of travel expenses Section 32 **-** is provided to a job seeker. The expenses are related to the participation in a recruitment process or an interview. The contribution shall be granted to cover the amount of 70% of documented costs provided that the costs are higher than four Euros.

Education and training provided to the labour market candidate Section 46 – consists in theoretical or practical training required by the new placement on the labour market. This tool can also involve activities related to the provision of recruitment services, information and consultancy services. The content and scope is determined by the present state of knowledge and skills so as to be conveniently used to acquire new knowledge and skills. By means of the relevant official body and upon his written request, the citizen shall be reimbursed 100% of the costs up to the total amount of 600.00 Euros following the commencement of employment or commencement of the performance of self-employment.

Education and training for the labour market §47 – is performed by an employer with the aim of providing career development for its employees. This process takes place during working hours. During this period, the employer shall be paid the average salary compensation amounting to the average monthly earnings.

Contribution to self-employment Section 49 – this contribution shall be granted only to the candidate registered in the Labour Office during the period of three months. The applicant receiving such contribution undertakes to perform self-employment for the period of at least

three years. A citizen who fails to meet the conditions for perform self-employment is obliged to refund a proportionate amount of the contribution.

Graduate practice §51 - allows job seekers to gain professional and practical experience with the employer. Graduate practice is carried out at least three months and shall not exceed the period of six months - twenty hours per week. The contribution amounts to 128, 75 Euros.

Contribution to support a vacancy creation in the first regularly paid employment §51a - this contribution is given to an employer admitting a jobseeker who had no regularly paid employment before entering the respective labour relation. The definition of regular unpaid employment is defined in the Act on employment services as a working position lasting for six consecutive months.

Allowance for commuting to work §53 - is provided monthly and is used to cover a part of the travel expenses. This allowance is provided for a maximum period of six months after the employment commencement. The contribution is paid according to the distance between the applicant´s permanent residence and place of work.

Resettlement allowance for work §53a – amounts to max. € 1,327.76 and serves as a reimbursement of expenses related to moving for the purpose of obtaining employment. Minimum distance between the previous and current address - 50km. The contribution is provided to a jobseeker registered at the respective labour office for at least three months. The contribution is provided biennially only to one of the spouses.

RE-PAS Section 54 - a jobseeker is supposed to choose the particular type of desired work activity to retrain in. The retraining shall be provided by an institute disposing with the necessary accreditation. A jobseeker is reimbursed 100% the retraining expenses.

Sheltered workshop and sheltered employment Section 55 - sheltered workshop and sheltered employment method is used for the employment of disabled citizens.

Contribution for citizens with disabilities in order to support their own business establishment or self-employment Section 57 - this post is granted to a disabled people seeking for a job for at least three months. Any person failing to comply with the obligation of running self-employment for a period of two years is required to repay the proportional amount of the contribution.

Contribution to cover the running costs of a sheltered workshop or a sheltered workplace §60

- **Tools of the active measures - employer**

Contribution to support the employment of a disadvantaged jobseeker Section 50 - this contribution is provided to the employer who has employed a disadvantaged candidate registered at the Labour office for the period of three months. The labour relation must be agreed for at least half of the designated weekly working time.

Contribution to support the development of local and regional employment §50j – the contribution serves to support local and regional employment and shall be granted for the period of nine calendar months without the possibility of repetition for the same employee. The contribution amounts to 80% of the total labour, more than 60% of the total labour under the § 49. 4, which has been calculated with respect to the employee´s average salary. The contribution is provided by the municipality, regional authorities or legal person established by the municipality.

A contribution to support job retention §50k

The contribution amounts to 50% of the salary compensation, but shall not exceed 50% of an employee´s average salary in the Slovak Republic. The contribution shall be granted for the maximum period of twelve months.

An activation allowance in form of small community services in favour of the community or in form of small community services for an autonomous district §52

The contribution serves to maintain working habits of the long-term unemployed receiving allowance of material need. The Act on Unemployment Services defines any long-term unemployed citizen as a person registered in the labour office for more than twelve months. The contribution is intended to carry out works such as: improvement of the economic, social and cultural conditions, development and provision of social services and supplementary education of children and youth.

The activation contribution in the form of voluntary service §52a

According to the Labour Office, voluntary service is defined as a form of activation of the jobseeker by means of voluntary service in order to gain practical experience within labour market. This service is performed by the jobseeker on a voluntary basis in an interval of twenty hours per week up to a maximum period of six months.

Support for the employment of a jobseeker Section 54 - the contribution serves to support employment of any candidate in the area of public employment. The contribution is provided to the employer monthly in the amount of 95% of the total cost of the employee´s work for the maximum period of six months and in the maximum amount of € 513.76.

Sheltered workshop and sheltered employment Section 54 – according to the Office of Labour, Social Affairs and Family, sheltered employment has been established by a natural or legal person and is occupied by at least 50% of people with disabilities.

A contribution to create a workplace or sheltered workshop Section 56 – the contribution serves to cover a part of the costs needed to create a work place for a disabled person in a sheltered workshop or a sheltered workplace. The contribution is based on the average unemployment rate in this region. The contribution ranges from € 4000 to € 5500. The work place retention shall last for the period of at least two years.

A contribution to keep a disabled person employed §56a

A contribution to support the activities of a work assistant §59 – it is provided to an employer employing more than 25% of people with disabilities

A contribution to cover the running costs of a sheltered workshop or a sheltered workplace and to cover the employees transport expenses§60

- ***Mediation and counselling at work*** - this tool is meant to provide information to employers or employees. According to the Act no. 5/2004 Coll. on Employment Services, these services are designated to influence the applicant´s decisions and behaviour. The main aim of mediation and counselling consists in providing effective and professional assistance to jobseekers.

The active labour market policy offers a large number of tools. A wide range of instruments does not allow an effective evaluation of the active labour market policies. Due to its high variety, the active labour market policy does not have a great chance to reduce the total number of unemployed on the labour market.

According to the data stated below, the active labour market policy instruments are certainly not the main factors which would lead to the unemployment reduction.

However, the tools evaluated in this paper shall to be considered after a prolonged period of time, for example, after two to three years. This is confirmed by J. Kluve (2006) stating that in the process of the analysis of the active labour market policy efectiveness, a long-term impact on the applicants must be taken into account

Within the context of this article, I have chosen two instruments of active labour market policies and general information about them in the Žilina region. The first tool consists in the institute of graduate practice §51 while the second tool consists in the education and training granted to a jobseeker in order to succeed on the labour market §46.

Tab. 3 Graduate practice §51 in 2013. Source: Own processing ,UPSVaR

District	**number of candidation**	**Agreed sum in €**	**Placement on the labour market since the programe termination**		
			po 3	**3 - 6**	**po 6**
Čadca	232	168 212,32	25	12	4
Dolný Kubín	71	43 004,03	37	17	8
Námestovo	247	159 529,18	169	75	19
Liptov	129	85 507,68	49	41	31
Martin	252	150 997,18	29	32	52
Ružomberok	160	139 157,75	5	19	32
Žilina	238	192 306,10	0	0	0

In comparison with the countries of the European Union, the unemployment rate of the young in Slovakia ranks among the highest in the EU. Youth unemployment stands at around 33%. The main idea of graduate practice consists in the help provided to the young in the process of taking up employment.

It is necessary to deal with the issue of youth unemployment by means of the instruments of the active labour market policy. Obviously, a change in school curricula is necessary. This program also serves as a temporary remedy against long-term youth unemployment.

The possibility of the candidate employment after completing graduate practice in the region of Žilina region has mainly negative impact, as provided in the table below. The highest number of candidates was registered in the Office of Labour, Social Affairs and Family in Námestovo while the highest number of candidates allocated in the labour market was in Martin.

Within the area of the Slovak Republic, the Statistical Office has recorded a decline in the number of applicants applying for graduate practice. The graph provides a comparison between the number of candidates enrolled in graduate practice and the education and training of the candidates for the labour market by 2011 - 2013.
Graduate practice is characterized by a high number of candidates. On the contrary, the second instrument is not characterized by such a high number of candidates. Obvious decrease in the number of applicants has been recorded as for the graduate practice.

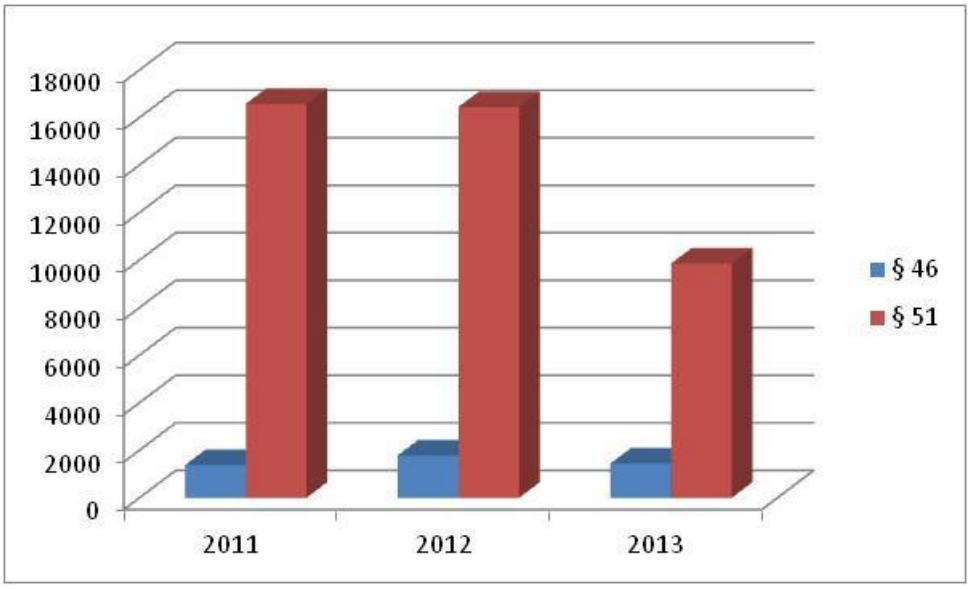

Fig. 1 – A summary of the selected tools of the active labour market policy.

Source: own processing, ÚPSVaR

Education and training of an applicant intending to enter the labour market represents another successful tool of the labour market policy within the Žilina region §46. In this article, the number of candidates and the amount of funds was compared with the number of allocated candidates. In case of both instruments, the possibility of a candidate´s employment on the labour market is very low but in case of these instruments, a long term perspective influencing the particular candidates shall be considered.

Tab. 4 Candidates education and preparation for the labour market. §46 in 2013.

Soure: Own processing ,UPSVaR

District	Number of candidates	Agreed sum in €	Placement on the labour market since the programe termination		
			po 3	3 - 6	po 6
Čadca	28	12 916,12	0	0	0
Dolný Kubín	40	18 554,20	2	4	1
Námestovo	155	41 123,76	0	0	0
Liptov	50	28 899,20	0	0	0
Martin	0	0,00	0	0	0
Ružomberok	0	0,00	0	0	0
Žilina	11	8 149,35	6	0	0

Education represents a certain potential for the economy in the future. However, each of us should bear the responsibility for our own personal development. Any person seeking for a job as well as each of us ought to realize that the learning process never ends.

The economic crisis represents another significant factor having an impact on education. The economic crisis is a period appropriate for education which can be considered as a tool of human capital development. (Vodák et al., 2011)

Since the contemporary world brings new social problems, it is necessary to focus on new needs of education in order that it was possible to understand the problems. Human resources rank among the most important accelerator of economic and social progress, it is therefore

important to pay enormous attention to education and lifelong training of people. (Kucharčíková et al., 2011)

The investment into the education of the young and of the adults has become necessary by reason of the extension of the retirement age. However, our society and businesses adhere to the attitude that education and investment to education is something that is unnecessary.

3 CONCLUSION

The aim of the article was to describe briefly the tools of active labour market policy in the Slovak republic. Under the terms of active labour market policy there are too big amount of contribution, which are chaotic very often. I have described two tools in the article. One of the tools section -§51graduate practise is intended for the group of young people with the aim to help them and to find a job, because the unemployment of youth in Slovakia is critical.

The second tool is the contribution education and training provided to the labour market candidate Section §46. In both cases the statistical office registers the low enforcement in the labour market. Education and training provided to the labour market candidate Section 46 is in the case of contribution extremely low. However, this tool plays an important part in the issue of active labour market policy because the effect of the job seekers is long term. The negative of this tool resides in low number of job seekers.

Active labour market policy plays and important part in the issue of unemployment. By force of its tools influences the groups of unemployed people. The issue of active labour market policy is the challenge for economic policy in the Slovak republic. In each country there are specific groups of unemployed with specific requirements. The meaning of active labour market policy is to adapt to specific groups even the particularities which are in the labour market.

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GLOBALIZATION TO RELOCALIZATION: A KEY TO SUSTAINABILITY OF THE LOCAL ECONOMY

Cathy-Austin Otekhile, Milan Zeleny

Abstract

Globalization is exhibiting the trait of a reversal towards relocalization. The aim of this paper is to examine the relocalization as a key to revitalizing local economies. Developing countries are accelerating in the pace of transformation of their economy. The autonomy of the local economy which has been eroded due to globalization and left the local people vulnerable. This study uses a descriptive approach and presented a case study of selected local communities and how they have been able to model sustainability. We argued that relocalization is the key to the redevelopment or rebuilding of communities and securing basic needs of the people. We present the "corso" (globalization) to "ricorso" (relocalization) and the definition of sustainability and the local economy. Empirical evidences from case studies reveals that a shift of paradigm from globalization to relocalization is the key to sustainability of the local economy.

Keywords: Local economies, Communities, Sustainability, Globalization, Relocalization, Corso, Ricorso

1. Introduction

The world today is facing quite a number of challenges ranging from food security, climate change, environmental degradation, drought, and terrorism to war and plagued with all kinds of communicable diseases. The World economies have been on the continuous process of transformation due to the innovation in transportation, telecommunication infrastructures and technologies, these innovations have enhanced the movement of people, services, and goods and as well made communication easier through internet, telephones and other media.

Despites decades of economic globalization of the world economies however, it must also be noted that there are several sectors which have suffered as a result of globalization especially the local economies. The problem of environmental degradation is exasperated by over dependence on fossil fuel. The activities of Transnational Corporations (TNCs) in the oil producing countries have done more havoc on the ecosystems and the local means of livelihood of the local people for example, the case of Niger-Delta in Nigeria. Sequel to this present predicament it is oblivious that relocalization is a feasible approach to help redevelop the rural economy in Niger-Delta of Nigeria. Globalization has eroded the environmental regulations, wages and social welfare standards. "Globalization produces a reversive process of relocalization and any progress is self-limiting and subject to a corso-ricorso cycle". According to Zeleny 2012, "In the corso of localization → globalization, it is the local producers and consumers who are becoming embedded into the structures of global economy. In the ricorso of globalization → relocalization, it is the global experience and knowledge that is becoming embodied in local communities. It is not a return to the original localization but a unidirectional towards relocalization".

Zeleny, further explains that the local economy is a natural social order which shares the same outer space with regions, city, area, and neighborhood has a great productive, natural, creative and cooperative potentials, these potentials are centrally controlled. The right of the

locals to manage and control their local economies, social and political resources has been taken away. Reversing this trend and restoring the autonomy of control to the locals, is the natural outcome of relocalization. He also stresses that environmental sustainability is fast becoming a vital metric for the measurement of corporate performance. The stakeholders, NGOs, concerned outside influencers and even financial markets are beginning to track this. Buckingham and Theobald, (2003) highlighted that in the UK, environmental sustainability has, arguably, been driven by pressures from supra-national and local organizations and not by the national government. And at the global level the highly publicized impetus has been the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992.

This paper attempts to use a descriptive study and case study approach to expatiate that relocalization is the key to the sustainability of the local economy. This paper is divided into three sections; the first section deals with the introduction, the second section gives a theoretical background and definition of local economy and sustainability, section three is focused on the conclusion.

2. Theorectical Background

Globalization to relocalization has been studied by different researchers from different academic perspectives: Regional and Social, Geographical and Economic stand points. Balkan (1998) stress that the past decades of global economy did not offer economic opportunities to growing world population. To this extent a lot of people in the developing countries are searching for other options, actively contructing new organizations in order to strengthen traditional social structures to defend themselves from national governments intention on promoting the globalized production system. If clearly understood, this resistance can become part of a broader effort to build a more just and fair society -society in which those who are maginalized could participate in reversing environmental degradation.

"Globalization is occurring increasingly at the expense of social, environmental and labor improvements, and is causing rising inequality for most parts of the world. Localization, by contrast, is a process that reverses the trend of globalization by discriminating in favor of the local. The policies bringing about localization are those which increase control of the economy by communities and nation states. The result should be an increase in community cohesion, a reduction in poverty and inequality, and an improvement in livelihoods, social infrastructure and environmental protection, and hence an increase in the all-important sense of security."(De Haan, 2000)

Human system is undergoing transformation which is preceded by a number of transformations that has occurred in the past decades: 1.the differentiation of the economic sectors rooted in accelerating productivity growth rate and characterized by high levels of unemployment, 2 the transition from specialization to division of labour to reintegration of labour, task and knowledge, 3 Emergence of a new technology based on system integration and digitization; 4. Political renewal of failed democracy towards authentic, direct and non-partisan res publica. Relocalization is the fifth ongoing transformation embracing and among this drivers are self-service (outsourcing to customer), disintermediation is that the removal of middle men. (Zeleny, 2012)

In spite of the new technologies like internet based social and business networks which are fast changing the nature of work and businesses by improving the productivity of labor; this productivity improvement is still at the point of historic takeoff. The Technology Support Network is making globalization to slow down and revert itself to a new cycle of society, a process of re-localization. All productive sectors have reached their peak in job creation; the

public sector jobs are unsustainable and the only feasible future for humanity is the transformation from globalization to relocalization based on self-service, self-reliant, dis intermediation and mass customization. He defined re-localization as a global experience and knowledge that is becoming embodied in the local communities. (Zeleny 2012)

Hines (2013) emphasizes that the policies that brought about localization are the ones which increases the control of the local economy by the communities and the nation states themselves which will results into reduction of poverty and all forms of inequality, community cohesion, improvement in livelihoods, infrastructures and environmental sustainability. Localization should not be perceived as restriction of flow of technology, trade and investment, management and legal structures but such transfer of technology and others can play a vital role in aiding the triumphant transition from globalization to relocalization. And it is not a way of overpowering the nation state control, where government only supply the policy and provide the economic framework and allow the people, community groups and businesses to re-diversify their local economies.

Furthermore, he outlines a set of global policies that can bring about relocalization; safeguarding national and regional economies against importation of goods and services that can be produced locally, localizing money flow to rebuild and redevelop the local economies, local competition policies to ensure high quality goods and services, the introduction of resource and other taxes to help pay for such a fundamental and expensive transition and to help protect the environment, promoting democracy in the local economies and the political systems and redirection of trade and aid in such a way to gear the redeveloping the local economies.

2.1 Relocalization of the Local economy

Relocalization is not a new concept or phenomenon; traditionally, it is a strategy which aims at rebuilding societies based on the local provision of food and energy, and currency, governance and culture. It is the ability of communities to diversify their local their economies in order to provide for their needs nearer their homes. The main goals of relocalization are to increase community energy security, food security, strengthen local economies, and dramatically improve environmental conditions (environmental sustainability) and social equity.

The relocalization strategy was been developed and implemented by the Post Carbon Institute; recognizes the liabilities of fossil fuel dependency and promotes greater security through redevelopment of local and regional economies more on self-reliant in terms of energy, food and water systems. Many social benefits might accrue to a relocalized society, including greater job stability, employment diversity, community cohesion, and public health. It supports the rebuilding of a more balanced local economy that stresses security of basic needs, local food, energy and water systems. In the absence of reliable trade partners, natural disaster or political instability, a local economy that produces its own basic needs will have a true comparative advantage. (Levidow & Psarikidou 2011).

Lavallee and Boyer (2006) focuses on one set of example where relocalization has proven a strong and determined political, economic and cultural force. By examining Wal-Mart's efforts to site a new store in Colchester, Connecticut. Wal-Mart had head-on political collusion with the local forces that working to preserve the local community. No matter how small a community might be they are not powerless in shaping their future, even in the face of big business interests and powerful political action. This case demonstrates the longings in the locals to return to the local in order to preserve their tradition, culture and resources. It also

gives us insight into how local communities can utilize different strategies to cope with globalization.

Furthermore, relocalization takes a different view altogether. Instead of maintaining a system that has no future, it calls for redeveloping means of livelihood that pollute as little as possible and that promote local and regional economy stability. Since much of our pollution results from the distances goods travel, we must shorten distances between production and consumption as much as we can. However relocalization can occur out of necessity during times of war, hardship and chaos. For example during the World War II in Europe, the UK relocalized the allotment movement of food reduced dependency on external energy supply.

Most researches have been in the area of local food systems (relocalization). The food production is an important sector ripe for relocalization, it can help provide a more stable source of job and income, increased food security and community interaction as local farming can help to address the problem of over dependency on fossil fuel and reduce the fuel cost used to ship goods long distances. Quite a number of case studies were mentioned; dairy at the Cobb Hill Cohousing community in Hartland, Vermont, that produces award winning cheeses, A study of 200 residents in Philadelphia found that residents who gardened not only had increased access to healthier foods—eating more fresh vegetables and fewer sweet. Another innovative way to finance sustainable communities involve harnessing the profits of a new breed of business called "social enterprise." This term refers to businesses that achieve their social missions through their earned income strategies. For example, Greyston Bakery in New York City was founded in 1982 to provide jobs for the chronically unemployed. Today, the profits of this $6.5-million business provide funding for health clinics; day care centers, affordable housing, and other social services that help address poverty in New York City. (Assadourian, 2008).

Relocalization of the food system has helped to shorten food supply chains, developed closer relations with the consumers and reduce food importation; farmers has gained more values by sourcing local agricultural inputs which has reduced cost of production and help to finance environmentally more sustainable practices. Based on the case study of UK rural county of Cumbria; farmers have developed greater proximity to consumers, as a means to gain their support for organic or local food. This opportunity has been an incentive for practices which reduce transport distances, energy costs and other external inputs. Regional authorities have provided various support measures for more closely linking producers with each other and with consumers, together developing a Cumbrian food culture. Going beyond the capacity of individual producers, farmer-led intermediaries have maintained distinctive product identities in larger markets including supermarket chains. Despite these benefits, the environmental better methods may lack economic viability; in reducing costs farmers may end up reducing productivity. (Levidow & Psarikidou 2011). The effects of global-local interaction on production and consumption of food in Ghana was analyzed, the findings revealed increasing consumption of foreign rice as opposed to decreasing consumption of local rice and other staples like millet, sorghum and yam. They stressed that opportunities abound to relocalized production- consumption patterns through the local foods like koose and waakaye. In the face of global food challenge, the sustainability of food production becomes imminent through the use of new technologies to improve the quality of local rice production. (Wilhelmina, Joost, George, & Guido, 2010).

Local community is a natural social order, sharing the same space, territory or locality like house, neighborhood, city, area region, or other form of geography. This human micro world or micro context is formed and ordered by rules of physical proximity. LC has a great productive, creative and cooperative potentials. Members of LC have vested interests in the

quality of their natural economic and social environment (Zeleny, 2012). The local economy is nexus of the national economy (See Figure 1). In the past decades of globalization, their potentials has been centrally controlled and managed. And reversing this trend and re-establishing the autonomy of local controls of local potentials, is the natural outcome of relocalization.

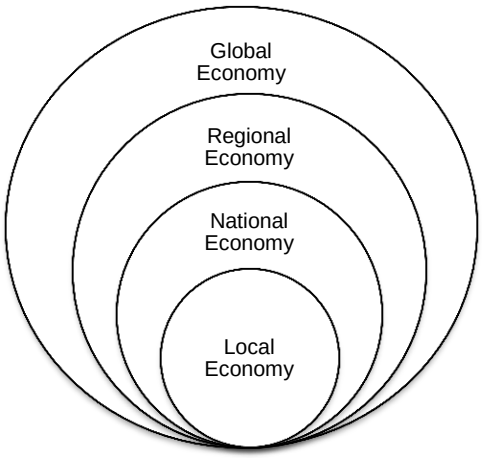

Figure 1 Local Economy

Source: Author's diagram showing Local economy as nexus of the global economy

The local community is endowed with some of these capital resources which create a source of livelihoods for the local communities; people can therefore combine these endowments that they have access to and control over; Scoones, (1998) identified these four capital as:

Natural capital – the natural resource stocks (soil, water, air, genetic resources, etc.) and environmental services (hydrological cycle, pollution sinks, etc.) from which resource flows and services useful for livelihoods are derived.

Economic or financial capital – the capital base (cash, credit/debt, savings, and other economic assets, including basic infrastructure and production equipment and technologies) which are essential for the pursuit of any livelihood strategy.

Human capital – the skills, knowledge, ability to labour and good health and physical capability important for the successful pursuit of different livelihood strategies.

Social capital – the social resources (networks, social claims, social relations, affiliations, associations) upon which people draw when pursuing different livelihood strategies requiring coordinated actions

Zeleny identifies these four capital as: Natural, Built, Human and Social. They are parallel and overlapping and that this evolved capital presents a minimal complex sustainability and self-reliance of pre-human and human system. The most important form of capital for developing countries is the human capital. The continued investment in human capital that is the software and brain ware of these nations is crucial for the development of these regions.

2.2 Sustainability

Sustainability has its root in the Bruntland report of 1987 on "Sustainable Development". The definition we have adopted is based on the study that embraces the three pillars of sustainability: the environment, economic and social welfare of the local. Scoones (2007)

defines sustainability as the ability of a system to bounce back from shocks and stresses and adopt stable states. Balkan (1998) identifies that sustainability is not only a matter of the environment, economic justice and development. It is about people and their survival as individualss and cultures. A strategy to promote ssustainability today must focus on the importance of the local prticipation and control over the way in which people live and work. The question of local or regional autonomy and autarchy is an important part of any discussion of national and international integration. The issues of autonomy versus cooperation and coordination are very much related to others having to do with self-sufficiency versus international specialization

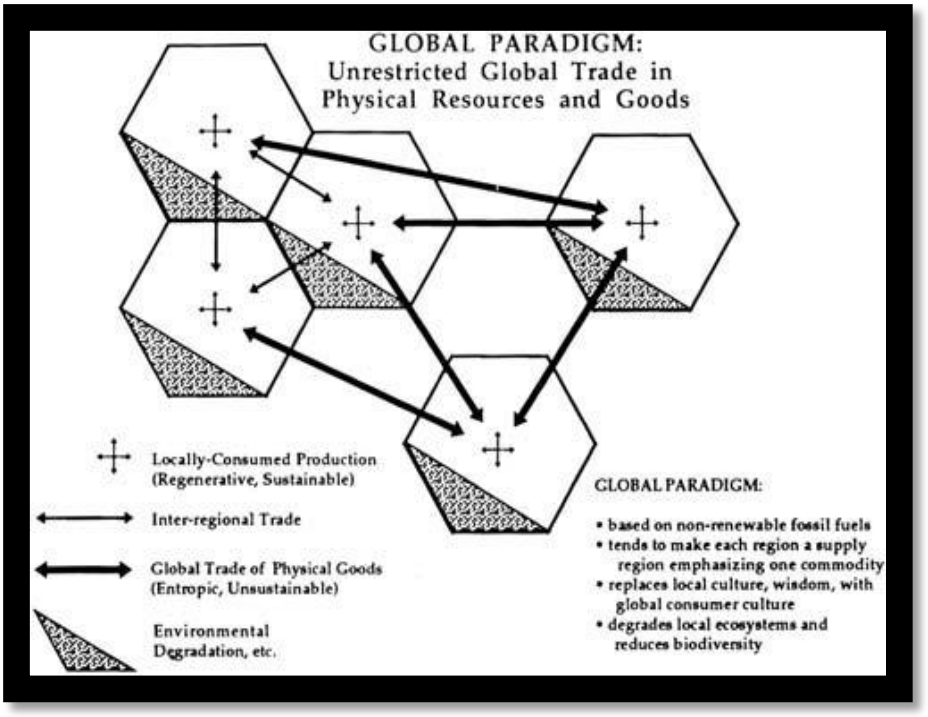

Figure 2. Global Paradigm. Regions provide one major resource or commodity to world markets in exchange for all other necessities.

Source: Thayer, 2008

Thayer, 2008 stresses that global trade degrades local ecosystems and reduces biodiversity (See Figure 2) which some scholars also emphasized; the peak oil. Preceding years of overdependence on fossil fuel and dismissal of all things local the humanities, science and design arts will seriously reconsider and recognize the local economy while electronic communication begins to shrinks our economic world and to some extent our perceptual world. There will be an evolution of focus on "living locally and thinking globally". In putting up with this new world order it is important to bear in mind the landscape of the next four to five decades will undergo rapid considerable evolutionary changes as strange admixtures of global and local affairs tugs on the formative dimensions of our rural and urban landscapes. Eyes should be fixed on these astonishing changes in the landscape as the world shrinks and expands at the same.

Global	Local
Market economy	Moral economy
An economics of price	An economic of sociology of quality
TNCs dominating	Independent artisan producers prevailing
Corporate profits	Community well being
Intensification	Extensification
Large-scale production	Small-scale production
Industrial model	Natural models
Monoclture	Bio-diversity
Resource consumption and degradation	Resources protection and regeneration
Relations across distance	Relations in proximity
Commodities across space	Communities in place
Big structures	Voluntary actors
Technocratic rules	Democratic participation
Homogenization of foods	Regional plates

Figure 4 Global Vs Local

Source: Adapted from Hinrrich, C.C. (2003).

Table 1 How Selected Communities Model Sustainability

Sector	Project	Location	Description
Energy	Micro hydroelectric generator	Inverie Scotland	In 2002, this remote Scottish community on the knoydart peninsula finished refurbishing a 280-kilowart hydroelectric generator, which now provides electricity for at a least 65 properties
Energy	Biomass	ZEGG, Belzig, Germany	The 80 residents of ZEGG obtain their heating from a wood-chip-fired heating plant, with the wood sustainably harvested from the local area
Energy	Biogas	Hammarby Sjöstad, Stockholm, Sweden	In this district 1,000 residences obtain their cooking gas from biogas that is generated from the Stockholm, district's waste water

Food production	Permaculture	Kibbutz Lotan, Production Arava Valley, Israel	Kibbutz Lotan maintains an array of sustainable agriculture features, including organic gardens, composting, trellising and community-supported agriculture. It also maintains a migrating bird preserve of five distinct habitats
Water catchment	Rainwater harvesting	Christie Walk, Adelaide, Australia.	This 27 unit Adelaide community captures all on-site rain water and uses it to maintain its 870 square meters of roof top and surrounding gardens
Sewage treatment	Ecological machine	Berea College, Ecovillage, Kentucky, United States	This community's "ecological machine" processes about 12,700 liters of waste water each day using a combination of bacteria, snails, and plants. Some of this water is then stored for use on the community's lawns and garden.
Sewage treatment	Constructed wetland	Ecoovila, Porto Alegre, Brazil	In this family community, sewage is processed in a bio-logical system that uses reed beds to filter water-water that is then used to irrigate the community's garden
Sewage	Water reuse	Solaire Apartment, New York City, United States	In this luxury apartment building, a water reuse system Apartment, filter waste water and reuse it for toilet flushing and the building's cooling tower. In 2006, this system recycled about 73,000 liters per day reducing total water needs by one-third
Transportation	Car Sharing	Bed ZED, London, England	Forty residents subscribe to a community venture, obtaining access to electric cars are charged by solar energy

Source Adapted from Assadourian, E. (2008).

3. Conclusion

This paper has attempted to demonstrate that relocalization is the key to the sustainability of local economies with a descriptive methodology using a case study of some selected communities which have been able to model sustainability. Empirical evidences reveal that food relocalization, energy and water have helped to shorten the food chains, increased food sufficiency or sovereignty of the local people and also improve the living conditions of the communities (Levidow and Psarikidou, 2011; Assadourian, 2008). These initiatives indicate a simple and modest means towards food security or sovereignty, green and clean economy, proximity between the consumers and producers and local participation of the locals in the economic, democratic and social well-being of the community.

Furthermore these case studies reveal the local production of food supply utilizing a more sustainable practices. Instead of depending on external inputs, rather sourced feed locally for livestock, on farm production of renewal energy (biogas) and organic foods. The autonomy of the people over their local resources is pivotal to their survival and sustainability. Within

the context of thinking globally and acting locally, these initiatives must be tailored in accordance with the local communities' characteristics or specificities and needs.

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DEVELOPING A HYBRID MODEL FOR DATA MINING, HOLISTIC AND KNOWLEDGE MANAGEMENT TO ENHANCE BUSINESS ADMINISTRATION

Stephen Nabareseh, Petr Klímek

Abstract

Knowledge is a multidimensional concept and categorized either as explicit or tacit. Knowledge, whether tacit or explicit needs to be for accelerated growth. In recent times, holistic management concept has engulfed industry and academia in the quest to design a more compact management concept. Whether knowledge or holistic management, data is generated and transformed into information. Data mining algorithms are employed to mine relevant patterns and interestingness in data to generate knowledge that is used and managed. The three concepts, Holistic Management, Data mining and Knowledge management, are interwoven and rely on each other. This paper carefully understudies the three concepts and designs a model that embraces the three models. The HoDaK model, as named, presents a cohesive and simple explanation of the three concepts and clearly reveals the points at which they intertwine.

Keywords: Knowledge-based management; Holistic Management; Data mining; Knowledge discovery; model

1. INTRODUCTION

The current upsurge of interest in knowledge and its affiliated components has been embraced by facets of the world. Data mining, knowledge discovery, knowledge management, knowledge transfer and holistic management are attributable to factors such as information and communication technology, managerial decision making and the need for organizations to better utilize their intellectual capital to stay ahead of the competition (Delen & Al-Hawamdeh, 2009). The tremendous increase in the volumes of data has given rise to the increase in holistic and knowledge management by many organizations.

The pillars of management in planning, organizing, leading and controlling hinge more on the mining of implicit and tacit knowledge for holistic management. In spite of the fact that keywords are used in identifying information (Savory & Butterfield, 1998), the extraction of knowledge and its management need very robust and modern tools. Most of the current managerial concepts are hinged on the extraction and application of knowledge retrieved from databases of companies. A good number of managers rely on data from the different segments of their companies to take decisions for the welfare of the company. Al-Hawamdeh, (2003) indicated that holistic and knowledge managers are deficient without the right analysis of relevant data to extract such knowledge. There is a need for a more intelligent information retrieval system that can take into account the semantic information for holistic and knowledge management (Desouza, 2003). But given the limitation of artificial intelligence based systems and the fact that most knowledge exists in the minds of people (Peng et al., 2008) in the form of tacit knowledge, it is ideal to extract this tacit knowledge and understand clearly its complexity for better management.

The huge volume of management data on companies is good for profiling the customers, employees and employing a particular management style to relevant fields (Reichheld, 2006). The concept of identifying new customers as a marketing application has given way to customer value measurement and retention. Modeling customer life time value is therefore one way of identifying, measuring customer value and predicting potential

customer churn (Rosset et al., 2003; Freeman and Melli, 2006; Wei and Chiu, 2002; Mozer et al., 2000; Mani et al., 1999 among others). Daskalaki et al. (2003) indicated that tree algorithms are used to predict customers for management purposes. The application of data mining techniques can also be used in defining customers, staff and various departments in a company. The use of association rules, sequential patterns, classification, clustering and prediction can be applied to enhance holistic and knowledge management activities.

This paper proposes a conceptual framework linking data mining to holistic and knowledge management concepts. This model is composed of knowledge management activities such as creating, extracting, storing and using/reusing knowledge which are also components of data mining and holistic management. The paper emphasizes the importance of data mining for knowledge management, displays and discusses the concept of holistic management in a data mining environment and suggests a model concatenating the three concepts in achieving managerial goals.

2. REVIEW OF THE THREE CONCEPTS

2.1 The concept of Holistic Management

Holistic Management is an approach to managing resources, skills, personnel and knowledge that creates diversity, increases production and strengthens the financial sector (Savory & Butterfield, 1998). Holistic management contributes to a general sustenance of the working environment including the social responsibilities of organisations that affect the general community. A holistic perspective is essential in management and most vital. However, according to Delen & Al-Hawamdeh (2009), it is also the most difficult to understand and more difficult to bring to bear in actual practice. This notwithstanding, the management of a business must be coordinated both within and without. The coordination of the internal business environment and its workforce with the environment in which the business finds itself is the ultimate of management.

Holistic perspective cannot be excluded in management. Management decision made exclusive of holistic perspective will likely produce a different outcome since the “whole” is not considered (Porvaznik, 2008). The management of general and professional knowledge comprising of operational and strategic knowledge with the embodiment of practical and human qualities as seen in figure 1 summarize the holistic management concept.

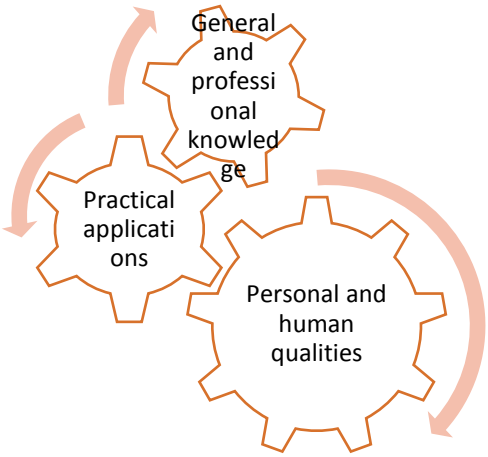

Figure 1: Holistic management concept Source: Authors

Holistic management encompasses the natural ecological, technological/technical, working humanitarian, economic/financial, marketing/commerce, legislative/legal and

geopolitical environments (Porvaznik, 2008) for shaping and building the entire business and its environs. These listed environments generate vast amounts of data daily that need to be mined with current scientific tools to identify patterns that will generate knowledge for decision making. The main role of holistic management is to induce competence in management by the unification of social, knowledge and application intelligence (Porvaznik, 2011) as shown in figure 2 below. These three cardinals of holistic management are bed-rocked by data mining and knowledge-based management.

There are endless numbers of people who do not manage their time well (Porvaznik, 2011). The inability to of better time management results in being unreliable, inaccurate, full of internal commotion, under pressure and a bad influence to the surroundings and society. Managers must fully create a holistic management of time of all workers to avoid killing initiatives and possibilities. Team management is a bane of knowledge formation and characterization of practical skills (Porvaznik, 2008).

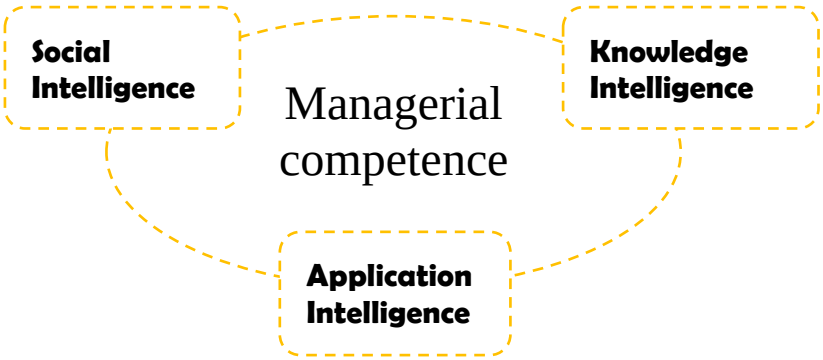

Figure 2: Pillars of managerial competence Source: Porvaznik (2008)

2.2 The concept of Knowledge-based management

In this information era, knowledge is becoming a crucial organizational resource that provides competitive advantage and gives rise to knowledge-based management (KM) initiatives. Many organizations collect and store enormous amounts of knowledge based quantities of data daily. However, these organisations have not been able to discover hidden patterns of information in the generated data for knowledge use (Silwattananusarn & Tuamsuk, 2012; Nabareseh et al, 2014). According to Hwang et al (2008), Knowledge-based management (KM) is a concept that evaluates useful patterns discovered from mined data that generates knowledge in the organization. KM process focuses on knowledge flows and the process of creating, sharing, transferring and distributing knowledge (Argote and Ingram, 2000) as seen in Figure 3. When interesting patterns are mined from data, knowledge is acquired which must be properly managed and applied in relevant fields. Every KM must have a feedback system to capture users' perception, satisfaction or dissatisfaction generating more data for mining. Creation of knowledge takes place when tacit and explicit knowledge is converted into data (Nonaka, 1991). Data mining algorithms such as association rules, classification, clustering or prediction can be used in the KM.

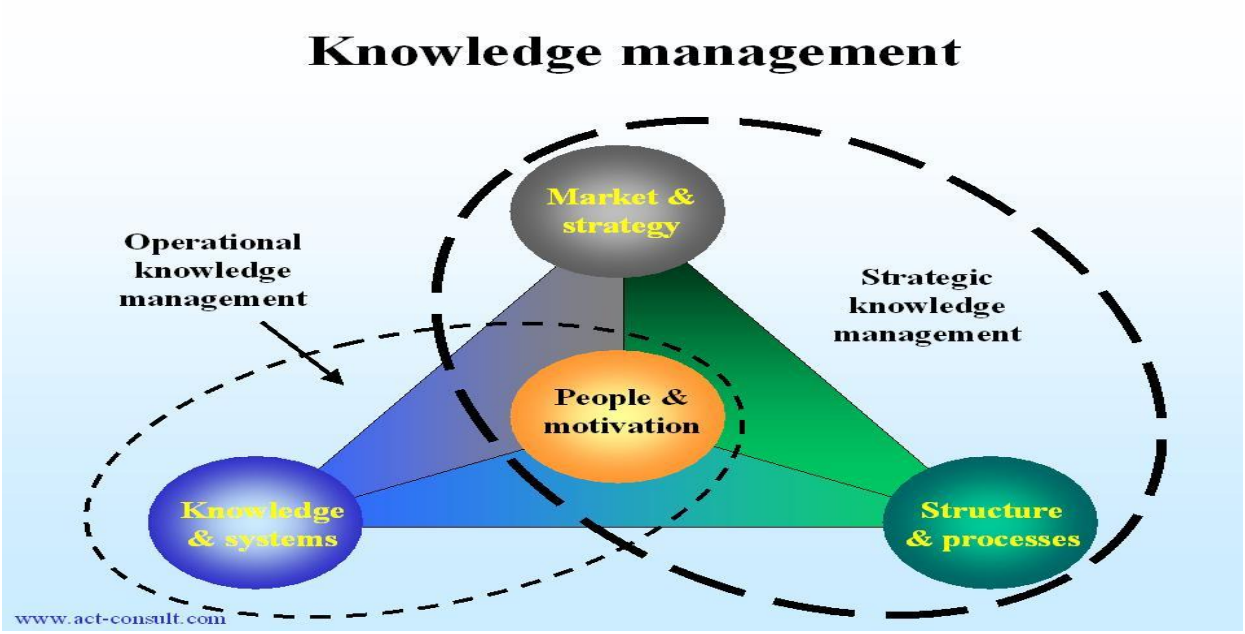

Figure 3: Knowledge Management diagram Source: http://www.act-consult.com

2.3 The concept of Data mining

The concept of data mining has been embraced globally by industry and has had a widespread market acceptance (Maimon and Rokach, 2005). Data mining algorithms mine knowledge from huge deposits of data that lead to very significant change (Taniar, 2008) of products and services. Feelders et al. (2000) defined data mining as "*the process of extracting information from a large data sets through the use of algorithms and techniques drawn from the field of statistic, machine learning, and database, management systems".* Han et al. (2006) also postulated data mining as a science of extracting or mining knowledge from large volumes of data. It is a tool used to extract knowledge that supports decision making in any organisation. The main goal of data mining is to generate no-obvious but very useful information and knowledge for managers and decision makers. Data mining also identifies valid new, probable useful and explicable patterns and correlations in existing data (Han et al., 2006). Statistics on economic growth, the development of interest rates and inflation, household income, education standards, crime trends, climate change (Han et al., 2006), customer behaviour analysis, marketing, Customer relationship Management (CRM) (Reichheld, 2006), fraud detection, network management (Madhuri, 2013), production (supply and demand) and sales (Morrison, 1993), organisation culture, character and maturity of staff, time management and team management are major input factors for holistic and knowledge management for business growth.

Data mining and knowledge discovery have been applied in several areas. Srivastava et al. (2000) discussed data mining in advertising coupled with web usage for discovery and applications for usage patterns, Li et al (2005) presented data mining in bioinformatics for interpreting information from biological sequences and structures, and Daskalaki et al. (2003) and Berson & Smith (2002) carefully analysed data mining in Customer Relationship Management (CRM). Other data mining applicable areas tackled by various authors include Marketing (Madhuri, 2013), Fraud Detection and Telecommunications (Hung et al., 2006; Pareek, 2006; Wei & Chiu, 2002), time management (Britton & Tesser, 1991), team management, social responsibility of organisations (Jenkins & Yakovleva, 2006), Health Care (Weiss, 2004), Investment/Securities (Rosset et al., 2003), Manufacturing (Taniar, 2006;

Kohavi, 2001), Process Control (Mani et al., 1999), Sports and Entertainment (Koh & Tan, 2011; Harding et al., 2006). Ranjan et al. (2008) and Hirji (2001) showed the effect of data mining in better decision making for HRM system and helps in strategic decision making process of human resource management system.

Data mining tools include clustering, classification, prediction, association, genetic algorithms, and neural network. Ahmed (2004) defined classification as the way to discover various characteristics in holistic management. Clustering algorithms like K-means algorithms helps in segmentation process. Prediction technique helps in planning the strategy for the future. Associations help identify rules interestingness patterns among the collected data. Data mining helps business world by providing two different forms of information and knowledge. The data mining and knowledge discovery process is shown in figure 4 below.

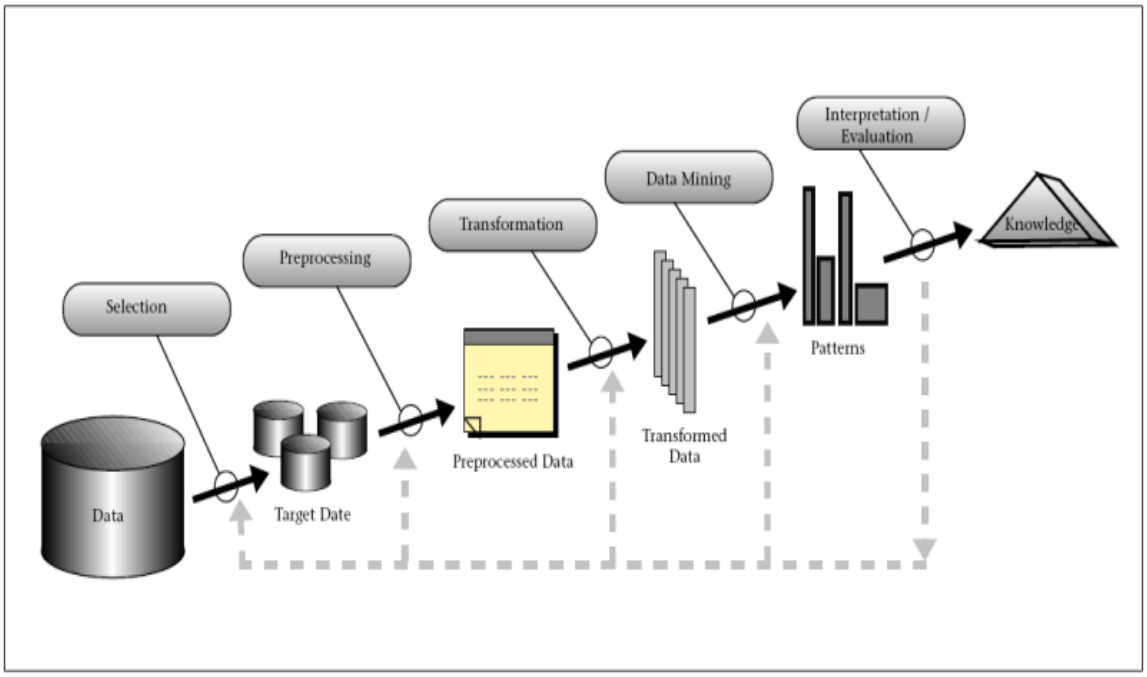

Figure 4: Data Mining process Source: Fayyad, et.al, (1996)

3. BUILDING THE HODAK MODEL

Holistic management and knowledge management are processes that utilize data generated daily for effective management (Dawei, 2011). The basis of data mining therefore helps mine relevant patterns in the data for useful knowledge for holistic management. Data mining is an essential part of holistic and knowledge management. Wang & Wang (2008) point out that the use of data in holistic and knowledge management by managers is regular in every component of the holistic and knowledge management ladder. Data mining tools could help holistic and knowledge managers discover the hidden knowledge in social maturity and character qualities, cognitive and creative qualities, temperament and somatic qualities of the people they manage in addition to the social responsibilities of the organisation.

