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FOREWORD

A portfolio of the 9th issue of The Journal of Business Management consists of papers presented at an online scientific conference “Business Psychology – Gateway to Sustainable and Successful Business” as well as papers submitted in the first half of 2015. Accordingly, the new issue is divided into two sections: business psychology (six papers) and management (five papers).

Business psychology is one of the cornerstones of successful and sustainable business. Understanding of the science of human behaviour coupled with experience and knowledge of management and working environment ensures effective and sustainable performance for both individuals and organisations.

The online scientific conference “Business Psychology – Gateway to Sustainable and Successful Business” brought together junior and senior researchers to discuss their academic interests and applied business cases in an innovative way.

Topics covered in the selected papers include: organisational culture and climate, occupational stress, professional deformation and burnout, leadership, innovations, and idea management, amongst others.

The papers devoted to management problems cover such issues as acquisition of firms, system of innovation management, idea management, etc. underpinning their theoretical and practical significance.

Every paper went through the double-blind peer review process. Eleven papers were shortlisted as a result.

Head of the Editorial Board,
Professor Dr. Vulfs Kozlinskis

Member of the scientific virtual conference
“Business Psychology - Gateway to Sustainable and Successful Business” organising committee
Dr. Maija Zakrizevska
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INTERRELATION BETWEEN ORGANIZATIONAL CULTURE AND CLIMATE FOR CREATIVITY IN STATE THEATRES IN LATVIA

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ABSTRACT
The purpose of the research paper is to study interrelation between organizational culture and climate for creativity in state theatres in Latvia. Main methods used for research: The Organizational Culture Assessment Methodology and Instrument, KEYS methodology and Instrument, interviews, mathematical statistical methods. Design of the research methodology as well as the model for interrelation between organizational culture and climate for creativity and also be used in research in other industries. Paper type: research paper. Keywords: organizational culture, organizational climate, creativity.

1. INTRODUCTION

In the current (changing) economic situation it is a positive and promising fact, that concepts like innovation, innovative entrepreneurship, creativity and creative economy, become increasingly important in the acoustic field of Latvian business management education and practice. This indicates a change in understanding and the way of thinking in business and society. All of the above is also related to organizational culture and climate (Dubkevics, 2009). Creative industries already by definition are associated with the above-mentioned concepts. Definitions of creative industries in management science are different, but not contradictory. Creative industries can be described as the convergence of creative arts (individual creativity, talent and skills) and culture industries (mass activities) to satisfy needs of the interactive consumer (Hartley, 2005).

Topicality of the theme is also determined by the nature of state theatres: on the one hand state theatres are business organizations (government established limited companies), while at the same time they are cultural institutions. From management perspective it is a question of how to balance creative, intellectual and emotional performances with needs of basic customers and market interests (Berzins, Niedrīte, 2011). Organizational culture in management science is defined as a set of basic assumptions, values, beliefs, behaviours and artefacts (Heskett, 2012). A strong organizational culture is linked to sustainability and long-term effectiveness of an organization (Heskett, 2012; Waterman, Peters, Philips, 1982, at.all.).

Sustainability of an organization is largely dependent on its openness to change – creativity and innovation. It is emphasized that creativity and innovation are the impetus to change, while organizational culture is the fundamental (Sarros, Cooper, Santora, 2008).

The Recent research shows that organizations with culture and strategy related to creativity and innovation show significant increase in company value and profits (Jaruzelski, Loehr, Holman, 2011).

Organizational culture research is important, necessary and useful. Topicality of the issue is also determined by the fact, that organizational culture can either support or hinder the change. This is also why organizational culture studies are important for long-term strategy. Organizational culture studies in Latvia are very fragmented, and mainly related to the commercial banking sector. The research is an application to build a research meta-story about performing arts in the form of state theatres in Latvia.

The notion of “culture” itself is associated with creativity. Creativity is the human ability to generate new ideas with potential value of practical applicability. Social environment has an impact on individual creativity. Organizational climate is the subjective perception of organizational characteristics and internal environment factors which have a positive or negative impact on individual creativity. (Amabile, Conti, Coon, 1996).

Both, organizational culture and climate actually characterize the same phenomenon – internal environment of an organization. The key difference is in research traditions and interpretations of the
phomena. Therefore, there is a need for integrated approach to both methodological (qualitative and quantitative methods need to be used in organizational culture research) and thematic meanings (Denison, 1996). It should be noted that interrelation between organizational culture and climate for creativity is not sufficiently studied in management science (McLean, Laird, 2005).

The author of the paper shares the view of the world’s leading management researchers - while analysing organizational culture and climate for creativity, in addition to management science, the knowledge of other social sciences such as sociology, anthropology, psychology and philosophy needs to be taken into consideration. (Hofstede G, Hofstede G.J, 2005).

Internal environment of an organization – culture and climate, is created in the management process – it is the result of specific management activities that lead to realization of organizational objectives.

**The aim** of the research is to study interrelation between organizational culture and climate for creativity in state theatres in Latvia.

**Research hypotheses** are:

1. Preferable changes of