It is therefore clear that the three concepts described, Holistic Management, Knowledge Management and Data Mining, are intertwined. The authors therefore designed the HoDaK model in figure 5 below to embody the three concepts and present a single model that describes the entirety of the concepts. Holistic management is embodied in all the various facets of KM and data generation. Using correlation, association rules, discriminant and

regression analysis of data mining techniques, relevant patterns imbedded in customer data, dependency of customer loyalty, valuation of managerial capability, prediction of the future of management based on historical and current facts, the effects of corporate governance on organisations as management objects and the effect of control mechanisms of organisations are easily assessed.

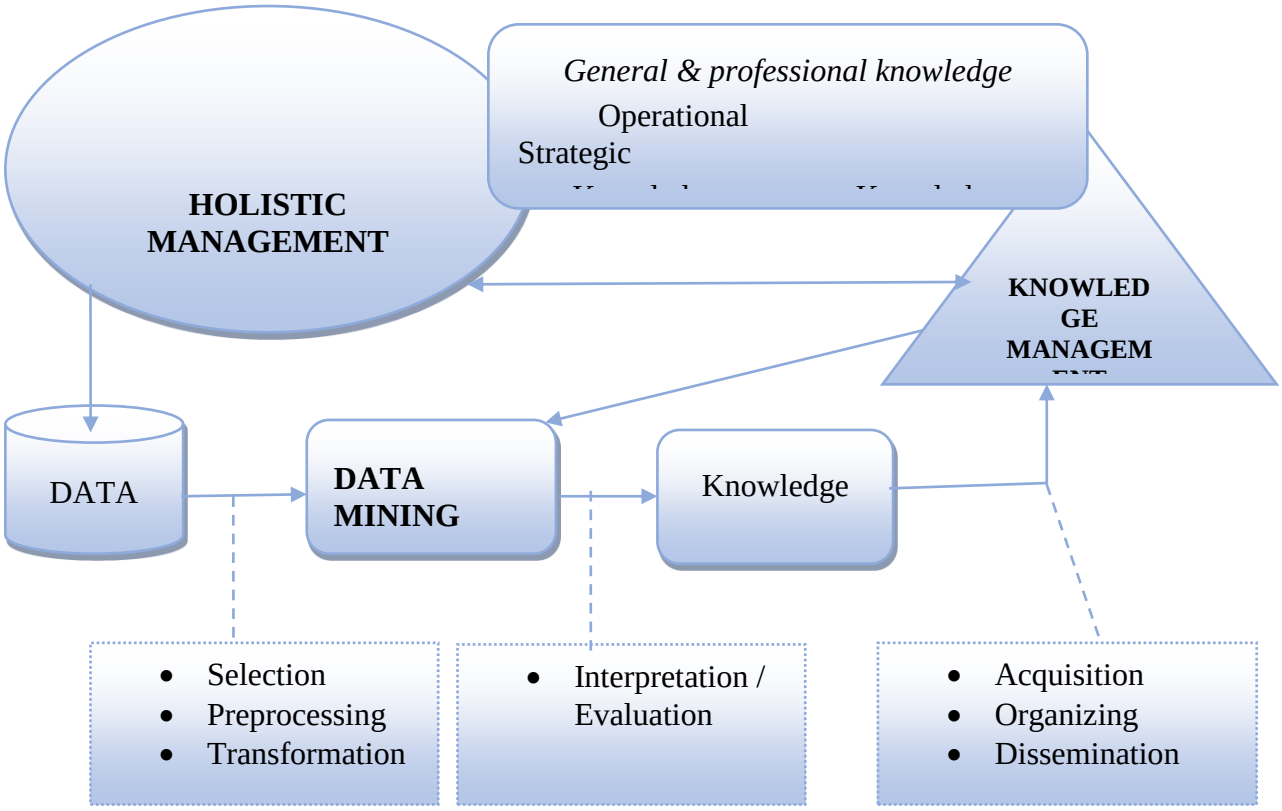

Figure 5: The HoDaK Model Source: Solely Authors'

Gathered data across the company structure is preprocessed and transformed for analysis. Data mining algorithms are applied to the data and patterns of knowledge is produced. This acquired knowledge is managed by organizing and disseminating it into appropriate and targeted use. The knowledge can be reprocessed and mined depending on the activity and area it is to be used. The defined general or professional knowledge can either be operational or strategic which is managed holistically.

The influence of customer data, perception, churn and life time value on revenues, supply chain management, growth and sustainability, collaboration and teamwork, managerial competence, internal and external environmental impact, impact of effective communication in management on the business, impact of types of motivation on output and the barriers to creativity are all embedded in the HoDak Model. The model portrays and identifies that the three concepts cannot be operated in isolation. Management can never be holistic without the knowledge that is mined from data. The data mining tools used in developing, preserving, using and sharing knowledge with a holistic management of the will increase the profit and growth of a business.

4. CONCLUSION

Holistic Management, Data Mining and Knowledge Management are three interwoven concepts that enable an organisation manage internal and external environment very well for accelerated growth. Data mining uses sophisticated data analysis applications to discover previously unknown, valid patterns and relationships in generated data from various data driven backgrounds for knowledge. The acquisition of knowledge using data mining equips the manager with the necessary information for organizing, planning, leading and controlling the organisation in a holistic form. It provides the necessary acumen to the manager to holistically manage the organisation in terms of social maturity, character qualities, professional abilities, practical skills, personal qualities and the global environmental effects of the organisation.

This paper produces a model (The HoDaK model) that integrates the three separate concepts of Holistic management, Data Mining and Knowledge management into one composite model for academic and industrial use. The paper evaluated the various concepts and carefully aligned the respective variables in building the HoDaK model. The model can be used in academia and industry to enhance theoretical understanding of the three concepts and the practical implementation of the model to enhance managerial competence.

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AGGLOMERATION AND TECHNICAL EFFICIENCY: A SURVEY OF LITERATURE IN FRONTIER STUDIES

Donvito Valle

Abstract

The development of sophisticated metric tools in benchmarking made it possible to derive more precise measures of technical efficiency of decision making units. This paper provides a review of peer-reviewed literature that applied frontier estimation techniques in the study of industrial agglomeration and its influence on technical efficiency at firm and aggregate levels. This paper specifically aims to describe the methodological considerations and summarize and evaluate the findings of these studies. Given the dearth in literature on the intersection of frontier analysis and agglomeration economies, research gaps are identified and directions to future research are proposed.

Keywords: industrial agglomeration, technical efficiency, DEA, SFA

1 INTRODUCTION

A number of empirical literature in economic geography and regional development sought to explain the agglomeration phenomenon and its impact on the economic performance of firms, industries, and regions. It is widely believed that agglomeration economies allow firms to concentrate in a particular area and take advantage of externalities such as acquiring low-cost inputs and skilled labor and benefiting from knowledge spillovers. On the other hand, there are also externalities association with agglomeration diseconomies such as cost of traffic congestion, land price inflation, and pollution.

One of the important measures of economic performance is the technical efficiency of a production process of a decision making unit. Technical efficiency refers to the capacity of firms to produce outputs using the least amount of inputs. Because firms use multiple inputs to produce multiple outputs, it is necessary to apply multivariate tools to derive more precise measures of efficiency. The use of frontier analysis techniques such as data envelopment analysis (DEA) and stochastic frontier analysis (SFA) has been advantageous in this area.

This paper aims to provide a review of studies that estimates the technical efficiency of firms, industries, and regions using frontier analysis techniques and then explains the variation on efficiency by looking into the effect of agglomeration economies to technical efficiency. The paper is structured as follows. Section 2 provides the conceptual framework and publication statistics. Section 3 examines the methodological parameters and considerations applied in the studies while Section 4 discusses the empirical results. Section 5 suggests the direction for future research.

2 CONCEPTUAL FRAMEWORK

Literature reviews on the use of frontier analysis techniques typically follows a paradigm that first defines the methodological considerations in selecting the measurement technique and specifying the variables and then identifies the sources of variation in technical efficiency. Independent studies by Sharma, Sharma, and Barua (2013) and Fethi and Pasiouras (2010), for example, adopted this paradigm in assessing the results of empirical literature that used DEA to estimate bank efficiency and productivity. Similar initiatives were undertaken by Eling and Luhnen (2010) in reviewing frontier studies on the insurance industry, Worthington

(2004) on healthcare, and Atici and Podinovski (2015) on agriculture. As regard to this, this paper also follows the same paradigm in surveying the literature on agglomeration economies.

Fourteen journal articles on the subject had been selected for this review. They were published mostly in journals on urban and regional studies, with a few papers appearing in journals on operations research, agriculture, and applied economics. These papers have been listed in SCOPUS database as of writing.

3 METHODOLOGICAL CONSIDERATIONS

Two of the most widely used frontier analysis techniques are DEA and SFA. DEA originates from the operations research tradition while SFA originates from the econometric tradition. As such, they differ in terms of ex-ante assumptions related to consideration of noise and limitation on functional form.

Charnes, Cooper, and Rhodes (1978) first proposed DEA, a linear programming technique, to evaluate the performance of nonprofit and public sector organizations based on its multiple inputs and multiple outputs. DEA computes the efficiency scores of firms called decision making units (DMU) by constructing a piecewise linear frontier and measuring the distance of the DMUs from the said frontier. The efficiency scores will range from 0 to 1, with efficient firms receiving a score of 1 and inefficient firms receiving a score less than 1. Meanwhile, the concept of an econometric technique called SFA was introduced by Aigner, Lovell, and Schmidt (1977) to estimate technical efficiency across a cross section of farms and firms. SFA uses maximum likelihood estimation to estimate the technology parameters as well as the residuals, which are decomposed into statistical noise and technical efficiency scores.

The ease of use of DEA and SFA over other efficiency estimation techniques paved way to extensive research on measuring the relative technical efficiency of institutions of various types, from banks to health care facilities to container ports. However, DEA and SFA are not without their limitations. While DEA does not require any assumption on the functional form of the input-output relationship, it is sensitive to the presence of outliers and produces scores that may be distorted by random noise such as measurement errors. Meanwhile, SFA accounts for statistical noise and outliers but its restrictions on the functional form becomes a concern because the choice of functional form affects the quality of estimates. The decision to adopt either of the two techniques rests on the choice of set of assumption researchers preferred over another set of assumptions, that is, deterministic-nonparametric assumptions as in the case of DEA or stochastic-parametric assumptions.

Out of these studies on agglomeration economies, 10 papers applied SFA, 3 papers used DEA, and only one article adopted both. As regards to the process of identifying the sources of variation of technical efficiency, these frontier studies usually follow a two-stage analysis. The technical efficiency scores are first computed and then these scores are regressed against a set of explanatory agglomeration variables.

To estimate the efficiency scores, it is assumed that industrial firms produce outputs using a combination of labor, capital, and intermediate goods. For outputs, it was common in frontier research to use gross value added at aggregate-level and either production units (Tveteras and Battese, 2006), shipments (Kim, Harris, and Vusovic, 2009) or sales (Mitra, 1999) at firm-level. Labor inputs were computed using either number of workers (Nakamura, 2012; Widodo, Salim, and Bloch, 2015), labor hours (McCoy and Moomaw, 1995) or wages (Fukao, Kravtsova, and Nakajima, 2014) while capital stock consisted of either the cost of fixed assets or cost of depreciation (Lakner, von Cramon-Taubadel and Brümmer, 2011). Intermediate goods included raw materials (Fukao, Kravtsova, and Nakajima, 2014), feeds

(Tveteras and Battese, 2006), farm inputs (Lakner, von Cramon-Taubadel and Brümmer, 2011) and energy use (Widodo, Salim, and Bloch, 2015)

To account for the effects of agglomeration economies, the frontier studies used variables such as population density and market access (Otsuka, Goto, and Sueyoshi, 2010; Otsuka and Goto, 2015), locational quotients and inverse of Hirschman-Herfindahl index (Agovino and Rapposelli, 2014, Widodo, Salim, and Bloch, 2015), city population (McCoy and Moomaw, 1995; Mitra, 1999), Harris-distance from efficient establishments (Fukao, Kravtsova, and Nakajima, 2014), proxies for R&D such as R&D expenditures, number of doctoral graduates, and number of universities (Kim, Harris, and Vusovic, 2009), and dummy variables to represent industries, regions, cities, or clusters (Agovino and Rapposelli, 2014; Lakner, von Cramon-Taubadel and Brümmer, 2011; Widodo, Salim, and Bloch, 2015).

4 SUMMARY OF EMPIRICAL RESULTS

The empirical results of frontier studies on agglomeration discuss the impact of externalities on technical efficiency at either firm- or aggregate-level. Five papers focused particularly on firm-level efficiency, six on industry-level efficiency, three regional level efficiency, and the remaining article on aggregate of both regional- and industry-level efficiency. The summary of the empirical results are provided in Table 1.

For the firm-level efficiency, Mitra (1999) studied firms in the electrical machinery and cotton and cotton textile industries in India while Fukao, Kravtsova, and Nakajima (2014) and Widodo, Salim, and Bloch (2015) used factory-level data from all types of manufacturing industries in Japan and Indonesia, respectively. Only two papers focused on agriculture: Lakner, von Cramon-Taubadel and Brümmer (2011) who analyzed organic pasture farms in Germany and Tveteras and Battese (2006) who looked into salmon aquaculture producers in Norway. All of them shared a common conclusion that agglomeration economies improved technical efficiency of firms. Widodo, Salim, and Bloch (2015) identified in particular that specialization (associated with localization or Marshall-Arrow-Romer externalities) and competition (associated with Porter externalities) positively influenced technical efficiency though notes that diversity (associated with urbanization Jacob externalities) had negative influence. This is in contrast to the findings of Lakner, von Cramon-Taubadel and Brümmer (2011) who suggested the positive effect of both localization and urbanization externalities.

For aggregate-level efficiency, Driffield and Munday (2001) studied three-digit industrial sectors in UK and Kim, Harris, and Vusovic (2009) specialized in biotech industries in Japan. Four groups of authors investigated on industry-level efficiency in Japan, namely, Otsuka and Goto (2015), Otsuka, Goto, and Sueyoshi (2010), Mitra and Sato (2007), and Nakamura (2012). Meanwhile, Agovino and Rapposelli (2014) focused on Italian regions and McCoy and Moomaw (1995) on Canadian cities. Similar to the conclusion above, all these scholars established that industrial agglomeration externalities have a positive influence on regions and industries though Bannister and Stolp (1995) partially deviated from this claim, stating that while the effect of agglomeration externalities was significantly positive for regions, it was not significant at industry level.

Tab. 1 – Summary of results of empirical literature on the effect of agglomeration externalities on technical efficiency. Source: Author

Authors (Publication year)	Sample size (Country, period of investigation)	Methodology	Explanatory variables	Main findings
Agovino and Rapposelli (2014)	20 regions (Italy, 1970 to 1993)	SFA	Marshall, Arrow, Romer externalities; Jacob externalities; spatial spillovers; time effect; regional dummies	Localization and urbanization externalities have in improving the efficiency level of the production process of Northern and Central Italy regions.
Bannister and Stolp (1995)	32 states and 7 two-digit industries (Mexico, 1985)	DEA	A set of location quotients; a set of dummy variables to account for contrasts across seven industries; a dummy variable that captures the effects of other agglomeration economies in the principle industrial centers of Mexico.	Scale, urbanization, and agglomeration economies in Mexico are positively related to technical efficiency at the regional level. Agglomeration economies at the industry level were not significant.
Driffield and Munday (2001)	102 three-digit industry sectors (UK, 1984 to 1992)	SFA	Regional industry agglomeration variable; percentage share of industry value added that is accounted for by foreign owned manufacturing	Regional concentration serve to move UK industries nearer to the technical efficiency frontier.
Fukao, Kravtsova, and Nakajima (2014)	Factories (Japan, 2007)	DEA and truncated regression	Harris-distance from efficient establishments; size; exporter dummy; multiplant dummy; density; R&D expenditure; share of university scholars in the prefecture; share of natural scientists in the prefecture; share of highly educated people; share of manager employment; share of technician employment; share of univ-graduates' working hours; mid-high-	Clustering occurs in each industry in Japan and efficient factories concentrate in certain regions. The closer Japanese manufacturing factories are to their most efficient counterparts, the better they perform.

			tech dummy; mid-low-tech dummy; low-tech dummy; share of exporting in the prefecture; share of exporting in the industry	
Authors (Publication year)	Sample size (Country, period of investigation)	Methodology	Explanatory variables	Main findings
Kim, Harris, and Vusovic (2009)	29 states (US, 1997) and 40 states (US, 2002)	DEA and Directed Acyclic Graph	DEA estimates; cluster dummy; regional income; population; bioscience universities; education level; number of advanced degrees awarded in bioscience; biotech firm size; biotech average payroll; high-tech infrastructure	Clustering has a positive impact on efficiency scores of US biotech industries.
Lakner, von Cramon-Taubadel and Brümmer (2011)	396 organic pasture farms (Germany, 1994 to 2004)	SFA	In conversion; no agricultural education of the farmer; age of the farmer; expenses for legal advice; soil quality; equity share; sum of land rent; volume of milk quota; intensity of livestock production; pasture share; legal status; part-time farm; volume of subsidies; regional variables	Localization and urbanization economics are found to have a significant impact on the technical efficiency of organic farms.
McCoy and Moomaw (1995)	50 cities (Canada, 1976 to 1980)	SFA	City population; percent of the manufacturing labor force that is male; percent of the population with a secondary certificate; city's unemployment rate; population density of the city	Population size and density both increase efficiency of cities in Canada.
Mitra (1999)	212 firms for electrical machinery and 294 firms for cotton and cotton textiles (India, 1992 to 1993)	SFA	City population; work force	There is a positive association between technical efficiency of firms in India and city size.

Mitra and Sato (2007)	47 prefectures (Japan, 2003)	SFA and factor analysis	Proportion of total manufacturing employment to total workforce; population density; per capita income; unemployment rate	There is a positive effect of agglomeration economies on efficiency of industries in Japan.

Authors (Publication year)	Sample size (Country, period of investigation)	Methodology	Explanatory variables	Main findings
Nakamura (2012)	17 industrial sectors (Japan, 2005)	SFA	Highway road length; daytime population; Herfindahl-Hirschman Index; number of workers at post code; average size of firm; capital stock; number of workers; scale economies; amount of stated capital; value-added ratio	For most light industries agglomeration of various sizes of firms is important for productivity rather than the concentration of uniform small size firms.
Otsuka and Goto (2015)	Manufacturing and non-manufacturing industries from 47 prefectures (Japan, 1980 to 2002)	SFA, DEA, and Tobit regression	Population density; market access; fiscal transfer ratio	Agglomeration economies improve productive efficiency in Japanese regional industries.
Otsuka, Goto, and Sueyoshi (2010)	Manufacturing and non-manufacturing industries from 47 prefectures 47 prefectures (Japan, 1980 to 2002)	SFA	Population density; market access; fiscal transfer ratio	Agglomeration economies and improvement of market access have a positive influence on the productive efficiency of Japanese regional industries.

5 CONCLUSIONS

This paper surveyed fourteen peer-reviewed papers that studied the effects of agglomeration externalities on technical efficiency at firm and aggregate levels. In particular, a number of these papers concluded that benefits derived from the spatial concentration of firms influence their economic performance as well as the performance of the industry and the region.

In the course of the research, it was observed that peer-reviewed literature on the intersection of frontier analysis and agglomeration economies are scarce. However, the agglomeration phenomenon continue to capture the interest of scholars, prompting them to investigate the effects of agglomeration externalities. This is evidenced by the increase in publication on the subject during the last years. In their study of industrial cluster-related literature, Lia and Geng (2012) identified only a few peer-reviewed that investigate performance at three levels: performance differences in firms located within and outside clusters, performance differences in firms inside the same industrial cluster and performance variations between clusters in the same industry. There was no mention of the application of frontier studies on any of the three levels. This author believes that this area of research is worthy of attention.

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THE CZECH AUTOMOTIVE INDUSTRY AND THE CZECH REPUBLIC ECONOMY RURING THE CRISIS PERIOD 2007 – 2013

Marek Sedláček

Abstract

The main aim of this article was to analyse impacts of the global economic situation during the crisis period into functioning and performance of the Czech automotive industry which is represented with the companies associated in The Automotive Industry Association Czech. Especially at their interaction with this way developed macroeconomic surroundings. For this kind of research was used a chosen company performance indicator Sales. That means in the article there were founded and analysed the possible intensities of dependency the Czech Republic, respectively its total economic indicators: Gross Domestic Product and Sales from Industrial Production on realized Sales in the sector of automotive industry in the Czech Republic. For this purpose of research the companies from the Czech automotive industry were devided into two cathegories: the finishers and suppliers but they were also counted altogether. This kind of research was done with the regress and correlation analysis.

Keywords: crisis, performance, result indicators, macroeconomic situation, correlation.

5 INTRODUCTION

During the decade from 2005 to 2015 there have been many changes in the global economic field or situation. This decade could be devided into some specific time periods: the pre crisis period 2005 – 2006, the crisis period 2007 – 2009 and the last one the post crisis period started 2010 and on.

Especially the years of 2007 – 2009 in the world history will be primarily connected with the entrance and marks of financial crisis, secondarily with its expansion in the form of worldwide economic recession and with declining activity of most economic subjects (states, companies, consumers, etc.) in the real economies (Smrčka, 2012). One, on global changes very sensitive and by this crisis affected sector, was the automotive industry (AI) globally and also the Czech automotive in local (Sedláček, 2013). The AI is one of the biggest industrial sectors in the Czech Republic and during its history there have been manufactured more than 16 mil. cars included passenger cars, trucks, buses and motorcycles. The Czech Republic is often called "the automotive power" (Sedláček, 2012).

In that case also the companies and firms interested in the Czech AI were affected by the global crisis during the period 2007-2009. All in this article chosen and analyzed companies are also involved in the business of The Automotive Industry Association Czech (further only AutoSAP), whose total data was used supposing that companies´ association in AutoSAP represents 85 – 90% of the automotive industry as the sector expressing production volume, export or number of workers etc. (Sedláček, 2013). Based on previously mentioned facts there should be a significant dependency between the situation or performance of the AI and the overall Czech Republic economic performance which is measured with its own macroeconomic indicators.

6 LITERATURE REVIEW

6.1 System of free market economy

Free market economy in the environment of free market is the relationship of dynamic balance, i. e. polar symmetry based on premises of free exchange. The purchaser and seller are attracted by the interest in the product (its sale, respectively purchase) and at the same time tehdy are kept away by opposite interest in the price of the product (Vrecion, 2008), (Sedláček, 2013). These polar and basically symmetric powers create this relationship. The intensity of interest during thinking and negotiation about the exchange is balanced and stabilized. The interest balance is completed by agreement on the product price, i. eagreement on concertized exchange symmetry (Sedláček, 2013). Only this kind of exchange looks like the right autoregulator and driving power of desired development of market economy. States that free exchange realized by the relationship of purchase and sale is the exchange when both sides of the relationship purchaser and seller realize value added, benefit or profit. Otherwise the entry into market transactions is not free (Zelený, 2011).

When in the case of permanent disruption of market economy microstructure, obstruction of its effort of cyclic autoregulation this way it comes up to the disruption of relative dynamic balance of the relationship (Friedman, 2002). The deformation of free exchange immediately makes deformation of autoregulative element TE, which leads to gradual destruction or unexpected collapse of the whole system (Sedláček, 2013), (Chau, 2012).

Macroeconomic theory offers the view of the crisis, respectively recession as a standard part of economic cycle. For recession elimination and its origin various recommendations were formulated starting at state protectionism through massive state interventions to money reserve growth. It is possible to understand the recession positively (Zelený, 2012), (Sedláček, 2013). The crisis is a certain part of economic development and has a cleaning effect. It deprives economy of useless and unsound, makes space for new ideas, companies and people. The main causes of that situation is possible to find in a big failure of free market regulation due to an unprecedented growth of state interventions into free market (Zelený, 2011).

6.2 Macroeconomic and company performance indicators

In theory the stable macroeconomic surrounding is one of the most important condition for reaching a sustainable growth of firm performance. Companies which would like to be ready for the future need to recognize and forecast whatś going on, which trends coming etc. From that perspective the common external and also firm internal dynamic balance is in a relationship (Chae, 2009). Standard concept of company strategies is possible to be defined as the ability of the company to reach its aims, its readiness to the future and company ability to face future conditions (Dent, 2008), (Žáková-Talpová, 2011).

For the reason and also for this kind of research needs the macroeconomic situation in this contribution was described with the macroeconomic indicators GDP and SIP. To face changing macroeconomic situation there are four main types of performance measures: (1) Key Result Indicators (KRIs) that tell how the company has done in a perspective or critical success factor e.g. EBT, Return on Capital, Customer Satisfaction etc., (2) Result Indicators (RIs) tell what the company has done and they are the financial performance measures like Net Profit, Sales etc., (3) Performance Indicators (PIs) are nonfinancial indicators e.g. percentage increase sales top 10% customers, late deliveries etc. (Parmenter, 2010).

7 PROBLEM FORMULATION AND RESEARCH METHODOLOGY

The research was devided into two levels so that it answered both below research questions. The first research problem was to answer whether it is true that the economy of the Czech Republic is still (also after the crisis period) highly dependent on productivity of the automotive industry sector. The second research question is concerned the company performance during the chosen pre, crisis and post crisis period. The author supposed that if the company strategy was successful then the company would reach similar results of chosen indicator without any regard to the progress of chosen indicator of macroeconomic surrounding mainly during crisis period 2007-2009.

7.1 Research questions (RQ)

RQ: Are there any relationships and dependancies between the economy of the Czech Republic represented with the chosen indicator Gross Domestic Product (GDP) and Sales from Industrial Production (SIP) highly and the productivity of the automotive industry sector measured with the RI Sales?

7.2 Research methodology

For answering the research question RQ were used overall indicators of association AutoSAP, mainly the indicators of the whole sales rate (RI Sales) during chosen period 2007 – 2013. There were used both the total indicators and the whole division of the companies in AutoSAP. From the macroeconomic point of view the indicators GDP and SIP were chosen for the same period. For finding causal relationships among statistic marks there was used regressive and correlation analysis. For counting was used Linear regression.

7.3 Restriction of the used research methods

One of the aims for the choice and usage of these methods was to contribute to the recognition of reciprocal relationships between observed marks (Sales) companies, AutoSAP as the whole and external macroeconomic surrounding (the Czech Republic) represented by the GDP and SIP indicators. Particularly the method of regressive and correlative analysis is usable and used for this type of economic research. It is important to mention that this method has its certain restrictions. One of the major restrictions seems to be the choice of suitable type of regress function (in work chosen Linear regression) and also the fact that the analysis of numbers can only limitedly cover the whole substance of researched economic quantities and phenomenon as on the level of micro so in macro surrounding. Restrictions of correlation is the fact that correlation is a statistic term for expressing the extent of some linear relationship and it concerns the term measurement. The cause and consequence concern deterministic dependence. It is important to analyse and explain causal connections.

8 THE RESULTS

For carrying out the research in the crisis and post crisis period 2007 – 2013 while using above described methods there with chosen values of RI Sales (mil. CZK, yearly). In comparison with the development of macro-surrounding in the form of regression and correlation analysis then Gross Domestic Product (GDP CZ) and Sales from Industrial Production (SIP CZ) both in mil. CZK, yearly. Due to the usage of basic macroeconomic data of the Czech Republic at this type of research it was important to pay adequate attention to these indicators.

8.1 The Gross Domestic Products of the Czech Republic (GDP CZ) 1999 - 2013

The indicator GDP CZ 1999 – 2013 shows the progress of this indicator in constant prices (2005) both in absolute values and index illustration were demonstrated (Fig. 1).

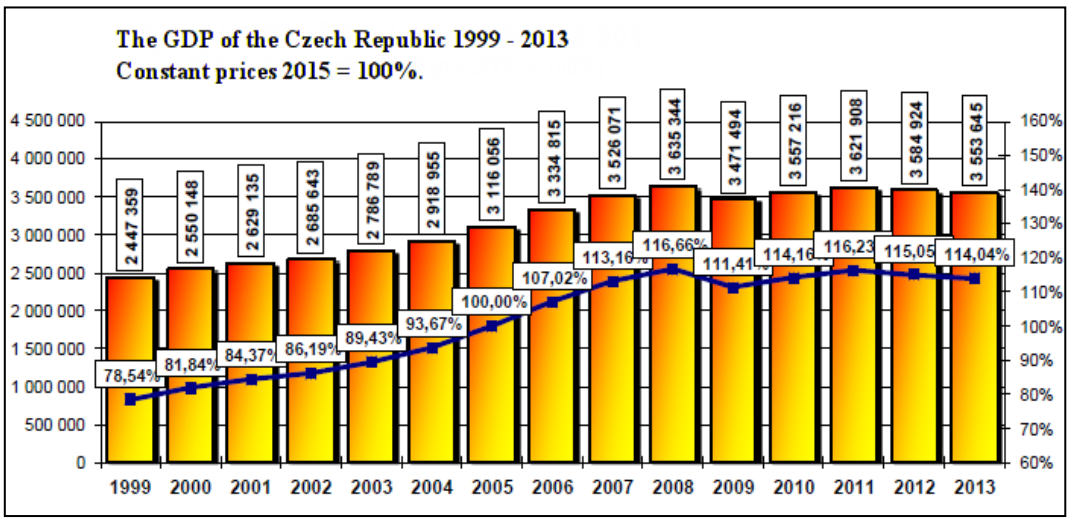

Fig. 1 – The GDP of the Czech Republic 1999 - 2013. Source: AutoSAP.

In Fig. 2 means absolute values of the choose indicator SIP in sum we can see graphically illustrated development of indicators during 1999 – 2010.

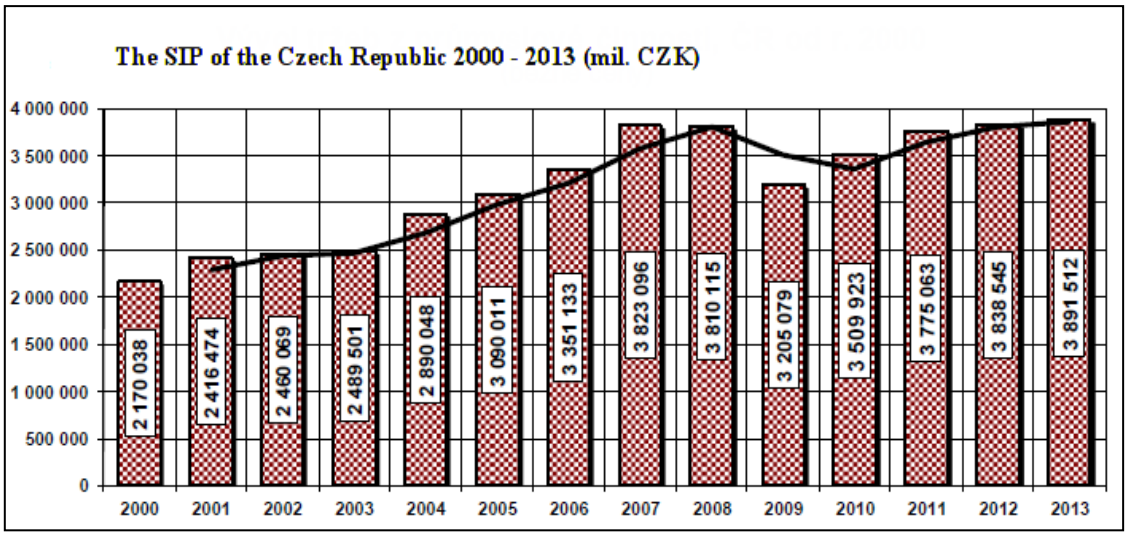

Fig. 2 – The SIP of the Czech Republic 2000 - 2013. Source: AutoSAP.

8.2 The growth of the RI Sales 2007 – 2013 (AutoSAP Finishers, Suppliers, In total)

The Tab. 1 below and also the charts further presents the growth of the indicator RI Sales. Thatś devided into free cathegories: finishers (SAP_f), suppliers (SAP_s) and in total (SAP_{f+s}).

Tab. 1 – The RI Sales AutoSAP Companies 2007 - 2013. Source: AutoSAP.

	2007	2008	2009	2010	2011	2012	2013
SAP_f	269 747	258 969	267 710	312 544	357 055	379 194	384 087
SAP_s	364 146	337 767	240 432	279 390	309 875	330 542	343 515
SAP_{f+s}	663 893	596 736	508 142	591 934	666 930	709 736	727 602

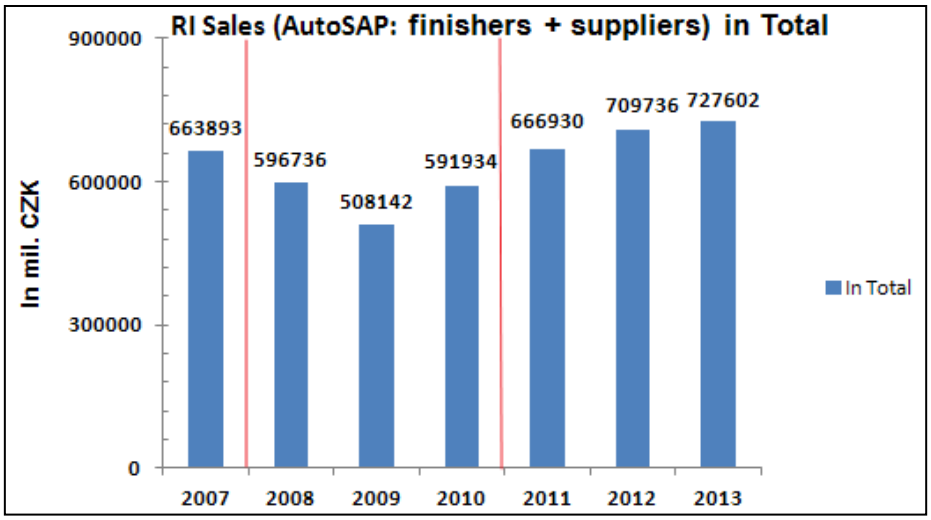

Fig. 3 – The SIP of the Czech Republic 2000 - 2013. Source: AutoSAP.

8.3 Return on Sales (RoS) AutoSAP Finishers and Suppliers 2007 - 2013

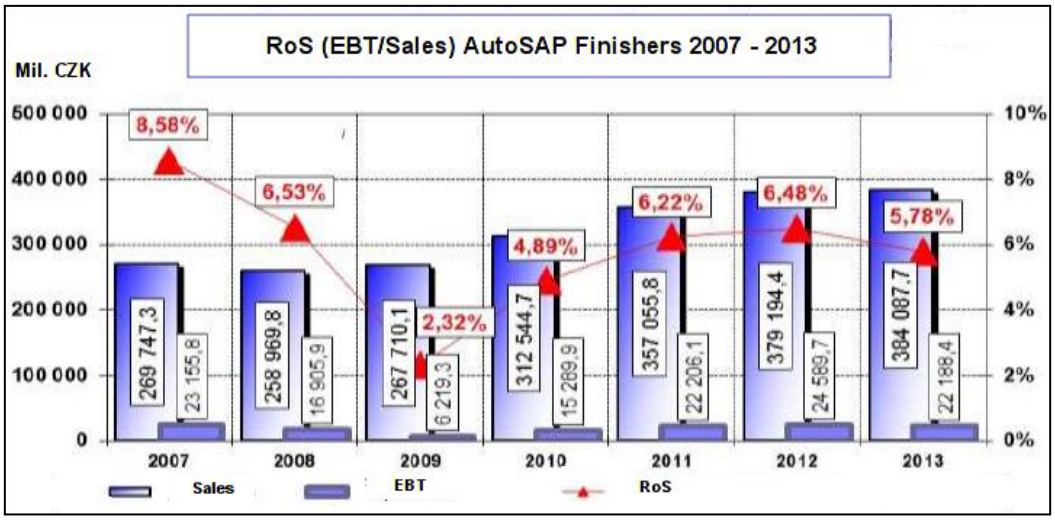

Fig. 4 – The indicator EBT/Sales AutoSAP Finishers. Source: AutoSAP.

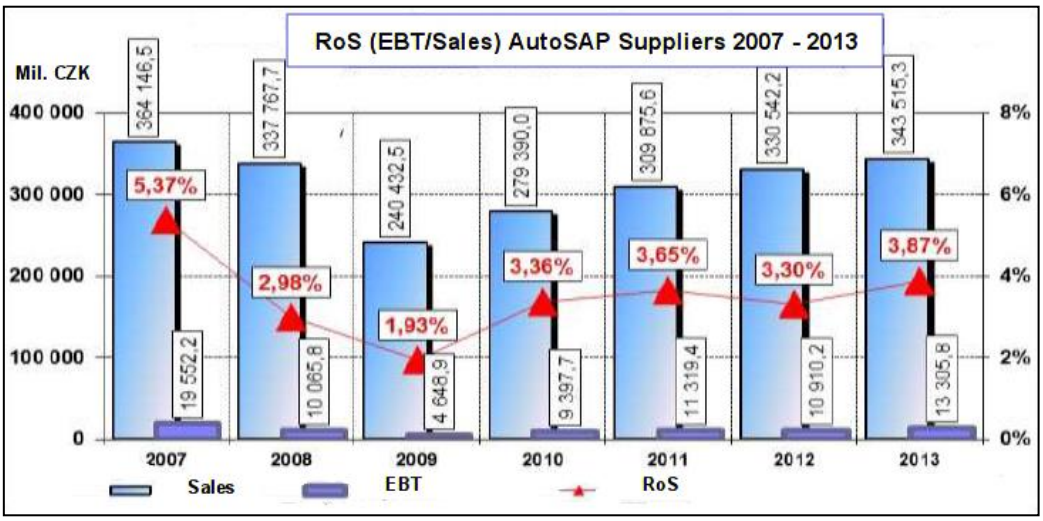

Fig. 5 – The indicator EBT/Sales AutoSAP Suppliers. Source: AutoSAP.

8.4 The relationships between the indicators AutoSAP RI Sales and GDP CZ, SIP CZ

For analysis of AutoSAP RI Sales (SAP_f, SAP_s, SAP_{f+s}) and the Czech Republic GDP and SIP regressive and correlation analysis was used which came out from so called the tab for correlation (Tab 2.) . Year values of the AutoSAP companies (SAP_f, SAP_s, SAP_{f+s}) in the Tab 2. represent the indicators RI Sales in bill. CZK and GDP Czech Republic also in bill. CZK.

Tab. 2 – RI Sales AutoSAP Companies and GDP CZ and SIP CZ. Source: own survey.

Sales AutoSAP Companies and CZK GDP (bill., CZK) 2007 - 2013					
Period	Sales AutoSAP Finishers (SAP_f)	Sales AutoSAP Suppliers (SAP_s)	Sales AutoSAP All (SAP_{s+f})	GDP Czech Republic	SIP Czech Republic
P1 (07)	0,27	0,36	0,63	3,53	3,56
P2 (08)	0,26	0,34	0,60	3,64	3,51
P3 (09)	0,27	0,24	0,51	3,47	3,03
P4 (10)	0,31	0,28	0,59	3,56	3,32
P5 (11)	0,36	0,31	0,67	3,62	3,57
P6 (12)	0,38	0,33	0,71	3,60	3,63
P7 (13)	0,38	0,34	0,73	3,55	3,68
Σ	2,23	2,20	4,43	24,96	24,30
Me	0,36	0,33	0,67	3,60	3,56
$R_{max - min}$	0,13	0,09	0,22	0,11	0,65
Ø	0,32	0,31	0,63	3,57	3,47

In the Table 2 there were calculated also values of: Σ, Me, $R_{max-min}$, Ø. Later to the input data there were additionally calculated values of dispersion s^2, values of determinant margin of error square root of dispersion *s* and also the parameters for the correlation and regression analysis *A* and *B*. It was necessary to find out the estimates of parameters *A* and *B* so that they could later be substituted to the equations of regress lines of all AutoSAP categories. Afterwords correlation coefficients *r* were calculated. The number of periods P was 7. The linear model represents dependencies between values RI Sales AutoSAP (SAP_f, SAP_s, SAP_{f+s}) vs. the CZ GDP 2007 – 13 and also vs. the CZ SIP 2007 – 13.

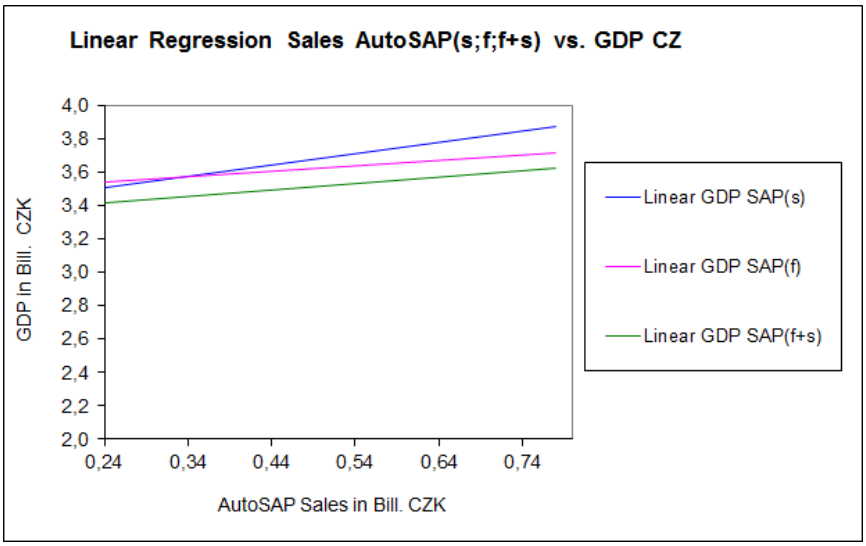

Fig. 6 The Linear Regression AutoSAP Comp. and GDP CZ. Source: own survey.

The test of linear dependence with the help of regressive and correlation analysis represents model relationship (Fig. 6) among researched values which are:

$y_f = 3{,}46 + 0{,}33x \quad (r_f = 0{,}32;\ \text{n} = 7)$

$y_s = 3{,}37 + 0{,}63x \quad (r_s = 0{,}47;\ \text{n} = 7)$

$y_{f+s} = 3{,}33 + 0{,}37x \quad (r_{f+s} = 0{,}49;\ \text{n} = 7)$

where y_f, y_s , y_{f+s} represent the values of GDP in relationship to the indicators RI Sales of the AutoSAP companies Finishers - $SAP_{(f)}$, Suppliers $SAP_{(s)}$ and AutoSAP Finishers and Suppliers altogether $SAP_{(f+s)}$. The results of this research were used as a base for the discussion concerned the RQ. Also the followed one was used (RI Sales vs. SIP CZ).

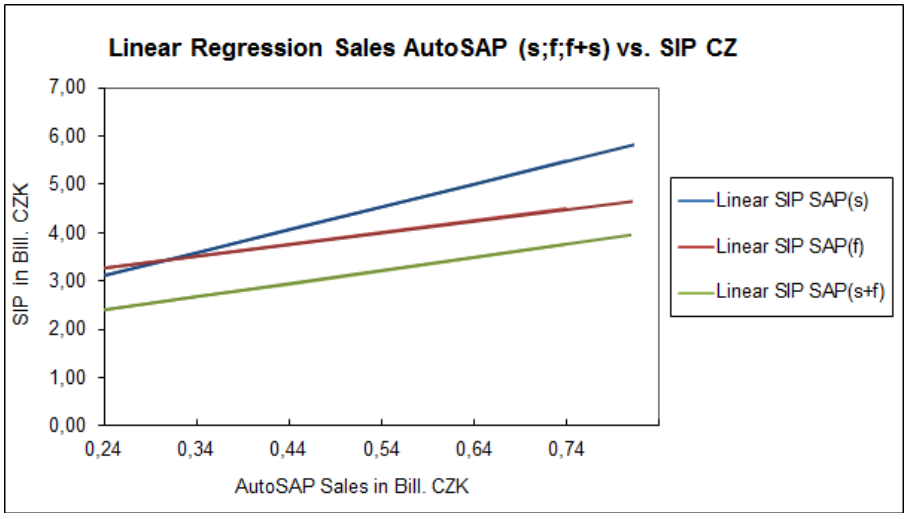

Fig. 7 The Linear Regression AutoSAP Comp. and SIP CZ. Source: own survey.

The test of linear dependence with the help of regressive and correlation analysis represents model relationship (Fig. 7) among researched values which are:

$y_f = 2{,}70 + 2{,}42x \quad (r_f = 0{,}59;\ \text{n} = 7)$

$y_s = 1{,}98 + 4{,}74x$ (r_s = 0,89; n = 7)

$y_{f+s} = 1{,}74 + 2{,}74x$ (r_{f+s} = 0,93; n = 7)

where y_f, y_s , y_{f+s} represent the values of SIP in relationship to the indicators RI Sales of the AutoSAP companies Finishers - $SAP_{(f)}$, Suppliers $SAP_{(s)}$ and AutoSAP Finishers and Suppliers altogether $SAP_{(f+s)}$. The results of this research were used as a base for the discussion concerned the RQ.

9 DISCUSSION

In the part called Research Question (RQ) there was introduced and for their answering was performed chosen types of analyses in other parts of the article. To acquire general knowledge about the state of macroeconomic surrounding respectively productivity of the Czech economy was used graphic illustrated progress of the GDP Czech Republic indicator in the years 1999-2013. Both the values of absolute height of GDP indicator and progress of year-on-year growth indexes were used in the research. According to the Fig. 1 GDP grew from years 200/99 (year 2000 minus year 1999) to 2004/03 gradually (growth rate: - 4% per period). From years 2005/04 growth by c. a. 7% per year came to the years 2008/07. After the year 2008 then comes to the decline in productivity of the Czech economy (impacts of the worldwide economic recession). The fact coming out of the mentioned data is that the economic productivity of the year 2008 level was not reached even in 2011, 2012, 2013 too. After the period of year-on-year slump 2009/08 (-5.5%) came up to slight growth by 3% (2010/09) respectively 1.9% (2011/10) and then it is more or less at the same level during 2012/11, 2013/2012.

For the discussion there are also used data from the macroeconomic indicator Sales from Industrial Production (SIP). The companies associated in AutoSAP and researched in this article representing automotive industry in the Czech Republic from c. a. 85-90% (Sales indicator). In 2011 reached higher sales level than in before crisis period. E.g. in 2011 the companies associated in AutoSAP reached the sales from industrial production 677.521.7 mil CZK which is by 12.7% more than in 2010. Since the sales volume from industrial activity in the Czech Republic grew by 7.2% in total we can claim that involvement of the companies associated in AutoSAP in total sales from industrial activity of the Czech Republic grew up by c. a. 1% compared with the year 2010. Within the whole automotive industry of the Czech Republic it was discovered that its involvement in industrial production (sales from industrial activity) exceeded the value 22.0%. Comparing years 2011/10 (2011 minus 2010) the automotive production of the Czech Republic grew up by 12.53%. Year-on-year production decline of companies AutoSAP has been recorded only three times since 1993. Between years 1994/93 it made 15.38%, between years 2009/08 led to 14.67%. The years 1994 and 2009 were the most difficult ones for the Czech automotive industry. Based on the researches it was found out that the companies involved in AutoSAP activity represent more than 85% of the production of the whole automotive industry in the Czech Republic. This share is in fact stable. The automotive industry then participated on the industrial production growth of the Czech Republic totally 36.90% in 2011 and slightly the same in 2012 and 2013.

For finding the answer to RQ was used further research method which is described in the appropriate part of the article. Regression and correlation analysis was used for this type of research. With its help we looked for possible relationship respectively dependency of GDP Czech Republic on indicator RI Sales of the companies associated in representing automotive industry in the Czech Republic. In Table 2 there are statet above mentioned indicators RI Sales for AutoSAP – Finishers (final products), AutoSAP Suppliers (not final products),

AutoSAP Companies (Finishers + Suppliers) and indicators GDP Czech Republic and SIP Czech Republic during 1999-2011 which is period n = 7. All data in Bill. CZK. By calculation of correlation coefficients there was discovered correlation dependency of macro indicators of economic productivity GDP CZ and SIP CZ on indicators RI Sales of the companies associated in AutoSAP. Closeness of the relationship of indicator GDP CZ and AutoSAP Finishers is expressed by correlation coefficient r_f = 0,32. GDP CZ and AutoSAP Suppliers then r_s = 0,47. GDP CZ and AutoSAP Companies (Finishers + Suppliers) then r_{f+s} = 0,49. These close linear dependencies are graphically illustrated in the Chart 6.

Closeness of the relationship of indicator SIP CZ and AutoSAP Finishers is expressed by correlation coefficient r_f = 0,59. SIP CZ and AutoSAP Suppliers then r_s = 0,89. SIP CZ and AutoSAP Companies (Finishers + Suppliers) then r_{f+s} = 0,93. These close linear dependencies are graphically illustrated in the Chart 7.

From the above mentioned researches and achieved results it is possible to answer the question RQ that the economy of the Czech Republic is quite dependent on the productivity of the automotive industry sector. This statement was supplemented by data acquired by calculations made in the appropriate part of the article.

10 CONCLUSION

This article has introduced relatively simple and effective attitude towards looking for the answers to asked research questions. The first concerned possible dependency of the economy of the Czech Republic, represented by indicators GDP and SIP on productivity of automotive industry sector respectively its highly important part i. e. companies associated in association AutoSAP CZ. The companies form association AutoSAP and all relationships were researched from the point of view of one of the company productivity top indicators – RI Sales. After carried out research and with the usage of chosen methods it is possible to point out the dependency of the Czech economy respectively values GDP and SIP of automotive industry sector . By extending used researched methods it will be possible to use the results in the future research works.

11 ACKNOWLEDGEMENT

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INDUSTRIAL ENGINEERING AND INFORMATION SYSTEMS

CONTINUOUS IMPROVEMENT TRENDS IN BUSINESS SERVICE CENTERS IN THE CZECH REPUBLIC AND SLOVAKIA

Oksana Koval, Felicita Chromjaková

Abstract

The paper examines trends in the global business service centers market as well as regional specifics in the Czech Republic and Slovakia. The research examines global and regional survey results collected in the 2012-2014 years on the topic of the continuous improvement in business service centers. In the paper, it was attempted to identify influence of continuous improvement adaptation on process improvement in shared service centers. The research also aims to provide a comprehensive review on the trends that are prevalent in the area of continuous improvement in the shared services segment.

Keywords: process optimization, Lean Six Sigma, business services, shared services, business service centers, shared service centers, CEE region

1 INTRODUCTION

Implementation of business service centers (BSCs) also known as shared service centers (SSCs) is the effective way to enhance company's competitiveness through cost decrease, process standardization, efficiency and performance improvement. They also provide additional benefits including enhanced risk management, consolidation of operations, raise of organizational flexibility, "and bringing value drivers beyond productivity—such as customer service, business agility and support for new capabilities—to the fore" (Dunkan, 2009). "Organizations including AlliedSignal, Monsanto, Amoco, Baxter International, Tenneco, Johnson & Johnson, General Electric, IBM, Hewlett Packard, American Express, BFI, New York Times, Case Corporation, and Lockheed Martin are turning to BSCs as a viable alternative to outsourcing, reengineering, organizational restructuring, or other related "solutions" to the staff services cost/performance challenge" (Institute of Management Accounts, 2000).

The recent economic downturn provided companies with a clear evidence that there is a need for development of more flexible and resources-wise organizations. The direct consequence of the urge for efficiency and responsiveness to changes in market conjuncture is a growing number of Shared Service Centers worldwide. As per The Hackett Group there are 4900 service centers operating globally, with 52% of them located in Europe. Association of Business Service Leaders in the Czech Republic (ABSL) estimates that 1000 of them are located in CEE with 60% being located in Poland, and employ 270-300 thousand individuals on a 20% yearly growth (Drygala, 2013). CEE region is by far the most popular location for shared service centers established by companies with headquarters located in Western Europe, accounting for 20% of all SSCs globally (Suska, Mänz, & Zitzen, 2014).

The growing number of BSCs worldwide faces a number of challenges including organizational and process complexity that prevent them from turning into profitable and successful business (Hogan, Puleo, & Virginkar, 2012). Unless a company addresses complexity, it will benefit from implementation of BSC only partially – it will still miss an opportunity to capture more value from enhancing service delivery or from expanding scope of the centers. Identification of the ways to decrease process complexity is a top priority for the industry at the moment. Findings from the research conducted by Accenture suggest that

necessity to thoroughly reengineer and standardize processes is essential to sustain the competitive advantage of BSCs over time (Dunkan, 2009). In fact, according to Deloitte research, a typical manufacturing company can cut its costs by 15-20 percent through process complexity reduction by Lean Six Sigma (Hogan et al., 2012).

In this situation application of Lean Six Sigma methodology is a valuable tool to improve performance of the business service centers. In the paper we are planning to assess the state of development of business service industry in Europe with a focus on the Czech Republic and Slovakia.

2 THEORETICAL BACKGROUND OF CONTINUOUS IMPROVEMENT IN BUSINESS SERVICE CENTERS

The complex character of business service centers and the variety of processes that take place in this type of organizations assumes specifics in application of continuous improvement methodologies. In the following chapter it is necessary to highlight theoretical background of the methodology as well as discuss main features of the business service centers.

2.1 Organisation and Development of Business Service Centers

The concept of business service centers has evolved from the idea of shared service centers (SSC) that was introduced in the late 1980s when large US corporations moved their back-office functions into one single location. The shared service initiative then spread to Europe and Asia (Redman, Snape, Wass, & Hamilton, 2007). Recently the concept of global business service centers has emerged. Based on the review of publications by the global leading consulting companies it can be suggested that Business Service Center is the next step in the evolution of shared service centers. Though the initial goals of two types of organisations are the same, business service center concept is more sophisticated due to higher alignment with corporate goals, higher emphasis on service quality and optimization as well as better performance in terms of cost saving (Fersht, Filippone, Aird, & Sappenfield, 2011).

The most necessary characteristic of the SSC is the provision of a commonly used service by a single organizational entity for two or more business units. The providing entity often is called a shared services center SSCs respectively. The ultimate goal of SSC solution is to increase both efficiency and effectiveness of the support services activities. Achieving this goal depends on the ability to leverage existing or potential knowledge, technology, or specialization within the organization (Institute of Management Accounts, 2000). Schulz and Brenner (2010) conducted thorough analysis of the most cited publications in the area of shared services and, based on the received results identified the following important aspects of modern shared service centers:

- consolidates processes within the group in order to reduce redundancies;
- delivers support processes as its core competency;
- has cost cutting as a major driver for implementation;
- has a clear focus on internal customers;
- is aligned with external competitors;
- is a separate organizational unit within the group; and
- is operated like a business.

Shared Service Centers reduce costs by consolidating one or more back-office operations used by multiple divisions of the same company—such as finance, information technology, customer service and human resources—into a shared operation. By creating a stand-alone or

semi-autonomous SSC, companies can eliminate redundant activities and improve efficiency, services and customer satisfaction. Because of the need of every corporate department for finance and human services, these functions offer a common opportunity for a SSC model. Many of the savings come from standardizing technology and processes on a national and regional basis, making it easier to provide support for multiple business units, reduce personnel and improve the speed and quality of service. Despite the success, some SSC pioneers are moving to variations on the model: outsourcing back-office operations to a third-party provider, and consolidating and moving SSCs to countries with lower labor costs.

A shared services approach differs markedly from its cost reduction counterpart. First, SSC starts with customer needs and requirements, with the goal to improve the service level. SSCs balance effort and costs with customer satisfaction and external benchmarks of performance to ensure that cost/quality tradeoffs are made without jeopardizing customers' needs. Finally, a SSC solution relies on a radical redesign of how work is delivered as well as where staff is located and used to ensure that waste and nonessential activities are removed to make way for an increase in the amount of value created for customers.

In the paper we will use term "business service center" assuming that it is the type of organization that evolved from the shared service center and consequently shares many common features with the SSCs. However, we would also consider that "global business services strategies are more compelling than standalone shared services and outsourcing strategies" due to the greater scope, scalability, efficiency and higher focus on process reengineering (Fersht et al., 2011). Moreover, according to the research conducted by the ABSL in 2013, shared services tend to move from single-function shared services to the multifunction global business service centers, and they currently account for over 70% of the SSCs (Bangemann, 2013). It should also be noted that differences between business service centers and shared service centers are still to be better studied, and definitions "shared services", "shared service centers", "shared service organisations" and "business service centers" are often interchangeable in the literature.

Business services centers are not simply another cost reduction scheme that results in reduced service levels. Moreover, BSCs tend to perfrom better in the area of customer satisfaction, impovement of service delivery, service quality and better access to skilled and external resources (Paagman, Tate, Furtmueller, & de Bloom, 2015).

2.2 Continuous improvement in Business Service Centers

Continuous improvement, which is also often referred as Kaizen, assumes continuous search for alternative ways of waste elimination in business processes. An effective Kaizen approach challenges and empowers every employee of the organization to use their innovative ideas to achieve improvements that lead to measurable results (Graban & Swartz, 2012).

Continuous improvement tools including Lean and Six Sigma that were initially developed in industrial practice can be successfully adapted in shared services environment through selection of specific tools and their customization to meet process improvement needs of the organization. According to The Hackett Group's 2007 Finance Shared Services Performance Study, the continuous improvement is considered as a best practice for business service centers (Ford & Webb, June 23, 2008). Moreover, companies that adopt Lean Six Sigma usually report higher process improvement and process optimization results (Pulakanam, 2012)

Recent report prepared by the Shared Services and Outsourcing Network (SSON) features continuous improvement as the top trend in shared service centers. Moreover, 71% of the

respondents representing 450 SSCs worldwide, cited continuous improvement as the main drive for process excellence in the organization (Hodge, 2015).

2.3 Overview of Total Quality Management and Lean Six Sigma methodologies

Lean Six Sigma methodology evolved as a combination of Lean and Six Sigma approaches. Definition of the Lean Six Sigma methodology and its components requires review of historical background of the approach.

Lean methodology starts its' history from the Toyota Production System that was developed based on the thirty years of practice and experiments in Toyota Company. The Lean approach is usually associated with identification and elimination of non-value added activities and inefficiencies such as excessive inventory, wait time, delivery etc.

Six Sigma was developed in Motorola Company in 1980s and largely utilizes statistical theory. Six Sigma is defined as "an organized, parallel-meso structure to reduce variation in organizational processes by using improvement specialists, a structured method, and performance metrics with the aim of achieving strategic objectives" (Schroeder, Linderman, Liedtke, & Choo, 2008).

The methodology assumes that every process factor can be characterized by a statistical distribution curve. The objective of the methodology is to develop processes, transactions and products that prevent and minimize number of defects. Therefore, according to the methodology process is the main tool "to achieve error-free products and services with maximum profitability". (Taghizadegan, 2006)

During the 1980s Six Sigma grew into a distinct manufacturing discipline. It now has a wide range of applications including transportation, administration, manufacturing, healthcare, and other operating processes.

Six Sigma is able to deliver strong performance improvement in terms of quality enhancement and decrease in number of defects, what consequently leads to improved savings. Motorola Company and General Electric are two most-cited examples on this regard, the latter of which reached level of $4 billion of savings per year through implementation of Six Sigma (Taghizadegan, 2006).

However, it was General Electric Company that added lean principles to its program in 2000 year to have a stronger focus on customer needs. The necessity to combine Six Sigma with Lean methods is explained by the fact that Six Sigma focuses on decrease of defects in products while there is still a strong need to improve variance in lead time for processes, and, as a result, deliver better customer experience (George, 2002).

Our literature review suggests that definitions of Lean Six Sigma methodology differ due to the variations in mix of applied tools as well as different authors' opinions on the primary goal of the methodology. In this article we will follow definition by George (2002): "Lean Six Sigma is a methodology that maximizes shareholder value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, process speed, and invested capital". However, in some cases, methodology is still viewed as more focused in decrease of defects and quality variation (Taghizadegan, 2006).

Total Quality Managemt (TQM) is another continuous improvement methodology that is very broadly defined. It started its development in 1960-70s in Japan from the quality circles or quality control circles. The idea behind these quality circles was to create a place for employees to meet regularly with the goal of development of innovative ideas aimed at quality improvement (Sashkin, 1993).

Early TQM frameworks feature three main components for effective quality management – culture, communication and commitment. Later frameworks integrate these components into more complicated four Ps model: planning, performance, process and people. TQM became very popular in the U.S through the works of Deming, Juran and Crosby who offered concept of 14 points. Establishment of the quality award models, such as Deming Prize also inhibited spread of the methodology in the companies (Oakland, 2003).

3 OBJECTIVES AND METHODOLOGY OF CONTINUOUS IMPROVEMENT TRENDS ASSESSMENT

The objective of the proposed research is to assess level of Lean Six Sigma application in business service centers in the Czech Republic and Slovakia. In our research we would like to assess the main expectations from the business service center structures by their clients and whether BSCs meet the expected targets. Based on this information we plan to research the extent to which potential of continuous improvement is utilized at the business service centers at the moment. Therefore, the research questions are as follows:

RQ1: What are the major trends in continuous improvement in Shared Service Centers globally and in Central and Eastern Europe?

RQ2: What is the leading continuous improvement methodology deployed in Shared Service Centers in the Czech Republic and Slovakia? Do these results conform to the global trend?

RQ3: Does implementation of continuous improvement tools has positive impact on the level of process improvement and process standardization?

Our research is based on thorough analysis of publications in the area of Lean Six Sigma in shared service centers and business service centers from the Web of Science and ProQuest databases. Key words for search queries included “lean six sigma”, “shared service centers”, “lean six sigma in shared service centers”. In addition a number of articles and reports from the leading consulting companies as well as governmental agencies that work in the area of shared services were studied. Data for the research was derived from the Shared Services Centers surveys conducted by PwC Company in the Czech Republic and Slovakia as well as global Shared Service Centers survey conducted during 2012-2014 years. The data will be used to compare performance and trends in business service sector of economy in Central and Eastern Europe (CEE) to the global trends.

The Global Shared Services Center Survey represents results for 377 shared service centers worldwide from different industries what makes obtained results reliable and representative (Suska et al., 2014). Shared Services Center Survey in the Czech Republic and Slovakia represents results for 29 SSCs (18 and 11 for the Czech Republic and Slovakia respectively) (Jennings, Pavúková, Appleton, & Smižanská, 2014).

Graphs and calculations presented in the paper were carried out with the base R programming language (version 3.1.1).

4 RESULTS OF ANALYSIS OF CONTINUOUS IMPROVEMENT IMPLEMENTATION IN THE CZECH REPUBLIC AND SLOVAKIA

In this section we will present the results obtained from the analysis of survey data and from literature review for the identified research questions. In the first section we will cover information on general trends in the area of continuous improvement in Business Service Centers worldwide as well as information on regional developments in the Czech Republic and Slovakia. Then we will continue with the deeper assessment of continuous improvement effectiveness for process improvement.

RQ1: What are the major trends in continuous improvement in Shared Service Centers globally and in Central and Eastern Europe?

Research conducted by HfS Company in 2011 suggests that over a half of companies worldwide that adopted business service centers experience an increased need to transform processes to achieve more effective operations and reduce costs, while only around 20% of surveyed companies report effectiveness of their efforts in these areas (Fersht et al., 2011).

Around 49% of companies that establish SSCs prefer to optimize and standardize processes after transfer of activities into the service centers. Consequently, deployment of continuous improvement tools in the centers becomes an important condition for achievement of cost savings and for shorter period of investment amortization (Suska et al., 2014).

According to the results of the surveys, over 85% of business service centers globally are always in the constant search for the ways to optimize processes including those that are not under responsibility of the SSCs (Suska et al., 2014). This trend is also well established in the Czech Republic and Slovakia with majority of companies reporting to constantly search for opportunities to improve and optimize processes (Jennings et al., 2014). Also, shared service centers admit high availability of optimization potential in the areas of process improvement and standardization with a focus on IT infrastructure (Fig. 1).

Globally, shared service centers report high levels of process standardization (over 50% of processes are standardized). However, percentage of standardized processes in Central and Eastern Europe is lower than the global average and in Western Europe (66% vs. 76 and 72% respectively). Significant results were achieved in the area of process improvement: over 90% of BSCs worldwide report to achieve some to major process improvements (Suska et al., 2014). The share of centers that achieved these levels of improvements in the Czech Republic and Slovakia is considerably smaller – only 2/3 of the companies report to achieve significant process improvements (Jennings et al., 2014).

Process optimization efforts are not limited by the shared services centers scope: service centers in CEE region are able to significantly contribute to the optimization of the company as a whole, which also corresponds to the global trend in this area.

Trends and challenges in the shared service segment in Central and Eastern Europe are similar to those that are prevalent worldwide. However, the Czech Republic and Slovakia still rank comparably lower in process improvement and process standardization areas. At the same time, business service centers in the region face unique challenges including the highest employee turnover rates comparing to other regions in the world and stronger process optimization priority (Jennings et al., 2014; Suska et al., 2014).

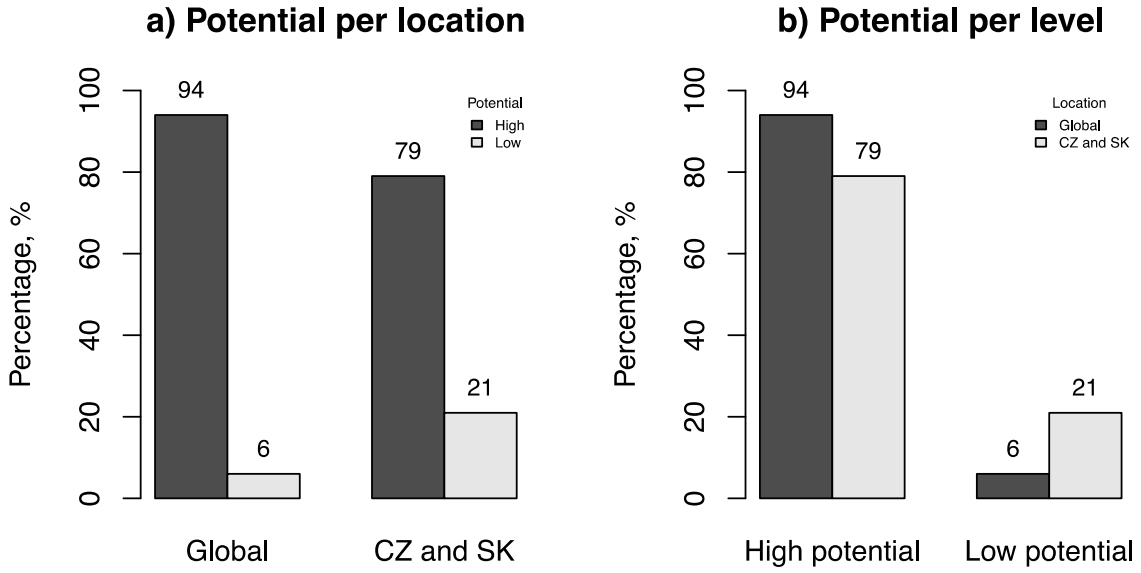

Fig 1. Assessment of process oprimisation potential with regards to the level and location. Source: developed by author based on (Jennings et al., 2014; Suska et al., 2014)

RQ2: What is the leading continuous improvement methodology deployed in Shared Service Centers in Czech Republic and Slovakia region? Do these results conform to the global trend?

In the global data obtained from the surveys, 45% of respondents employ Six Sigma and 38% adopted Total Quality Management (TQM). Majority of respondents prefer to use Lean approaches or company-specific tools (Fig 2): 75% of respondents either implement or continuously use other approaches in their companies (Suska et al., 2014). However, in the Czech Republic and Slovakia, Six Sigma is a leading continuous improvement tool (45% of respondents report to implement it and use continuously). In Slovak market the tendency towards Six Sigma implementation is even higher – 72% of companies claim to be using the methodology or being in the process of its implementation. Slovak business service centers also have wider support for other methodologies and Lean in particular. Therefore, pattern of continuous improvement adoption in the Czech Republic and Slovakia does not follow the global trend (Jennings et al., 2014).

RQ3: Does implementation of continuous improvement tools has positive impact on the level of process improvement and process standardization?

Based on the analysis of the data collected in the surveys, companies that implemented and continuously use Six Sigma and Total Quality Management tend to report higher rates of process standardization and optimization. This is true at both global and regional levels. It can be suggested that share of companies that implemented continuous improvement methodology correlates with the levels of achieved process standardization and optimization in the region (Fig 3). As a consequence, lower percentage of companies that report to implement continuous improvement in the Czech Republic and Slovakia can be tightened to the lower levels of process standardization and optimization. The survey data also identifies that relatively small portion of the surveyed centers implements Six Sigma or TQM and it is necessary to identify possible barriers for the introduction of these more complex but more effective continuous improvement tools in the shared service centers.

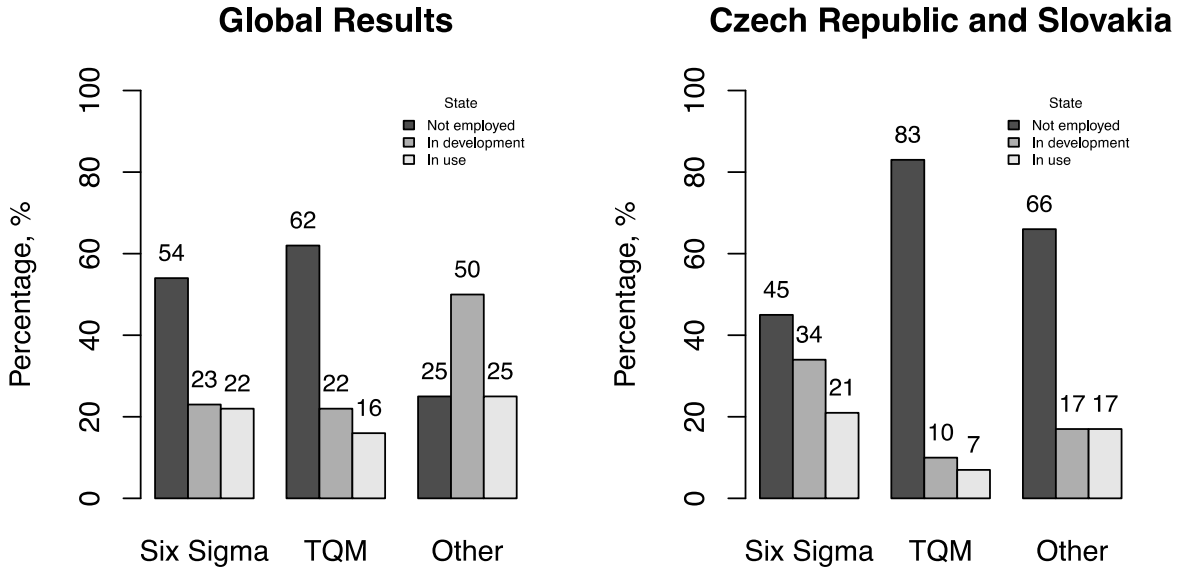

Fig 2. Levels of implementation of continuous improvement tools: global and regional perspective. Source: developed by author based on (Jennings et al., 2014; Suska et al., 2014)

On the global scale, average percentage of respondents that employ continuous improvement tools is around 26% and for the Czech Republic and Slovakia this number is around 18% (Tab 1). These numbers are calculated based on the results of the surveys as a simple average of respondents that either employ or in the stage of implementation of continuous improvement in their companies. Additionally, reported share of significant process improvements in the Czech Republic and Slovakia is lower than the global level: only 76% of the processes are improved in the region compared to 92% global average (Fig 3).

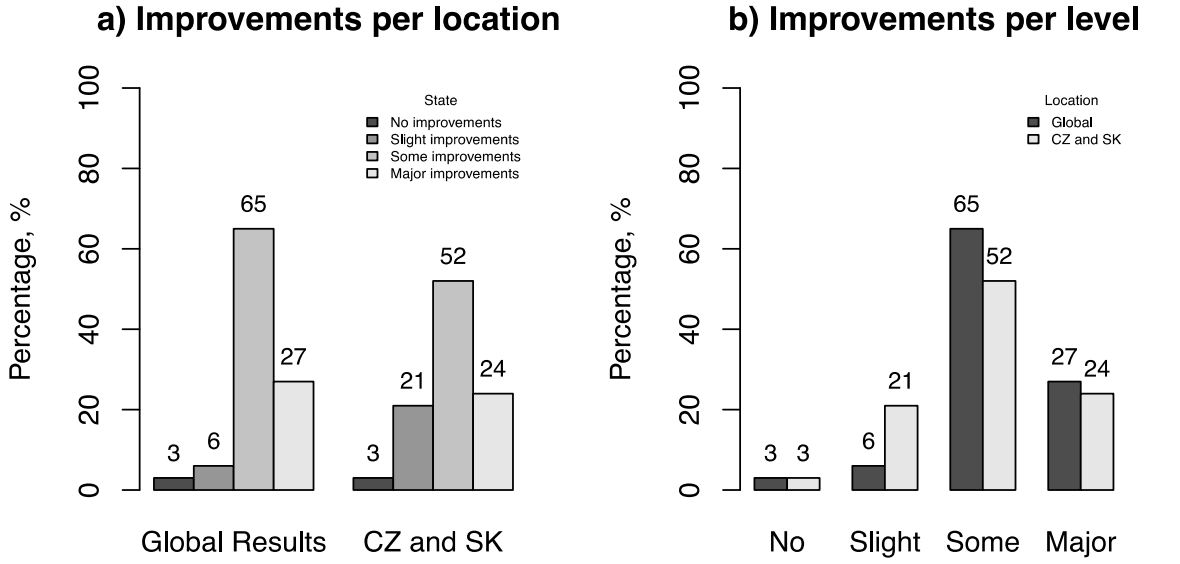

Fig 3. Levels of achieved improvements: global and regional perspective. Source: developed by author based on (Jennings et al., 2014; Suska et al., 2014)

Tab 1. – Average percentage of continuous improvement tools implementation. Source: developed by author based on (Jennings et al., 2014; Suska et al., 2014)

Location	Continuous improvement tools implementation, %			
	Six Sigma	TQM	Other	Average CI
Global Results	22,5	19,0	37,5	26,3
Czech Republic and Slovakia	27,5	8,5	17	17,7

The received results serve as an important ground for further research of the relationships between continuous improvement deployment and the achievements in the area of process optimization and standardization. Though the results may suggest a positive correlation between them, more quantitative research is needed to make well-grounded conclusions in this regard.

5 DISCUSSION OF THE RECEIVED RESULTS

Continuous improvement has been on the rise in the shared service centers and is likely to become of even higher importance in the upcoming years. Though the results of the analysis suggest a positive impact of the continuous improvement implementation on the process optimization and standardization, more qualitative and quantitative evidence is still needed. In addition, it is necessary to address the issue of implementation of hybrid Lean Six Sigma methodology that is considered highly effective for process improvement; therefore, assessment of Lean Six Sigma implementation along with Lean, Six Sigma, TQM and other tools is necessary.

Another point that should be addressed in further research is assessment of barriers and challenges for introduction of continuous improvement tools in business service centers. It is of especial importance for the Czech Republic and Slovakia where levels of continuous improvement adoption are comparably low and customer expectations on process quality and process improvement are higher.

6 CONCLUSION

Business service centers represent global trends towards improved performance through consolidation of the business processes. While primary reason for establishment of BSCs is usually effective cost reduction, with the development of the shared services industry customer satisfaction and process improvement become the main focuses of the companies.

Process improvement is now a global trend in shared service centers and it is of even higher importance in the Czech Republic and Slovakia where achievements of continuous improvement by date were slightly lower than the global average. With the growing competition in the segment, further spread of continuous improvement will be an important factor for sustaining competitiveness of the region on the global shared service market.

Increased expectations from business service centers in terms of quality of the service, savings, process stability and innovation development drives the trend for adoption of continuous improvement worldwide. While results delivered by the continuous improvement in the centers significantly contributed to the better performance and strategic goals fulfillment, there is still a need for introduction of effective approaches for continuous improvement adaptation in the shared service centers and sustainability of the achieved results over time.

Acknowledgement

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HOW TO MEASURE PROCESS COSTS – AN INTEGRATION OF BUSINESS PROCESS MANAGEMENT AND COST MANAGEMENT

Martin Hrabal

Abstract

Many organizations are currently implementing some form of process management practices whether it is process modeling, simulation, Lean, Six Sigma and others. Altogether, these practices are subject to Business Process Management discipline which provides methodology for management, measurement and improvement of key business processes. On the other hand, managerial accounting methods often remain the same despite changes in cost structures. As a result of these changes, several process-oriented managerial accounting methods occurred. The aim of this paper is to provide an overview of these methods and to suggest their incorporation into other process management initiatives through a process model.

Keywords: Business Process Management, Managerial Accounting, Process owner, Process Costs, Activity-Based Costing, Throughput Accounting, Lean Accounting

1 INTRODUCTION

Business Process Management (BPM) was one of the main paradigms of twentieth century management theory. BPM is a reaction especially to external factors. These are not only market factors but also technological, social and environmental ones. What they have in common is a change, respectively the trend of continuous acceleration of changes, the shortening of product life cycles or mass customization.

BPM is a paradigm reflecting process and not a functional perspective of an organization. The base is the knowledge that value is added to products through processes cutting across several functional departments of an organization. An analysis of these processes includes also measurement of their performance and costs.

Cost structures changed radically in the twentieth century as well. Development of technologies resulted in extensive automation of production processes, vast utilization of information and communication systems and knowledge workers' employment. As a result of the outlined progress, overhead costs increased at the expense of direct costs. Traditional cost management methods no longer provide adequate information for decision making. Thus, this paper deals with process-oriented cost management methods.

To compare individual process-oriented cost management methods, a literature review was conducted, especially in the field of Activity Based Costing and its variants, Throughput Accounting, Lean Accounting and Resource Consumption Accounting. Then, a suggestion for integration of BPM and cost management methods is discussed. The goal is to synthetize practices of process modeling, performance measurement and cost accounting.

2 BUSINESS PROCESS MANAGEMENT

The key of successful business is a value creation through activities. According to Porter (2004), every organization is a collection of activities forming a value chain. Basically, primary activities are design, production and delivery of a product including support activities. BPM is then a discipline focused on processes as a means of achieving

organization´s objectives through their improvement, performance management and governance (Jeston and Nelis, 2014). Processes determine how things are done. Therefore BPM is an art and a science of how to do things and how to do them better (Lehmann, 2012). Many modern management theories emphasize processes and their management (Smith and Fingar, 2007). So, BPM contains disciplines such as Six Sigma, Lean, Reengineering or Activity Based Costing, while their potentials are enhanced if they are managed as processes of change.

For every process some manager must be responsible, a so-called process owner. The process owner is responsible for reengineering and the continuous improvement of a process (Hammer and Champy, 2003). Because processes, especially core processes, are multifunctional, process owners should also have multifunctional responsibility (Robson and Ullah, 1996). Thus, a matrix organization structure may arise where functional managers have responsibility for areas such as sales, production, finance, or human resources, while process owners are responsible for end-to-end processes cutting across these functional departments (Nesheim, 2011).

Every process performance must be measured so its contribution to corporate goals can be assessed. Performance measurement is a quantification of effectiveness and efficiency of a particular activity or a process. Effectiveness indicates the scope in which customer´s requirements are met. It is linked to output of a process. Efficiency relates to scarce resource utilization. Performance measures are indicators of the effectiveness and efficiency. (Neely et al., 1996)

There are many performance measurement systems and methods. The most famous and most often discussed is Balanced Scorecard (Neely, 2005). But such systems are beyond the scope of this paper, which is instead focused on one of the process efficiency parameters – the cost. Supposing that process owners are measuring performance of processes, they should also measure costs of a process.

3 PROCESS-ORIENTED COST MANAGEMENT METHODS

The main role of managerial accounting is to provide relevant information for decision making. Traditional methods that allocated overhead costs through allocation bases are no longer sufficient. These bases are often arbitrarily chosen and averaged real product costs. In reaction to trends, new methods were developed such as Activity Based Costing, Throughput Accounting or Lean Accounting and Resource Consumption Accounting. Processes must be evaluated not only from time and quality perspectives but also from a cost perspective. Besides Value Stream Mapping and statistical process control, it is proper to use, e.g., Activity Based Costing. (Adamczak et al., 2013)

3.1 Activity-Based Costing

Activity Based Costing (ABC) emerged in the 1988 with an article by Cooper and Kaplan. In practice, companies such as John Deer, Hewlett Packard, Siemens or Ericsson tried some transaction-based costing in the late 1980s (Hope and Player, 2012). The main premise is that activities consume scarce resources (Kaličanin a Knežević, 2013). The goal is therefore to find out overall process costs including costs of non-action. So, ABC integrates previously separated methods such as value analysis, process analysis, quality management and costing into a single analysis (Drucker, 1995).

According to Kaplan and Cooper (1998), traditional costing methods are appropriate when indirect costs are small, the environment is stable, and products and customers are mature. But in the case of large overheads caused by production of various new products and development

of new processes it can lead to underestimation of costs used for special products and vice versa. Therefore, ABC is more suitable for cost evaluation and management.

The procedure of ABC is as follows: at first activities performed by indirect resources must be identified. Then, how much the organization is spending on these activities is evaluated. The third step is to identify products, services and eventually customers created by activities. The final step is selecting activity drivers linking activity costs with products, services and customers. (Kaplan and Cooper, 1998) Concisely, Hicks (1999) describes the procedure as assigning costs to activities, assigning costs among activities and assigning activity costs to products.

3.2 Implementation of Activity-Based Costing

Although the premise of ABC is quite simple, the implementation of ABC is difficult and risky because it is not a mere calculation method but a change in thinking and the adoption of a process orientation. ABC is not just a formal accounting system. It is also a strategic tool (Cooper and Kaplan, 1990; Wegmann, 2009).

Managers can use information from the ABC system in decision-making. Generally, such decisions can be grouped into two areas – operational and strategic Activity Based Management (ABM), i.e., management using information from ABC. The former encompasses increasing efficiency and asset utilization and decreasing costs. The latter focus on increasing profitability through product design, product mix or customer and supplier relationships. (Kaplan and Cooper, 1998)

Now it is clear how ABC/ABM is connected to BPM because the former is a specific discipline of process cost management and the latter provides general theory for process-oriented methods. Nevertheless, the process of ABC can become complex, which has led to several recent variants.

3.3 Variants of Activity-Based Costing

During the development of ABC appeared several variants, reacting especially to critiques such as high costs, high numbers of unsuccessful implementations or high complexity. These variants differ in dimensions such as space, time and level of detail. Spatial dimension enables extension from product costs to customer costs or market costs (Customer-driven ABC), suppliers (Benchmarking-driven ABC, Interorganizational-driven ABC) or environment (Environment-driven ABC). Time dimension expands calculations on future. It includes Activity Based Budgeting, Target ABC or Life-cycle ABC. By these, calculations are widened from production phases to research and development or product liquidation. The level of detail determines if costs are allocated to an entire process, sub-process or an activity. Proper variants are Time-driven ABC or methods of Lean Accounting or Resource Consumption Accounting. (Wegmann, 2009)

Time-driven ABC (TDABC) is useful in several ways. It operates only with one cost driver – time – and aggregates more resource types into one whole. The procedure is as follows: first, the time capacity of resources is determined approximately at 80% of overall capacity. Then, overall costs are divided by resource capacity, and costs per minute are calculated. It is important to analyze activities and define durations of activities. These durations are multiplied by costs per minute and finally multiplied by number of activity instances. TDABC simplifies and cheapens implementation and the maintenance of the ABC system, helps with capacity estimations and is easy to actualize. However, the price for simplification is possible inaccuracies caused by the use of capacity and time estimations. TDABC is relevant in case of standardized processes, supply chains, call centers or healthcare but not, e.g., in research and

development. (Szychta, 2010) TDABC can be enriched with the mentioned methods and, e.g., level of detail. Operations of processes can be used instead of activities.

According to Stratton (2009), ABC is still relevant despite criticism. He points out that the most-often used methods are still traditional calculations. The implementation of ABC is therefore beneficial for decision making about product mix, profitability analysis, increasing activity performance and planning including budgeting.

3.4 Throughput Accounting

Throughput Accounting (TA) is a tool based on the Theory of Constraints (TOC) developed by Eliyahu Goldratt (Goldratt and Cox, 2004). This theory is famous because it does not focus on the maximization of utilization of every single workplace but only so-called constraints or bottlenecks. Constraint is a place in a system where capacity is the same or lower than requirements on it. Thus, according to the theory of constraints, managers should optimize the whole system by improving the constraint utilization and the rest of the system balance in its tact. The constraint then determines a throughput, i.e., pace where a system generates revenues.

TA is a type of managerial accounting which encourages decision making about product mix, investments or order acquisition according to their influence on so-called constraints. A variant which seems to be most profitable according to traditional costing methods can be rejected by TA because the constraint does not generate sufficient throughput (Cox and Schleier, 2010). Another fact distinguishing TA is that it calculates only variable costs. Thus, it is possible to hear about super-variable costing (Aghili, 2011). However, differently from variable costing, which prioritizes products according to their contribution margin, TA prefers products generating highest throughput in a constraint (Utku et al., 2011).

Another argument of TA proponents against other methods is that product unit costs do not exist at all. Although prices are unitary, they have nothing in common with costs. Prices are set by the market, and costs are determined by value-adding processes. So, TA compares total revenues with total costs of processes, taking into account capacities so throughput in a constraint can be maximized. (Ross, 2011)

Throughput is defined as revenues minus sum of variable costs. Another metric is investment (or inventory), i.e., all assets bought for sale. The last metric is operating expense, meaning other costs changing assets into throughput. These metrics are the base for the calculation of indicators (Ross, 2011):

- Net profit = throughput – operating expense
- Productivity = throughput / operating expense
- Return on investment = net profit / investment
- Investment turn = throughput / investment

Only variants with positive results in these indicators are accepted (Ibid.). TA is more customer-focused than the traditional cost accounting methods and even ABC. Cost accounting and ABC prioritize a higher utilization of resources, which causes an increase in inventory above customer demands. In a process-oriented organization focused on a customer, it is necessary to be flexible and lean. TA focuses on system optimization through utilization of a constraint, not utilization of all parts within the system. (Aghili, 2011)

Nevertheless, according to Drury (2004), TA adopts short-term decision thinking because it supposes all operating expenses are fixed. But over a longer time period, costs become variable and manageable. Therefore, as Kaplan and Cooper (1998) point out, ABC and TOC

are not in conflict but complement each other. TA provides short-term optimization, and ABC delivers dynamic optimization of the resource supply of a process.

3.5 Lean Accounting and Resource Consumption Accounting

Lean Accounting is not just an application of Lean Manufacturing principles, respectively Lean Administration, into the area of finance processes. Moreover, it is a calculation method. Lean Accounting is a reaction to traditional costing methods which are complex, and with many non-value adding activities, their reports support large production batches, they are unable to adequately evaluate Lean initiatives, and their reports are hard to understand and calculate with traditional product costs. The vision of Lean Accounting is therefore to provide accurate information just-in-time, which will promote improvement initiatives, value creation, waste elimination and standards compliance (e.g., GAAP). An integral part is thus the calculation of process costs and target costs. (Maskell and Baggaley, 2006)

Thus, Lean Accounting organizes costs not by accounting functions but by business process which are reorganized by product families. Profitability is also monitored at the level of product families where costs can be better assigned. Instead of allocating overheads to products, Lean Accounting focus on cost reduction via waste elimination and streamlining processes. (Cunningham and Fiume, 2003)

Lean Accounting proponents criticize traditional costing methods and even ABC. ABC just refines calculations which are based on wrong assumptions. In eyes of these critics, ABC leads to reducing costs by increasing batches. ABC is also too complex for the majority of employees in a day-to-day workplace, and it is expensive to implement and maintain. (Huntzinger, 2007)

Resource Consumption Accounting is another method from the process-oriented family of methods. The basic premise is that costs are caused by resource consumption. That is why flows of resources consumption are modelled and costs are allocated according to their attributability. Therefore, not all the costs are allocated but only those with casual relations. It is not therefore absorption calculation. (White, 2009)

4 COST MANAGEMENT IN A PROCESS-ORIENTED ORGANIZATION

How can we integrate modern managerial accounting methods with BPM? Current process models not only describe running of enterprise processes but they are also interconnected with systems for data gathering. It is now possible to measure process performance up to the level of specific instance. It is a standard to measure cycle times and other technical indicators but it is also necessary to incorporate accounting data into evaluation of a process.

Sonnenberg and Brocke (2013) suggest process-oriented accounting model using economic events and activities which are reflecting resource consumption. The model then monitors durations of economic activities (resource consumption) and registers economic events (changes in resource quantity without attribute of duration). Transactions are not recorded only in double-entry bookkeeping but also in process oriented accounting system. It is crucial to include principle of reciprocity into the model, i.e. resources are consumed to satisfy customers via processes but they must also secure throughput for other stakeholders. E.g. purchase process includes events and activities of material receipt and payment for these resources.

Another standard requirement upon process management is a focus on external customers. Part of this philosophy is acceptance of prices given by market. A company therefore accepts a price and designs a product and process so it respects the price while generating profit. Just

to measure costs is not enough. Managers must manage costs proactively. This method of retrograde calculation is called Target Costing. (Moisello, 2012) Through Target Costing, managers focus on reducing future costs in design and development phase and not in production phase via high volumes batches (Hope and Player, 2012).

A success of Japanese companies, especially Toyota, made this method famous. Japanese systems of cost management but also other areas focus not only on production but also the other parts of product lifecycle. Particularly, they focus on phase of development when costs can be managed most effectively. (Huntzinger, 2007)

While managing costs in these phases a new question arises. The question is how much can a product cost. If a company want to reduce costs and keep quality standards as well it is necessary to standardize processes and modularize assembly. Park and Simpson (2008) argue that creation of so called product families based on resources redesign to make exclusive resources more effective improves makes production more efficient. Reasons are as follows: decrease of unit complexity, decrease of costs and diversity of inventory and production, adaption of products to demand, simpler switch between product generations and savings from conformity and standardization.

5 DISCUSSION

BPM offers several disciplines for performance measurement and improvement of processes. It always depends on a specific company strategy to determine suitable method. Consistent use of BPM can ensure synergy of various disciplines whether it is Lean, Six Sigma or ABC. A basis is always a process model of organization´s value chain. To incorporate economic point of view upon processes, i.e. their resources consumption and cost calculations it is at first necessary to define level of detail. The figure 1 illustrates hierarchy of a process model: process groups, processes, subprocesses and activities.

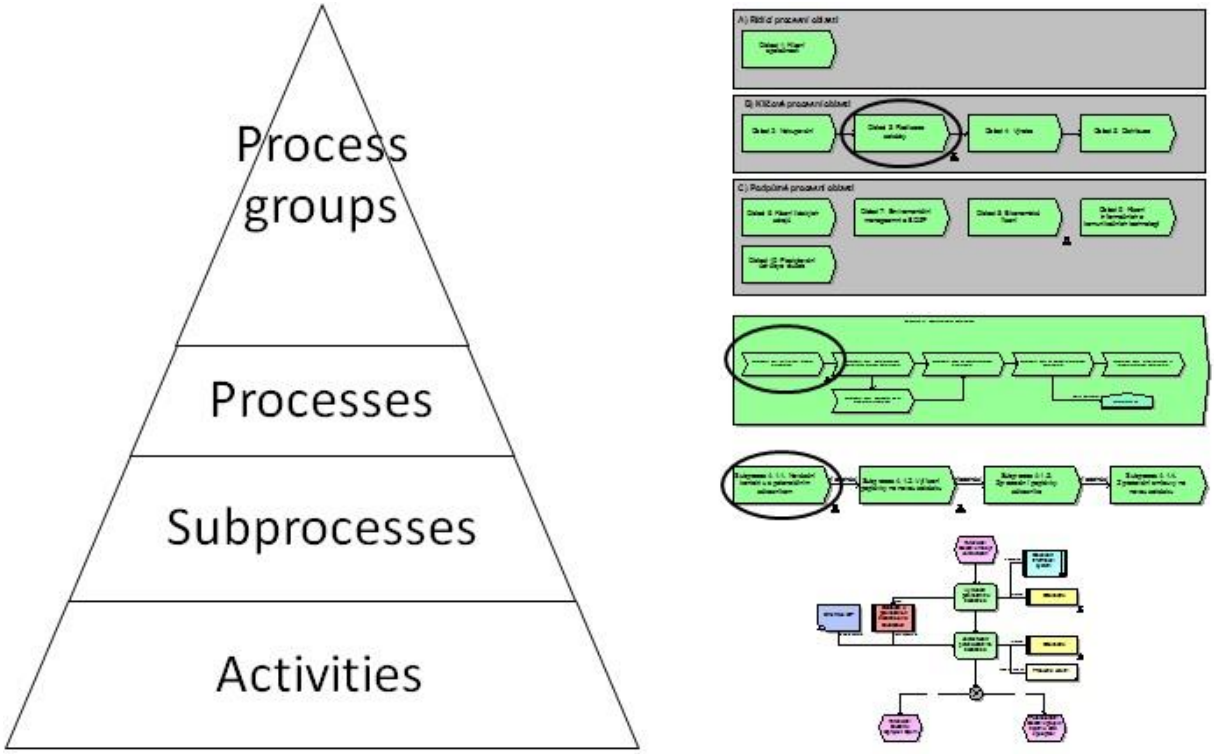

Fig. 22 - Process model hierarchy (own processing)

If a company uses e.g. some form of ABC it must decide which level of hierarchy (process, subprocess, activity) will be identified with the term activity. In language of BPM, activity is on the lowest level which would mean vast ABC model because even small companies perform tens or hundreds of activities. In case of larger organizations or in case of strategic decision making is therefore suitable to handle activity on a level of subprocesses or processes. It means to utilize some of variants such as Lean Accounting, Resource Consumption Accounting recommended by White (2009) or Wegmann (2009).

Tab. 15 - Recommended calculation methods according to the level of detail (own processing according to Wegmann, 2009)

Level of detail	Accounting method
Task resources	Resource Consumption Accounting, Time-driven ABC
Activity resources	ABC
Subprocess resources	ABC, Simplified Time-driven ABC
Process resources	Process Costing, Lean Accounting

Data for calculation can be gathered through duration measurement (durations of activities and processes) and recording economic events (changes of resources status). Process models must therefore contain links to these transactions which circumscribe activities and processes to be measured. Appropriate notation for such matter is Event-driven Process Chain (EPC) as illustrates figure 2. Nevertheless, Business Process Model and Notation (BPMN) can also define events and thus integrate BPM and accounting.

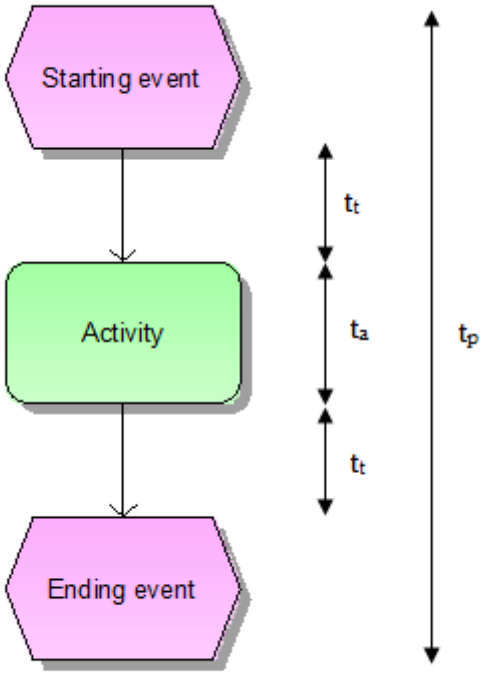

Fig. 23 - EPC diagram with times of activities (own processing)

Let´s take hypothetical process of material receipt. Starting event is "material delivered". Activities of goods and document checking, material reception to stock and storage of material ended by event representing changes in economic resources, i.e. "material was received" and "liabilities for material were paid". It is possible to measure total time of a process t_p (time between starting and ending event), time of particular activities t_a, or transports and waiting times between activities t_t. The scope and detail is always determined by strategy.

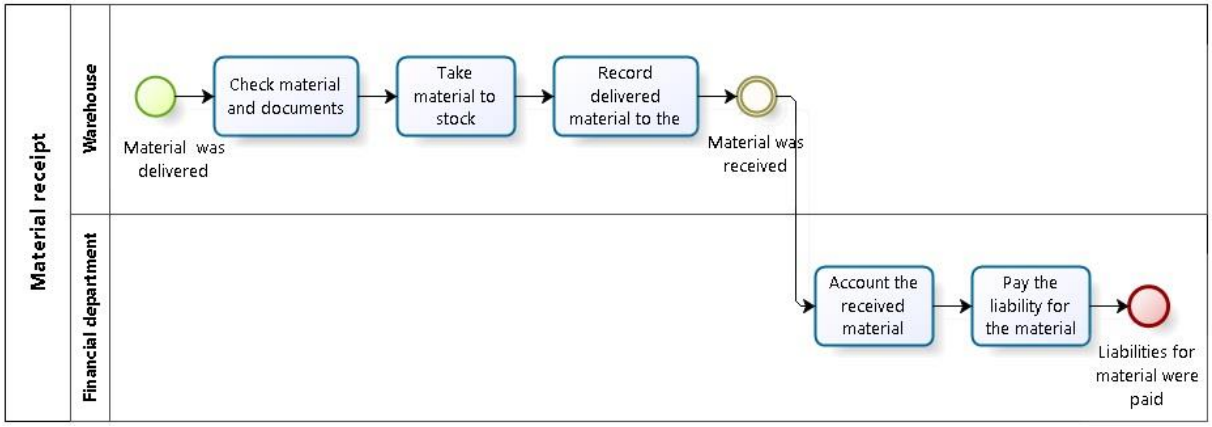

Fig. 24 - BPMN diagram with economic events and activities (own processing)

Process model can be henceforth utilized for waste identification and improvement initiatives using Lean or Six Sigma. One of them can also be streamlining finance processes and thus providing reports easy to understand. Another principle should be calculation of target costs and analysis of constraints. Although ABC allocates all costs, arguments of TA proponents can be diminished by choose of cost objects so the costs are attributable. Thus, process costs can managers allocate on products and overheads unattributable to process allocate to customer or market segment.

6 CONCLUSION

The process management paradigm, developments in technology, society, markets and environment lead to vast changes in organizations and their cost structures. As a result, several innovative cost management methods occurred, e.g. ABC, TA, Lean Accounting or RCA. Their common denominator is a process focus but they have also differences between each other. ABC allocates costs to products or customers through activities and despite criticism it is developing into several applications. TA is more short-term oriented and does not allocate costs to product but only compares total revenues with total costs of a process, eventually calculates throughput per constraint to choose best option from several alternatives. Lean Accounting and RCA are alternatives focusing on waste, support of lean initiatives and non-absorption calculation to provide transparent information to managers i.e. process owners.

Integration of BPM with process oriented accounting methods enables synergy in performance measurement. Using both natural and monetary units is important for process evaluation and decision making. Adequate description of economic activities and events together with level definition for cost allocation is a base for conceptual process model which enables process owners and analysts to acquire information about real performance of processes. Managers have therefore a tool providing materials for strategic and operative decision making about economic resources utilization which reflects change in external environment and internal development.

Main principles which managerial accounting should respect are especially target costing, integration of process and accounting model, analysis of constraints, waste elimination and value creation for both external and internal customers. There is no strict rule or roadmap to this goal. Every organization should acquire its own system of process performance and cost measurement. To achieve this goal, it may utilize various methods introduced it this paper.

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ANALYSIS OF SIX SIGMA USING AND ITS METHODOLOGY DMAIC

Miroslava Lovichová

Abstract

This contribution focuses on the issue connected with the one of the methods used in innovative process and that is a method, called Six Sigma. First chapters in this contribution theoretically describe and explain what six sigma means, how it is used and what practical and theoretical attitudes are to it. Another chapters contain an introduction to the project methodology of Six Sigma called DMAIC (define, measure, analyse, improve, and control). It helps to achieve high performing business results. The DMAIC approach is proven to help organizations achieve on time delivery of the right quality and quantity to satisfy customers. Practical part of this contribution brings an example of a case study where the DMAIC approach is used according to the DPMO (defects per million opportunities) and COPQ (cost of poor quality). The example of a case study shows the way how to calculate Six Sigma result with the help of a formula and other possibilities how to calculate it. Last part represents a short comparison in using of the Six Sigma method in small, medium and large scaled enterprises. The comparison is based on the characteristics and requirements of the enterprise type.

Keywords: Six Sigma, DMAIC, enterprise, calculation

1 SIX SIGMA – INTRODUCTION

Six Sigma is a statistical measurement of only 3.4 defects per million. Six-Sigma is a management philosophy focused on eliminating mistakes, waste and rework. It establishes a measurable status to achieve and embodies a strategic problem-solving method to increase customer. Satisfaction and dramatically reduce cost and increase profits. Six-Sigma gives discipline, structure, and a foundation for solid decision making based on simple statistics. The real power of Six Sigma is simple because it combines people power with process power. The Six Sigma is a financial improvement strategy for an organization and now a day it is being used in many industries. Basically it is a quality improving process of final product by reducing the defects; minimize the variation and improve capability in the manufacturing process. The objective of Six Sigma is to increase the profit margin, improve financial condition through minimizing the defects rate of product. It increases the customer satisfaction, retention and produces the best class product from the best process performance.

If an organization is focused on customer satisfaction, then Six Sigma will offer a method and some tools for the identification and improvement of both internal and external process problems to better meet customer needs by identifying the variations in organization's processes that might influence the customer's point of view, negatively (Arnheinter and Maleyeff, 2005).

1.1 History of Six Sigma Model

Since the 1920's the word 'sigma' has been used by mathematicians and engineers as a symbol for a unit of measurement in product quality variation. In the mid-1980's engineers in Motorola in the USA used 'Six Sigma' an informal name for an in-house initiative for reducing defects in production processes, because it represented a suitably high level of

quality. (Note here it's Sigma with a big 'S' because in this context Six Sigma is a 'branded' name for Motorola's initiative.)

In the late-1980's following the success of the above initiative, Motorola extended the Six Sigma methods to its critical business processes, and significantly Six Sigma became a formalised in-house 'branded' name for a performance improvement methodology, i.e., beyond purely 'defect reduction', in Motorola Inc.

In 1991 Motorola certified its first 'Black Belt' Six Sigma experts, which indicates the beginnings of the formalization of the accredited training of Six Sigma methods.

In 1991 also, Allied Signal, (a large avionics company which merged with Honeywell in 1999), adopted the Six Sigma methods, and claimed significant improvements and cost savings within six months. It seems that Allied Signal's new CEO Lawrence Bossidy learned of Motorola's work with Six Sigma and so approached Motorola's CEO Bob Galvin to learn how it could be used in Allied Signal.

In 1995, General Electric's CEO Jack Welch (Welch knew Bossidy since Bossidy once worked for Welch at GE, and Welch was impressed by Bossidy's achievements using Six Sigma) decided to implement Six Sigma in GE, and by 1998 GE claimed that Six Sigma had generated over three-quarters of a billion dollars of cost savings.

By the mid-1990's Six Sigma had developed into a transferable 'branded' corporate management initiative and methodology, notably in General Electric and other large manufacturing corporations, but also in organizations outside the manufacturing sector.

By the year 2000, Six Sigma was effectively established as an industry in its own right, involving the training, consultancy and implementation of Six Sigma methodology in all sorts of organizations around the world. That is to say, in a little over ten years, Six Sigma quickly became not only a hugely popular methodology used by many corporations for quality and process improvement, Six Sigma also became the subject of many and various training and consultancy products and services around which developed very many Six Sigma support organizations (Bendell, 2006).

1.2 Attitudes to Six Sigma

M. Sokovic undertook projects to identify areas in the process where extra expenses exist, identify the biggest impact on production expenses, introduce appropriate measurement system, improve process and reduce expenses on production times, and implement improvements (Sokovic and Pavletic, 2006). Gustav Nyren represented the variables influencing the chosen characteristics variable and then optimized the process in a robust and repeatable way (Nyrén, 2007). John Racine focuses on what six-sigma is today and what its roots are both in Japan and in the west and what six-sigma offers the world today (Racine, 2005). Zenon Chaczko et al. introduced a process for the module level integration of computer based systems which is based on the Six-sigma Process Improvement Model, where the goal of the process is to improve the overall quality of the system under development (Chaczko and Rahali, 2007). Philip Stephen highlighted a distinct methodology for integrating lean manufacturing and six-sigma philosophies in manufacturing facilities (Stephen, 2004). He focuses that helps the user identify worthy projects and move them steadily to successful completion, the user identify poorly conceived projects before devoting any time or resources to them, the user identify stalled projects and provide them with the attention they need to move forward again, the user decide when it’s time to pull the plug on dead projects before they consume too much time and resources and provide a record for the user that helps improve the project selection, management and results tracking process.

1.3 Six Sigma and its methodology

The fundamental objective of Six Sigma methodology is the implementation of a measurement based strategy that focuses on process improvement and variation reduction through the application of Six Sigma tools. As a way of running a business, Six Sigma is a highly disciplined process which helps companies and individuals develop and deliver near perfect products and services. It is an enterprise-wide strategy that effectively develops a capability and a desire within individuals to improve decision-making, solve business problems and improve the overall performance of the enterprise.

Six Sigma holds the philosophy that every process can and should be repeatedly evaluated and significantly improved in terms of time required, resources used, quality performance, cost and other aspects relevant to the process. It prepares employees with the best available problem solving tools and methods. At its core, Six Sigma utilizes a systematic five-phase problem solving methodology called DMAIC that means: Define, Measure, Analyze, Improve and Control. Single steps include:

Define – At the preliminary stage poorly performing areas are identified and prioritized for improvement. Projects are defined and launched with well-articulated problem and objective statements that have a beneficial impact to the organization.

Measure – At the preliminary stage, great care must be taken to identify a suspected problem process that is within practical realms of control. Is improving a particular process aligned with the organization's strategic goals? How will you know when and if you've been successful? What is the capability of the process? Using process mapping, flow charts and FMEA (Failure Mode Effects Analysis), original data is collected that will act as a baseline for monitoring improvements.

Analyze –When, where and why do defects occur? This phase applies appropriate statistical analysis such as scatter plots, input/output matrices and hypothesis testing to accurately understand exactly what is happening within a given process.

Improve – In this phase, vital factors in the process are identified and experiments are systematically designed to focus on those that can be modified or adjusted to reach targeted goals.

Control – The Control phase incorporates the basic tools of Statistical Process Control to manage processes on a continual basis. Once the DMAIC process has begun, it must be managed continually to assure that benefits are sustained (Stephen, 2004).

Tab. 1– Steps of DMAIC methodology (Stephen, 2004)

Define	Step 0	Select a Project
Measure	Step 1 Step 2	Establish Performance Parameters Validate Measurement System for 'Y'
Analyze	Step 3 Step 4 Step 5	Establish Process Baseline Define Performance Goals Identify Variation Sources
Improve	Step 6 Step 7 Step 8	Explore Potential Causes Establish Variable Relationship Design Operating Limits
Control	Step 9 Step 10 Step 11	Validate Measurement System for 'X' Verify Process Improvement Implement Process Controls

2 PROCESS CAPABILITY OF SIX SIGMA

The sigma scale is a universal measure of how well a critical characteristic performs compared to its requirements. The higher the sigma score, the more capable the characteristic is. For example, if a critical characteristic is defective 31 percent of the time, you say that this characteristic operates at two sigma level. But if it runs at 93.3-percent compliance, it is said that it operates at three sigma level. The following Table 2 shows the single sigma groups with values determined by DPMO (Defect Per Million Opportunities) and COPQ (Cost Of Poor Quality) where it is possible to find out the level of researched problem from 10 % to 40%. According to the percentage value there can be seen the level of capability characterized as world class, industry average and non-competitive (Gardner and Hoerl, 2010)

Tab. 2 – Six Sigma value chart (Gardner and Hoerl, 2010)

SIGMA	DPMO	COPQ	CAPABILITY
6 sigma	3.4	<10 % of sales	World class
5 sigma	230	10 to 15 % of sales	
4 sigma	6200	15 to 20 % of sales	Industry Average
3 sigma	67000	20 to 30 % of sales	
2 sigma	310000	30 to 40 % of sales	Non-Competitive
1 sigma			

2.1 How to calculate Six Sigma

How exactly is it possible to calculate Six Sigma? There are a few procedures for calculating. A formula and a simple calculator are used. Consider a power company for illustration purposes: A power company measures their performance in uptime of available power to their grid. Here is the five-step process to calculate sigma process for a formula calculating.

Step 1: Define Your Opportunities

An opportunity is the lowest defect noticeable by a customer. This definition, of course, is debatable within the Six Sigma community. Here's a useful snippet from the forum discussing this point: Typically, most products (and services) have more than one opportunity of going wrong. For example, it is estimated than in electronics assembly a diode could have the following opportunities for error: 1) wrong diode and 2) wrong polarity (inserted backwards), so for each assembly shipped, at least two defect opportunities could be assigned for each diode. Apparently, some manufacturers of large complex equipment with many components prefer to (count two opportunities in this case).

Many Six Sigma professionals support the counter point. I always like to think back to the pioneer of Six Sigma, Motorola. They built pagers that did not require testing prior to shipment to the customer. Their process sigma was around six, meaning that only approximately 3.4 pagers out of a million shipped did not function properly when the

customer received it. The customer does not care if the diode is backwards or is missing, just that the pager works.

Returning to our power company example, an opportunity was defined as a minute of uptime. That was the lowest (shortest) time period that was noticeable by a customer.

Step 2: Define Your Defects

Defining what a defect is to your customer is not easy either. You need to first communicate with your customer through focus groups, surveys, or other voice of the customer tools. To Motorola pager customers, a defect was defined as a pager that did not function properly.

Returning to our power company example, a defect is defined by the customer as one minute of no power. An additional defect would be noticed for every minute that elapsed where the customer didn't have power available.

Step 3: Measure Your Opportunities and Defects

Now that you have clear definitions of what an opportunity and defect are, you can measure them. The power company example is relatively straight forward, but sometimes you may need to set up a formal data collection plan and organize the process of data collection.

Step 4: Calculate

The process yield is calculated by subtracting the total number of defects from the total number of opportunities, dividing by the total number of opportunities, and finally multiplying the result by 100.

Step 5: Look Up Process Sigma

The final step is to look up your sigma on a sigma conversion table, using your process yield calculated in Step 4 (Linderman and Schroeder, 2008).

2.2 Six Sigma Calculator

The calculation of a Sigma level is based on the number of defects per million opportunities – DPMO (Topfer, 2008).

In order to calculate the DPMO, three distinct pieces of information are required:

a) the number of units produced

b) the number of defect opportunities per unit

c) the number of defects

The formula is:

$$\text{DPMO} = \frac{\text{(Number of Defects X 1,000,000)}}{\text{((Number of Defect Opportunities/Unit) x Number of Units)}}$$

A. All values required to calculate Sigma level

Defects:	2
Units:	100
Opportunities per Unit:	2

DPMO:	10 000
Sigma Level:	3,83

B. Sigma calculated based on defects and number of opportunities

Defects:	2
Number of Opportunities:	250 000

DPMO:	8
Sigma Level:	5,81

C. Enter only the known Defects Per Million Opportunities

Enter DPMO	66 700

Sigma Level:	3,01

If a characteristic operates at three sigma level that means the variation in its performance exceeds acceptable levels 6.7 percent of the time. This breakdown may be an invoicing process that goes longer than the company's allowed time limit. Whatever the critical characteristic may be, if it's three sigma level. It is defective 6.7 percent of the time, or 66,700 times out of a million. Values 3.83, 5.81 and 3.01 represent results for given cause studies.

What the originators of Six Sigma discovered is that when they worked to have each critical characteristic in the system — the product, the service, the transaction — perform at a Six Sigma level, the risk of the individual characteristics being incorrect was small enough (0.00034 percent or 3.4 defects per million opportunities) that the overall system still performed at an exceptional level when all the parts were assembled together.

And even when long-term effects inevitably entered into each characteristic, the overall system performance remained high. These companies then had a method for competing at a whole new level on the global market. That's why six is the magic number.

So why six level and not five sigma level? The complex products for which this method originated had enough characteristics rolled together and enough long-term degradation that only six would do. Four or five sigma just didn't provide enough relief from these two constraints.

The systems and environments of transactional and service companies now adopting Six Sigma are often less complex; they don't have as many critical characteristics coming together, so they don't necessarily need to have each critical characteristic operating at Six Sigma. In these cases, four or five may actually do.

But the magnitude of the earlier success of Six Sigma has made the name stick. And almost all companies, regardless of their size or complexity, recognize the benefits of aiming for a Six Sigma goal. Even if the milestone of Six Sigma is never reached, the act of working toward that goal drives breakthrough changes.

In some instances, great companies are able to produce Six Sigma quality in their final products, services, and transactions — especially when safety or human life is involved. For example, did you know that you're about 2,000 times more likely to reach your destination when you fly than your luggage is? That's because airline safety operates at a level higher than Six Sigma, while baggage reliability operates at about four sigma level.

3 SIX SIGMA IN SMALL, MEDIUM AND LARGE ENTERPRISE

This chapter focuses on characteristic of possible using of Six Sigma in enterprises according to their size division.

3.1 Small enterprises

Organizations come in all shapes and sizes and work in different domains. We will basically look at the classification of organizations based on their scale. Organizations can be categorized as small scale, medium scale and large scale depending upon the overall magnitude of their work. Let first study the characteristics of the small scale organization and then decide which quality improvement methodology will be most suitable for such an organization and help it succeed and achieve its goals.

Six sigma would also reduce variability in processes but since the processes themselves are small and simple in a small scale firm, the chances of them varying or deviating highly from quality are low and hence the focus on identifying value, satisfying customers, reducing reworks and waste provided by Six Sigma will be a better option for these small scale organizations. Also it may not be essential to go through entire DMAIC in the case of small organizations and it may just take up more time and resources for smaller problems that these firms deal with (Arnheiter and Maleyeff, 2005).

3.2 Medium enterprises

Medium sized firm can use six sigma approaches effectively as the size of the firm isn't too small to apply these approaches and at the same time it is not so large that the six sigma approach would prove inefficient for its quality control procedure. The controls applied on processes as a result of six sigma approach will eventually help these firms keep up the results achieved from six sigma process. Also the medium funds invested in quality are capable of handling six sigma level. Six sigma would also reduce variability in processes but since the

processes themselves are small and simple in a small scale firm, the chances of them varying or deviating highly from quality are low and hence the focus on identifying value, satisfying customers, reducing reworks and waste provided by Lean will be a better option for these small scale organizations. Also it may not be essential to go through entire DMAIC in the case of small organizations and it may just take up more time and resources for smaller problems that these firms deal with. At the end, six sigma will bring its own benefits, but given the structure and working of small scale organizations, Lean will definitely be more conducive to them. To sum it up Lean is also described as a pull system. The system promotes conditions necessary to manufacture high quality products to meet market demand with relatively small levels of inventory and this is definitely what the small scale organizations are looking for (Linderman and Schroeder, 2008).

3.3 Large enterprises

Large scale firm has enough capital and can utilize any quality improvement tool and implement it to perfection but looking at this information, it becomes obvious that these firms have to take care of quality and will not hesitate from spending on achieving it. The paper proposes that these. Methodology of Six Sigma focuses on the elimination of waste and variation, following the DMAIC structure, to achieve customer satisfaction with regards to quality, delivery and cost. It focuses on improving processes, satisfying customers and achieving better financial results for the business. Large businesses may produce variations is results since the scale of operation is large and at the same time has to eliminate waste and focus on other fruitful tasks rather than wasting of time on reworks. These firms have the resources in terms of money and people who can make Six Sigma, apply DMAIC and at the same time inculcate lean features (Mann, 2008).

4 CONCLUSION

The six-sigma framework provides an impetus for establishing best practice with the company. It also provides the company with a performance benchmark on which it could base its future performance enhancement programs. As it has been observed that the level of its sigma is not satisfactory, there is no way to improve this by DMAIC. The implementation of six-sigma will save money which will result higher profit of the organization. As the businesses are influenced by globalization, the competition is arising more and more and so, to sustain in the global business every organization needs to maintain appropriate quality level. This study will contribute to a new management approach on improving business process for both efficiency and consistent quality customer service. After reviewing the benefits and limitations behind Six Sigma, a company should determine whether or not Six Sigma is for them. A clear trend is that Six Sigma is diversifying into large service oriented organizations. In the case organization it is noted that the workers are very busy to produce their expected amount of fan. Finally it is said that, it is possible to improve productivity by using six-sigma which is the main purpose of this study. In the future, it is likely that more changes will emerge; making Six Sigma an even more beneficial application for organizations of all types and sizes. It is believed that other companies can learn the insights from this study to identify further research areas for efficiency and quality services. To ensure this quality and also the sustainability, six-sigma will no doubt play a vital role in the long run.

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EVALUATION OF THE CURRENT WAY OF APPLICATION OF THE SMED METHOD

Jan Filla

Abstract

Businesses are currently fully subordinated to the requirements of its customers. For success and competitiveness of the company, it is necessary to react flexibly to these requirements. In case, that there is a wide range of products through the manufacturing process, the management within the company has to make an essential decision about size of the batch. Businesses currently prefer to choose path of connecting individual orders into larger batches instead of carrying out time-consuming and expensive changeovers of the machines. The issue of the changeover process started to be solved in 1950 by Shigeo Shingo, who later defined the fundamentals of the SMED method. The actual method is used across the all the industrial sectors, and slight changes occur in the method during last century. This article primarily deals with theoretical resources and with the evaluation of a current way of application the SMED method.

Keywords: SMED, Single Minute Exchange of Dies, changeover process, changeover time reduction

1 INTRODUCTION

The market globalization has changed the conditions of doing business nowadays; enterprises are currently situated in a very turbulent business environment. Production activities of companies across the production sector are therefore, often complicated by the specific demands of its customers who require flexible reaction to their current needs. (Kumar, 2013; Mašín a Vytlačil, 2000) Conditions which are mentioned above are closely related to the changeover process of the machines. In enterprises, the issue is mostly solved by using of two different approaches. The first solution of the problem is the integration of production in larger batches; the second solution is based on the frequent change of the production program which is associated with the changeover of the machinery (McIntosh, Owen, Culley & Mileham, 2007; Cakmakci, 2009). For the reduction of length of the machine changeover process, mainly the SMED method is used. According to Bikram and Khanduja (2010) the SMED method is becoming a universal approach, which can be applied at any type of enterprise or industry.

2 LITERATURE REVIEW

2.1 Theoretical background of the SMED method

The SMED method, Single Minute Exchange of Dies, in the form in which it was defined by Shigeo Shingo (1985) can be considered as a one of the elementary tools of modern industrial engineering, which aims on significant reduction of the time needed for changeover and adjust the setting of machinery. The time period of changeover is a very important factor, which in practice often complicates the whole process of production management. If the changeover process is time-consuming, i.e., the length of the changeover process is within hours; companies prefer to choose a strategy of linking batches in order to minimize machine downtime due to changeovers (King, 2009). In (Perinić, Ikonić and Maričić, 2009) authors

state that also the additional methods of industrial engineering are needed to support the process of applying the SMED method.

As has been stated above, Shigeo Shingo is considered as a pioneer of the SMED method. The method itself was developed during his project in MAZDA production plant in 1950. The result of the initial analysis of the bottle neck issue was that the problem is not the lack of capacity of the machine, but the way the changeover were conducted. In the process of changeover, there were present activities, which significantly affected the time of changeover and, which were unrelated to the process of changeover (Shingo, 1985).

The method was defined as a process consists of three following steps - Separating internal and external setup, Converting internal to external setup and streamlining all aspects of the setup operations (Shingo, 1985). This original procedure defined by Shingo, is advocated by most academics and manufactures, and it is commonly used as a tool for improve the time of changeover (McIntosh et al., 2007).The original procedure of application of the SMED method (Moxham and Greatbanks, 2001) is shown in *Figure 1.*

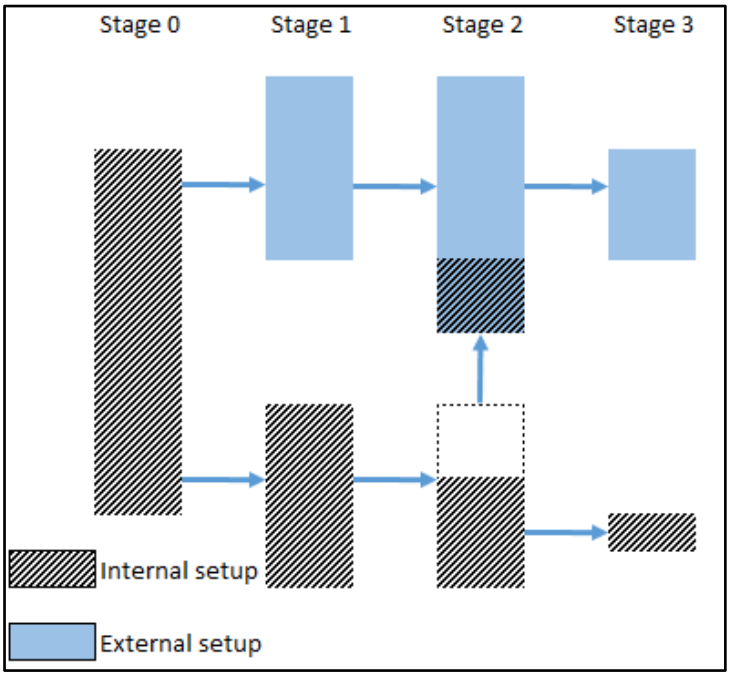

Fig. 1 – SMED concept stages. Source: (Shingo, 1985)

External setup, eventually external time, as a term has been also defined by Shigeo Shingo (1985) who described external time as a operations which can be performed only when a machine is shut down, the point of view on discussed issue, is slightly different in case of various authors, e.g., McIntosh, Culley, Gest, Mileham and Owen (1996) defines external setup as a time which is allocated to preparation of the changeover process prior to halting the machinery. The main goal of application of the SMED method is to eliminate or at least separate activities, which are unnecessary conducted in the internal setup. On the contrary, the internal time can be described as set of activities which can be performed only if the machine is not operational (Perinić, Ikonić and Maričić, 2009).

2.2 The current practice in applying the SMED method

The SMED method at its basics is fairly widespread among enterprises, the SMED method is applied in enterprises across the whole production sector, e.g. Foundries and heavy industry

(Bikram and Khanduja, 2010; Perinić et al., 2009), precision engineering (Kumar, 2013), textile processing (Moxham and Greatbanks, 2001).

The application of the method itself subordinate to the methodology defined by Shingo (1985), the process of the application is show in *Figure 1.* (Shingo, 1985) in the text above. As has been stated in previous text, the original Shingo´s methodology (1985) is advocated by the most of the academics and manufacturers, the current procedures and individual improvement techniques are shown in Table 1 (McIntosh et al., 2007).

Tab. 2 – Individual improvement techniques within the SMED methodology. Source: (Shingo, 1985)

SMED concept or stage	Assigned SMED improvement technique
Stage 1: Separate internal and external setup	• Using checklists • Performing function checks • Improving die transportation
Stage 2: Convert internal to external set-up	• Preparing operational conditions in advance • Function standardization • Using intermediary jigs
Stage 3: Stream line all the aspects of the set-up operation	• Improve the storage and transportation of dies, etc. • Implement parallel operations • Using functional clamps • Eliminating adjustments • Least common multiple system • mechanization

On the basis of *Table 1.* there is large amount of solutions in specific cases of applying the SMED method. Basically these solutions can be divided in two groups – Low-cost/No-cost solutions (Cakmakci, 2009; Culley, Owen, Mileham & McIntosh, 2003) and "New design solution" (McIntosh, 1996)

McIntosh et al. claim (McIntosh, 1996), that there is a majority view that changeover should be realized as a shop floor kaizen activity. The emphasis is on exploiting the innate skills and experience of the existing labour force and, through them, achieving improvement in case of changeovers at low cost. But it has to be mentioned, that the changeover time reduction of applying the low-cost/no-cost solution may be lower than in the case of "new design solution" or modification of the enterprise´s machinery. The modification of machinery can be done by applying simple technical solutions such as reduce screw usage on machines (Sharma, 2001), using functional clamps and standardization of equipment (Shingo, 1985).

Kumar (2013) states, that there are also alternative approaches for reducing setup time, such as:

- Production planning
- Group technologies
- Design standardization
- Use standard modules
- Work simplification
- Mechanization or automation

2.3 The assumptions for applying and sustaining the SMED method

The actual procedure and application of the SMED method are very thoroughly and extensively described in large variety of publications (Perinić et al., 2009; Bikram and Khanduja, 2010; Sharma, 2001) which; however, often neglects issue of sustainability of values, which has been achieved by the application of the SMED method. Maxham and Greatbanks (2001) state that the fundamental prerequisites for successful and sustainable application of the SMED method are following conditions:

- Team approach, especially team approach in sense of sharing information
- Visual factory control
- Performance measurement and identification of key indicators
- Kaizen system, which is focused on evaluation a measurement of defined key indicators

Even in the case of compliance with the above assumptions, there are specific factors which significantly affect sustaining of the SMED method. Culley et al. (2003) divides these factors into the following groups:

- Managerial and organizational issues
- Equipment modification

In the matter of managerial and organizational issues, it is necessary to ensure adequate training of staff and to use proven best practices (Cakmakci, 2009; Culley et al. , 2003) or checklists (Perinić et al., 2009), which were established during the application of the SMED method. Maintaining the performance achieved by application of the SMED method, i.e., compliance with standardized procedures and meeting the changeover times which were established for setup of machines should be also designated as an obligation of employees responsible for changeover process (Culley et al., 2003). According to Cakmakci (2009), the cost of individual solutions has to be considered; methodology based solutions are cheap in the most of the cases, but the added value, i.e. changeover time reduction, is relatively low. On the other hand the "new design solution" (McIntost et al., 1996) is much more costly but the changeover time reduction is significant in the most case. Low-cost approaches to achieving changeover process improvement are very common nowadays, and enterprises tend to rely mostly on organizational changes of existing work practices and changeover procedures (Culley et al., 2003).

2.4 Methods of lean manufacturing used for applying the SMED method and possible development of the SMED method

In practice, the SMED method is usually supported by using additional methods of industrial engineering; according to Perinic et al. (2009), the process of improving changeover times should be realized through the integration of the SMED method and the 5S method, and

should be implemented by ten following steps, which are based on Shingo´s (1985) original procedure:

1. Implementation team forming.
2. Training.
3. Survey and screening of the situation prior to the method implementation.
4. Activity classification.
5. Transforming internal into external activities.
6. Internal activities minimization.
7. External activities improvement.
8. Standardizations of SMED procedures.
9. Quantification of savings reached by SMED.
10. Continuous improvement process.

Integration of the SMED method and the 5S method is taking place mainly in steps 6 and 7, when it is necessary to visualize the workplace the appropriate way, i.e., deploy all the tools so each tool will be always within reach and organize work in such a way to avoid searching for tools, which are needed to perform the changeover process. The need of visual management has been also mentioned by Moxham and Greatbanks (2003) in *Prerequisites for the implementation of the SMED methodology* and Bikram and Khanduja (2010) in *SMED: for quick changeovers in foundry SMEs.* There is also a need to simplify all the tasks during the changeover, by using of dowels, locating pins, fixtures and visual marks. Standardization of bolts, screws and wrenches is highly recommended in case of application the SMED method. All these recommendation in conjunction with poka-yoke techniques can ensure significant reduction of time requirements of individual operations in changeover process. (King, 2009)

In some cases the SMED method is used as an element of TPM (McIntosh, Culley, Mileham & Owen, 2001) and continuous improvement process (Perinic et al., 2009), in efforts of reaching lean manufacturing and fulfilling lean manufacture philosophy. McIntosh et al. (2001) states, that the changeover of the machinery is closely linked with maintenance, because maintenance tasks are likely to be distinguished by the removal and replacement of identical components, to allow continued manufacture of the same product.

According to Palanisamy and Siddiqui (2013), the MES system is very important in case of applying methods of lean manufacturing. They state, that the MES system can be considered as a bridge which spans the gap between the planning system and controlling system by using real-time information to manage manufacturing resources as people, equipment and inventory. Therefore, the MES system can be described as a hub that collects information and provides them to other subject within the production system.

2.5 Implementation of industrial engineering methods in Czech and Slovak companies between the years 2002 and 2009

The research conducted by Bobák, Pivodová and Poláková (2013), which is partially focused on comparing the implementation of industrial engineering methods in Czech and Slovak companies between the years 2002 and 2009, shows that in 2009 more than half of surveyed manufacturing companies use industrial engineering methods such as Standardization (59 %), Analysis and modeling of business processes (52 %), TPM (75%), Study of working methods (58 %) and KAIZEN (63 %). More than one-third of the companies are using Lean Layout,

Jidoka, 5S and Visual Management. Authors also state that the remaining group of industrial engineering methods is used only on a smaller scale. The research shows that the use of industrial engineering methods, especially in case of methods such as Poka-Yoke, Lean Layout and JIT concept, had a downward trend between the years 2002 and 2009 (see *Figure 2*).

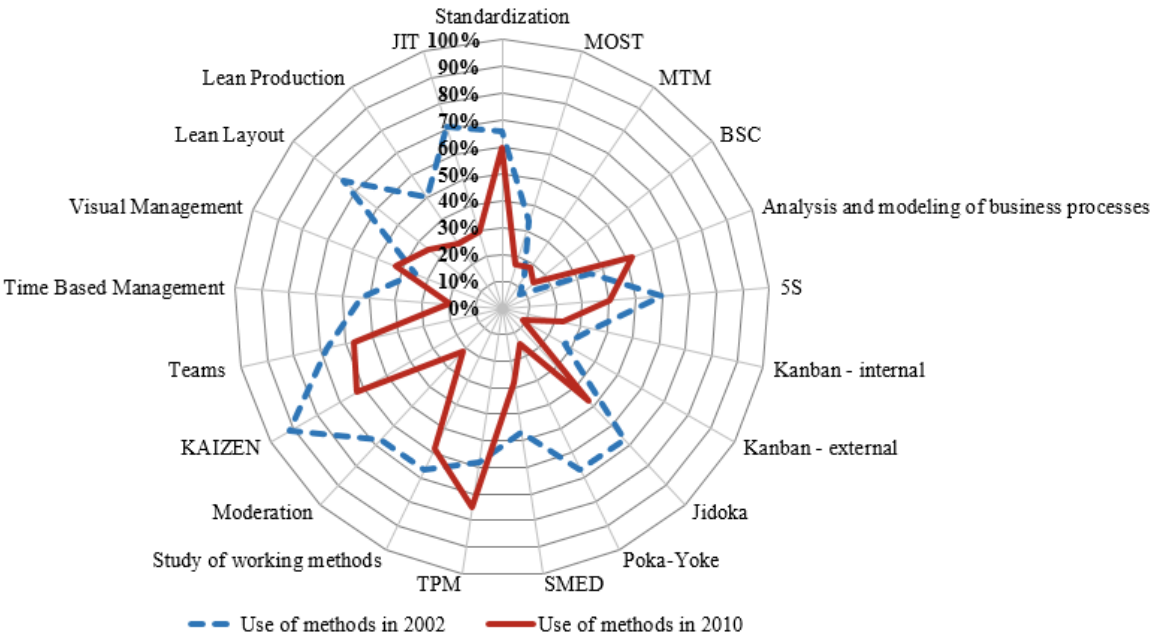

Fig. 2 – Application of industrial engineering methods. Source: Bobák et al. (2013)

The data for the qualitative research (Bobák et al., 2013) were collected in form of structured interview based on statements in the following scale: being used, planning to use and do not plan to using the method. The results of the research were compared with similar research (Tuček, 2002), which was focused on the manufacturing companies of rubber and plastics industry, electro-technical and machine industry with more than 1000 employees and annual turnover above 250 million.

As seen in the graph, almost half of the surveyed companies applied or intended to apply the SMED method in 2002, however, in 2010 the number of companiesthose are using the SMED method have been dropped to 30 %, which could indicate a decrease of interest in application of this method in Czech and Slovak companies. On the other hand Bobák et al. (2013) state that the comparison methods of industrial engineering in time is not accurate because of the utilization of a different sample of companies. In the research which was conducted in 2002, the sample consisted of large companies, which applies the methods of industrial engineering more frequently.

3 DISCUSSION AND CONCLUSION

According to the articles which are published in scientific journals, the SMED method can be considered as a widespread tool of industrial engineering, through which can be achieved significant reduction of time which is needed to changeover of enterprises machinery. The method itself is relatively complex and can be used in a wide variety of businesses across the whole production sector. It is evident that the SMED method is evolving, but only in the sense of application of additional methods of lean manufacturing. The core of the method is still in the original procedure, which has been defined by Shigeo Shingo (1985) in *Revolution in*

manufacturing: the SMED system. The enterprises also tend to application the SMED method in form of low-cost/no-cost solutions, which can be considered as cheep and enough efficient, but the real potential of the method stays hidden. The "new design solution" or solution with additional investment in equipment can most likely make possible to perform changeover of the machine in single-digit minutes. Research conducted by Palanisamy and Siddiqui (2013) has been dealing with integration the SMED method and the MES system, this line of research can be considered as a new opportunity to improve the SMED method and its applicability in business practice.

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THE ROLE OF ERGONOMICS IN CORPORATE COSTS

Barbora Hamplová

Abstract

The trend of growing health cost at the corporate level is a part of a global trend. A survey by Tower Watson called *Global Medical Trends Survey 2011* predicted a global increase of this costs by 10.5% in 2011; in Europe by 9.1%. Another increase is expected within the next five years (Sanicola, 2011). This fact has also been confirmed by Japsen (2013) who states that in 2014 the increase in medical expenses of employers had risen by up to 6.7 %. The Czech Republic faces the same situation, the costs are high and continue to rise (Gola, 2011). This continual trend affects particularly the finances of large multinational corporations. (ManagementPress, 2011).

The purpose of this article is to identify the reasons behind increasing costs in healthcare. It exist many reasons which could play role in cost increasing in healthcare - longer life expectancy, ageing population, unhealthy lifestyle, chronic diseases, growing period of incapacity for work or inappropriate working conditions. The article focuses on inappropriate working conditions and shows what kind of consequences can be caused by.

Primarily, article is concerned with corporate health cost and financial impact of inappropriate working environment, secondary is concerned to impact of inappropriate working environment on worker´s health. The article also present science ergonomics which can be seen as one of the possible cost-cutting tool and useful aid to improve worker´s health.

Keywords: ergonomics, corporate costs, healthcare, working environment

1 INTRODUCTION

The tendency to decrease costs is viewed nowadays as one of the reactions to current economic situation. Costs-decreasing efforts have become an integral and ever-present activity within all processes running at the microeconomic level. Companies are under ongoing pressure aiming at increasing performance, competitiveness, stability, efficiency, etc. Decreasing costs is here understood as a possibility and mechanism leading to fulfilling this aim.

We divided many category of costs. This article is concretely focused on health costs. Reaction of enterprises (Japsen, 2013), selected economic criteria (UZIS, 2013), criticism from the European Commission (Holub, 2014), criticism from Minister of Finance Andrej Babis (2014) who said that Czech healthcare is run inefficiently and financed non-transparently with increasing costs, are reflective of the fact that funding of healthcare in the Czech Republic is hot and important issue. Health costs represent one part of the costs of enterprises that is way the companies should seek opportunities for cutting costs in healthcare and health costs.

Generally speaking, each cost-category has a different potential of cuts (Dominik, 2013). In this case, science called ergonomics has potential to be perceived as cost-cutting tool. Apart from the fact that ergonomics plays crucial role in improving and optimization of work environment and work conditions, its importance could be also seen in the health costs issue.

2 LITERATURE REVIEW

2.1 The reasons behind increasing costs

According to Czech Statistical Office (2013) the main reason behind increasing costs of healthcare can be attributed to rising standard of living, longer life expectancy and ageing population. Bartak (2006) sees one of the reasons also higher costliness of new medical technologies. Babis (2014) emphasizes bad financial management of hospitals and other medical institutions. Company EEIP - based on a study mapping investments in healthcare - considers the following aspects as essential: ageing population, unhealthy lifestyle and chronic diseases (EEIP, 2014). Toulemon (2013) mentions another factor causing an increase in costs, which is the growing period of incapacity for work. Between 2000 and 2011 this period had increased by 16.1 days (Aktispol, 2013). In 1990s Franklin Becker (1985) started to examine the relationship between work environment and the health condition of employees. He claimed that work environment was a crucial and often neglected part of working conditions. "Quality of Work Environment is viewed as one facet of the Quality of Worklife movement." He also named unsuitable work environment as a cause of health problems of employees (Becker, 1985). This claim was confirmed by Hedge et al. (1995) in their study about the influence of lighting conditions on health and work productivity. Dul and Ceylan (2010) view suitable work environment as a tool to fulfil corporate needs: maximum output at minimum cost. Unsuitable work environment can be considered another possible factor influencing rising health costs.

2.2 Corporate health costs

In corporate environment health expenditure is associated especially with statutory insurance payments (health insurance, liability insurance in case of an accident or occupational injury or occupational illness) and follow-up costs caused by occupational injury or illness. These costs and losses represent not only a temporary financial burden but also additional financial burdens in the long run. These may involve payments of disability pension, widow's pension, orphan's pension and other benefits (Mrkvicka, 2011).

In connection with the development of an occupational injury or occupational disease which are caused by inappropriate working environment, there are two groups of subjects, who are affected by the costs and losses. The following chart shows the first area - affected workers (Kooperativa, 2015).

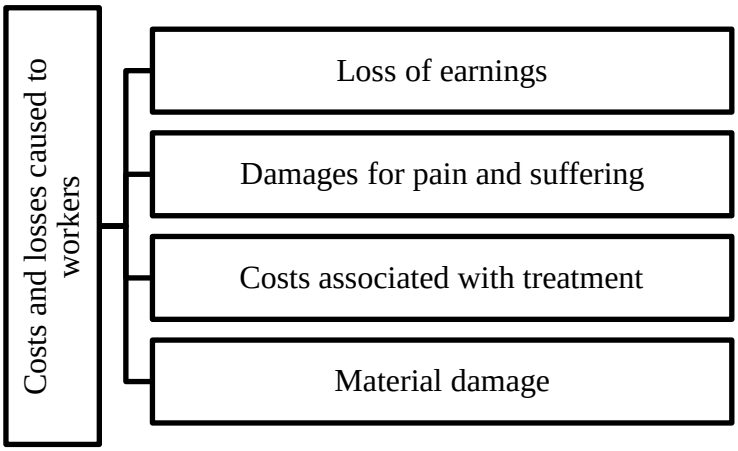

Fig. 1:Workers affected by coscs and losses. Source: Mrkvicka, 2011

Due to workplace accidents and occupational diseases, affected workers be entitled to compensation. Every company closes compulsory accident insurance. In the Czech Republic, this insurance is offered by Kooperativa insurance. On the basis of the risk of work, the amount of insurance is determined and the full amount of the losses caused to workers is covered from insurance payment. Because of certain rare circumstances, it may happen that the insurance company reduces this insurance payment. In this case, the shortening is in the employers´ side. Rare circumstances could be primarily specified like non-fulfilment of legislative requirements for health protection at work - neglect of preventive examinations, failure to provide personal protective working aids, insufficient training, low risk assessment etc. It is necessary to mention the situation when the employer can reduces its staff by level of employee own fault.

In 2013, 42 927 work accidents with incapacity for work (Mrkvicka, 2014) and 983 occupational diseases (Fenclova a kol., 2014) were registered. It represents 43 910 cases with title to compensation.

The second group of subjects, who are affected by the costs and losses caused by work accidents and occupational diseases are employers. Following table shows cost group connected with mentioned cost and losses (Mrkvicka, 2011).

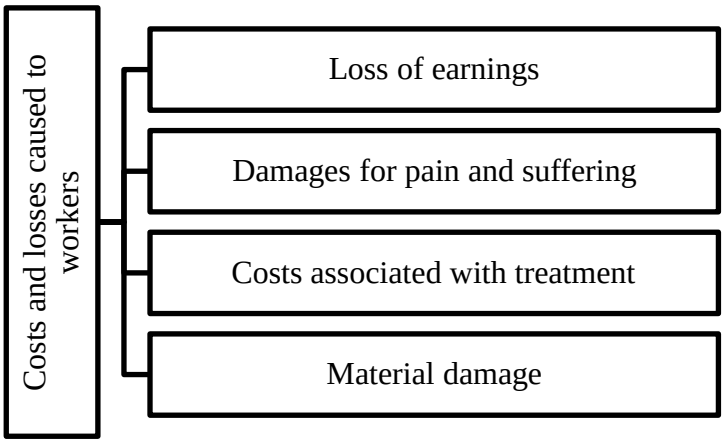

Fig. 2: Cost and losses caused to employers. Source: Mrkvicka, 2011

According to project HS57/00 „Cost analysis of workplace accident and occupational diseases in the Czech Republic “, in 2011 costs and losses gave rise to employers were quantify to 13 703, 9 mil. CZK. 5 764, 2 mil. CZK was represented by insured costs and 7 939, 7 mil. CZK by uninsured costs (Mrkvicka, 2011).

3 DISCUSSION

Work environment is viewed as one determiner of increasing health costs. Because of inappropriate working environment, workplace accidents and occupational diseases can be broadened in considerable degree. Work environment is also viewed as one determiner of health conditions of employees. It influences their quality of work, performance and satisfaction (Becker, 1985) as well as their work efficiency and work-related stress (Hedge et al. (1995). The term work environment used here incorporates mainly parameters of work environment, such as working space, manipulation space, working position and movements, etc. (Gilbertova, 2002). Also mentioned are physical factors of the environment, such as chemical substances and compounds, physical and mental stress. (Chundela, 2005). Vischer (2008) sees the importance in the actual spatial arrangement of the workplace and its equipment - such as furniture, work tools, etc. He also analyses information based on the feedback from office furniture designers and manufacturers who report a growing demand for products which positively influence the quality of work environment. Hernández-Fernaud (2013) adds that workplace conditions can influence employees' mental state which is then reflected in their health status. Dul and Ceylan (2010) define the connection between work environment and employees' creativity. Creativity is perceived as "Production of novel and potentially useful ideas for solving problems and for developing new products, services, processes, systems. Work methods." They state that work environment is a factor that boosts employees' creativity (Dul, Ceylan, 2010).

The above mentioned claims unequivocally confirm the fact that work environment is a key element in the working process. Manager's task is to set it up properly and check regularly whether it is in accordance with all the needs of the staff and supports their performance (Dul and Ceylan, 2010). If the work environment is not set up properly, we can expect negative impacts in financial area which is described above and in employees´ health and performance. Such employees fail to keep up with the expected working pace and are no longer fully productive. They lose concentration and make more mistakes, which in the end leads to decreased quality of work. Lack of concentration or unsuitable workplace conditions can result in situations affecting employees' health and condition. In the end, employees become susceptible to diseases and illnesses. Other consequences of inappropriate working environment shows this table. We can divide three situations which can come into being (Tuček, 2005). There are illustrated on figure 3. First situation is called near-misses describe as "*Potentially significant event that did not occur due to prevailing conditions, but could have resulted from a sequence of events that did occur*." (BusinessDictionary, 2014). In this case, the reparation is high level of prevent. Second situation is accident which may result in workplace accident. Last situation is called other injuries which may result in occupational diseases. All these situation are connected with large financial burden.

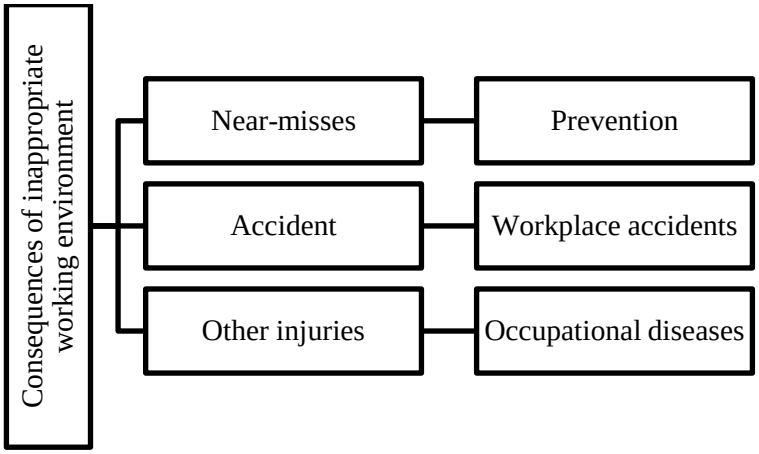

Fig. 3: Consequences of inappropriate work conditions. Source: Tucek, 2005

Another result of unsuitable work environment is development of work-related stress and psychosocial risks. Michalik (2014) states that health status of 20% of employees is affected by work-related stress and almost 70% of employees are affected by psychosocial risk factors resulting in health problems. He further claims that almost 50% of all absences from work are caused by stress. The amount of stress and stress factors can also be influenced by suitable work environment.

Ergonomics is a science which uses optimization of working conditions. It plays main role in reduction of health costs and in elimination negative influences of work environment. „*Ergonomics has been involved to prevent and correct negative effects of this way of organising work on health and safety and on productivity and quality.“* (Dul and Ceylan, 2010). „*The emphasis within ergonomics is to ensure that designs complement the strengths and abilities of people and minimise the effects of their limitations, rather than forcing them to adapt.“* (Ergonomics&Human Factors, 2014). The advantage of ergonomics is combination of three carasteristics: „*systems approach, design driven, and performance and well-being goals.“* (Dul, Bruder et all., 2012). Ergonomics is multidisciplinary field when knowledge of many sciences are needed. (IEA, 2015). There is many fields where ergonomics focuses on - physical ergonomics with a focus on anatomy, anthropology, physiology, etc.; cognitive ergonomics focuses on mental processes, organizational ergonomics dealing with socio-technical systems etc. (IEA, 2015).). For example Organizational Design and Management is one of the important part of ergonomics (Hendrick, 1991). *„Although the scope of ergonomics is much broader.“* (Cohen, Gjessing et all., 1997).

The aim of ergonomics is to understand to relation between human and system (IEA, 2015). *„Human factors (ergonomics) has great potential to contribute to the design of all kinds of systems with people (work systems, product, service systems).“* (Dul, Bruder, Buckle et all., 2012). We use many tools to implement ergonomic principles – checklists, RULA, REBA, NIOSH etc. Rating directly by workers who work on the workplace is another possible way of implementation of ergonomic principles (Chiasson, Imneau, Major a kol., 2011). With an aging population, the ergonomists improve the working tools to be more comfortable for elderly people (Wu, Chio, Hou, 2014).

Following figure presents how ergonomics is also seen as multidimensional. There are typify three dimension „*which should be thought of as three separate dimensions for the ergonomics program.“* (Karwowski, 1998). Technical issues include cumulative trauma disorders, workplace design, environmental factors (noise, thermal comfort, human errors, lighting etc.) and others. Managerial issues include retrofits of existing problems, focus on prevention and others. The last issue focuses on improving safety and health, productivity, quality, operating performance etc. During ergonomics screening, none of these dimensions should be neglected (Karwowski, 1998).

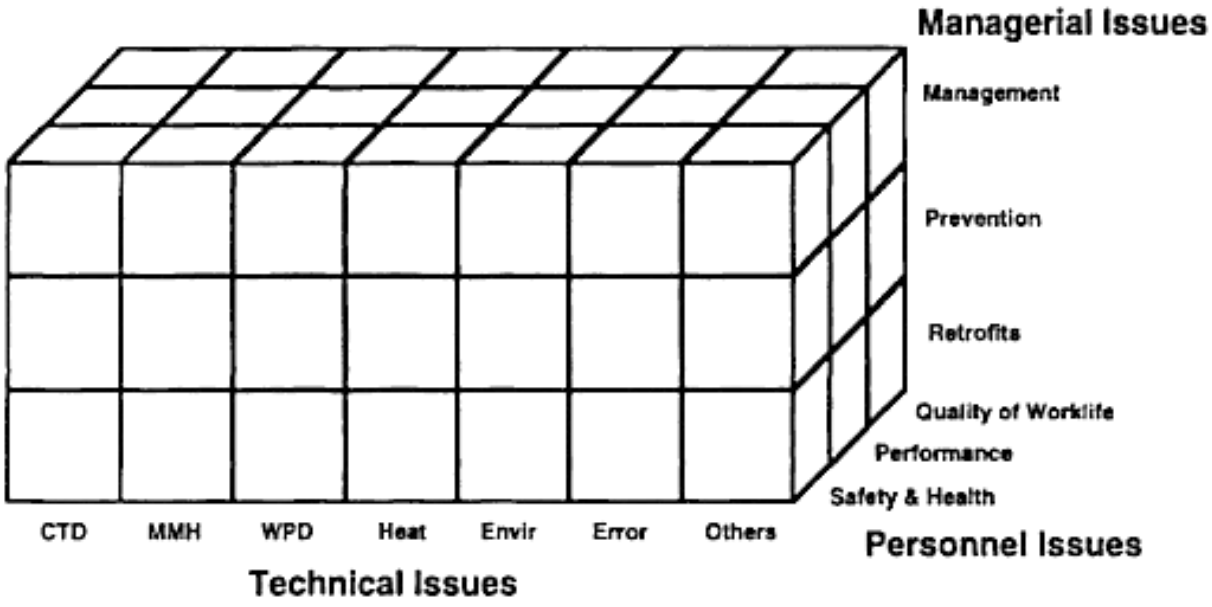

Fig. 4: Multidimensional ergonomics. Source: Karwowski, 1998

Prevention plays a crucial part in ergonomics. Exploring ergonomics after a health issue, occupational injury or illness has occurred is a wrong strategy. Prevention programmes must be included within all activities and routines around the workplace. Ergonomic prevention leads to a continuous improvement of these processes and prevents and decreases the risks of developing a serious health problem. (United States Department of Labor, 2010). The cost of prevention is very frequently lower than the sum spent on mitigating the consequences. (Cost of Quality, 2011). *"According to the National Safety Council, workplace injuries and illnesses cost our economy 198.2 billion dollars a year. That's over half a billion dollars each day! Employers who invest in injury and illness prevention programs can expect significant cost savings in addition to reducing fatalities, injuries, and illnesses. Workplace safety is not only the right thing to do for your workers; it's the right thing to do for your business."* (Michaels, 2010). Prevention programmes brings advantages for employees - reduce of morbidity, comfortable working environment, and for employers as well – every dollar invested in safety and suitability of the working environment is returned six times (United States Department of Labor, 2010). Even though ergonomics can have a significant influence on eliminating health issues and decreasing costs, it is often disregarded by companies. „*Ergonomics potential, however, is underexploited.“* (Dul, Bruder, Buckle et all., 2012)

4 CONCLUSION

The article shows that in company environment, costs caused by workplaces accidents, occupational diseases and so on mean large financial burden. It is vital to ensure terms which would lead to cost reduction in healthcare area. These terms are verifiably bound to working environment and working conditions. By implementing ergonomic principles and rules, preventive ergonomic programmes companies are incapable of cutting down the costs. It is prospective to say that ergonomics can be perceived as one of the cost-cutting tool. If the ergonomics become an essential part of the working process, the results are visible in financial area, in improving of worker´s health, his productivity and efficiency, in quality of work and in his loyalty and satisfaction as well. And what more, it is already required by the state's legislation.

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OPTIMIZATION OF QUALITY MANAGEMENT SYSTEM IN HEALTHCARE WITH SUPPORT LEAN MANAGEMENT

Monika Kolková

Abstract

The main goal of this paper is to identify total quality system of healthcare and how to improve lean healthcare. Paper is divded into two parts – first part refers to quality system of healthcare in general second part is about new methods like lean healthcare and critical view of the current problems with quality management in healthcare. Quality in healthcare has several structures that interact with each other. The aim is to show possibility of linking different areas of quality management and using methods of lean healthcare to increase their efficiency. The increase needs to raise system efficiency and quality is a necessity in terms of increasingly growing globalization and technology. Research and development is there very connected with the ability to become competitive organization.

Keywords: lean healthcare, TQM, CQI, patients, hospitals, strategic planning

1 INTRODUCTION

Competition in the field of quality is still difficult to grasp. We still haven´t onl sufficient detals about quality assessed tasks among hospitals, but very often we haven't sufficiently defined health indicators. Based on above sentence article is structured like this*:* Section 3 defines and characterizes the quality management system with reference to an important realization of several factors that affect the quality of healthcare and the indicators that we should measure. Although it is health system controlled largely based on moral ethics, it is important to realize that this is an organization that works on basis of the processes that affect our operations. For this reason, I'm dealing in 4 area with contemporary problems of quality in healthcare and the factors affecting it. The aim of this article is not to provide a unified solution for quality control, but look at the quality of several aspects and understand to the system interconnectedness and processes of impact on quality care, but also on culture and philosophy hospitals.

2 METHODOLOGY

This article begins with a literature review concerning the quality management system of medical devices and systems that deliver increasing the efficiency of quality. The first part is focused on the management system in general and to the critical views of the individual important areas, here is also defined several methods for improving quality management. The second part analyzes the current problems with the quality of healthcare according to individual criteria and showing the synergistic effect of this impact.

3 DEFINITION AND CHARACTERISTICS OF QUALITY MANAGEMENT SYSTEM

Quality in healthcare facilities is one of the most important aspects. The quality we can understand from several views:

- The level of costumer or patient satisfaction

- Or as a compliance with standards (Gladkij & Clark, 2003)

WHO (1996) understands quality in healthcare facilities as a summary of achievement results in prevention, diagnostic and treatment due to technological, scientific and cultural environment of given area. Quality can be understood as a perfection level of given treatment due to present level of knowledge and global evolution (Miller et al., 2009).

Quality is creating with set of healthcare properties, which we are able, practically, examine and quantitatively evaluate to the healthcare standards. Healthcare standard is valid form which represent expect condition. Quality is precisely defined as a level of conformity with expectation (Improving healthcare monitoring system, CZ2004/006-237/0801- správně má být Improving healthcare monitoring system, 2009).

Quality management system has as a goal synergistic effect individual activities based on proactive attitude (Wagner, De Bakker & Groenewegen PP, 1999). In recent time healthcare facilities are achieving magnificent progress in a way of evaluation quality management and competitive strategy and application accreditation systems, organizational programs quality management, internal and clinic audits, setting safety patients systems, analysing system performance and focusing on patient satisfaction (Donabedian, 2005).

In recent years we can register high increase of requirements for quality secure in healthcare. We are starting to realize that quality in healthcare can be viewed not only from nurseling performance, but also from an economic aspect. In the Czech republic in 2010 was estabilished a group based on the requirements WHO and OECD called Working Group for Patient Safety and Quality of Health Care

(czech shortcut for the name of the group is PSBPKZP). Main purpose of this group is to provide safety for patients and healthcare quality in Czech Republic (Ministerstvo zdravotnictví ČR, 2010).

3.1 QMS METHODS

In the last decade we see activity to implement a formalized process of continuous quality improvement, including external control, which fits into both accreditation and certification systems. This new tendency determines the increasing pressure on higher effectiveness and efficiency in healthcare, transparency of operations, consistent use of financial, material and human resources (Kaplan & Norton, 2010).

These facts lead to the unification of a number of existing activities related not only to the management of the organization and its operation, but also the efficiency of systematization and other services (final project report MZ ČR, 2009). The issue of effective functioning of the management lies in the improper management systems at each hospital, in the absence of a logical connection of individual bonds, thus becoming the quality management system is, more art than science (Hall & Johnson, 2009). Hospitals implement a standard management system ISO 9001, but even these standards form only a brief outline of what has to be done (Davenport, 2010).

Mr. Mudr. Vychytil (2009) in analysis of implementation quality system monitoring and safety in organizations directly controlled by Ministry of Health defines only 50% national or international accreditation, in 70% of hospitals have ISO 9001, 50% of hospitals have also certificate of quality for various operation of hospital. In sanatoriums is situation of quality management different. Absence of detailed data about spectrum of watching indicators and methods of analysis make it impossible for rating their validity (Vychytil, 2009).

Continuous quality improvement is referred in the context of healthcare in particular acronym CQI. That includes a formalized process of continuous quality improvement. Integral parts are already mentioned external controls.

Due to the efforts to implement process management to increase the quality, I believe that the main step is to grasp the strategy work of the hospital to obtain maximum efficiency. Healthcare is a specific area where quality plays a critical role and responsibility of workers is at its maximum level. According to the obtained information and experience, I created a custom CQI model which shows the synergistic properties and importance of individual elements, which must be include for the CQI. CQI should be flexible synergistic system which works on the basis of the data acquisition and facts. Strategic management system affects the hospital for several years ahead. Here I would like to mention, as a functional synergistic system hospital Jilemnice, which with the help of external quality control (accreditation) implemented strategic management plan in 2020.

As a important component is necessary to realize the need to connect the system with the latest knowledge in the field of work psychology, management and clinical psychology, which have a high impact on the quality of healthcare. Hitka (2005) identifies the need for awareness of the value and importance of caring for employees and their development. An integral part is ensuring regular supervision.

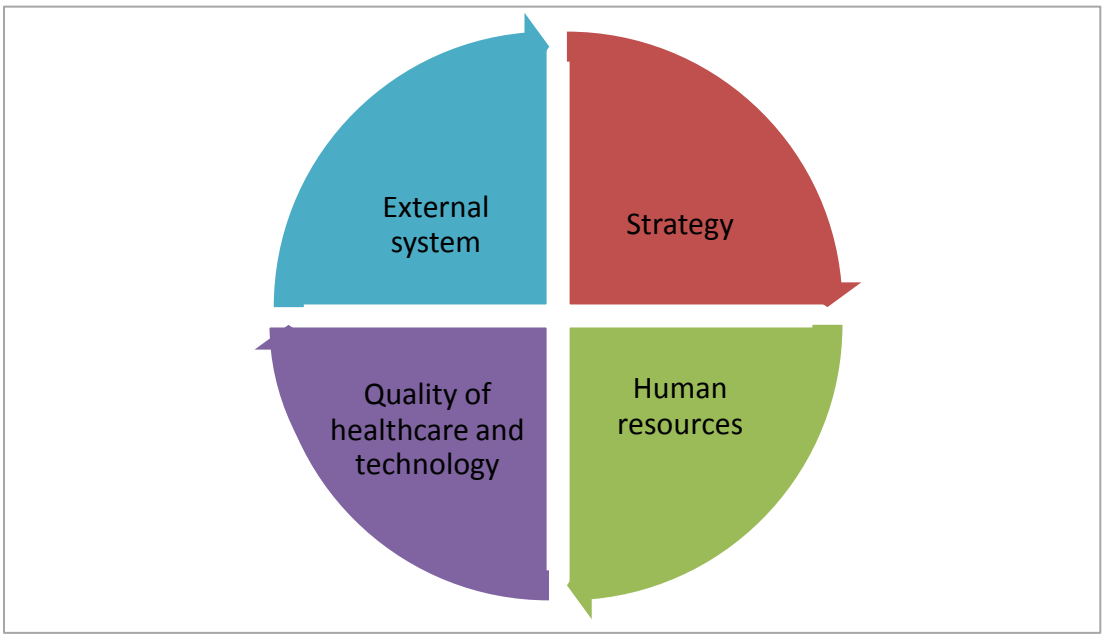

Fig. 1: Quality management: Source: Own elaboration

3.2 ISO 9001

Certification ISO 9001 is in this time one of the most effective tools for increasing effectiveness of quality. Stunning increase in the introduction of this methodology into manufacturing enterprises shifted in recent years to healthcare facilities, the main concept of this procedure is compliance QMS (Sampaio & Saravia, 2011).

Franceschini et al. (2004) exponential justify application of the ISO 9001 to organization as an effort to increase competitiveness. Identifying the goals of ISO 9001 is the applicability of environmental organizations the flexibility to changing requirements, determine the objectives of the organization, process management and effective supplier-customer approach (Gladkij & Clark, 2003).

3.3 ACCREDITATION

The process by which external organizations evaluate medical facilities and assess the extent to which this facilities follows in compliance with the requirements for quality of care. It aims to create conditions for continuous quality improvement in health care facilities, standardize and continuously improve the quality and safety of care based on scientific knowledge, reduce economic costs spent on healthcare, improving the efficiency of healthcare delivery and strengthen confidence in the company (JCI, 2010).

3.4 OTHER QUALITY MANAGEMENT SYSTEMS

In recent years hospitals apply other methods for increasing the quality, including the method Six Sigma - innovative program that uses data analysis so as to achieve effective control of processes with the removal of waste (Woodard & Tanisha, 2005). Six Sigma fits into a new comprehensive quality management system called TQM (total quality management), sometimes also called CQI (continuous quality improvement), which is designed to satisfy the needs of patients and continually improve all organizational processes and activities (Chong, Unklesbay & Dowdy, 2000).

Six Sigma is often intertwined with lean healthcare, philosophy that eliminates waste, sets a simple and clear links and uses modern methods for acceleration of work and the use of effective actions (Ledigo-Quigley, 2008)

3.5 LEAN HEALTHCARE

For proper introduction to Lean healthcare quality management system in hospitals, it is necessary to understand the added value. In medical facilities we meet with several types of added value according to the customer, process and product. Customer can be patient and the patient's family, doctors, laboratory etc. Currently we still encounter with the problem of defining the correct value added in the hospital (Graban, 2012).

Lean healthcare applies contribution of the scientific methods to solve problems, requires a different approach, using small steps (kaizen) set of continuous quality improvement. Quality Manager at the hospital must be able to lead people to search for problems and using their own ideas for solution. Identify and monitor unwanted events, reduce risk and increase the responsibility and authority of workers in the redesign process (Hjertqvist, 2013) The use of methods such as value stream mapping, identification and elimination of waste, 5S (systematization, standardization and visualization workstation, visual management, teamwork, setting the pull system and increase the ability of individual decisions (Graban, 2012).

4 CURRENT PROBLEMS IN THE QUALITY MANAGEMENT SYSTEM

In the CQI (TQM) is a significant difference between the introduction of structural and logical system of management in healthcare facilities (Smith, 1992). Especially in MZČR is the difference between medical institutions and medical facilities striking, when system in hospitals is not widely implemented. Currently, there is no good motivation for the introduction of CQI. A very common phenomenon is also data collection and analysis of data on individual processes without any additional links on the accurate evaluation and feedback for each indicator (Vychytil, 2009).

JCAHO (Joint Commission on Accreditation of Healthcare Organizations, 2012) defines the main problem as the inability to set a flexible system of quality depending on the requirements of the standards and methodologies, whose negative effect is an increase bureaucracy and inefficient use of the correct indicators.

Vychytil (2009) formulates proposals of next steps to optimize the quality system within focusing on the minimum requirements of the methodological proposal of the Ministry of Health, the existence of a functional system quality control and safety parameters included in the evaluation of directors, detailed analysis of the spectrum of observed indicators of quality, settings external controls and standardize quality management systems and data collection.

Missing correct methodology leads to the implementation of the management system on the surface of the organization rather than to its culture. One of these reasons is the insufficiently trained staff and building a strong customary system (Kaplan & Norton, 2010).

In healthcare we can identify the cost of poor quality:

• Visible costs:

- the Complaints by customers
- errors in billing insurance
- expressive of overtime
- the unnecessary, incorrect or lost lab results on unnecessary costs departments

• Invisible costs:

- professional integrity
- the lack of coordination of teamwork among doctors, nurses and technicians
- poor documentation
- ineffective communication between health professionals and patients
- poor equipment
- medication errors
- inaccurate information for an insurance company
- delayed receipts
- decubitus

Bengora (2006) states that the biggest problem is the distribution of quality. Statements like: everyone have the highest possible care are very often, but logically flawed and impractical. Unreality is due to the economic limits of quality improvement. Medicine is a plan similar opinion, but economically unrepairable recommendations and procedures, doctors often ignore the economic impact.

This functional model shows a major problem in medicine. Quality managers are often faced with resisting the introduction of new management methods to the hospital. Omission that even the hospital is an organization affects the quality management system. In case we are ignoring the production costs and the relevant weighting kind of costs we get the absolute usefulness services, which are thus free logically means that any improvement in either qualitative or quantitative is 0. However, customers believe that any improvements could bring them relief from their suffering. The same situation occurs at the moment when a doctor or other health services producer does not consider costs. Poor logical connection leads to the fact that the quality level is not always optimal. Costs continue to rise, we do not have the right information, do not follow quality and where it is needed. Occurs view of quality in healthcare. Managers see the quality of the processes that affect the quality synergistically.

Kaplan (2010) introduces setting process approach from several areas:

• Internal

• Managerial

• Statistical

• External

• Professional

• Case studies

Control of the quality management system is very important and it's also necessary to know who is the manager of quality. I will demonstrate in the following table analysis reviews of 34 (21 hospitals, 13 medical institutions) medical institutes. The following is assessed analyze only 34 medical institutes. In the Czech Republic a total of 30,000 health care facilities.

Tab. 1 – Quality Management System: Source: Analysis of the implementation monitoring systems quality and safety of the Ministry of Health, 2009.

Hospitals - 21		**Medical institutions - 13**	
Staffing		**Staffing**	
Quality manager	83,30%	Quality manager	58,70%
Without quality manager	16,70%	Without quality manager	41,30%
Education Quality Manager		**Education Quality Manager**	
Medic	44,50%	Medic	75,00%
Engineer, Master	33,30%	Engineer, Master	25,00%
Medic and manager	22,20%	Medic and manager	0,00%
External management system		**External management system**	
Certification ISO	38%	Certification ISO	0%
Customary management system	62%	Customary management system	0%

The table above indicates that we need to focus not only on the quality management system in hospitals, but also in medical facilities. It is also important to understand the necessity of proper quality management system and not only application of its own system without feedback.

5 CONCLUSION AND FURTHER RESEARCH

People look differently on management quality management in health care. Important synergistic implementation of the individual steps of process management with support modern methods such as lean management. It is also important to continuous learning and adjustment teamwork with the support of work psychology and management.

The first attempts at downsizing hospitals are now recorded. In some hospitals had the first training and we can detect also the first case study. It is important to focus in the future on research linking individual system management, IT and data acquisition and application of new knowledge from work psychology and management and supervision.

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CHOOSING AN APPROPRIATE MODEL OF STOCK IN A COMPANY IN CRISIS PERIOD

Jan Jakeš

Abstract

The paper deals with the types of inventory, inventory costs and mathematical models suitable for inventory analysis. The paper generaly describes the theory of inventory and practical knowledge of production logistics in the automotive industry during the crisis. The work also contains a description of several inventory management models and their suitability for a particular problem. The final part contains the concrete use of a mathematical model. The paper should be assisted when thinking about setting inventory levels in the production company during the economic crisis.

Key words: Types of inventory, inventory costs, inventory models, the automotive industry, crisis

1 INTRODUCTION

The aim of this work is to delineate an inventory management in the automotive industry and to determine a well chosen model of inventory control inventory levels of company operating in the automotive industry during the economic crisis. This theme was chosen because I worked in logistics of manufacturing companies where this issue is very topical. Most manufacturing companies have significant inventory costs and trying to keep inventory management to optimize as much as possible.

In the event of a crisis is the aim of optimizing inventory management put even greater emphasis. For example in the automotive industry from which I have the most experience, the crisis started almost immediately. Consumers first began to cut down on non-essential things and automobiles are definitely non-essential. There were well-founded estimates that since the beginning of the new millennium in Europe were approximately 20% more production capacity automakers and suppliers to the automotive industry than the real demand - it is clear that the automotive sector has been hit by the crisis significantly. While during my entire career from 1999 to 2008 occurred in logistics to the constant increasing requirements of customers - it was necessary to constantly extract the existing capacity of one hundred percent and strive to provide new capacities and increase requirements to suppliers, from autumn 2008 the vast majority of companies began to experience decline call offs. In terms of stocks before the crisis meant to keep them at level higher than optimal, since the crisis began, and this trend still exists, is to hold stocks below optimal levels.

There are various theories of inventory management decsribe in this work, some inventory models and an application one of the models on the example of smaller company operating in the automotive industry, which is struggling with a lack of orders caused by the crisis.

2 INVENTORY MANAGEMENT

As already mentioned, companies have in their stocks bound substantial assets and therefore seek to optimize them. Stocks can be classified according to different criteria - the degree of processing, the purpose or function.

2.1 Type of stocks

According to fuction stock are devided as follows:

- Disconnect stocks:
  - turnover (common) stocks – reserve to cover needs between two deliveries,
  - safety stock – reserve to cover random fluctuations,
  - anticipatory stocks (frontloading) – for example stocks in case of seasonality,
  - stocks in the logistic channel – transport stocks, material in the progress.
- strategic reserves – reserves in case of unforeseen events,
- spekulative stocks – stocks purchased for some occation, mostly during the anticipated growth of input prices,
- technologic stocks – stocks for supplies of technologic needs (food industry),
- stocks without function.

As already mentioned, companies have in their stocks bound substantial assets and therefore seek to optimize them. Stocks can be classified according to different criteria - the degree of processing, according to the purpose or function.

Based on experience in logistics there will be mentioned some interesting things related to stocks. There are strategic reserves which in the contract require French carmaker PSA (Peugeot-Citroen) and Renault. Supplier was required to hold in external warehouse a three-day supply of finished products in case of unforeseen events. As an example of unforeseen events was mentioned a fire or strike. There was probably a deep experince with a strike in France. It was necessary to restructure once a year those finished products and they had come to the customer specially marked, therefore it was not necessary to continuously permut based on FI-FO (Simply first dispatched is the oldest).

It is also possible to mention of practical experience some of the stocks that fall into the category of stocks without function. In practice it is hard to not meet with the company where they should not have stocks belonging to the category of unwanted. For example a customer has announced that one of the final products will want a certain amount per year. However the marginal model was not sell well and forecasts at once rapidly decreased. Responsible logistician not responded properly and not promptly cut call offs to their supplier. The supplier originally ordered components produced and delivered and the customer had stocks for several years.

In every company there will be plenty of finished products, semi-finished material or input components and raw materials which are either mostly qualitative reasons refused to either the customer or the company itself is trying to claim it to suppliers. For example this includes products that are out of tolerance of the customer and the company itself caught it. Due to complicated negotiations about guilt, exceptions and acceptance with customers and suppliers these stocks are in store for many months, sometimes years, and finally, the company is often forced the goods to destroy.

In the automotive industry suppliers agree to supply products throughout the entire life cycle of a specific car model and also undertake a period of time to deliver products even after production of spare parts. This often means having enough stock input materials or finished products to be produced in a cost-effective batch for several years.

2.2 Inventory costs

From a financial and economic point of view are associated with inventory costs because stocks are bound resources that could be used in another way.

Costs connected with stocks:

- costs for orders,
- costs connected with stockholding,
- costs for lack of stocks.

More detailed will be mentioned costs resulting from deficiency reserves, which are the nightmare of all companies operating in the supply chain of the final car manufacturer. Thanks to the considerable competitive environment, mentioned the crisis, the enormous pressure automakers and sometimes due to a false sense of infallibility and sophistication of management tools in the automotive industry suppliers sometimes compress their inventory to an absolute minimum. Then whatever the reason may be that the products to the customer are not at the moment available.

Companies supplying parts to car manufacturers are well aware that stopping the production line automaker is extremely expensive, because for every minute they are charged a fine of several million crowns. Among the suppliers in the automotive industry circulate various stories about flying helicopter to the car factory with several components as a carmaker forced a small carrier to stop their business because his truck crashed with key supplies and threated production. Practical experience of the author, for example, refers to small, fast cars, which it was necessary to send with several parts to the carmaker or vice versa when the contractor stopped our line, we enforced and calculated the stop cost.

3 STOCKS MODELS

Stock models try to answer when to order new delivery and how big should bet he delivery. Company leaders often try to find out an optimal level of stocks.

Stocks models theory can be classified according to various criteria. One of the division model is broken down into static and dynamic. For **static model** of stocks is taken only one delivery that had again not complete. Business needs are met from this stock. In case the supply is insufficient, the costs of deficiency occur. In contrast, there are higher supply costs associated with the residual amount after production.

The **dynamic model** of stocks is continually updated in time. Furthermore, a distinction whether the ordering process is changing over time. Inventory levels are monitored during the process either continuously or at defined time intervals.

When the inventory management takes into account the time that elapses between exposure order and its delivery to the warehouse. It is the lead time.

When issuing orders, there are two basic strategies:

1. The first request is issued when the supply drops to a predetermined level. Stocks in this strategy are constantly monitored and when to drop a set limit is needed to order a new delivery. It is a system with continuous monitoring.
2. Order is issued at regular intervals. The company monitors the size of these intervals stocks and accordingly orders the necessary amount. This is a system with periodic monitoring of stocks.

One of the fundamental division is cutting stocks models for **deterministic** and **stochastic** models. The models are divided according to the exact nature of the demand. Deterministic models assume that the demand at the time fixed. Stochastic models assume an unlimited demand - demand size is fixed only with a certain probability.

3.1 Deterministic stocks models

If we know in advance the size needs to be met from stock and is not necessary to calculate with fluctuations, it seems pointless to create any safety stock. Therefore all deterministic models optimize only reversing component inventory and optimum cost is expressed only by the storage costs and recurring costs replenishment. In practice only rarely a situation is encountered that would not be affected by the uncertainty and could be displayed by deterministic models so that these models will be mentioned only marginally.

EOQ model – optimum size delivery

As stated JABLONSKÝ (2002), EOQ model (economic order quantity) is essential, probably the oldest and most famous model, where demand is continuous and does not change over time. In the literature we can meet with the name Harris-Wilson model. It is based on the following assumptions:

- reserves are supplemented at one time after their exhaustion,
- there is no shortage of reserves (at the time exhaustion warehouse is completed),
- the acquisition period of deliveries is known and constant,
- demand is known ahead for the item purchased for the entire supply period,
- size of all deliveries is constant,
- due to constant demand stock consumption is uniform,
- purchace price is independent of the size supply.

There is regular repetition of supplies in this model that are identical. The total cost of replenishment warehouse can be expressed as follows:

$$N(q) = c_1 \frac{q}{2} + c_2 \frac{Q}{q}, \qquad (1)$$

where

c_1 is an annual unit cost of storage

c_2 is an acquisition cost per delivery

q is a size of one delivery

Q is a size of year demand

$q/2$ is an average stock size

Q/q is a number of delivery cycles

We can influence the level of cost in formula (1) only by the size of delivery q, which is the only variable in this model.

Under these assumptions it is possible to determine how large is the supply and how often should a company to order an item that costs associated with acquiring and maintaining inventories as low as possible. If we put the first derivative of the function $N(q)$ is zero:

$$\frac{dN}{dq} = \frac{c_1}{2} - \frac{c_2 Q}{q^2} = 0$$

and we solve this equation for the unknown *q* then as a result we get:

$$\boldsymbol{q^* = \sqrt{\frac{2Qc_2}{c_1}}}$$

Thus will be calculated in this model optimum delivery.

If we substitute the optimal value to the cost function (1), after treatment a total optimal cost is

$$N^* = \sqrt{2Qc_1c_2}$$

Than we can express optimal replenisment cycle lenght t^*:

$$t^* = \frac{q^*}{Q} = \sqrt{\frac{2c_2}{Qc_1}}$$

As mentioned above, this model is historically one of the oldest and stands on several assumptions, which are difficult in the real world securable. On the other hand all the stakeholders in the automotive industry tries to set up and develop such complex processes throughout the supply chain, which could make orders the entire system of orders as simple as possible, more transparent and fixed. For some simpler calculations the theoretical conditions of this model could be used , however, in the automotive industry hit by crisis cannot be apply several conditions of the model (size of delivery is the constant, supplement the storage occurs at any one time, utilization of inventory is uniform).

Transitional dissatisfaction demand model

This model differs from the previous model only in that it allows a temporary shortage of stock in the warehouse. Therefore the demand may be unsatisfied for a transitional period. This brings additional costs.

The principle of the model, namely that there is a temporary unsatisfied demand, is unacceptable in a particular case of the company in the automotive industry. Therefore that will not be considered for the calculation model.

POQ Production model

A production model POQ (production order Quantity) again using the same assumptions as the EOQ model. The difference is that it does not apply one of its conditions - the supplement of the storage occurs at one time. Adding storage is not disposable. The delivery cycle is divided into two - production and consumption cycle. This model is closer to reality, but still there are assumptions that the size of the supply is constant and utilization of inventory is uniform. However the projections in the supply chain in the automotive industry does not apply and therefore even this model will not be considered for calculation.

Rebates model

Here we will briefly mention a rebates model which however in the automotive industry is considered too inappropriate. It does not apply here as one of the assumptions in the model EOQ that the purchase price does not depend on the size of the order. In this model we assume that the supplier offers quantity discounts.

3.2 Stochastic stocks models

One of the assumtions in previous deterministic models was evenly distributed demand. Stochastic models are models with uncertain demand. We often assume a normal distribution in stochastic models, which describes well the course uncertain demand.

Stochastic continuous demand model

It continuously monitors the status of stocks in this model, which means that a new order is issued at a time when the total inventory in the warehouse drops to a specified limit. This limit r is called a point of another order. The acquisition period d is constant.

JABLONSKÝ (2002), during the acquisition lead times may occur 2 cases:

1. Demand during acquisition lead times d is lower than the point of another order r. Another delivery arrives at the warehouse even at time when there is some stock in a store. This means that the stock is continuously available and no unsatisfied requests – see the first cycle in fig. 1.
2. Demand during the acquisition lead times d is higher than the point of another order r. In this case the consumtion of stocks will come during acquisition time delivery and not to the full satisfaction of the requirements - see the second cycle in fig. 1. Points R1 and R2 show the exposure order.

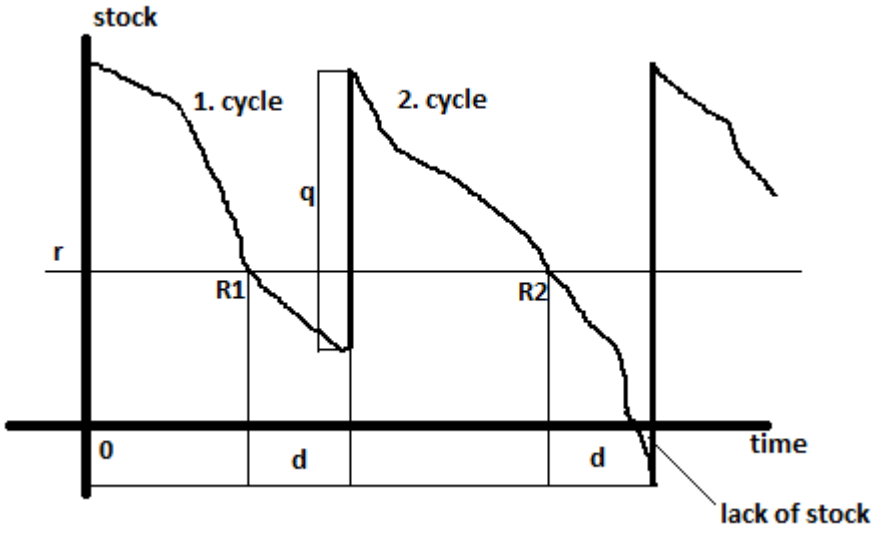

Fig. 1 – Dependence of stocks at the time when the stochastic demand.
Source: JABLONSKÝ J. Operační výzkum. Praha: Professional publishing, 2002. ISBN 80-86419-23-1. Modely řízení zásob, p. 228

It is necessary to know the character of stochastic demand when creating stochastic models. This is determined by the appropriate probability distribution, its mean value μ_Q and by standart deviation σ_Q. The mean value and the standart deviation of demand during acquisition lead time d will $\mu_d = d\mu_Q$ and $\sigma_d = d\sigma_Q$.

We will assume that the demand will be during the acquisition lead times a normal distribution with mean value μ_d and standart deviation σ_d.

Another assumption that occurs is the **level of service**. It is a probability that within one delivery cycle are not unsatisfied requests. The level of service we denote γ. When the demand will be lower than the point of a new order *r* *, there is no unsatisfied demand. Otherwise when the demand will be higher than *r* *, occurs unsatisfied demand. If a company wants to reduce the probability of unsatisfied demands and to increase the level of service, it must issue an order at the moment when the supply drops to a level which is still higher than *r**. Then will apply:

$$r_\gamma = r^* + w,$$

When *r** is point of furhter order, r_γ is point of further order for a given level of servis and *w* represents a **safety stock**.. It is an additional supply that allows to cover excess demand during the acquisition lead times. Safety stock leads to a higher level of service, but also causes higher storage inventory costs.

JABLONSKÝ (2002) stated, that a mean of storage and cost enumerate:

$$\mu_N = \sqrt{2\mu_Q c_1 c_2} + c_1 w$$

To determine the amount of safety stock is needed to solve

$$P\{ Qd \leq r^* + w \} \geq \gamma$$

where *Qd* is a demand during the acquisition period and P is the probability, that the actual demand is lower than the level of orders totaled more with safety stock, which should be higher than γ. It is now necessary to define the probability distribution of the demand, which is, as mentioned above, the normal distribution. Given that in the tables are only available values of the distribution function of the standard normal distribution *N (0,1)* it is necessary to transfer random variable *Qd* with distribution $N(\mu_d, \sigma_d) = N(r^*, \sigma_d)$ to random variable with distribution *N(0,1)* according to

$$z = \frac{Qd - r*}{\sigma_d} \qquad (2)$$

value z_γ, which correspond to level of servicey γ, we determine from the table of the distribution function of the distribution *N(0,1),* where for exemple wherein $\gamma = 0{,}99$ is $z_{0,99}$ = 2,327

After substituting into *(2)* we get

$$Qd^* = z_\gamma \sigma_d + r^* \qquad (3)$$

When creating safety stock must pay

$$r^* + w \geq Qd^* \qquad (4)$$

After combination *(3)* and *(4)* we get

$$w \geq z_{\gamma}\, \sigma_{d}$$

Safety stock must be created at such level to pay this formula.

The stochastic model of continuous demand will be used to determine optimal inventory and safety stock for a specific example of company operating in the automotive industry. Shortly there will be further mentioned stochastic model, which is a single inventory optimization model, but in our particular case is not applicable because a larger supply is created at the beginning which than no longer supplemented as in the automotive industry not used practically.

Model created a singl stock

As mentioned above, once is created the stock at the beginning and gain no longer. Demand is not deterministic, it is then necessary to describe it by some probability distribution. This model is used primarily by the demand for goods seasonal nature (eg. Christmas trees) for perishable goods (fruits, flowers). A typical role model is called a newsboy problem, the problem of newspaper dealer. It means that the standard deviation and the mean demand is estimated based on previous experience.

4 APPLICATION OF SUITABLE MODEL FOR THE CALCULATION OF THE OPTIMAL INVENTORY

You will find application of the theory of inventory control models to the specific case of the company CIE Metal. The company operating in the automotive industry was significantly affected by the crisis and the challenge is to figure out how big should be the optimal supply of components, which are optimal inventory costs and what the optimal level of safety stock.

The company CIE Metal is a Spanish company producing metal components for the automotive industry.

In terms of the automotive industry it is a medium-sized company of about 200 employees and a monthly turnover of 44 million CZK (specific data from January 2014). The company is engaged in several specific projects for different customers, the most important is the production of the rear axle for Opel Zafira. The rear axle is produced on automatic robotic line and the main component of which is purchased is the torsion bar, supplied by the German company Benteler. In the automotive industry is often applied system where the final manufacturer defines to its supplier suppliers of raw materials or components. The final manufacturer is often a stake in the negotiations of suppliers with their suppliers on prices. This also applies in this case.

Company Opel was one of the automakers that have been most affected by the crisis. Demand dropped significantly and Opel closed the plant in Antwerp and Bochum. This situation significantly hit the company CIE Metal, which decreased significantly call offs by about 30%. In the automotive industry, manufacturers often guarantee the final annual volume suppliers with some variation. In the specific case of the company CIE Metal it was 140 000 pieces of rear axles + - 10%. In the case of overflow or underflow volume should automaker under the contract provide compensation. In this particular case, which is solved at the highest level of management companies, unfortunately due to the financial situation of the company Opel and given promises of future projects, Opel did not provide any compensation.

Task is as follows: Figure out how big should be the optimal batch of torsion bars, which are optimal storage costs of this component and what should be the safety stock.

4.1 Using the model

The simplest model for use appears to be deterministic EOQ model. However, it has several assumptions that the use of the model in reality considerably limit. Restrictive assumptions are as follows: demand is known and constant, consumtion of inventories is even and the size of the supply is constant. So in real cases the use of this model is limited, on the other hand suppliers in the automotive industry are equipped with sophisticated information systems that are capable at the lowest cost evenly order deliveries and those deliveries are almost constant.

Compared with other industries the demand of finished automobile manufacturers is quite clearly defined due to the really advanced tools of market research however due to the already mentioned crisis the demand is more stochastic.

For calculating the optimal supply costs and safety stocks thus will be elected one of stochastic models, stochastic model of continuous demand. Second stochastic model - a model created a single stock, which is described above, it is not approproate for this particular study because there is a supply created once (suitable for seasonal goods). Auxiliary calculations of unit storage cost and acquisition cost will be made using the inference of deterministic EOQ model.

4.2 Calculation of optimal inventory and safety stock

Specific manual input data model are as follows :

The average annual demand for the rear axle Opel Zafira	μ_Q = 140 000 pcs
Standart deviation (+-10%)	σ_Q = 14 000 pcs
Acquisition time of delivery (delivery 2 x per month)	d = 1/24 year
Purchase price of torsion bar (one torsion bar in one axle)	500 CZK

There are deduced even more tiems:

The Annual storage cost c_1 per one torsion bar:

When packing 50 pieces per pallet, pallet sizes 2 m2, storage costs 3 CZK / day / m2, the costs for loading pallets 400 CZK / palette and unloading costs 300 CZK / pallet is c_1 = 3*365*2/50 + 400/50 + 300/50 = 58 CZK.

Fixed cost c_2 connected with each delivery:

There are included all administrative costs in this item connected with the order of delivery and a trasport of goods. Transport costs are fixed with transport provider by an agreement for one year, they are 18 000 CZK, the other administrative costs connected with the delivery are 4000 CZK. In total thus c_2 = 22 000 CZK.

Demand during the acquisition lead times *d* is μ_d = 140 000/24 = 5833 pcs

And standart deviation of this demand is σ_d = 14 000/24 = 583 pcs

Optimum supply amount q * is the following :

$$q^* = \sqrt{\frac{2Qc_2}{c_1}} = \sqrt{\frac{2 \cdot 140\,000 \cdot 22\,000}{58}} = 10306 \text{ pcs}$$

point of next order *r** is :

$$r^* = \mu_Q d = 140\,000\ (1/24) = 5833 \text{ pcs}$$

Now even calculate the optimal total cost by EOQ model :

$$N^* = \sqrt{2Qc_1c_2} = \sqrt{2 \cdot 140\,000 \cdot 58 \cdot 22\,000} = 597\,729 \text{ CZK}$$

As mentioned above, we assumed that the demand for the cost of delivery period *d* has a normal distribution $N(\mu_d, \sigma_d) = N(5833,583)$

From tables with distribution function of the standard normal distribution *N (0,1)* which were to be transformed random variable *Qd (Formula 2)* determine what value z_γ matches to the operating level γ. Given that suppliers in the automotive industry are committed to the creation of safety stocks, taking into account only the operating level of 0.99 and higher.

Thus from table for pro $z_{0,99}$ = 2,327.

Safety stock will be $w \geq z_{0,99}\ \sigma_d$ = 2,327 · 583 = 1357 pcs

The order should therefore be exposed when the inventory level drops to

$r^* + w$ = 5833 + 1357 = 7190 pcs

Will also increase the mean cost from deterministic EOQ costs

to $\mu_N = \sqrt{2\mu_Q c_1 c_2} + c_1$ w = 565 968 + 1357 · 58 = 676 435 CZK.

Thus Let us summarize the results: level of optimal supply torsion bar is q * = 10,306 pcs, point of another order r * = 5833 pcs, safety stock w = 1357 pieces and the mean total cost at the operating level of 99% is 676,435 CZK.

In practice when determining the amount of deliveries are more reflected transport costs and the quantities to be ordered as multiple transport units (eg. Containers) or in the case of larger volumes full trucks. The buffer stock is in practice often a multiple of the daily manufacturing process needs.

However the calculated results which have been achieved by using the stochastic model of continuous demand are relatively close to real values, which are normally operate. The chosen model therefore well describes the work of stocks in a company operating in the automotive industry. Given the uncertainty of orders from customers in the automotive industry is definitely preferable to use a stochastic model that works with an unlimited demand.

5 CONCLUSION

The aim of this study was to describe the theory of business resources in the automotive industry in times of crisis. There were described types of stocks, species inventory costs and some practical knowledge from the factory related to crises. The work also describes the different inventory models. As each of them is suitable for a different case. For specific calculation of the optimal delivery, safety stock and the mean cost of storage of the company operating in the automotive industry is used a stochastic model of continuous demand. Since

the calculated value is close to the values used in real operation, the selected model is well quantifiing the mentioned issue.
On the one hand due to uncertain demand the overall costs and safety stock are higher, on the other hand in a case crisis, there is fear of a drop in orders and the related effort to minimize inventory costs. In this case the company's management must to make decision if do not reduce the service level of 99% to a lower value and thus to reduce safety stock. The total costs are reduced but the risk of delivery failure to customer increases.

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MEASURING THE QUALITY AND CONTINUOUS IMPROVEMENT IN SELECTED FOOD CHAIN

Emília Svitová, Zuzana Kapsdorferová

Abstract

The integral part of human existence has been providing services. Human society through long-term social development, starting from food consumption through mass production, arrived at the consumption of services. Social and cultural development, changes in the production sector and the growth of the labour productivity influence the increase in the consumption. The last few decades are considered to be the period focused on the development of services. In the most developed economies, services account for as much as 70% of the gross domestic product, with growing importance. With the aim of offering another added value for their customers a vast majority of companies nowadays also provide services along with their range of products. The companies putting maximum effort into achieving high-quality services and 100% customer satisfaction grow faster, generate more profit, work more efficiently, and have loyal customers. The part of managing processes of providing services is monitoring quality, the determination of the approach to quality measurement, evaluation of the process and implementing of real corrective measures. The aim of the scientific article is to point out one of the possible ways to evaluate the quality of services in a selected fast food chain and to perform internal benchmarking and to evaluate the quality of service based on chosen methods.

Keywords: Ishikawa diagram, Quality of services CSO index, quality measurement tools, continuous improvement, Pareto chart

1 INTRODUCTION

According to Beshah and Berhan (2014) both quality and quantity are very important issues in the day-to- day activities of our lives. The decision of right quantity may vary, but the need for quality is always found to be high. Qulaity of product is one of customers§ ever-changing criteria for purchasing decision making. Dora, Kumar, Goubergen, Molnar, and Gellynck (2014) wrote that the importance of quality has significantly grown in the food sector over the last decades because of increasing consumers' expectations, governmental regulations and expanding competition in the market. Kafetzopoulos and Gotzamani (2014) stressed that in response, food companies have increasingly pursued quality management (QM) practices in recent years. Regarding of this fact an increasing number of food companies all over the world have been implementing quality and Food Safety Systems (FSS) in order to improve the quality and safety of their products and to witness the related benefits. Nowadays, the main Quality Management Systems (QMS) that are implemented by food companies are those in the International Organization for Standardization (ISO) 9000 series, such as ISO 9001: 2008. The ISO 9000 series of quality management standards provides the framework for organizations to install a QMS following certain guidelines and leads to continually improved processes that satisfy customers' requirements. Zuurbier and Trienekens (2008) added that in the last decade many public and private standards on food safety and quality have been developed as a result of these developments. Currently, there is proliferation of standards worldwide. One effect is that, in particular, companies from developing countries and emerging economies have problems to comply with these standards. Another important effect is increasing marginal costs of certification and accreditation, which also puts pressure on

company profits in industrialized countries. The combined impacts of these effects ask for strategies to revalue the cost/effectiveness of the certification and accreditation system.

The service quality is defined by ISO 9000:2005 as the level in which the services meet the requirements, wishes and expectations of the recipient. A customer regards the service quality as excellent or unsatisfactory in dependence on his or her experience without regard to what the marketers and other experts consider being excellent. If a company providing services wants to survive, it is important to consider how the customers perceive its services. Ďaďo, Petrovičová, and Kostková (2006) states that customer expectations are determined by the previous experience with consumption of the concerned service, references of corresponding groups, the service presentation in individual forms of marketing communication, the price of the service, the situation in the time of service consumption, the norms, values and needs of the consumer, the subject providing the services, the risk connected with the service consumption etc. The expectations are usually defined by what should be done or what will be done. The tolerance zone is different in different consumers. It is also different in one and the same consumer in dependence on specific conditions of service provision. The tolerance zone is influenced also by the specific type of service, whether it is a service as a result of process of service provision, or whether it is a service as a process. Services representing a process have a wider tolerance zone. The zone is determined, among others, by the perception of alternatives of provided services, customer's imagination of himself in the corresponding process of service provision, the explicit or implicit approach to the provided service, the previous experience with the service, oral information about the specific service from others, risk connected with the purchase and consumption of the service, ability to evaluate the quality of the provided service etc.

In terms of service offer, it is possible to talk about two quality levels: the functional service quality and the technical service quality. The functional quality relates to the consumer who perceives the interactions of the service provider, and the technical quality relates to the consumer who perceives the result of service provision. In service management and marketing (Gronroos, 2001) set up a model of service quality perception based on the relation between the expected quality and the experience of the customer with quality. The overall quality is, unlike the product quality, of a subjective nature. The overall quality represents a summary of more aspects of quality assessment. The service quality is, unlike the product quality, subjective. The aim is that the customer perceives even the slightest difference between the perceived and the real quality of the service.

Zeithaml and Bitner (2002) state that the quality of provided services is significantly influenced also by the loyalty and satisfaction of consumers.

2 AIM AND METHODS

The aim of the presented research is perform internal benchmarking and to measure the quality of provided services with selected methods. In the research, critical factors of quality and customer satisfaction of a company were evaluated by mystery shopping visits, the Customer Satisfaction Opportunity Index (CSO) was identified and the Net Promoter Score was calculated. The acquired data were compared in an internal benchmarking. Acquired data were processed and analysed with the Pareto chart, the Ishikawa diagram and the method of 5 Whys was also used to evaluate the quality of services.

Measuring service quality and customer satisfaction was carried out in one company. The evaluation and service quality measurement methodology was performed by the PDCA cycle of quality improvement. In the first research stage, the current quality level in individual establishments was identified. The "mystery shopping" method was applied in this stage. The

research consisted of 16 mystery shopping actions altogether carried out by eight mystery shoppers in the course of 6 months in two establishments of the company that have been referred to as restaurant A and restaurant B in the research. The research was conducted from December 2013 until May 2014, two visits each month. In order to achieve a better comparison, the visits in both restaurants were done on the same day. It is important to add in this connection that internal principles for mystery shoppers in the analysed company were respected during the research. On the basis of critical factors and mentioned requirements, an own questionnaire was prepared for the mystery shopping research. In the introduction, the question concerning the Net Promoter Score was created. The critical quality factors that were set very strictly by the company were respected in the research because a non-achievement of any of 10 critical factors means quality failure. The CSO index represents the percentage of mystery shopping visits that did not fulfil one or more critical quality factors with impact on customer satisfaction. The aim is to reduce the number of visits where the critical factors have not been fulfilled. The lower the CSO percentage, the better the quality, company performance and customer satisfaction.

3 RESULTS AND DISCUSSION

3.1 Measuring Service Quality in the Selected Company and Internal Benchmarking

The analysed company has been working in more than 121 countries all over the world; it serves 70 million people daily in more than 35,000 restaurants in the world, and is employer for 1.8 million employees. The company has built its entire quality conception on 100% customer satisfaction. The company has focused on three main quality pillars: a quality product, quality services, and a clean business premises.

In order to measure service quality, it was necessary to identify the key factors of service quality. The company defined them as follows: hot and fresh sandwiches, hot, salted and crispy French fries, serving the costumer from his placement into the nearest, shortest queue within 300 seconds, a friendly greeting at arrival and departure, customer friendly access, correct meals and beverages according to orders, a clear and comprehensible communication, clean premises, clean employees, clean toilettes. These key factors were identified and analysed by the company and they are valid for all establishments all over the world. If an establishment achieves all mentioned critical quality factors during a customer's visit, the customer is satisfied only to 88-89%. If a further quality factor is not achieved, the customer satisfaction drops dramatically. These criteria were fully respected during the research, and mystery shoppers filled in a specific questionnaire with quantified questions at the end of their visit. This analysis focused purely on the subjective satisfaction, or dissatisfaction of customers with the aim to check the aforementioned critical and supporting quality factors.

It follows from the evaluation of the mystery shopping questionnaires in the restaurant A that this restaurant maintains a high quality of its products and services. All analysed critical factors were met, and this is an excellent result in 7 out of 8 visits. During one out of 8 visits, 3 critical factors were not met: serving the customer within 300 seconds, customer friendly access and cleanliness of the toilettes. The CSO index of the restaurant A was set at 12.5%.

When looking at the evaluation of the 8 mystery shopping questionnaires, one can see that the level of the provided services in the restaurant B is, as far as the quality is concerned, different. The CSO index is as much as 62.5%, that means that as many as 5 mystery shopping visits did not achieve at least 1 critical quality indicator, such as: serving the customer within 300 seconds, greeting at arrival and departure, and customer friendly access. The results of the internal benchmarking related to the analysed establishments are indicated in Fig. 1.

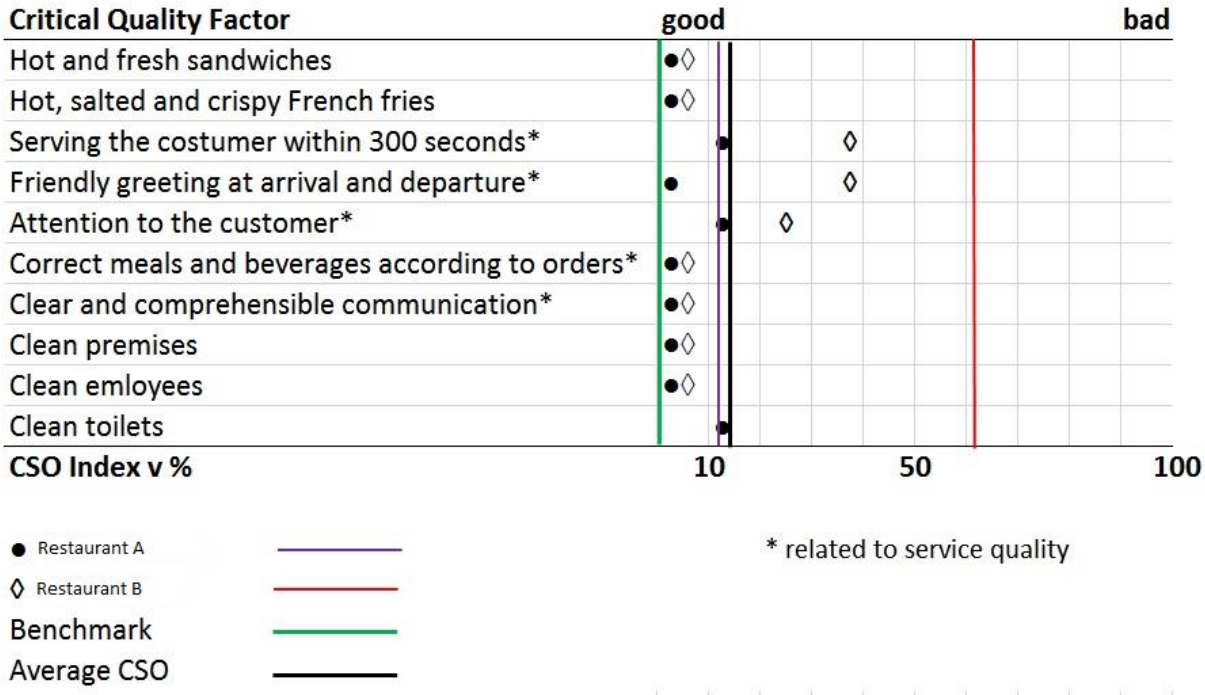

Fig.1– Internal benchmarking of analysed companies. Source: Own work

It follows from the figure that neither of both restaurants achieved the CSO=0, i.e. the benchmark in the group, that means we cannot consider them being the best restaurants. It is necessary to add that the restaurant A achieved a CSO result above average although in one mentioned case, during one visit, there was a problem with serving the customer within 300 seconds, the attention of employees to the customer and with the cleanliness of the toilettes. In spite of this, this result is slightly above average in comparison to the CSO average in Slovakia. The restaurant B achieved a result that is deeply below average, with the CSO score of 62.5%, in three critical factors: serving the customer within 300 seconds, a friendly greeting at arrival and departure and customer friendly access. In both restaurants we have found out the same problem with 2 same critical factors, and that is serving the customer within 300 seconds, and customer friendly access. It is not clear whether the frequency of not meeting these critical quality factors is widespread in other restaurants in Slovakia as well.

3.2 Identifying the Net Promoter Score of the Company

The Net Promoter Score is based on the fundamental perspective that customers of each company can be divided into three categories: supporters, passive customers, and critics. The point is in identifying recommendations of the company to a friend or a colleague. Respondents answer in points, from 0 to 10, where 0 is the lowest and 10 the highest score, i.e. a 10 would provide a client who would recommend a company to a friend or colleague on all accounts. Unlike mystery shopping where we clearly can quantify the results, the NPS is a subjective indicator, this, however, does not mean that it would be of a lesser value. An average company has the NPS only about from 5 to 10. This indicator is important because the supporters are the basis of a healthy and profitable growth of a company in the future. The best global companies run their business models between NPS 50–80%, and there still is potential to improve this subjective factor.

The results of the Net Promoter Score are shown in Fig. 2 and 3 as follows:

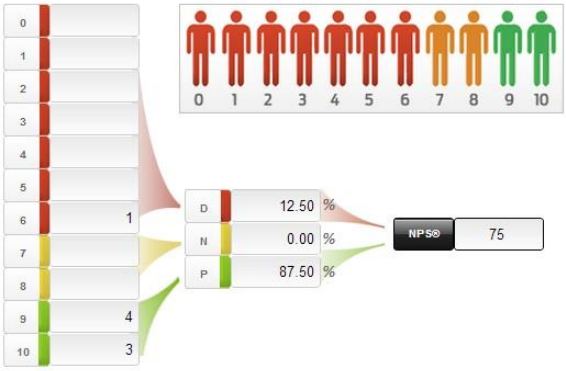

Fig. 2 – Net Promoter Score: Restaurant A.
Source: Own work

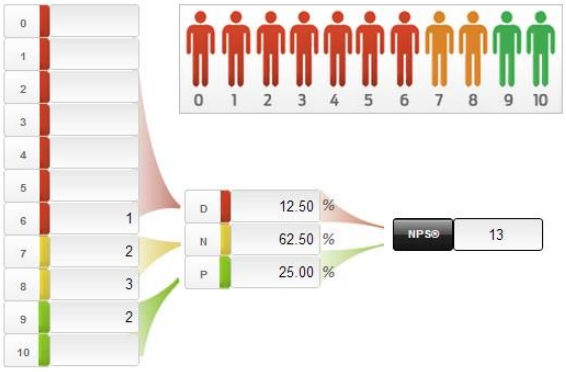

Fig. 3 – Net Promoter Score: Restaurant B.
Source: Own work

The Net Promoter Score of restaurant A shows the fact that there are 87.5% supporters of the mentioned restaurant, and 12.5% critics which is a positive score because the supporters highly outnumber the critics and in doing so they recommend the restaurant and are the basis of a healthy growth. The Net Promoter Score in restaurant B is, based on the evaluation of the mystery shopping questionnaires, only 13, which is an average indicator. The company creates daily more supporters and good name promoters than their critics and this can hamper the development of restaurant B and increase their costs for marketing and for the acquisition of customers significantly. This reduces the profitability and potential for healthy, organic growth in the future. Another finding is interesting with regard to restaurant B. In spite of the fact that the service quality was not optimal, the NPS indicator achieves an average result. This means, that despite the fact that the customers themselves were not entirely satisfied with the quality, there are still more customers who would recommend this restaurant B to their friends.

3.3 Analysis and Identification of Reasons and Problems

The key problems were identified with the Pareto chart. With this chart, it is also possible to focus primarily on those factors that have the largest share in the analysed problem.

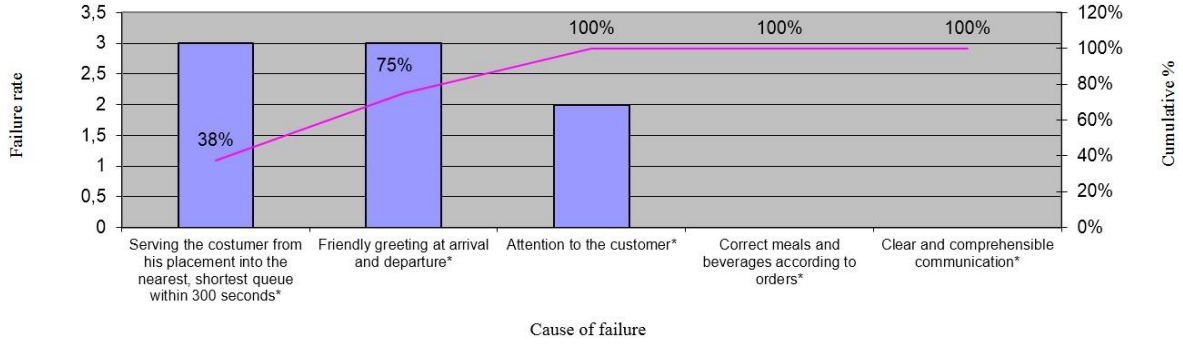

Fig.4 – Pareto Chart. Source: Internal sources of the company, own work

Following from the Pareto chart, a key minority of deficits (cumulative value 75%) was identified that has a significant impact on customer satisfaction. These are “the missing friendly greeting” and “serving a costumer within 300 seconds”.

The key activity is to look for reasons for deficits, mistakes and problems. To find out the main reason, the chart of reasons and consequences as well as the method of 5 Whys were used. The reasons for not fulfilling the five critical quality factors: “not serving a costumer within 300 seconds” and “the missing friendly greeting”, were identified (Table 1 and Fig 5).

Tab.1 – Looking for reasons with the method of 5 Whys. Source: Own work

Problem	Why?	Why?	Why?	Why?	Why?	Action
Not serving the customer from his placement into the queue within 300 seconds	long queues	many people at once	lunch customers not covered with increased number of employees at cash counters	bad ratio of production/cash counters employees	bad planning by manager	increase the number of employees, retraining for manager
	don't know how to serve the customer	nobody told them how	no proper training	no time by manager	bad time management by manager	training and practices for employees and manager
	don't know how to serve the customer	don't know the practices	forget the practices	not visible	mistake by manager	using visual aids
	don't know who to serve	nobody tells them	insufficient communication	no communication between new employees	weak communication	improve communication skills, team building activities, soft skills improvement
	don't know why they should do it	they don't care	personality of employees	bad recruiting	incorrect procedures of recruiting	new employees, motivation system, prizes and fines for employees, training
	don't know why they should do it	don't realize the importance	don't know the importance of "fast" in fast food	insufficient explanation		training on customer satisfaction
	inadequate number of employees	incorrect shift management	incorrect evaluation of shift manager	didn't know how to do it correctly	insufficient training	retraining and practices
	waiting for the French fries	small number of employees at the machine	incorrect evaluation of shift manager	forgot it	mistake by manager	retraining and practices
	small number of cash counters	cash desk is not working	forget to report it	insufficient evidence, reporting	missing maintenance report and evidence	practice training, using additional miniPC cash desk
	waiting for the French fries	the machine is not working	nobody took care of the maintanance	no plan	mistake by manager	introduce maintenance plan
				reason of failure		

In order to look for reasons, the Ishikawa diagram was used and four parts were evaluated: people, management, methods and processes.

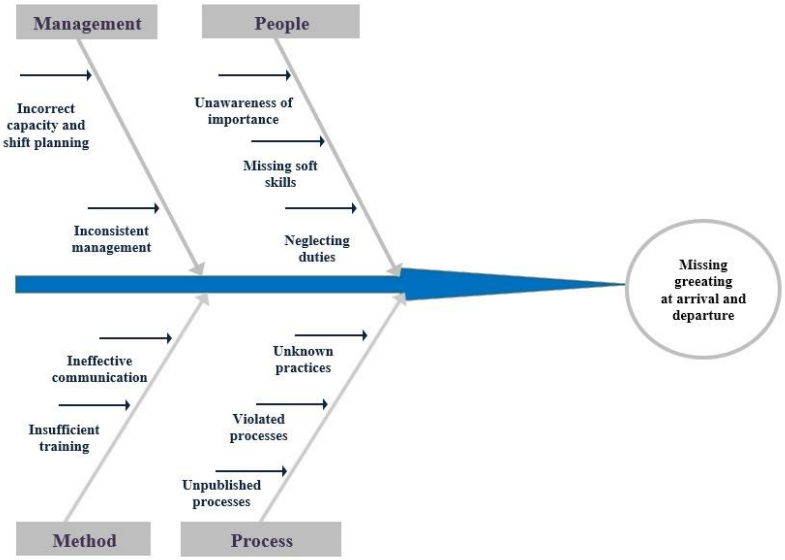

Fig. 5 – Ishikawa diagram. Source: Own work

With regard to restaurant B, the standard process after the mentioned identification of unsatisfactory CSO index is the integration of the restaurant into the so-called ROIP system which is a 21-month complex system of supervision and quality improvement and company performance improvement. Its aims are:

- measuring the fulfilling of standards and improving the business and quality performance,
- protection of the company brand,
- achieving sustainable profitable growth of the company.

This programme usually consists of steps such as increasing mystery shopping checks, e.g. up to 3 visits per month, regular SOR (Small Operations Review) audits – basic evaluation of restaurant systems in business and submitting measures for improvement of their quality and performance, BPS – Business Planning Session is a meeting of leading representatives and a consultant in order to use the ROIP methods for improvement of selected indicators, CRO – as a planned activity that provides opportunity for an audit of 12 restaurant systems and enables to evaluate the restaurant capacity through a diagnosis of processes, performance of regular FOR (Full Operations Review) audits – in-depth and detailed evaluation of restaurant systems in business and restaurants, submitting measures for quality improvement, supporting visits from management that help the management to support changes in the restaurant and other.

4 CONCLUSIONS

Sources of all societies are limited therefore it is necessary to start the improvement with the biggest deficits and areas where we can achieve the largest, most substantial and most visible improvements. By focusing internal company resources on improvement of a small number of main areas, above-average results can be achieved, and what can be prevented is wasting resources into too many areas from which every area will be improved only on average. The research pointed at the fact that measuring quality has to be a necessary tool for quality performance and improvement. The achieved quality level of offered services is not random but a result of a good or less successful management of selected restaurants. Providing the highest possible service quality does not only mean to providing and offering customers with a positive experience that they will remember, to satisfy their needs perfectly but mainly to exceed their expectations consistently. Then the customers will perceive the company where they buy products and services as a positively evaluated, they will return regularly, and such a company has big chances to succeed in the present demanding market environment.

The customers confront their requirements, wishes and expectations with the real service quality. There is a tolerance zone between those two limits when the customers still tolerate and accept the quality. A service provided in real life with a quality that is diametrically different from the expected service quality level has a negative impact on the customer loyalty and the company perception. The tolerance zone is different in individual consumers and depends on previous experiences of the customer with the competitors. The aim of each company is to exceed the expectations of their costumers and not to become self-satisfied with the provided quality standard.

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LEAN SIX SIGMA JOURNEY – PAST, PRESENT, FUTURE: LITERATURE REVIEW

Vladyslav Vlasov

Abstract

Over the last few decades, continuous improvement has become immensely popular and widely used in various business sectors. In particular, Lean and Six Sigma. These philosophies originated separately, but merged over time and formed a Lean Six Sigma methodology that continues to develop. This paper examines Lean Six Sigma development beginning from the early stages up to current state and future perspectives. An insight to Lean and Six Sigma as separate methodologies is given, followed by a more detailed review of a combined Lean Six Sigma approach. Critical success and failure factors of Lean Six Sigma implementation are discussed. The review ends with explanation of "green" LSS trend.

Keywords: Lean Six Sigma, environment, wastes, critical success and failure factors

1 INTRODUCTION

Companies throughout the world have always been working on improving their operations and challenging their bottom lines. With a tremendously increased competition triggered by globalization, it has become vital for them to run their businesses in the most efficient and effective ways. Currently various approaches to improvement exist and pursue financial success and competitive advantages. However, synergy of Lean and Six Sigma (LSS) is considered to be the most widely applied approach to changes and improvement. It embraces the best aspects of both methodologies helping to achieve positive results in organizational performance improvement, if applied in a proper way.

The literature review includes a brief explanation of Lean and Six Sigma as separate methodologies, followed by an insight to combined LSS. Critical success and failure factors review provides an understanding of what is needed for a successful implementation of LSS. The article also attempts to explain a potential of combining "green" tendency with LSS putting an emphasis on greater benefits that could be achieved by this cooperation. The intended audience for the paper is scholars and practitioners, whose field of research is related to improvement methodologies and protection of the environment.

2 EVOLUTION OF LEAN SIX SIGMA

This chapter describes the evolution of LSS methodology providing brief insights to Lean and Six Sigma as separate methodologies as well as to the LSS holistic approach. The chapter ends with a brief analysis of possible "green" trend in LSS.

2.1 Lean

Since the early 1970s, researches have been studying lean concept while practitioners were using it to improve businesses. It resulted in a broad body of knowledge related to the topic that continues to develop and grow.

The term "lean production" is used to refer to manufacturing techniques or tools developed and used by Toyota Motor Company (Holweg, 2007). The concept was earlier described by Womack et al. (1990) to sum up the results of a research conducted by Massachusetts Institute of Technology (MIT) called International Motor Vehicle Program (IMVP) and the term itself

was coined by John Krafcik in 1988, a member of research team. Lean production is also commonly referred to the Toyota Production System (TPS). Currently, such terms as lean manufacturing, lean, lean philosophy, lean methodology, etc. appear in scholar works as well as practitioners vocabulary. Notwithstanding the variety of terms, the core idea behind them lies in the reduction or at best elimination of non-value adding activities in business process to maximize customer value.

Non-value adding activities, known as "wastes" in Lean paradigm, are given in Table 1.

Tab. 1 – "Wastes" in Lean paradigm. Source: Adapted from Ohno (1988) and Zhang (2012)

Types of Waste		Description
T	Transportation	Excessive transportation of work-in-process (WIP) or goods
I	Inventory	Excess of material and information
M	Motion	Unnecessary human movements
W	Waiting	Delays and idle time
O	Overproduction	Production of products/services ahead of demand
O	Over processing	Not required process steps
D	Defects	Off-specification outcomes
S	Skills	Not utilised capabilities

Initially, seven types of waste (TIMWOOD) were developed by Taiici Ohno, Toyota's Chief Engineer. Later, the eights type of waste, "skills", was added. To reduce or at best eliminate waste, it is necessary to clearly understand what the waste is and where it is. Wastes are easier to be found in manufacturing environment than in service sector. For each type of waste, there are various techniques for tackling it depending on conditions of processes or the overall business.

Jones (2010) drags attention to the fact that Lean is not only about waste and a tactic or short-term cost reduction program, but rather a way of thinking and acting for the entire organization. Stone (2012) studied lean related literature for the last forty years and marked out four phases of lean research development (Tab.2).

Tab. 2 – Four decades of Lean. Source: Adapted from Stone (2012)

Year	Phase	Description
1970 – 1990	Discovery	Oil crisis in 1973 triggered interest in Japanese management methods
1991 - 1996	Dissemination	Principles of Lean applied in US manufacturing sector known as TQM, JIT, etc.
1997 - 2000	Implementation	Lean thinking becomes an integral part of strategic management
2001 - 2005	Enterprise	Lean goes beyond manufacturing to service sector organisations
2006 - 2009	Performance	Attempts to assess the level of leanness, culture development and human resource aspects
2009 - present	Synergy	Lean is being applied to all functional areas of businesses and addresses environmental issues

Key findings of the lean literature review revealed by Stone (2012) and Seddon and Caulkin (2007) include:

- lean thinking became a philosophy originated in manufacturing and currently being applied not only to shop floor, but all through organisations of all industries;
- interest in research and application of Lean steadily increases;
- historically greater part of research concentrated on operational aspects with current shift to organisational development and human resource disciplines;
- Strategic alignment in all areas of an organisation is hard to reach, though when done so it guarantees successful transformation;
- lean goes beyond manufacturing and service, integrating aspects of environmental protection management;
- system thinking applicability to Lean discussed by researchers with less evidence from practice that remains a topic for the future research.

2.2 Six Sigma

Linderman et al. (2009) define Six Sigma as a systematic and organized approach to long-term process improvements aligned with the strategy of organisations, both for new product and service development based on statistical methods in addition to scientific method aimed at reducing customer defined defect rates.

Engineer Bill Smith at Motorola developed Six Sigma in the mid-1980s. The motivation behind the invention was to reduce high cost of poor quality. The methodology contributed to Motorola's quality turnaround and is believed to be the key factor of winning the 1988 Baldrige National Quality Award. However, the roots of the methodology lie in Deming's TQM principles and the works of Juran (Brady and Allen, 2006). Later Six Sigma was promoted in General Electrics (GE) both internally and externally as well as in many Fortune 500 companies in the 1990s and gaining its popularity over other improvement techniques.

"*Sigma*" is a statistical term referred to the measurement of process deviation from perfection. The idea lies in measuring the number of defects in the process to be able to prevent them systematically get to "zero defects" as near as possible. Ideally, a process should not exceed 3.4 defects per million opportunities to achieve the exact six sigma quality. Here an "opportunity" is a chance for non-conformance or failing to meet the required specification (Pyzdek and Keller, 2014).

Six Sigma is guided by a structured problem solving method widely known as DMAIC (Define, Measure, Analyse, Improve, and Control) as shown on Fig.1.

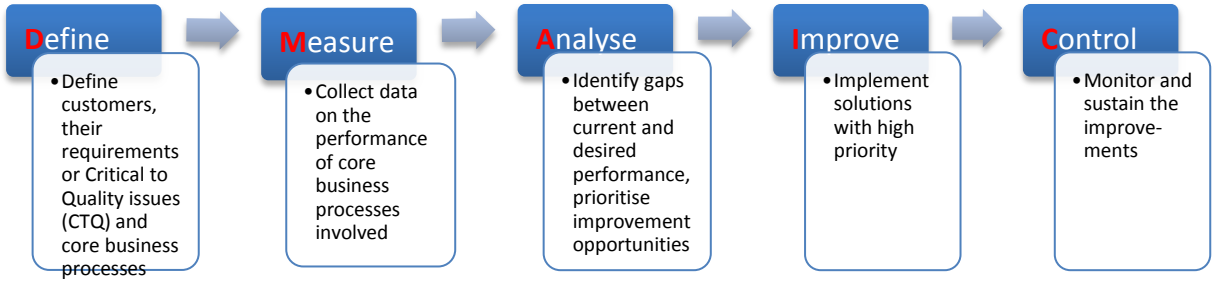

Fig. 1 – DMAIC roadmap. Source: Adapted from GE Capital (2012)

The method highly relies on data analysis and fact-based decision-making. Each stage of the method possesses specific tools and techniques and seeking to reduce variation in processes to gain high quality conformance from the customers' perspective.

2.3 LSS

Lean production and Six Sigma had been used separately for decades before they merged in the late 1990s. George (2002) defines LSS as a structured theory based methodology that concentrates on performance improvement, effective leadership development and customer satisfaction. Spector (2006) states that LSS is one of the most effective methodologies in process improvement and it is widely utilised in various top performing organisations.

Zhang (2012) concludes that the combination of lean manufacturing and six sigma produces a greater effect than each one of them individually and eliminating the cons of each approach in the meantime. The following figure explains the core of LSS:

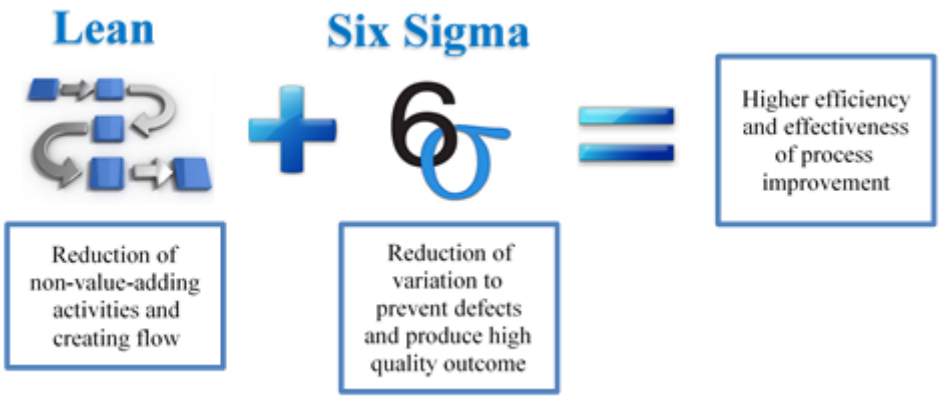

Fig.2 – Lean Six Sigma synergy. Source: Authors view

Behind each building block of LSS, there is an enormous body of knowledge that was developed by researchers and practitioners. However, each organization has to adjust LSS to its specific needs and conditions of business processes.

Majority of business processes consist of sub-processes and with each of them including more material and information flows. Snee (2010) adds that the flows between process steps possess non-value adding activities (wastes) that to great extent affect the overall process performance (Fig.3).

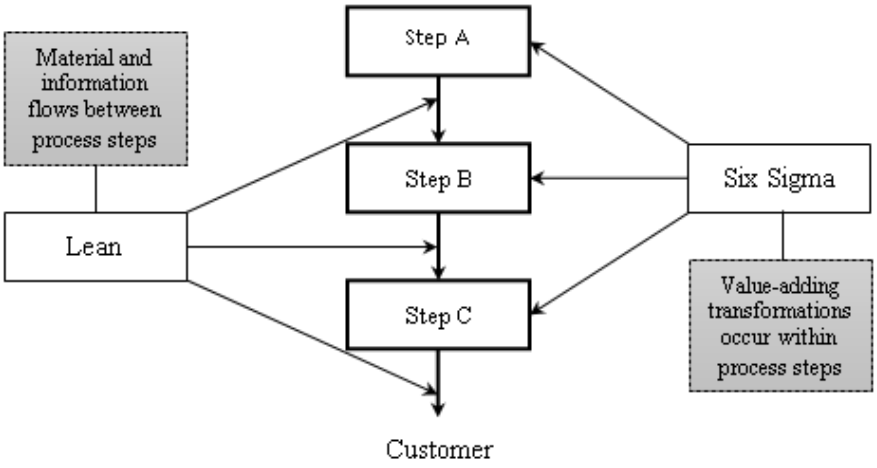

Fig.3 - Opportunities for improvement. Source: Snee (2010)

Therefore, the improvement potential of LSS becomes higher rather than utilising either Lean or Six Sigma separately, because it pursues higher process efficiency and quality of outputs or effectiveness (Chiarini and Vagnoni, 2014).

2.3.1 Success and failure factors of LSS

A great number of companies launch LSS implementation and follow the methodology for a certain period of time. However, majority of them refuse to continue with it because of different reasons. A survey conducted by Industry Week revealed only two percent of firms using Lean achieved their expected goals and about 74 percent did not have positive progress with Lean (Pay, 2008). Thus, it becomes important to understand the main reason behind success and failure of LSS initiatives.

2.3.1.1 Critical Failure Factors (CFF)

Garg and Garf (2013) defined CFFs as key aspects or areas where things must go wrong to cause the failure or an implementation that fails to achieve a sufficient return on investment (ROI).

Albliwi et al. (2014) in their systematic literature review studied journal papers related to Lean, Six Sigma and Lean Six Sigma from 1995 to 2013. As a result, 34 factors leading to deployment failures of LSS were determined out of which the following were cited more frequently by different authors:

- Lack of top management attitude, commitment and involvement.
  This factor applies to all industries where LSS was applied and to various countries and size of organisations. Without it, most of initiatives are likely to fail in the very early stages as well as with a proper management support improvement programmes tend to yield essentials benefits (Snee, 2010).

- Lack of training and education in field of LSS.
  As trainings are expensive, many firms neglect them. However, it is critical for achieving success in LSS. Laureani and Antony (2012) explain such behaviour as lack of long-term vision and absence of an immediate ROI.

- Poor selection and prioritisation of LSS projects.

Duarte et al. (2012) state that selection of an inappropriate project leads to LSS fail as well as termination of LSS implementation in a great number of cases. If a right project is chosen, it guarantees the highest return for the company.

- No linkage of improvement projects to strategy.
  Strategic objectives of companies are to be given the highest possible priority and major resources should be aligned to their achievement. If improvements does not have an effect on strategic objectives, it also tends to fail.

- Lack of technical, human and financial resources.
  All the above mentioned is hardly achievable without a sufficient amount of resources. This problem is inartistic to most companies throughout the world.

According to Albliwi et al. (2014), CFF may also depend on the evolution or development of countries, where applied; the nature of industry and the size of an organisation. LSS in developing countries tends to fail more often compared to developed countries with a higher amount of resources and knowledge available. LSS deployment has also to be adjusted whether it is applied in services, healthcare, higher education, manufacturing or other sectors.

Deep analysis of CFF enables researchers and practitioners in the field of LSS to transform them into CSF so that to ensure positive results by addressing them. The following sub-chapter covers CSF of LSS and summarises the research in the field.

2.3.1.2 Critical Success Factors (CSF)

Success factors are the factors crucial to the success of any program or technique, in such way that, if objectives associated with the factors are not attained, the application of the technique will perhaps fail completely (Rungasamy et al., 2002). Brotherton and Shaw (1996) explained CSFs as the key things that must be achieved by an organisation to identify the areas, which will produce the greatest "competitive leverages". They emphasised that CSFs are not the main aims, but are the actions and processes that management can control to attain the organization's goals.

Antony and Laureani (2012) conducted a survey of 31 literature sources discussing success factors for LSS implementation from which they found 19 success factors that they later included into a questionnaire. It was used to verify if the organisations that implemented LSS possessed or shared any of those factors and which ones they considered as more important. Based on more than 101 received responses the chosen success factors were ranked according to the average importance scores (see Fig. 4).

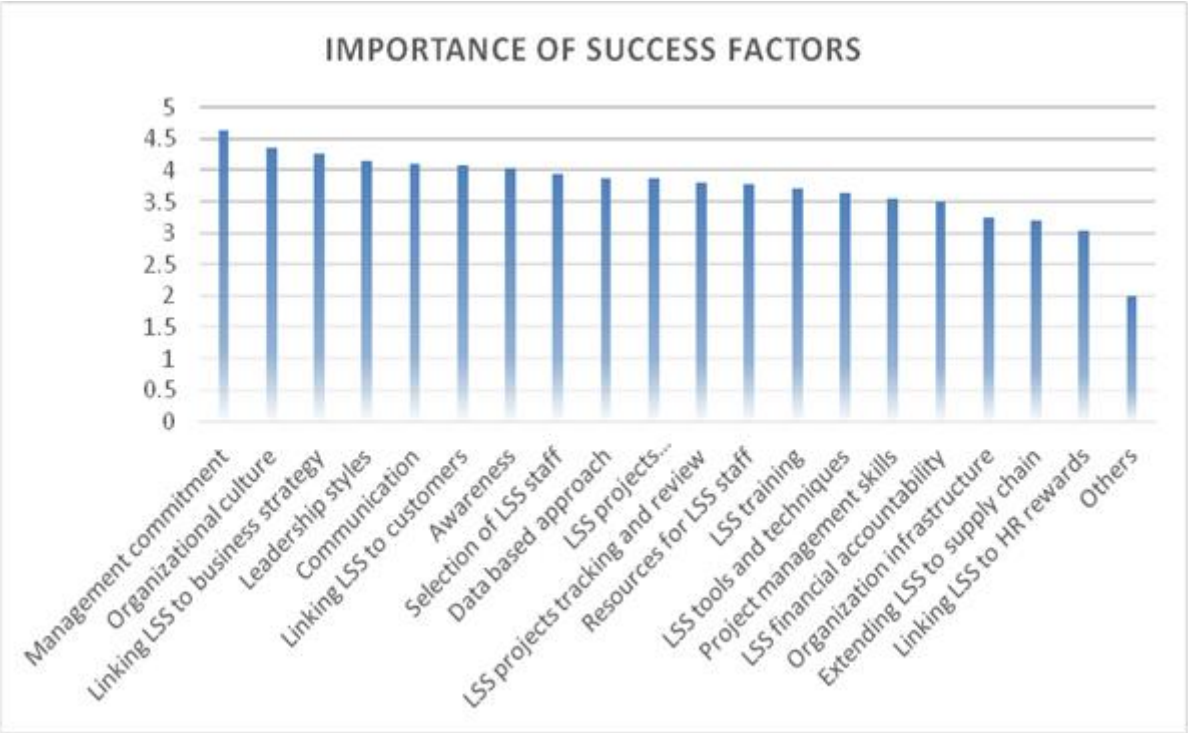

Fig. 4 – Success factors average importance score. Source: Antony and Laureani (2012)

The results of the survey confirmed that among the success factors for starting LSS initiative in an organisation are:

- management commitment
  Without the continuous support and commitment from top management, the true importance of the initiative will be in doubt and the energy behind it will be weakened (Pande *et al*., 2000).
- organisational culture
  A successful introduction and implementation of LSS requires adjustments to the culture of the organization and a change in the attitudes of its employees. LSS initiatives require the right mind-set and attitude of people working within the organization at all levels. The people within the organization must be made aware of the needs for change (Antony and Banuelas, 2002).
- linkage of LSS to business strategy
  LSS is an improvement-focused approach aimed at developing and improving operational capability, its implementation should be considered strategic, in the sense of following an approach, which deals with a particular business situation or circumstance. (Manville *et al.*, 2012)

However, the survey revealed a difference in the attitudes of the practitioners and scholars towards the Leadership styles factor. In the literature, this factor is mentioned as less, important compared to the perception of it by the practitioners in the field.

There are many CSFs in determining the LSS implementation success and each CSF is interdependent of each other in order to make the LSS program a success. Although Jeyaraman and Teo (2010) suggest that some vital CSFs need to have more focus, the trivial CSFs cannot be ignored absolutely. It is believed that the implementation of the LSS program harbours enormous difficulties, in order to reap significant improvement on the company performance, it should be properly planned to implement successfully.

2.4 LSS to become Green

Continuous improvement methodologies also change and develop so that they could help to achieve even more benefits and cover more business aspects. LSS mainly focuses on continuous improvement in cost, quality, and delivery, but it also has positive side effects such as environmental benefits. United States Environmental Protection Agency (EPA) argues that LSS attempts to establish a culture of continuous improvement, waste reduction and elimination, employees' empowerment that is similar to organisational attributes promoted by environmental management systems and prevention of pollution.

The potential of waste elimination within LSS taking into consideration environmental aspects is very high. Table 3 shows some most common effects of LSS wastes on the environment.

Tab. 3 – Wastes effects on the environment. Source: Snee (2010)

Type of Waste	Description
Transportation	Extra fuel consumption and air pollution; extra packaging is necessary for protecting the transported components of goods
Inventory	Energy is required to heating, cooling, lightning; WIP can be damaged and would have to be replaced
Waiting	Excessive energy is required to heating, cooling, lightning during idle time;
Overproduction	Usage of more materials for unnecessary products as well as extra energy consumption
Over processing	Waste as a result of unnecessary processing
Defects	Usage of more materials for the produced defects. More resources required for the recycling of defects; excessive use of energy for the above mentioned processes

Tackling the above-mentioned wastes, companies can save the resources along with reducing their environmental footprint. Environmental pollution is not yet regarded as a waste, but it has all chances to become one more type of waste with a growing importance and interest to green practices.

Notwithstanding all the benefits, LSS programmes do not yet explicitly integrate environmental practices and considerations. If firms strive to become highly environmentally friendly and follow LSS separately, improvements can be greatly enhanced by merging both practices into a holistic approach. For example, an American multinational conglomerate corporation achieved 61% decrease of air emissions and roughly 64% of toxic inventory releases with a help of LSS and pollution prevention. Another company, Woodfold Manufacturing, managed to reduce solid organic waste by about 6 tons with a help of value stream mapping.

"Green LSS" might become another evolutionary step of improvement methodologies. Efforts have already been taken to merge LSS and environmental aspects under the such names as "Lean and Clean", "Lean and Green", "Lean and Sustainability", "Lean Ecology", "Green Six Sigma", etc. There are companies that are sceptical to LSS, so they could be even more sceptical to the combination of "green" approach and LSS. Therefore, this concept has to be communicated in a careful manner, especially to operations managers. This is obviously a

new direction for the research and topic for discussion. Meanwhile it is possible to put an effort to increasing the organisational readiness for the utilisation of "green LSS". Companies have to become aware of the relationship between LSS and environmental performance. Sharing good practices of environmentally concerned LSS and development of an integrated LSS and environment protection techniques can intensify the growth of interest to "green LSS".

3 CONCLUSION

The current review has described the development of LSS and examined the "going green" trend. LSS is a powerful improvement methodology that has been quickly developing within manufacturing and service sectors. Lean is presented in a form of analysis of four decades of scholar papers and books from researches and practitioners in the field. Lean evolution was divided into such phases as dissemination, implementation, enterprise, performance and synergy that represent primary aspects and changes inartistic to each period of development. Out of the key findings, system-thinking integration to Lean paradigm is very important and deserves further careful examination. Six sigma origins were traced and the core idea behind the methodology lying in variation reduction through the in depth data analysis as a part of DMAIC was described. The followed description of LSS pointed out the importance and power of tackling the efficiency of processes along with the effectiveness of the outcomes. Notwithstanding the substantial body of knowledge in LSS, there is a high rate of failures in implementing the methodology. Hence, a deeper look into critical success factors revealed that without management commitment, organization culture and alignment with the business strategy, majority of the implementation efforts were likely to fail. Organisation willing to yield more benefits from LSS utilization should consider this factors and work on putting them into practice before starting the improvements. To conclude, as LSS evolves and new paradigms appear, it will surely incorporate an element of environmental sustainability.

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PUBLIC ADMINISTRATION AND NON-PROFIT SECTOR

MANAGEMENT OPTIONS IN EGOVERNMENT AND PROVIDING OF ITS SERVICES AND ITS USE FOR COMPUTER LITERACY INCREASING AMONG THE CITIZENS OF SMALL MUNICIPALITY

Markéta Sanalla, Věra Plhoňová

Abstract

Efforts to modernize society give rise to changes in the public administration. This situation is able to be seen most often through contact with an executive officer and facilitate service processes, which are related to government. An increasing proportion of these services is provided by the so-called. Cyberspace, which is a virtual world, consists of joining all modern telecommunication devices and networks. Presently it is an open space that faces many attacks and depends on all users, haw they can be successful. The problem is most common for users who suffer from some form of IT illiteracy. These issues may be increasingly encountering municipalities with fewer people, where older populations live more often in, and where their ignorance may allow unknowingly attacks the information systems of public administration. Targeted management of employee activities and their impact on clients can improve the current state of the issue.

Keywords: eGovernment, management, public service, municipality, services

1 INTRODUCTION

Since the early nineties tendency of modernize public administration appears. This effect can clearly be recognized phenomenon. Modernization is a part of the reform together with others. Some phases of the reforms, such as the new territorial division of the country or clarify wording transferred and independent operation of municipalities have been more or less successfully completed. It can be said the current priority of the reform is to improve government services. Higher quality of efficiency has to be seen not only in the range of independent or delegated municipality authority but also in all the other services of the government. This all is should be realized according to a major modernization motto, which places the citizen as a client's position of public administration.

However, it is important to point out that with the ongoing modernization of the public administration new tools are integrated, which are said to be complex system – eGovernment (Čmejrek & Bubeníček & Čopík, 2010) . This system is not only a tool for building the information society, but it also arranges communication with public and administrative management in electronic form. Public administration modernization, coupled with its essential terms of computerization, is still in progress and other service tasks appear together with new challenges and problems (Macek, 2007).

Among the major challenges in this article will be included mainly the area of computer literacy of citizens, which is still not commonplace. Related to this is another pitfall of modernization, which is especially apparent in small municipalities and significantly associated with low computer literacy of citizens, including government officials, and this is an underestimation of communities to protect computers against possible attacks cyberpiracy (Macek & Smejkal, 2012). These facts are evident from several researches undertaken in SVŠE Znojmo in the past academic year 2013/2014

2 THEORETICAL BASIS

2.1 Public administration reform: current status and challenges

At the beginning of the text is necessary to clarify the terminology. There are many definitions of public administration. The same feature of all definitions postulate that in essence it is an activity that provides management of public affairs. Petr Prucha and Karel Schelle define public administration in their book Foundations of local government. Public administration is supplemented by definition, therefore, that "the public administration in a society organized in the state means governance, implemented in its role as a manifestation of executive power in the state. For this executive power is characteristic taht they are predominantly the public authority" (Průcha & Schelle, 1995). Pavel Káňa adds that the administration has its roots in Roman law. "Public administration is the management of human society organized in the state in the state system." (Káňa, 2004).

Reforms and all the complex changes in public administration in the present day are so extensive that the public administration system brings a whole new set of challenges. The leading experts on the topic Richard Pomahač and Olga Vidláková talk about a social problem. "Public Administration is a social problem. People have long believability that this is a problem that requires a solution, and is therefore not strange that the wide-developed theories of public administration in many forms, and created other problems. For example, that not everything is about public administration writes and teaches corresponds to reality, or that public administration theory is virtually unknown to all those who act as experts in matters of public administration "(Pohamač & Vidláková, 2002).

Responding to public administration reform and constant new coming innovations that addresses municipalities and regions, is to use the newly emerging tools of modern management in public administration. These tools of modern times thus contribute to higher quality and efficiency of public administration and support the democratic principles of government and citizens' satisfaction. (Http://www.grapes.cz/nove-metody-rizeni-ve-verejne-sprave/; [online]. [Cit. 14/11/2013]).

New dimensions of public administration introduced the possibility of electronic communication, which is "the transmission of data messages between public authorities and between those authorities and other third parties" (Balík, 2006). Legislation carries a general nature. General nature carries Law no. 40/1964 S., Civil Code, in section 40, article 3 provides that if a legal act is done by electronic means, it can be signed electronically in accordance with special regulations. Also, certain legislation and precisely regulate the possibility of electronic communication only in specific cases and agendas. As an example, Act no. 500/2004 Coll., The Administrative Code, which in section 37, paragraph 2 provides that filing. Act directed against the administrative authority can be made also in electronic form signed by electronic signature.

In connection with the new challenges to domestic public administration, becomes part of a complex system called Cyberspace. Under this concept, imagine a virtual world, which is formed by connecting all modern telecommunication devices and networks. This is an area of business, education, search and examination of information and entertainment. Cyberspace is today open to hackers (specialists who can penetrate into the system other than the standard way), hackers (or bypass security electronic programming elements for the purpose of unauthorized use) or activist groups such as Anonymous or terrorists (http://www.smartadministration.cz/).

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Computer networks of public administration may also become so turning goal. Piracy violates the established rules for using computers and other technology (Vacek, 2013). According to available data, which were examined in the research SVŠE in Czech Republic, is a noticeable increase in cyber crime. In the years 1990 - 1995 index increase was prosecuted in the Czech Republic by 150%. There are also the criminal groups with elements of organized crime (Smejkal, 2001).

The most common form of computer crime is spreading viruses when their authors thus gain very valuable data, such as seepage into the company database (Jirovský, 2007). Pro-government is the greatest threat to alter the database of employees or clients, which can be misused personal data (Matějka, 2002). To protect against viruses used antivirus programs. Some antivirus programs are available for free on the Internet, but these programs are not designated, for example, to protect passwords and online banking. Research on SVŠE asked in the municipalities in region Znojmo, on the use of these programs and their experiences with cyber crime.

3 OBJECTIVES AND METHODOLOGY

The aim of this paper is to define options for public administration to protect Cyberspace in networks of their municipalities. Cyberspace is managed by smaller municipalities, and limited by abilities of their users, namely the citizens of these communities.

The research was conducted in the academic year 2013 and 2014 in Znojmo region, where we have defined as a research area the former district municipality Znojmo, in the form of a questionnaire survey. The questionnaires were distributed online and in paper form too. Another part of the research has been directed to residents of the village as Znojmo, administration type number III. In this section of the survey were return 300 papers the relevant questionnaires. The second component of the respondents were municipalities, administration type number II., in the region Znojmo. The total number of respondents was 78 municipalities asked by electronic form of paper. The filling benefited 38 municipalities to complete the questionnaire in a text document took advantage of seven municipalities, using paper forms did not respond to any community. The total number of returned questionnaires was 45. This number is adequate in relation to the number of municipalities of this public administration type in Znojmo district. Questionnaires collection took place from 24th February 2014 to 14th March 2014. Information obtained by collecting data were statistically evaluated and analyzed. The results are shown in graphs.

4 RESEARCH RESULTS

Reform of public administration, which affected the operation of domestic institutions widely particularly in the early 90s of the last century, it has become an area of research also on Private Higher School of Economics Znojmo. This paper presents partial results of the research. Answers are illustrating and summarizing current knowledge, that focus on the public administration specifically in the region of Znojmo.

One of the questions put to respondents tried to analyze the attitude of consumers of government services, namely, whether citizens are satisfied with the offer and processes these services.

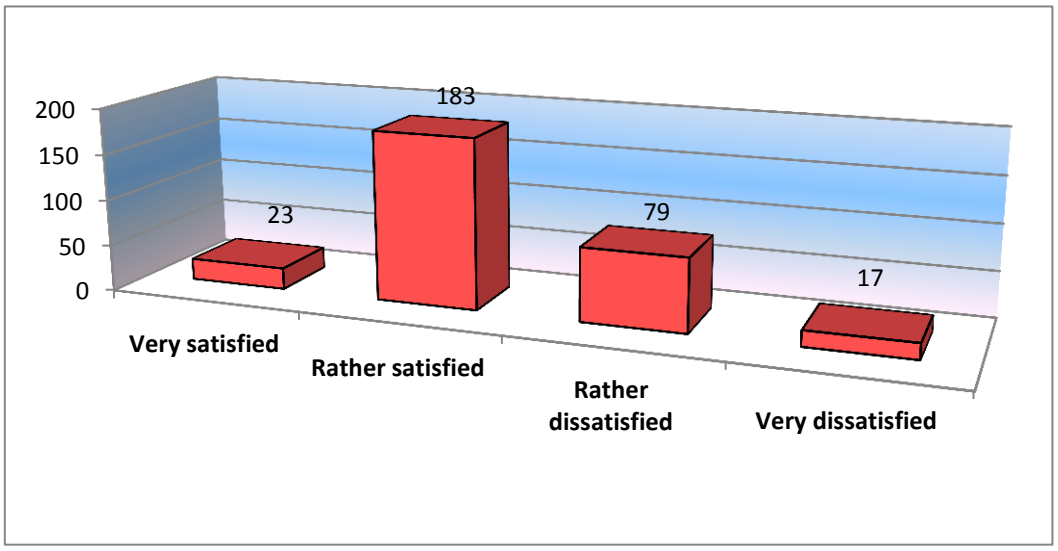

Fig 1 - Satisfaction with the functioning of public administration in the Czech Republic. Source: Own research.

A total of 206 respondents were very or fairly satisfied with the functioning of the services. Rather dissatisfied was very dissatisfied and 79 of the 17 respondents.

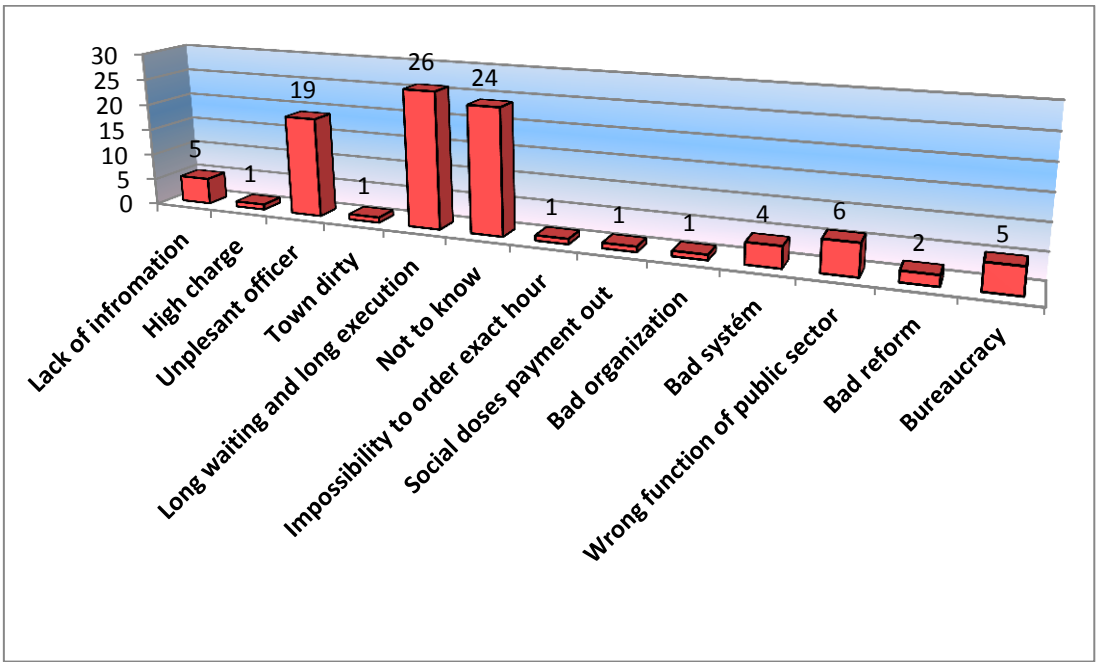

Fig. 2 Reasons for dissatisfaction with the functioning of public administration. Source: Own research.

The research is also focused on question whether respondents have registered in recent years, information regarding the modernization of public administration. Respondents could select only two responses to a "yes" or "no." The answers were almost equal. Of the 302 respondents

answered 153 respondents that modernization registered, which is 51%. A total of 149 respondents said that modernization did not register at all.

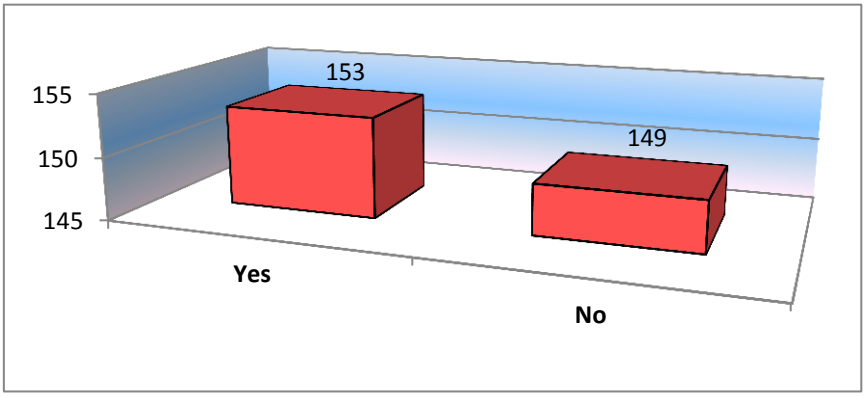

Fig. 3 Awareness of the modernization of public administration Source: Own research.

One of the questions studied the frequency of using public services. Most respondents felt that the situation concerning public administration, solve for the last year or the last six months. For us is very interesting the lat part of questionnaire: only minimum of our respondent is not using the benefits from public administration outputs.

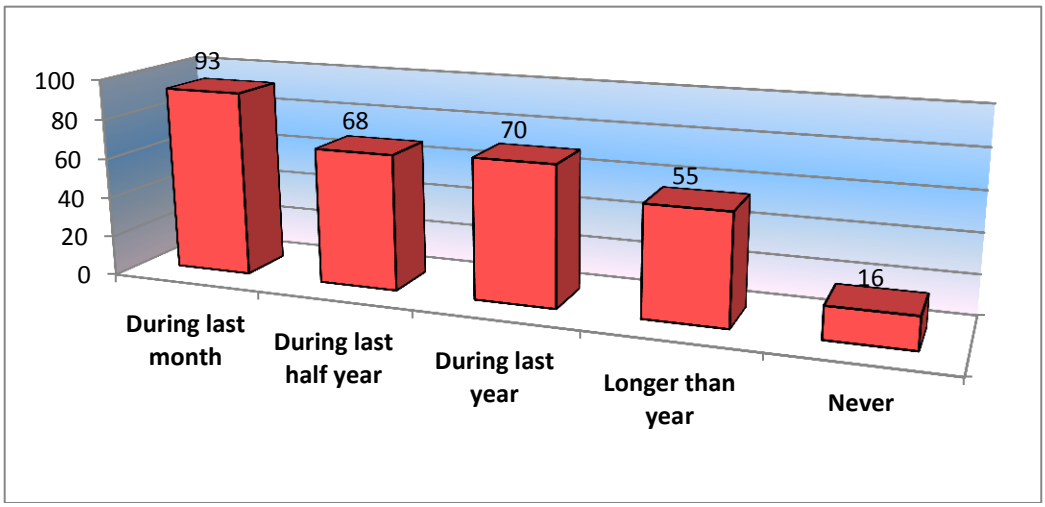

Fig. 4 Frequency of using public services Source: Own research.

Second part of our research asked on particular problem in current public administration what is secure of Cyberspace of municipalities networking. We examined whether municipalities rely on antivirus software to protect their data. This question had a choice of four answers. This question will tell us whether the village protects against viruses and other worms that infect their computers.

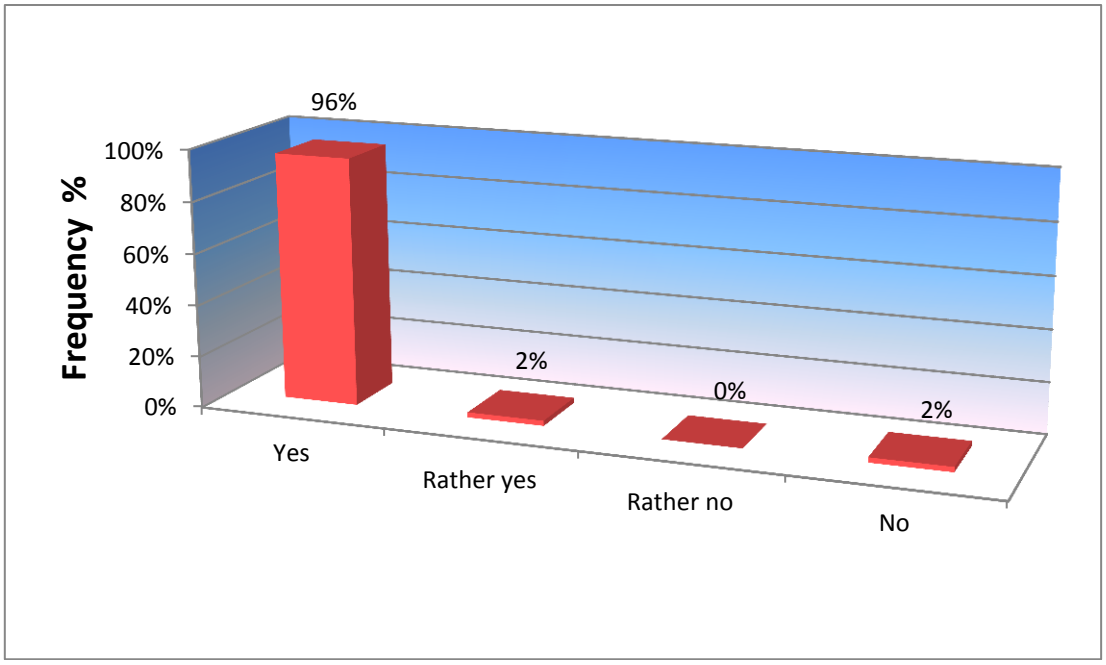

Fig. 5 Enjoyment antivirus program to protect data Source: Own research.

The evaluation of this issue, we learned that 96 % of municipalities used antivirus programs for data protection. Only 2 % of the municipalities do not protect their Cyberspace. Using antivirus software community makes it difficult to attack private data to different viruses. Antivirus programs are the most common protection for every computer owner also in public administration sphere. However, antivirus programs can ensure that we become victims of viruses or other attacks.

The focus of the research also was to determine whether municipalities check downloaded files from the Internet using antivirus programs. I was here a choice of four answers. Analysis of the answers to this question will we know whether the municipality control data, which are downloaded to your computer.

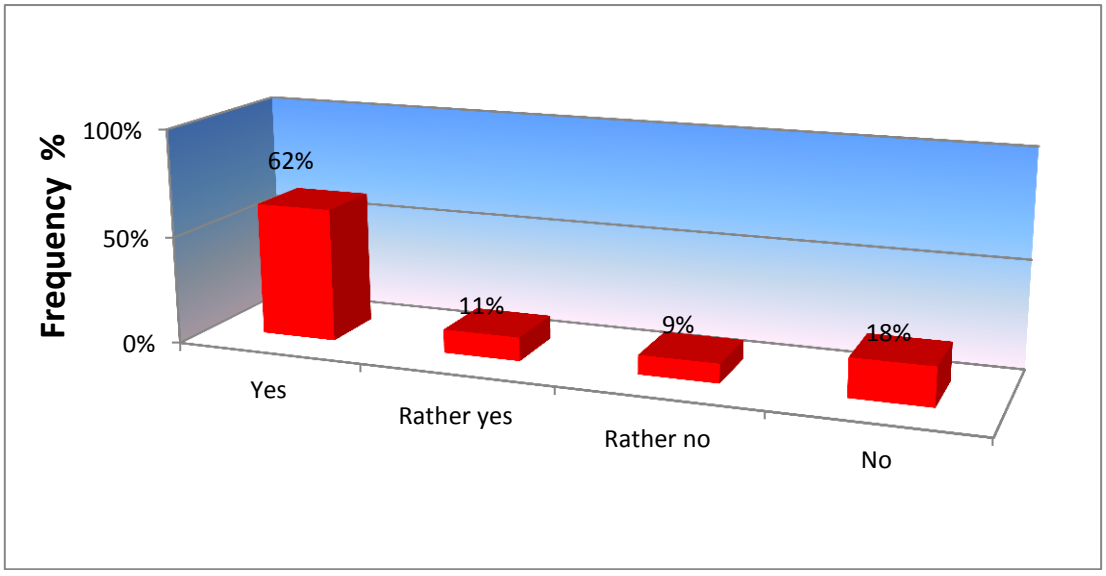

Fig. 6 Checking download antivirus programs Source: Own research.

By analyzing responses to the question posed above, we found that 62 % of the municipalities check downloaded files from the Internet using antivirus programs. These villages are in danger of Internet piracy. Today hacker groups use files that contain harmful viruses to attack computers. Using these viruses can easily find private logins and passwords that a user types into the computer. Hacker has access to all his files. If the municipality does not protect using antivirus software, belongs to a group that can be easily attacked.

For our research was very interesting questionnaire what should determine whether municipalities have secure protection for sensitive data community. Sensitive data can be various personal data on population management, e-banking, etc. On this question there were four response options.

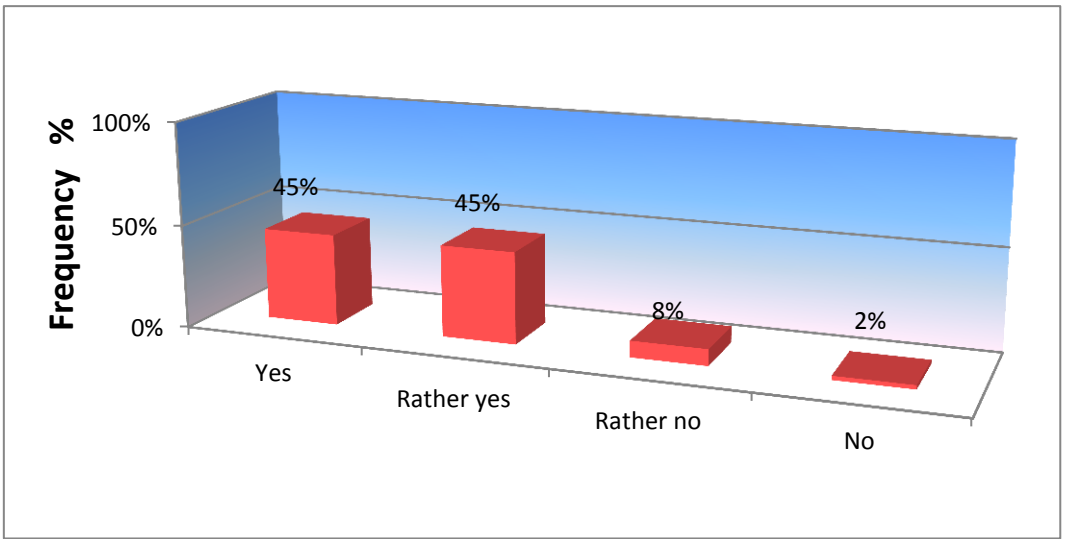

Fig. 7 Evaluation of safety sensitive data protection communities Source: Own research.

The analysis of this question suggests that municipalities have secure protection for their sensitive data. Answer Yes chose 45 % of municipalities and Answer Probably yes 45 %. But we found that they protect public administration Cyberspace only by weak antivirus programs. Better inherent safety protection such as encryption, use only a few of municipalities.

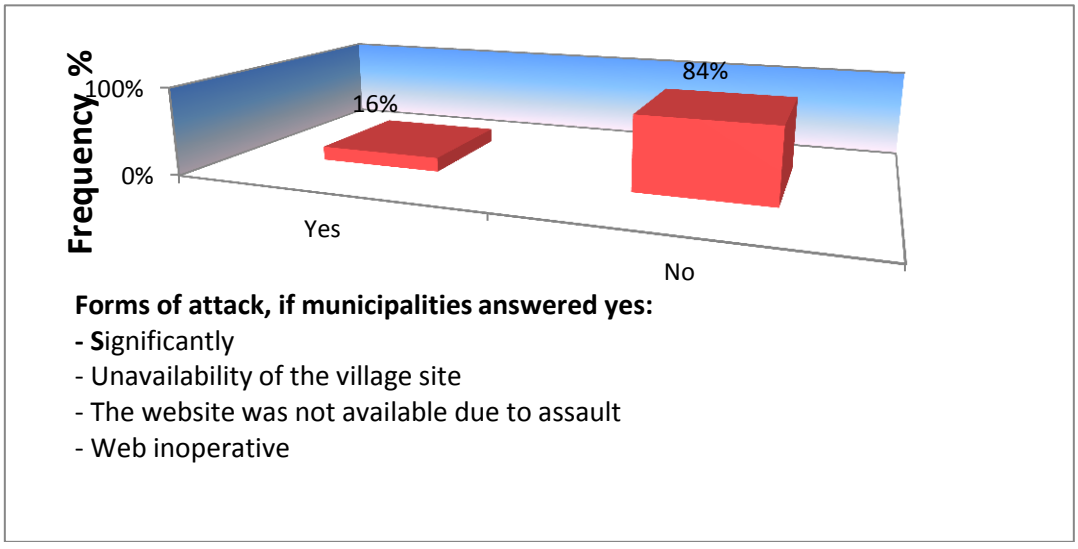

Fig. 8 Assault community website Source: Own research

For our point of view were very important also the last part in questionnaire. The aim was also to determine whether municipalities were in attacked in the web network of the municipality, and how they were attacked.

The results of the questions showed that the municipality of the II. type in region Znojmo district were attacked. The most frequent attack of the website can be achieved by hacker attacks, called DDoS. It is a fact that on the website at the same time connects several computers across public administration (Doseděl, 2005). These DDoS attacks use hacking groups to carry out attacks on very important sites such as government sites or to sites of global organizations. The analysis of our research clearly reveals that 84 % of municipalities have not previously been infected by the serious DDoS attack but what is is really alarming that they are not prepared for it at all. It is alarming not only for security in public administration in research region Znojmo but also for all Cyberspaces in public administration.

5 DISCUSSION

Final summary of the survey II. degree villages in Znojmo district is as follows:

•36% of municipal workers are trained and informed about the threat posed by Internet piracy. Rather, they have been informed and trained 11% of workers municipalities and 4% of the municipalities are not at all informed and trained.

•96% of municipalities used antivirus programs for data protection. Only 2 % of these communities does not use anti-virus programs.

•Checking the downloaded files from the Internet performs 62 % of the municipalities. In 18% of cases, municipalities do not control the data downloaded from the Internet and are exposed to the threat of Internet piracy.

•44% of municipalities do not open spam SPAM. 7 % of the municipalities responded yes and 11% somewhat agree that opening up mail SPAM.

•45% of municipalities have secure protection for sensitive data community. 45 % of the municipalities responded probably yes. Secure data protection owned 2 % of the municipalities.

•27% of municipal employs one IT employee. Absolute majority of municipalities and 67 % does not have IT staff, which should work on IT governance community. Two employees IT employs only 4% of the municipalities. The remaining 2% of the municipalities employs three or more IT staff.

•IT staff is trained in the field and in 76 % of cases. The remaining 24 % of workers are not educated in the field of IT.

•External IT management uses 67% of the municipalities. For managing IT pays municipalities companies that operate these services offered. Internal IT management to 33% of municipalities manages itself.

•The concept of Internet piracy has met 69% of the municipalities. Probably yes met with piracy 23% of the municipalities. Only 4% of municipalities had the opportunity to meet with Internet piracy. Here it depends on how the municipality met with this notion, whether in literature or as a victim of this crime.

•Website of the village was in 16 % of cases infected. The remaining 84% of sites was challenged. The most common forms of attacks were DDoS attacks, which caused the malfunction community website.

•47 % of municipalities rather know what to do if they become victims of their community of Internet piracy. 22 % of municipalities rather not know how to proceed. 9 % of cases, municipalities do not know what to do if they become victims of this crime

•Municipalities are informed in 29 % of cases of Internet piracy threats. Probably yes, the information is 49% of the municipalities. 22 % of municipalities are more informed about the threat of Internet piracy.

•35 % of municipalities need government grants, which are used for maximum data protection. In 27 % of cases, actually not enough and 29 % of municipalities are not enough subsidies that are designed for this purpose.

•Proposals to improve protection against Internet piracy has 20 % of the municipalities. The most common suggestions municipality argued that the state should improve the legislation, increase subsidies, greater awareness and training, high-quality IT equipment municipality. 80% of municipalities have no suggestions to improve protection against internet piracy.

The survey shows that most municipalities outsourcing IT management, or employ one IT employee. To manage IT village I chose management through outsourcing. This is mainly because the company offers its customers a professional approach, where IT management carried out by experienced and educated professionals. It offers a comprehensive service, which starts from the engagement, development and maintenance of hardware and software.

Outsourcing companies also offer web site management, which includes both maintenance as well as their protection from attack. Protection website is very complex. Experienced specialists in the field of IT know how best to protect websites against attacks and known solutions on how to proceed if the site was compromised. The most common attack occurred community website using a DDoS attack.

There is the financial side as an important issue, when an administrator is paid not full time but only when it is necessary. The advantage of outsourcing is experience and knowledge of data protection. Employing less experienced worker community becomes more accessible to become a victim of Internet piracy.

For effective protection against Internet piracy can be used antivirus programs, which are basic protection that municipalities may have. Extended Protection of antivirus blocks fraudulent websites, emails, keeps updating of programs, prevent attacks from hackers. Longer protects passwords that are used to log into the servers or banking i. These antivirus programs also protect a computer from malicious files that are downloaded from the Internet or open spam. When downloading immediately run an antivirus program, which identifies the infected file and stops its downloading. Antivirus programs are essential protection that municipalities may have, but to penetrate malware to prevent server.

•In case of computer infection it must be checked using an antivirus program.

•Use only one security program.

•Check disk using programs that detect damage and back up your data.

•After using the Windows defragmentation tool on a data check to repair the damaged sectors.

In case computer is infected new drivers must be installed (such as video card, motherboard, etc.).

•Protection of websites is more complicated. Long passwords must possess for sites to monitor their attendance, check the connected IP addresses.

6 CONCLUSION

E-government represents a significant shift in the organization forward, which allows high comfort for using of the services provided by government or municipality for a wide variety of clients, i.e. citizens. In addition to the basic technological security, both the hardware and software, these both must be able to secure usage the service as the most qualified employee - office worker. With these two factory is connected also data protection, which is closely related not only to provider electronically services but also to user who is informed and equipped with some knowledge who does not open by his action an imaginary gate for attack or access the data.

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OUTCOME OF RESEARCH „DEVELOPMENT OF HUMAN RESOURCES AS A COMPETITIVE ADVANTAGE OF ORGANIZATIONS IN THE PUBLIC SECTOR

Lenka Kempová

Abstract

This article presents the key outcomes of my research entitled "Development of Human Resources as a Competitive Advantage of Organizations in the Public Sector" which was carried out during 2013-2014. The basic package of the research consisted of public sector organizations, respectively organizations of local administration – higher local administration units (districts) and primary local administration units (municipalities). The aim of the research was to identify the current state of the strategic and systematic approach implementation to the concept of education and development in public sector organizations. To obtain the primary data the method of interrogation was used, respectively questionnaire technique. Respondents answered above all the questions regarding the existence of the organization's strategy, the concept of education and development in their organization. It was also investigated whether there is identification of training needs, whether internal education plans are worked out during education and development planning, which methods of education are mostly used at education a development implementation, whether there are any barriers that impede the implementation of education and development, whether the organizations evaluate training and development after each educational activity and whether there is education and development perceived as a competitive advantage. The gathered primary data were afterwards analyzed using statistical methods and evaluated. Proposals and recommendations are expressed at the end of this article which could be an inspiration for changes in the approach to the implementation of a strategic and systematic approach to the concept of education and development in the public sector organizations.

Keywords: Concept of education and development, education and development, public administration, strategic and systematic approach

1 INTRODUCTION

Public administration went through a number of changes in the last two decades focused to improve the performance of public sector, make it more efficient and bring it up-to-date. These changes were also related to the concept of education and development in the public sector organizations which reached a considerable development as well and was above all significantly influenced by the public administration reform itself. Current practice still face the issue that organizations do not approach the concept of education and development of its employees comprehensively and education and development is executed randomly, without any systematic elements.

Based on this the question can be raised whether a strategic and systematic approach to the concept of education and development of employees is the way that can help? Could be the right direction for example defined strategy of organization? Does the identification of educational needs take place in organizations? What training methods are being used during the implementation of training and development? What are the barriers organizations face when implementing education and development? And do organizations consider education and development as a competitive advantage?

In order to find the answers to these and other questions I carried out the research and key results are presented in this article.

2 INVESTIGATION RESEARCH "DEVELOPMENT OF HUMAN RESOURCES AS A COMPETITIVE ADVANTAGE OF ORGANIZATIONS IN THE PUBLIC SECTOR"

The research was conducted in three phases, specifically in the preparation, implementation and evaluation phases. Based on the theoretical starting points the first, preparation phase, was focused on the definition of the research objective and research questions, the definition of thesis goal, the hypotheses, the conditions of reaserch were set up, a core set of research was determined and a sample size of research was defined. In the preparation phase the method of data collection was chosen as well, a questionnaire was created and a pilot study was done at the end of this phase. The preparation phase started in the second half of 2013 (July – December 2013). The second, implementation phase, included addressing subjects of research, data collection, evaluation of data collection and data relevance, data preparation for the evaluation phase. This phase took place in the first half of 2014 (January – June 2014). In the third, evaluation phase, the gathered empirical data were analyzed by statistical methods, evaluated and graphically processed the way to allow to derive the appropriate conclusions out of the survey data. The phase took place in the second half of 2014 (July – October 2014).

The aim of the research was to identify the current state of implementation of a strategic and systematic approach to the concept of education and development in the public sector organizations. In order to clarify and refine the defined objective of research, a research question was formulated: „Do the public sector organizations apply a strategic and systematic approach to the concept of education and development of its human resources?" Based on this research question the following range of questions was formulated for the survey to find out whether and how public sector organizations:

- have defined an overal strategy, HR and educational strategy?

- have set a concept of education and development?

- identify educational needs?

- develop internal plans of education while planning the education?

- which methods of education use most at implementation of education and development?

- whether there are any barriers that impede the implementation of education and development?

- evaluate education and development after each educational activity?

- consider education and development as a competitive advantage?

The primary sample for the research was public sector organizations. For the needs of the thesis a sample was narrowed down to subjects of local administration, specifically organizations of local administration units – higher local administration units (districts) and primary local administration units (municipalities).

It was important to select the appropriate method of data colletion to obtain sufficent amount of data. It was necessary to consider the timing and financial difficulty but also to fulfill the requirement of including all types of organizations (meaning disctrict authorities and other municipalities) and at the same time representation of all regions in the Czech Republic in the research. The method of interrogation was selected for this reaseach, a questionnaire technique, specifically electronic on-line questionnaire created in Google documents.

Data collection was conducted during February – May 2014. In total 2180 organizations were addressed and a return of completed questionnaires reached a level of 17,02 %. With the total amount of 371 completed questionnaires the sample representativeness of executed research was ensured.

2.1 Evaluation and interpretation of research

Key outputs of the research could be summarized as follows:

- At least partially – 165 organizations (44,5 %) have defined an organization strategy, 162 organizations (43,7 %) have HR strategy and 135 organizations (36,4 %) have educational strategy.

In the first question, respondents were asked to evaluate whether their organization has defined the organization strategy, HR strategy and educational strategy. They were asked to assign the values on the numerical scale to above mentioned strategies depending on whether they are defined in their organization. For this purpose the fourstage numeric scale was used where 1 = not at all; 2 = partially; 3 = mostly; 4 = completely. A summary of responses is shown in order of their average ranking in Figure 1.

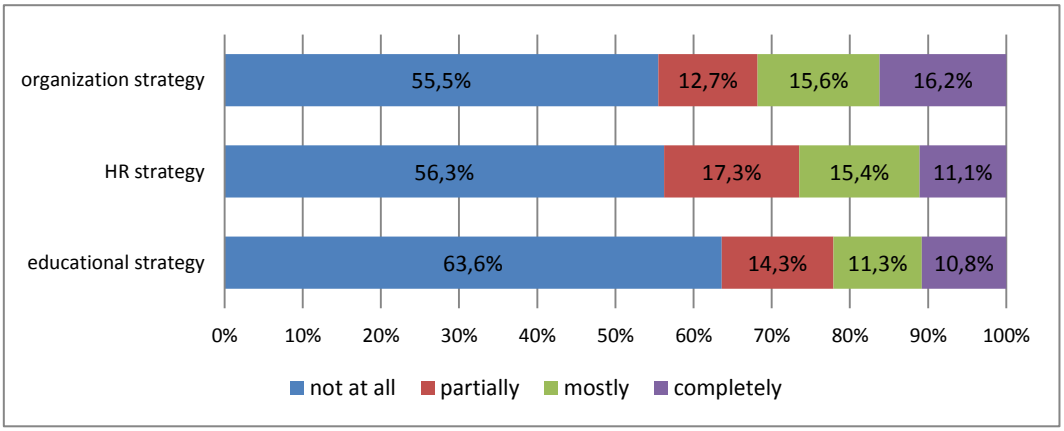

Fig. 1 – Strategy definition. Source: own processing.

Organizations in the public sector follow the private sphere and perceive more and more the benefits of adopting a certain strategy as well-conceived strategie sets the direction of development of organization in the near and distant future, determines its priorities and values, sets strategic goals. HR strategy linked to the overall strategy is the starting point of strategic HR management using specific actions that lead to the fulfillment of defined strategic objectives and maintaining a competitive advantage. Educational strategie should be based on HR strategy and should determine the basic principles on which the concept of education and development stands.

- Concept of education and development is implemented in 214 organizations (57,7 %).

In the second question respondents were asked to answer whether there is a concept of employee education and development set in their organization. In total 214 respondents (57,7 %) stated that they have the concept of education and development set in their organization, 157 respondents (42,3 %) answered they do not have it.

This finding is without any doubts a positive information since it is clear that employees in the public sector have the opportunity to be educated according to a certain concept which is currently based on the Law on Civil Servants. The concept of education and development can be considered as one of the main tools in the development and deepening of professional

competences of individual employees. Application of this concept leads to the higher employee performance and consequently also the organization performance as a whole.

- Mostly, specifically in 323 organizations (87,1 %), external training covers the largest share.

In the seventh question the respondents were asked regarding the proportion of internal and external training in their organization. Respondents should choose one of the three options to answer: major proportion is internal training, major proportion is external training, internal and external training are more or less balanced. In total of 323 organizations (87,1 %) external training covers a higher proportion, in 30 organizations (8,1 %) internal and external training are more or less balanced and in 18 organizations (4,9 %) an internal training covers the higher proportion. Graphical representation of responses is shown in Figure 2.

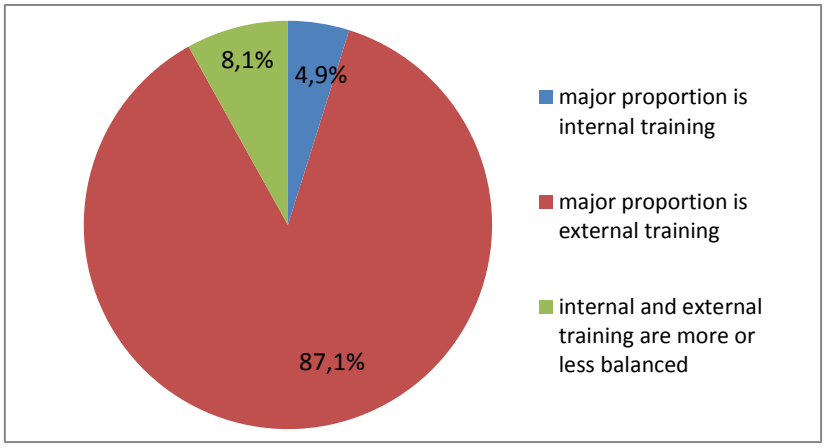

Fig. 2 – Proportion of external and internal education. Source: own processing.

This indicates that most organizations send their employees to external training activities. Although this type of education is without any doubts for most organizations more expensive than the training for their employees organized by themselves, it is not in their capacity to arrange all educational activities without external educational institutions. This follows mainly from a variety of training that organizations must provide to their employees and it is not possible to cover such a large area with own lecturers, even in large organizations.

- Training needs analysis is implemented in 141 organizations (38 %).

In the third question, the respondents were asked whether their organization runs training needs analysis. A total of 141 respondents (38 %) stated that training needs analysis is carried out in their organization and 230 respondents (62 %) then responded that training needs analysis is not carried out.

This indicates that many organizations are now aware of the importance of education and understand that in order to have education properly and address set, it is necessary to process at the very beginning a good quality training needs analysis which will bring an accurate picture of the current state creating a good basis for planning of other educational activities. On the other hand the research investigation however proved that almost a third, specifically 230 organizations (62 %), ignore or underestimate the importance of the training needs analysis or fails to quantify the benefits that it can bring. These organizations only estimate the educational requirements and do have evidence if the certain education is really the one that is needed. Education can therefore be random and without any systematic elements.

- Internal plan of educational activities is generated in 118 organizations (31,8 %).

In the sixth question the respondents were asked whether the plan of internal educational activities is generated in their organization. A total of 118 respondents (31,8 %) stated that the plans of internal educational activities are generated in their organization and 253 respondents (68,2 %) then responded that such plans are not generated.

This indicates that more than two thirds, specifically 253 organizations (68,2 %), do not generate an internal plan of training activities. This may be caused by e.g. lack of appropriate space to organize such educational activities, therefore these plans are not even generated. In contrast organizations preparing this plan are aware of the benefits that internal training brings. Starting with considerable financial savings to the possibility of training a large amount of employees.

- ***Within education and development the method of lecture is most frequently used.***

In the eleventh question the respondents should evaluate on a scale which methods of education and development are used in the organization and how often. Respondents could select from the following answers: a lecture, a conference, a workshop, a case study, e-learning, coaching, mentoring, 360° feedback, work rotation, eventually they could add their own answer and assign values on a numerical scale regarding which methods of education and development they use in the organization. For this purpose a fourstage numerical range was used where 1 = not at all; 2 = partially; 3 = mostly; 4 = completely. A summary of responses is shown in order of their average ranking in Figure 3.

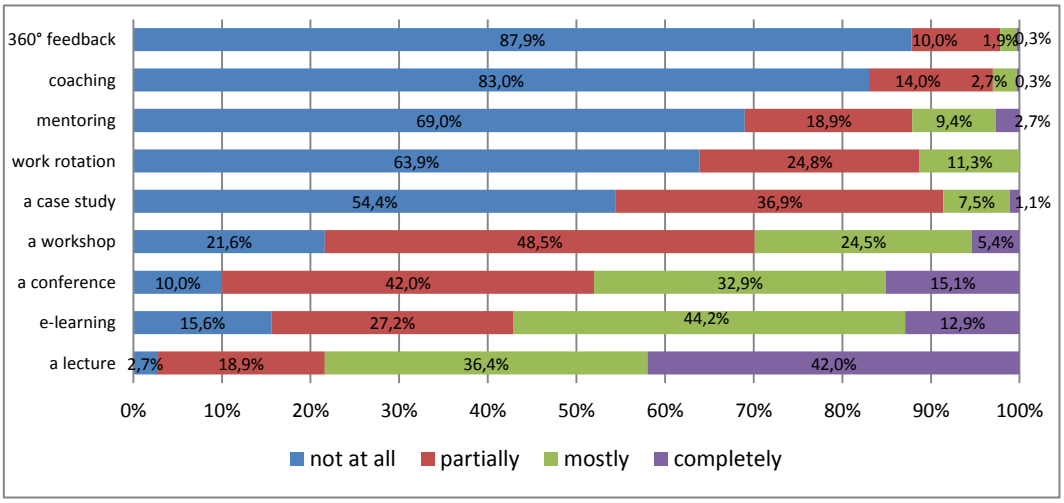

Fig. 3 – Methods of education and development. Source: own processing.

From the above it is clear that the most frequently used method is a lecture, specifically in 361 organizations (97,3 %), which is related to the content of the education, respectively that the most frequest area of education is a legislation where the lecture method seems best suited for this training. The advantage of this method is a financial saving and also training of a large number of employees in a short time. E-learing is also a widely used method, specifically in 313 organizations (84,3 %) which is associated with the technology development and also with the possibility that employees can learn at a time suitable for them. Conferences are another popular method of training where organizations can share their experience and pass the information to others, and also workshops which can take place in smaller groups.

- ***Lack of financials was marked among the most common barriers of education and development.***

In the fifteenth question the respondents shoud evaluate on a scale whether there are barriers of education and development in their organization. Respondents could choose from the

following answers: issues with their absence (irreplaceableness), lack of financials for education and development, lack of suitable lecturers, inappropriate focus of training courses offered by educational institutions, lack of interest and willingness of employees, incorrectly set concept of education and development, eventually they could add their own answer and assign values on a numerical scale regarding the existence of the barriers. For this purpose a fourstage numerical range was used where 1 = definitely not; 2 = rather not; 3 = rather yes; 4 = definitely yes. A summary of responses is shown in order of their average ranking in Figure 4.

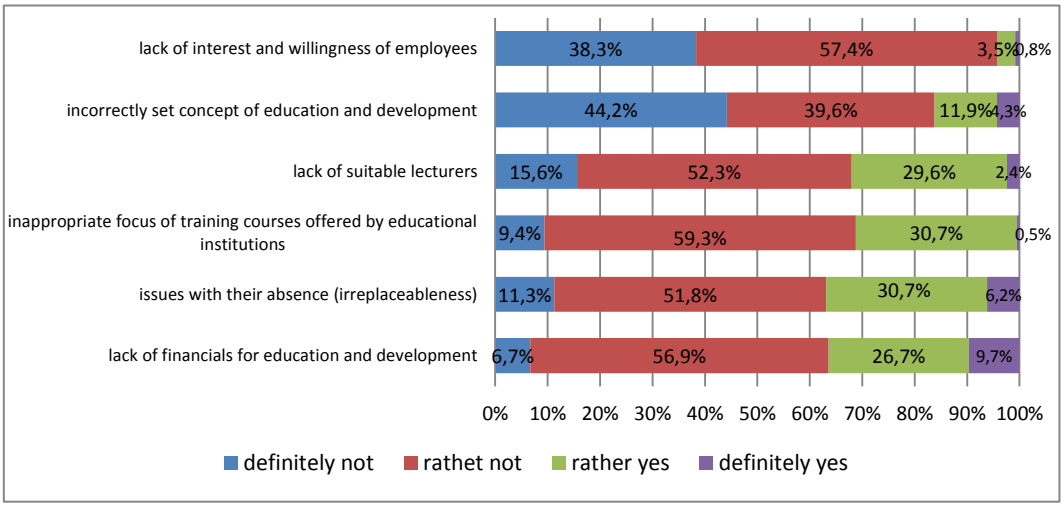

Fig. 4 – Barriers in education and development. Source: own processing.

- 193 organizations (52 %) perceive education and development as a competitive advantage.

In the 24th question the respondents were asked whether their organization perceive the education and development of employees as a competitive advantage of public sector organizations. In total 193 respondents (52 %) answered that their organization perceive education and development of employees as a competitive advantage and 178 respondents (48 %) then answered that education and development in organization is not perceived as a competitive advantage.

It is obvious that more than half, specifically 193 organizations (52 %), perceive educated employees as a competitive advantage compared to other organizations, meaning that they understand that the regular education and coverage of development is necessary to maintain a certain standard in organization and it is absolutely necessary for its further development.

- Educational activities are evaluated immediately after its completion in 116 organizations (31,3 %).

In the sixteenth questions respondents were asked to evaluate on a scale whether each educational aktivity is evaluated after the completion. For this purpose a fourstage numerical range was used where 1 = totally disagree; 2 = rather disagree; 3 = rather agree; 4 = totally agree. Responses are shown on following Figure 5.

This indicates that more than one third, specifically 255 organizations (68,8 %), do not evaluate educational activities immediately after its completion which cannot be considered as a positive information because if the organization does not evaluate education it is impossible to find out whether participants were satisfied with the training, whether the event met their expectations, whether the defined objective was met, etc. For organizations evaluating educational activities after their completion it is undoubtedly beneficial and feedback is then provided not only to a lecturer, training participants, but also to the organization itself.

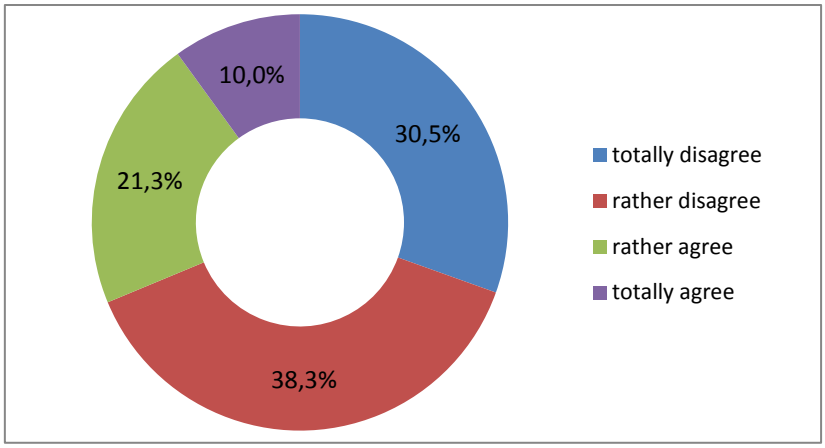

Fig. 5 – Evaluation of educational activities right after their completion. Source: own processing

- A questionnaire was identified among the most common methods for evaluation of education and development, it is used at least occasionally in 224 organizations (60,4 %).

In the eighteenth question the respondents should evaluate on a scale whether different methods for evaluation of education and development are used in their organization. Respondents could select from the following answers: questionnaires, tests before training, tests after training, interviews, benefit estimation, 360° feedback, return of investments, eventually they could add their own answer and assign values on a numerical scale whether different methods for evaluation of education and development are used in their organization. For this purpose a fourstage numerical range was used where 1 = never; 2 = partially; 3 = often; 4 = regularly.

The outcome is that mostly, specifically in 224 organizations (60,4 %), the evaluation of educational activities is carried out by the method of a questionnaire which is for the most educational activities and a general overview of events certainly sufficient. However it is preferable to combine this method with another, for example interviews, which are placed in the order as the second. By a combination of these two methods it is possible to get a clear overview regarding the overall process and benefit of educational activity and the research shows that the number of organizations use this. Tests after the educational activity are used less, they reveal the knowledge but do not ensure that the participant of educational activity will be able to use it in practice.

2.2 Hypothesis testing

In total four hypotheses were determined within the thesis. Based on the evaluation of results of the research these hypotheses were tested.

Hypothesis No. 1: ***Implementation of concept of education and development in public sector organization depends on a size of organization.***

To determine the dependence between the introduction of the concept of education and development and a size of the organization there were formulated two following statistical hypotheses:

H_0: *Implementation of concept of education and development in public sector organization does not depend on a size of organization.*

H_1: *Implementation of concept of education and development in public sector organization depends on a size of organization.*

Pearson chi-square test proved a statistical dependence between these variables as the p-value is smaller (< 0.001) than the determined level of significance of 5 % ($\alpha = 0.05$). Taking this into consideration we can decline hypothesis H_0 and confirm hypothesis H_1: *Implementation of concept of education and development in public sector organization depends on a size of organization.* Based on the above mentioned we can say that implementation of concept of education and development thus depends on a size of organization. At the same time the assumption was confirmed that organizations with more employees have implemented the concept of education and development to a greater extent. ***Hypothesis No. 1 was confirmed.***

Hypothesis No. 2: ***A lecture belongs among the most frequently used method within education and development in public sector organization.***

Respondents could select from the following answers: a lecture, a conference, a workshop, case studies, e-learning, coaching, mentoring, 360° feedback, work rotation, eventually they could add their own answer and assign values on a numerical scale regarding which methods of education and development they use in the organization. Respondents mentioned among the most frequently used methods within education and development: a lecture with average evaluation of 3,18; e-learning with average evaluation of 2,54; conference with average evaluation of 2,53. ***Hypothesis No. 2 was confirmed.***

Hypothesis No. 3: ***Lack of financials belongs among the most common barriers of education and development in public sector organizations.***

Respondents could choose from the following answers: issues with their absence (irreplaceableness), lack of financials for education and development, lack of suitable lecturers, inappropriate focus of training courses offered by educational institutions, lack of interest and willingness of employees, incorrectly set concept of education and development, eventually they could add their own answer and assign values on a numerical scale regarding the existence of the barriers. Among the biggest barriers of education and development respondents mentioned: lack of financials for education and development with average evaluation of 2,39; issues with employee´s absence (irreplaceableness) with average evaluation of 2,32 and inappropriate focus of training courses offered by educational institutions with average evaluation of 2,22. ***Hypothesis No. 3 was confirmed.***

Hypothesis No. 4: ***Perception of education and development as a competitive advantage of public sector organizations depends on a size of organization.***

To determine the dependence between the perception of education and development as a competitive advantage and a size of the organization there were formulated two following statistical hypotheses:

H_0: *Perception of education and development as a competitive advantage of public sector organizations does not depend on a size of organization.*

H_1: *Perception of education and development as a competitive advantage of public sector organizations depends on a size of organization.*

Pearson chi-square test proved a statistical dependence between these variables as the p-value is smaller (< 0.001) than the determined level of significance of 5 % ($\alpha = 0.05$). Taking this into consideration we can decline hypothesis H_0 and confirm hypothesis H_1: *Perception of education and development as a competitive advantage of public sector organizations depends on a size of organization*. Based on this we can say that perception of education as a competitive advantage thus depends on a size of organization. At the same time the assumption was confirmed that organizations with more employees perceive education and development as a competitive advantage to a greater extent. ***Hypothesis No. 4 was confirmed.***

3 PROPOSALS AND RECOMMENDATIONS

Based on the results of the research certain proposals and recommendations were determined which can be an inspiration to change the approach to the application of the concept of education and development in these organizations. To the key ones belong:

- ***The introduction of a strategic approach to education and development of employees***, respectively organizations with more than 50 employees should work out and implement a concept of education and development; this concept should be in accordance with the strategy of organization, with HR eventually educational strategy; Balanced Scorecard seems to be the appropriate methodology for public sector that can help to connect an organization strategy with a concept of education and development.

- ***Determination of a certain concept of education and development***, namely:

  - Ensuring the implementation of the analysis of educational needs, respectively to analyze the educational needs regardless of the size of organization, minimum once per year; to consider methods to identify the educational needs; during identification of educational needs not to limit yourself for only one source.
  - Planning of education and development, respectively not to forget the overall development of employee; not to distinguish between civil servants and other employess within education and development; to generate individual plans of education also for employees – non civil servants.
  - Implementation of education and development, respectively to set up a system of experience sharing on a workplace; to always consider an inclusion of educational methods taking into account the content of education and participants; to use concept 70-20-10; to overcome the barriers of education and development and not to succumb.
  - Ensuring the evaluation of education and development, respectively to always conduct evaluation of educational activity; to find out the employee expectation before the educational activity starts; not to concentrate on one method of evaluation only but to combine the one with several others; to carry out also a follow-up evaluation to reveal the actually gained knowledge and skills out of the given education; to conduct further evaluation of education and development with hindsight.

One of the basic tools of implementation of the strategic approach to the concept of education and development is a view at education and development as a comprehensive and systematic approach. At the same time it is not possible to omit the specialties of education and development in public sector. Systematic approach to the concept of education and development should therefore be based on a vision, a mission, strategic objectives, HR respectively educational strategy and specialities of education and development in public sector organizations. By connectiong these areas it is possible to build a functional and effective system of employee education and development to further educate and develop employee potential, to provide quick and good quality public services as requested, to adapt better to the new requirements related to the technical and technological progress or the expected legislative changes and thus achieve a competitive advantage over other organizations in the public sector in the form of flexible, highly productive, communicative and motivated employees. Strategical and systematic approach to the concept of education and development can therefore be described as a tool that is necessary to obtain and maintain a competitive advantage.

4 CONCLUSION

This article dealt with the key outcomes of my own research investigation titled "Development of Human Resources as a Competitive Advantage of Organizations in the Public Sector" carried out during 2013-2014. The aim of the executed research was to identify the current state of implementation of a strategic and systematic approach to the concept of education and development in the public sector organizations.

We can say that the results of the research described in this article could be a valuable information for organizations in the public sector and could be an inspiration to change the attitude to the implementation of a strategic and systematic approach to the concept of education and development in public sector organizations.

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PUBLIC SECTOR'S FUNCTIONING AND SOCIAL TERRITORIAL ATTRACTIVNESS

E.V.Popov, Zhoomart Omonov, I.S. Katz

Abstract

The article examines institutional principles of forming territory's social attractiveness; presents the main public sector's institutes that influence region's social attractiveness; demonstrates the institutional structure of the region. Institutional structure is given according to population's needs. The analysis shown in the paper presents quality rating, correlation and regression functions between social attraction indicators and indices showing the development of institutes of law, public health, education, dataware, transport and leisure. The concept is implemented in Sverdlovsk region.

Keywords: territorial infrastructure, public goods, strategy of regional development, social attractiveness

1 INSITUTIONAL REGULATIONS OF SOCIAL TERRITORIAL ATTRACTIVNESS

A number of institutional conditions contribute the social attractiveness of a territory, be it a particular populated area or a country. These conditions determine the comfort level of this territory for the population to reside. Undoubtedly, their number is rather large, including both the objective and subjective terms. Nevertheless, it seems feasible to single out the following condition groups (Tab.1), with the most important characteristics in terms of further management being the level of variability and endogeneity of these parameters. The variability determines the extent of the parameter reaction to an impact, whereas the endogeneity shows the parameter independence for the territory given on the parameters of other territories.

Table 1. Institutional conditions of social territorial attractiveness

Parameter	Variability	Endogeneity
The level of territorial infrastructure development	+++	++
Overall economic territorial development	++	+
Human and cultural capital of the territory	+	++
Nature and climatic conditions	-	+++

The institutional regularities forming social territorial attractiveness are a complex set of the mechanisms approved, which function on the territory given and determine the parameters of social attractiveness. They include the economic and political mechanisms, public opinion, and traditions. Fig. 1 describes how these mechanisms affect the institutional conditions of social territorial attractiveness.

The regulating potential of these mechanisms is not the same both towards different institutional conditions, and the various mechanisms' effect on each condition. Here, the economic conditions, which regulate the conditions of social attractiveness softly and naturally, possess the biggest impact potential. Being the most variable, however, the potential of the territory's infrastructure development is also the most controllable.

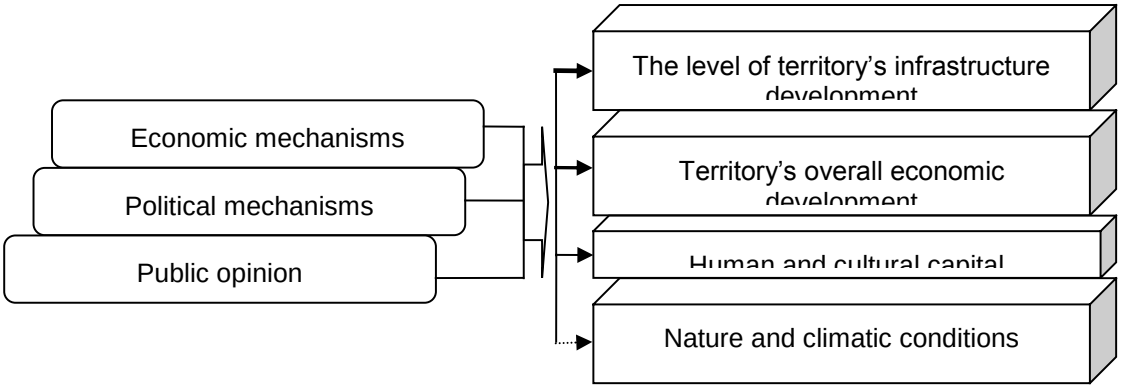

Fig.1 Institutional regularities of social territorial attractiveness

The regulating potential of these mechanisms is not the same both towards different institutional conditions, and the various mechanisms' effect on each condition. Here, the economic conditions, which regulate the conditions of social attractiveness softly and naturally, possess the biggest impact potential. Being the most variable, however, the potential of the territory's infrastructure development is also the most controllable.

To understand the regulating effect of these mechanisms, we turn to consider the institutional structure of such regulation in terms of the population needs (Tab.2).

Table 2. Institutions of territorial infrastructure development

Need	**Institution**	**Indicator**
Security	Maintenance of a public order institution	Expenses on military security and public order maintenance
Health	Health care institution	The number of hospitals, hospital beds, medical staff
Conditions of life	Basic infrastructure services institution	Production and distribution of power, gas and water
Knowledge	Education institution	The number of pupils and students in primary, secondary, vocational, higher and post-graduate education institutions
Information	Informational support	The number and funds of

		libraries, the number of media
Travel	Transport institution	The number of journeys depending on the kind of transport for a million of citizens
Spiritual and leisure needs	Leisure institution	The number and repertoire of theaters and cinemas; the number of museums, parks, restaurants, cafés

2 PRACTICAL APPLICATION THE SOCIAL ATTRACTIVNESS THEORY ON SVERDLOVSK REGION

Popular method of evaluating the performance of public sector is the method of the public opinion poll on the quality of goods. Such research was held on Sverdlovsk region in 2014. Sverdlovsk region is the district of Russian Federation and is situated in the central part of the Urals. The territory of Sverdlovsk oblast' is 194 302 square kilometers and the population in 2015 is 4 327 472 people.

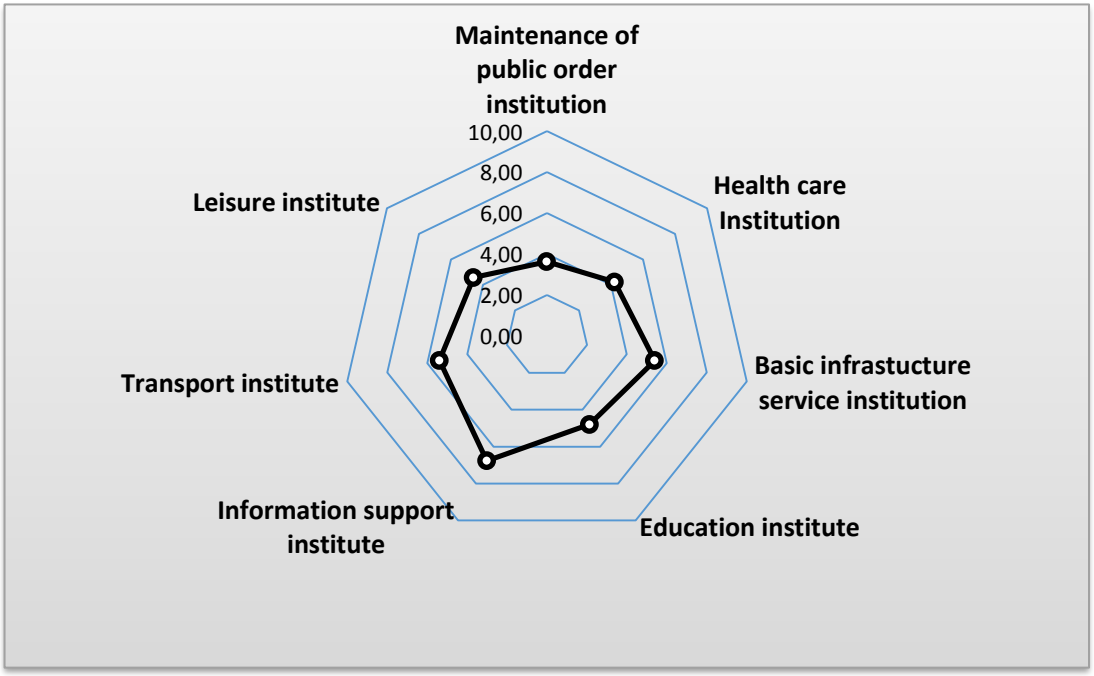

Fig.2 Quality rating of public sectors institutions of Sverdlovsk region

The best institution according to the survey is information support institution. It has 6,76 point out of 10. On the second place there is basic infrastructure service institution. It's about 5,40 points. On the third place there is transport institute (5,38 points). Then comes education institute. It has 4,80 points. Leisure institute is less popular – 4,58 points. Then comes health care institution – 4,23 points. The least popular is maintenance of public order institution. It has only 3,63 points. But we believe this kind of research to be ineffective. Firstly, this study is based on the subjective views. Estimates depend to a greater degree on the state of public goods provided by the public sector, and the subjective expectations of individuals. Secondly, all these institutions have unequal values for the population. For example, the Institute of leisure is less important than institutions of health and education.

Regarding to this, we have tried to objectively evaluate the effectiveness of public sector institutions. In our view, the result of the functioning of public sector institutions is a social appeal, that is attractiveness of the area to stay. We take the indices of birth rate (b) and migration (m) as the indicators of social territorial attractiveness, most brightly demonstrating the population's inclination to live on the territory given, as well as the factor of GRP, showing the population's business activity. Besides, we have developed two integral indicators:

$$P=b+m, \quad (1),$$

describing the general gross influx of people, as well as

$$A=P*GRP, \quad (2),$$

necessary for the analysis of the total effect of institutional factors on the economic and migration–fertility indices.

In order to analyze the potential of institutional regulation of social territorial attractiveness, we carried out a correlation-regression analysis of the Sverdlovsk region data in 2000-2013[13]. The analysis undertaken brought about the following regularities.

Maintenance of public order institution. The correlation and regression analysis failed to reveal any steady correlation between the indicators, which characterize social attractiveness, and the ones, which describe this institution. The maximum significant indicator – the correlation index between GRP and MS (military security expenses) – was 0.59. Hence, the institution given showed no potential of affecting the social attractiveness on the regional level. This is likely to be caused by the fairly low endogeneity and regional variability of this institution. It seems more active as a tool on the federal level.

Health care institution. The study of a number of indicators characterizing the level of health care system found that the indicator HS (gross expenses on health care) affects GRP on a largest scale, while the indicators HB (the number of hospital beds) and HH (the number of hospitals) are most active towards the indicator P. The corresponding regressions are presented by the equations (3) and (4):

$$GRP = 13.5*HS + 327102.3 \text{ (R-squared=0.78, prob=0.04)} \quad (3)$$

$$P = 4575.5*HB + 543.3*HH - 98819.9 \text{ (R-squared=0.99, prob=0.01)} \quad (4)$$

So, this institution stimulates rather the influx of population than the people's activity. The most significant tool of increasing the social attractiveness of a territory is providing the population with the necessary number of hospital beds, which guarantee the adequate and timely medical care.

[13] The data were taken from http://sverdl.gks.ru, http://www.gks.ru, , the Statictics Collection "Regions of Russia". Social-economic indicators 2013/Stat. Coll./Rosstat. – Moscow, 2013. – 990p.

Basic infrastructure services institution. The correlation and regression analysis showed high significance of the indicators characterizing this institution for P. The equation (5) gives the corresponding regression:

$$P = 0.17*CS + 13857.5 \text{ (R-squared=0.92, prob=0.009)}, \quad (5)$$

where CS – the gross production and distribution of power, gas and water.

However, along with high significance of this indicator, there is rather low regulating effect. The reason seems to be the low elasticity of demand on communal public services. Thus, this tool can be seen more as a strategic one, rather than tactic, concerning the regulation of social attractiveness on a concerned territory.

Education institution. This institution is most effective in terms of the birth rate level. According to the analysis, the most significant factor is the level of secondary education. Its regulating effect is described by the formula (6):

$$P = 50.3*SS - 55807.7 \text{ (R-squared=0.91, prob=0.01)} \quad (6)$$

The analysis did not reveal any apparent correlation concerning other levels of education system. Moreover, in terms of higher education, the correlation proved negative pointing at the lower fertility attitude along with the higher education level among the population. As opposed for migration, the effect of this indicator is positive (r=0.85), as significant as the effect of vocational education (r=0.82). Therefore, all the levels of education system prove important for increasing the social attractiveness of a territory in terms of the population influx.

Information support institution. Since information has become the most important of all the resources nowadays, the dramatic effect of this institution on all the characteristics of social attractiveness seems inevitable. The biggest correlation concerning P was demonstrated by the library provision and the Internet access (r=0.88 and r=0.86, respectively). However, the indicator of Internet access proved significant only concerning GRP (r=0.9). The regression concerning the Internet access effect on the integral indicator A is given by the equation (7):

$$A = 143.9*IN – 132080 \text{ (R-squared=0.89, prob=0.05)} \quad (7)$$

Transport institution. This institution most affects the gross regional product; the corresponding dependence is described by the equation (8):

$$GRP = 9.55*T + 100637.48 \text{ (R-squared=0.99, prob=0.00005)} \quad (8)$$

This institution did not show direct influence on the migration flows and the birth rate. However, the indirect effect it has on the integrated indicator A demonstrates high significance of this factor.

$$A = 10105579.4*TQ - 1435037742.88 \text{ (R-squared=0.91, prob=0.05)}, \quad (9)$$

where TQ – the passenger traffic flow, with particular role of such kinds of transport as buses, trams, trolleybuses, metro.

Leisure institution. The analysis showed the importance of this institution mostly regarding the indicators of gross regional product and migration characteristics. It affects indirectly the integral indicator A as well, with this effect being most obvious regarding museums:

$$A = 3510360119.27*M + 334420925033 \text{ (R-squared=0.9, prob=0.05)} \quad (10)$$

There is also a noticeable effect on GRP from the turnover of restaurants, cafes and other catering institutions (F):

$$GRP = 61.08*F + 272029.46 \text{ (R-squared=0.91, prob=0.05)} \quad (11)$$

This index affects migration to a lesser extent.

So, the most significant indicators regarding this institution are museums and catering companies. Such characteristics as the number of theaters and performances, the number of parks, cinemas, clubs did not reveal any controlling effect.

Summing up all the above said, it is necessary to emphasize that the territorial infrastructure, on the larger extent being the companies of public sector, enjoys a powerful regulating potential on the indicators of social territorial attractiveness. Such institutions as health care, education, information, and basic infrastructure services are most effective regarding the population reproduction and immigration activity. The population's business activity, on the other hand, is most affected by the institutions of information, transport and leisure. It is believed that the appropriate use of the methodology provided will increase the social attractiveness of the Sverdlovsk region, as well as will help develop a set of stimulating measures for the other Russia's regions.

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SPECIFICS OF SERVICES AND CLASSIFICATION OF CLUSTER ORGANISATIONS IN EUROPE WITH FOCUS ON SERVICE SECTOR

Martin Horák

Abstract

The main goal of this paper is to identify in which areas of the service sector is tendency to clustering and to find out share of cluster organisations in the service sector compared to other sectors. It is the first step needed for further analysis of clusters and cluster organisations which exist in the service sector. Paper is divided into two parts – first part refers to services in general and second part is about clusters and cluster organisations in Europe with focus on the service sector. In this paper are cluster organisations in Europe divided into 4 categories – cluster organisations in manufacturing industries, in agriculture, in knowledge-intensive services and in less knowledge-intensive services. Two last type of cluster organisations (knowledge-intensive services and less knowledge-intensive services) are considered as cluster organisations in the service sector. These two categories have 52% of total share of cluster organisations. Sectors which have the highest number of cluster organisations are IT, green tech., biotech, followed by transportation and logistics, health and tourism. The classification in this study was made on the basis of NACE rev.2 and Eurostat classification. In the last part of the article are given suggestions for the direction of future research.

Keywords: cluster, cluster organisation, services, service sector, knowledge-intensive services, less knowledge-intensive services

1 INTRODUCTION

The service sector has recently become the most important economic sector in Europe. European Commission (2009) states in their report that almost all employment growth in the period 1995-2007 was identified in the service sector. In 2007, more than 155 million people are engaged in service activities, representing 69.2 % of total employment and generates 71.6 % of gross value added generated by the twenty-seven states. From that point of view, we can describe European economy as a service economy. With including fact, that knowledge play also very important role in modern economy, we can call today economy as a service-oriented knowledge economy.

Small and medium-sized enterprises existing in the service sector are facing many problems every day. To remain competitive they need to keep up with all kinds of changes in the world. One of possible option for enterprises in the service sector is become a member of a cluster. Although clusters and cluster organizations were in the past mainly being created in manufacturing industry, we can see in recent days that clusters appears also in the service industry. The main goal of this article is to identify in which areas of the service industry is tendency to clusterting and this paper also brings up classification of cluster organisations in Europe based on NACE rev.2 and Eurostat.

The article is structured as follows: section 3 introduces definitions of services, four main characteristics of services and the classification of services. Section 4 presents a literature review on clusters and cluster organisations, which is followed by the classification of cluster organisations in Europe with focus on the service sector. Cluster organisations are divided into four categories. Finally, conclusion and suggestions for the direction of future research are given in section 5.

2 METHODOLOGY

This paper starts with a literature review on definitions of services, main characteristics of services and the classification of services. So the first part of the paper is focused on services in general. The second part is about clusters and cluster organisations in Europe with focus on the service sector. In the second part clusters and cluster organisations are firstly examined, this is followed by overview of cluster organisations in Europe. Data about cluster organisations in Europe was gathered from European cluster observatory. Observatory identified 48 sectors in which are cluster organisations being created. Each of these sectors were examined and then assigned to one of cluster organisations categories – manufacturing, agriculture, knowledge-intensive services, less knowledge-intensive services. Compositon of these four categories is presented in appropriate chapter. The classification of cluster organisations was made on the basis of NACE rev.2 and Eurostat. Next section is focused on two of these categories which were considered as categories in the service sector - knowledge-intensive services and less knowledge-intensive services.

3 DEFINITION, CHARACTERISTICS AND CLASSIFICATION OF SERVICES

Section three begins with a reviewing existing definitions of services, follows with four main characteristics of services and the classification of services.

3.1 Definition of services

This part presents some definitions of services which were found in literature. The reason of this is to make clear what actions are considered as services. It will also show us some interesting points of view on services.

For example Vargo and Lusch (2004a) define service *"as the application of specialized competences through deeds, processes, and performances for the benefit of another entity or the entity itself"* (p. 2). According to Kotler (1988) *"a service is an act of performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to a physical product"* (p. 477). Quinn, Baruch and Payuette (1987) say that services include all economic activities whose output is not a physical product or construction, is generally consumed at the time it is produced, and provides added value in forms (such as convenience, amusement, timeliness, comfort or health) that are essentially intangible concerns of its first purchaser.

As we can see, many scholars in the past were bringing up their own definition of services. In general, we can say that service activities are differentiated from non-service activities by the attributes of intangibility, heterogeneity, inseparability and perishability. These four basic characteristics of services are closely examined in next part of this paper.

3.2 Characteristics of services

This part of the paper is focused on characteristics of services mentioned above (intangibility, heterogenity, inseparability, and perishability). For better understanding each part of these attributes is examined and described.

The first attribute is intangibility. Based on literature review we can say that intangibility is key characteristic of services. Zeithaml and Bitner (1996) describe it as follows: *"Because services are performances or actions rather than objects, they cannot be seen, felt, tasted, or touched in the same manner that we can sense tangible goods"* (p. 19). Breivik and Troye (1996) suggest three dimensions to intangibility: abstractness, generality and lack of pre-purchase inspection possibilities. Abstractness refers to something that is

thought of apart from any particular instances or material objects. Generality refers to a class of things, persons, events, properties, or the like, as opposed to specificity, which pertains to one specific object, person, event, or the like. And finally lack of pre-purchase inspection possibilities means that service as performance cannot cannot be produced in advance for prepurchase inspection.

Second characteristic is perishability. Services cannot be stored, saved, returned, or resold once they have been used. Once rendered to a customer, the service is completely consumed and cannot be delivered to another customer. According to Parker (2012) services are perishable in two regards. First, the relevant resources, processes, and systems of a service are assigned for delivery during a definite period in time. Second, when the service has been completely rendered, this particular service irreversibly vanishes as it has been consumed by the consumer.

Inseparability of services refers to the fact that services are produced and consumed at the same time and that they cannot be separated from their providers, whether the providers are people or machine (Kotler & Armstrong, 2011). Inseparability is one of the characters that differentiate services with products because of the simultaneous production and consumption (Sierra and McQuitty, 2005).

The last characteristic is variability. It means that the quality of services depends on who provides them as well as when, where, and how they are provided (Kotler & Armstrong, 2011).

However, we can detect also some critics of this four basic characteristics, for example Lovelock and Gummesson (2004) say that the traditional definition has a weakness in differentiating services from goods and Vargo and Lusch (2004b) indicate that the traditional definition's characterizations are inaccurate and reflect a view of exchange that is driven by the manufacturer's perspective.

3.3 Classification of services

This part deals with the classification of services which will be applied on cluster organisations in section four of this paper.

The official statistics on services in Europe are based on the NACE classification. According to Eurostat, the terms service sector or services are generally used to refer to economic activities covered by Sections G to U of NACE revision 2. This approach covers those service companies for which services constitute their main activities but it does not include the large number of service activities produced within manufacturing or other industrial firms.

Tab. 3 - Classification of services by NACE Rev. 2. Source: Eurostat

NACE Rev. 2	
Section	Description
G	Wholesale and retail trade, repair of motor vehicles and motocycle
I	Accommodation and food service activities
H	Transporation and storage
J	Information and communication
K	Financial and insurance activities
L	Real estate activities
M	Professional, scientific and technical activities
N	Administrative and support service activities
O	Public administration and defence, compulsory social security
P	Education
Q	Human health and social work activities
R	Arts, entertainment and recreation
S	Other service activities
T	Activities of households as employers, undifferentiated goods and services producing-activities of households for own use
U	Activities of extraterritorial organisations and bodies

Since 2009 Eurostat defines the service sector based on the share of tertiary educated persons at NACE 2-digit level. Services by that classification are divided into 2 large categories - knowledge-intensive services (KIS) and less knowledge-intensive services (LKIS).

Tab. 4 - Knowledge-intensive services. Source: Eurostat

Knowledge based services	NACE Rev. 2 codes – 2-digit level
Knowledge-intensive services (KIS)	50 to 51 Water transport, Air transport
	58 to 63 Publishing activities, Motion picture, video and television programme production, sound recording and music publishing activities, Programming and broadcasting activities, Telecommunications, Computer programming, consultancy and related activities, Information service activities (section J)
	64 to 66 Financial and insurance activities (section K)
	69 to 75 Legal and accounting activities, Activities of head offices, management consultancy activities, Architectural and engineering activities, technical testing analysis, Scientific research and development, Advertising and market research, Other professional, scientific and technical activities, Veterinary activities (section M)
	78 Employment activities
	80 Security and investigation activities
	84 to 93 Public administration and defence, compulsory social security (section O), Education (section P), Human health and social work activities (section Q), Arts entertainment and recreation (section R)

All activities mentioned in Tab. 2 are considered as knowledge-intensive services. Knowledge intensive services (KIS) are typically defined as services that make intensive use of R&D, skilled labour and knowledge embodied in technology (Bishop, 2008).

Miles (2008) in his paper called Patterns of innovation in service industries gives examples of using knowledge in specific service sectors - in health services, knowledge in areas such as biochemistry, physiology, pharmaceuticals, and surgery is applied to influence bodily well-being; information is exchanged with patients, communities, and other practitioners about which behaviors may further support this. In many countries, health services feature large-scale R&D activities alongside more routine, testing-oriented laboratory work. Financial services largely involve processing information about ownership rights and the value of money and monetized commodities and how these behave over time in varying circumstances. Educational services organize and reproduce knowledge, and train various levels of students (including training them how to learn), but they also provide some social service functions like child care.

Tab. 3 refers to high-tech knowledge-intensive services. These services fall into knowledge-intensive services category. Activities such as scientific research and

development, telecommunications, activities related to IT and others activities mentioned in Tab. 3 belongs to that category.

Tab. 5 - High-tech knowledge-intensive services. Source: Eurostat

High-tech knowledge-intensive services	59 to 63 Motion picture, video and television programme production, sound recording and music publishing activities, Programming and broadcasting activities, Telecommunications, Computer programming, consultancy and related activities, Information service activities
	72 Scientific research and development

Some service sectors that are oriented to physical transformations, such as HORECA (hotels, restaurants and catering), transport, and trade services, resemble manufacturing and agriculture in that they have high shares of low-skilled workers. Public administration has a remarkable share of medium-skilled employment: Government bureaucracies typically employ many office workers in routine information processing tasks (Miles, 2008). These all mentioned service sectors and others in Tab. 4 are considered as less knowledge-intensive services.

Tab. 6 - Less knowledge-intensive services. Source: Eurostat

Less knowledge-intensive services (LKIS)	45 to 47 Wholesale and retail trade, repair of motor vehicles and motorcycles (section G)
	49 Land transport and transport via pipelines
	52 to 53 Warehousing and support activities for transportation, Postal and courier activities
	55 to 56 Accommodation and food service activities (section I)
	68 Real estate activities (section L)
	77 Rental and leasing activities
	79 Travel agency, tour operator reservation service and related activities
	81 Services to buildings and landspace activities
	82 Office administrative, office support and other business support activities
	94 to 96 Activities of membership organisations, Repair of computers and personal and household goods, Other personal services activities (section S)
	97 to 99 Activities of households as employers of domestic personnel, Undifferentiated goods-and services producing activities of private households for own use (section T), Activities of extraterritorial organisations and bodies (section U)

4 CLUSTERS AND CLUSTER ORGANISATIONS

This section of the paper introduces a few definitions of the term cluster, benefits which enterprises have from becoming a member of cluster and a short review of the latest development in the studies about clusters in services. This is followed by mapping cluster organisations in Europe and classifying them into four categories. After that share of each cluster organisation category is presented and two categories (knowledge-intensive services and less knowledge-intensive services) are being closely examined.

The drivers behind the service economy are mainly small and medium-sized enterprises (SMEs), even more so than for manufacturing. Nowadays it is becoming more difficult for SMEs to compete with larger ones. One of very valuable option for them is to become a member of cluster. Clusters can help create entirely new service sectors, in particular by developing and promoting new technology-based services in close partnerships between larger firms, universities, innovative SMEs and local user groups. Swann and Prevezer (1996) see clusters as *"groups of companies within one economic sector which are*

situated in one and the same geographical area". Steiner and Hartmann (2006) say that cluster is *"a number of complementary companies (in industrial or service sectors) of public, private and quasi public research institutions and development institutions which are connected by labor market and/or ties of costs – of production output and/or technological ties"*. In my oppinion the most complex definition of term cluster is given by Michael Porter (1990), he defined clusters as *"geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (universities, standards agencies, and trade associations) in particular fields that compete but also cooperate"* (p. 30).

Another term that needs to be distinguished is a cluster initiative. According to the Cluster Initiative Greenbook, cluster initiatives are described as *"organized efforts to enhance the competitiveness of a cluster, involving private industry, public authorities and/or academic institutions"* (Sölvell, Lindqvist & Ketels, 2003). Most of the cluster initiatives emerge in the form of a project and later on they are converted into more formal structure. Cluster organisation is then characterized as *"organised efforts to facilitate cluster development, which can take various forms, ranging from non-profit associations, through public agencies to companies. A cluster organisation typically functions as a mediator between various cluster members and adds value by stimulating collaboration both within the cluster and between the cluster and the outside world"* (Schretlen et al., 2011).

There are many benefits of becoming member of a cluster. Mazilu and Sava (2001) in their paper list following benefits:

- The clusters stimulate the innovation through the exchange of information among different actors and they create strong synergies with the complementary sectors along the value chain
- The clusters are a source of work places
- The clusters can reduce the barriers of the market and determine the creation of new enterprises and business models
- The cluster is a key instrument for the strengthening of the entrepreneurship, helping the companies find resources, technologies and knowledge and facilitate ideas to transform in opportunities of businesses
- The clusters are components of policies and strategies of strengthening competitiveness and regional development. The clusters networks as instruments of internationalisation

Most scholars were in the past focusing on the traditional manufacturing clusters, but with the rise of knowledge and considering the fact that the majority of world economies are becoming more service oriented, this situation is starting to change. Nowadays still more and more scholars are studying clusters and their effects in other sectors than manufacturing. Most of them are focused to specific service sector, e.g. tourism (Jackson & Murphy, 2006), health (Ramos et al., 2013). When speaking about clusters in the service sector, interesting study is written by Hsieh, Lee and Ho (2012) - according to the location of consuming the cluster services, they classify different types of service clusters into two broad categories. Type I is the network-based and process-oriented service cluster where services are designed and developed inside the clusters, but the outputs are delivered and consumed globally. Type II is the consumption-oriented and destination-based service cluster within which services are designed, developed, delivered, and consumed. In later part of their paper they are also comparing these two type of service clusters with industrial cluster.

Another scholar Stephan Maning (2013) in his paper about the rise of knowledge services clusters identifies and then compares three type of clusters - Low-cost manufacturing clusters, High-tech clusters and Knowledge service clusters. He mentioned that knowledge service clusters have two main features such as focus on technical talent and knowledge services and strong global orientation, which make them quite distinct from most traditional industry clusters. On the one hand, knowledge services clusters develop around the provision of technical talent and upstream knowledge services rather than manual labor and the manufacturing of goods. Knowledge services can be recognized by their symbolic–analytical and partially intangible nature and the need for higher-skilled technical talent and expertise to perform these services.

In literature the term knowledge intensive business services (KIBS) is being used by some scholars while speaking about clusters. Miles et al. (1995) defined KIBS as services which rely heavily upon professional knowledge; either supply products which are primarily sources of information and knowledge, or use their knowledge to produce services which are intermediate inputs to their clients knowledge generating and information processing activities and, finally, primarily have other businesses as their main clients. There are plenty of case studies which are focused on KBIS clusters – e.g. ICT services (Aslesen & Isaksen, 2007); consulting services (Keeble & Nachum, 2002); broadcast and financial services (Cook & Pandit, 2004) and so on.

4.1 Cluster organisations in Europe and their classification

The previous part was focused on giving a short introduction of clusters and cluster organisations in general, this part is aimed on situation in Europe within cluster organisations. The European Cluster Observatory lists some 1 400 cluster organisations. Observatory divides them into standard sectors (contains 44 sectors), creative and cultural industries, green technology, micro and nanotechnology and optics and photonics. From this distribution we cannot say how many cluster organisations are in the service sectors and what is their share of all cluster organisations, so I divided cluster organisations in Europe into 4 categories – Cluster organisations in manufacturing industries, in agriculture, in knowledge-intensive services and in less knowledge-intensive services. Two last type of cluster organisations (knowledge-intensive services and less knowledge-intensive services) are considered as cluster organisations in the service sector. This classification was made on the basis of NACE rev.2 and Eurostat classification. It should be mentioned that some cluster organisations are covering more sector than one - these organisations are included in each of these sectors. Due to that fact the total number of cluster organisations is higher than in real.

So, let's now have a look on composition of each cluster organisation category. The number in the bracket refers to a total number of cluster organisations in appropriate sector.

In the cluster organisations in manufacturing industries are included following sectors: aerospace (47), apparel (25), automotive (74), building fixtures (5), chemical (18), construction (44), food (70), footwear (14), forest products (47), furniture (32), heavy machinery (22), instruments (7), jewellery and precious metals (8), leather (7), lighting and electrical equipment (18), maritime (49), materials (44), metal manufacturing (25), miscellaneous (92), oil and gas (6), pharmaceuticals (30), plastics (31), production technology (55), sporting and childrens goods (10), stone quarries (2), textiles (51), tobacco (0).

In the cluster organisations in agriculture are these sectors: agricultural products (50), farming and animal husbandry (9).

Cluster organisations in knowledge-intensive services consist of sectors such as business services (28), education (18), entertainment (25), financial services (8), health (67),

media and publishing (17). This category also includes sectors which are considered as high-tech knowledge-intensive services (these sectors are focused mainly on research and development) – biotech (93), IT (168), telecom (23), medical technology and device (63), energy technology (47), green technology (150), micro and nanotechnology (45), optics and photonics (36), creative and cultural industries (42).

Cluster organisations in less knowledge-intensive services contain distribution (2), tourism (51), transportation and logistics (69).

4.2 Share of each cluster organisation category in Europe

On the chart below we can see the share of each mentioned category of cluster organisations. Most of them exist in manufacturing industries (833), followed by knowledge-intensive services (820). The lowest number of cluster organisations is in agriculture – only 59. These facts support the statement that the majority of world economies are becoming service-oriented knowledge economies.

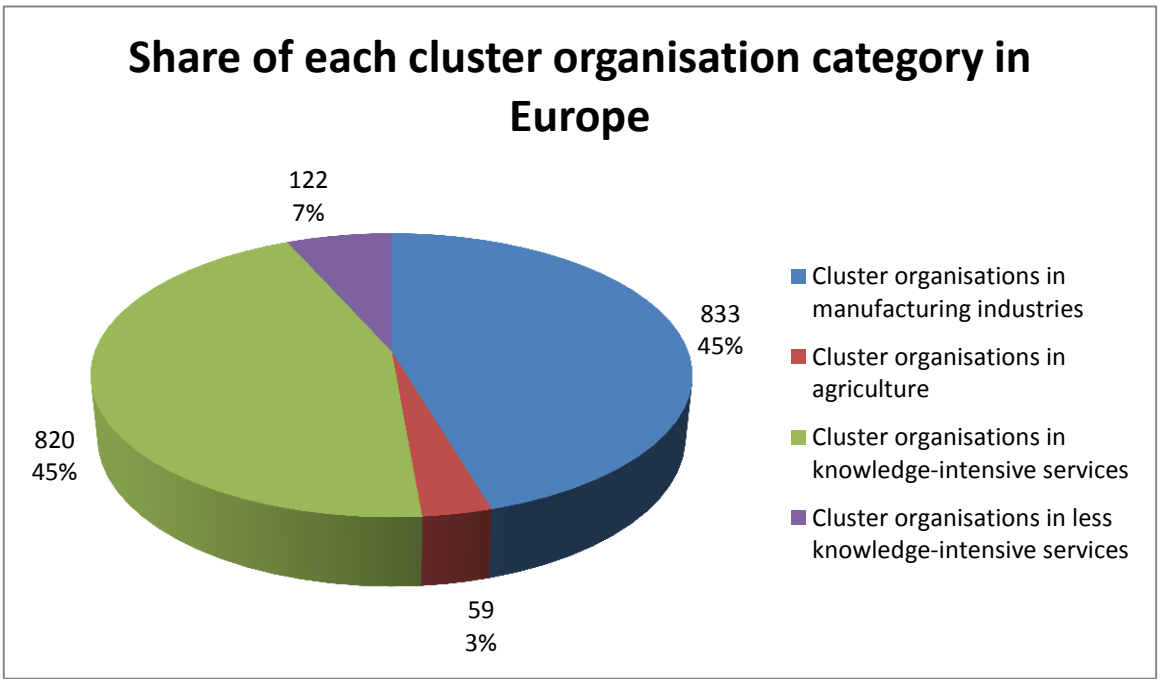

Fig. 1 - Share of each cluster organisation category in Europe. Source: The European Cluster Observatory

4.3 Cluster organisations in service sector in Europe

Distribution of cluster organisations in Europe into 4 categories and share of each category was presented in the previous chapter. This part is aimed on two categories of cluster organisations which exist in services - knowledge-intensive services and less knowledge-intensive services.

On the first chart below we can see share of sectors which were included in knowledge-intensive services. The most cluster organisations in this category are in high-tech knowledge-intensive services, followed by health, business services and entertainment. Cluster organisations in health sector are mainly in Germany, France, Spain. The highest

number of cluster org. in business services is in Hungary (- there are 7 cluster org. specialising in business services in Hungary, 4 of them are situated in Budapest).

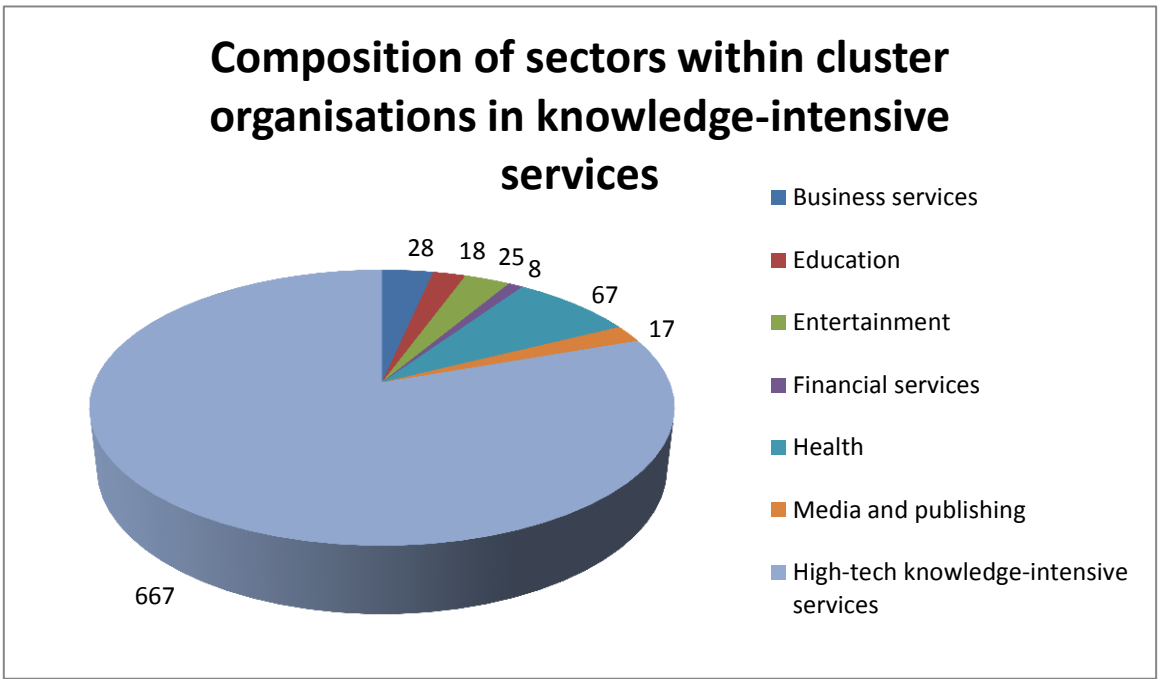

Fig. 2 - Composition of sectors within cluster organisations in knowledge-intensive services. Source: The European Cluster Observatory

Although high-tech knowledge-intensive services were included into knowledge-intensive services (based on classification of services by Eurostat), it should be noted that the main focus of that sector is on research and development. The dominant sector in High-tech KIS is IT, followed by green technology and biotech. In IT sector the most cluster organisations can be found in Germany, Belgium and Sweden. Countries such as Germany, Hungary, France and Denmark are dominant in green technology. Cluster organisations in biotech exist mainly in Germany, France and in the north of Europe (Sweden, Denmark). In the Czech republic we can identify 8 cluster organisations which belongs to this category - 3 in IT sector, 3 in green technology and 2 in micro and nanotechnology (note that these data from The European Cluster Observatory belongs to year 2012).

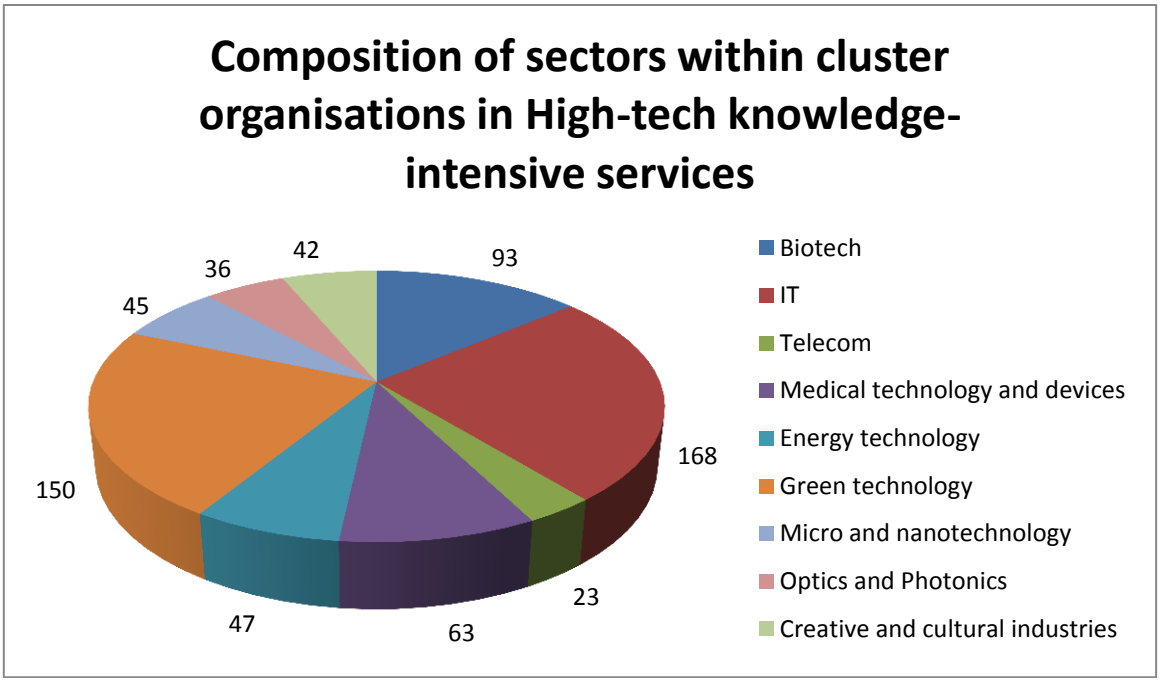

Fig. 3 - Composition of sectors within cluster organisations in High-tech knowledge-intensive services. Source: The European Cluster Observatory

Second category of cluster organisations in services is less knowledge-intensive services. This category includes three sectors – distribution, tourism and transportation and logistics. In distribution there are only two cluster organisations – Industries du Commerce in France and Distretto padovano della logistica in Italy. The most cluster organisations in less knowledge-intensive services are in transportation and logistics. Dominant country in that sector is Germany - for example cluster org. TSB Innovationsagentur Berlin, GZVB - Traffic, Transport & Telematics Brunswick, Aktiv in der Natur and Logistics Initiative Hamburg can be found there. Germany is followed by Italy and Hungary. In tourism sector were identified 51 cluster organisations. Most of them are being created mainly in the south of Europe – in Spain, Portugal, and in the eastern Europe – Slovakia, Hungary. In tourism sector we can also indicate connection with others sectors – for example with health (Health tourism cluster in Hungary, Romanian Geothermal Cluster). This fact could be worth for next research – tendency for connection with other sectors in services.

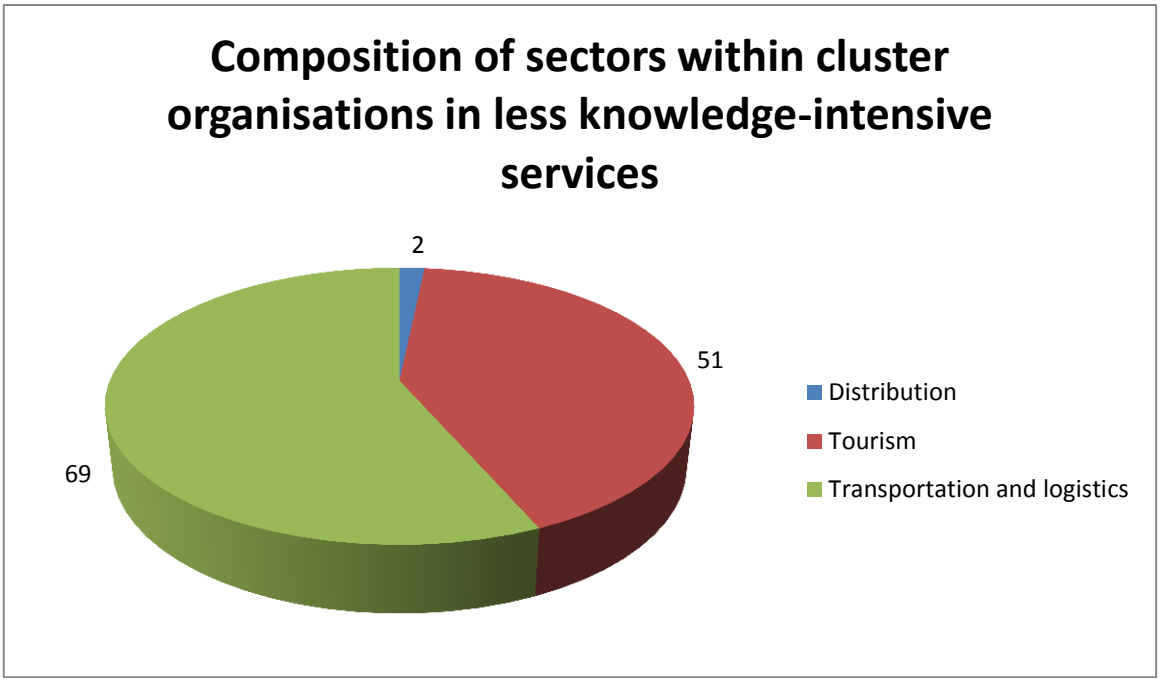

Fig. 4 - Composition of sectors within cluster organisations in less knowledge-intensive services. Source: The European Cluster Observatory

5 CONCLUSION AND FURTHER RESEARCH

Aim of this study was to summ up literature review about specifics of services, clusters and cluster organisations and to come up with the classification of cluster organisations in Europe with focus on the service sector. The main reason of that was to find out share of cluster organisations in the service sector compared to other sectors. Also these facts gave us information about which service sectors have tendency to clustering. Based on the used classification two categories of cluster organisations in the service sector were identified - knowledge-intensive services and less knowledge-intensive services. These two categories have 52% of total share of cluster organisations. Sectors which have the highest number of cluster org. are IT, green tech., biotech, followed by transportation and logistics, health and tourism. These findings mean that the service sector is starting to play much more important role than in the past. The most of European economies are becoming service-oriented knowledge economies. Many countries in Europe are starting to move their focus from the manufacturing sector to the service sector and they also starting to realise that they have to support subjects existing in the service sector to remain competitive.

As regards for direction for further research, we should focus now on choosing specific service sector which have the most potential within the Czech republic in a way of evolving clusters. This should be followed by identifying differences within clusters in the service sector and manufacturing clusters in a way of managing, financing, activities and other factors/specifics in order to propose a model of how to manage cluster or cluster organisation in the service sector. It is crucial to find more information about clusters and cluster organisations in the service sector so policymakers and actors existing in service sector could manage their organisations more effectively.

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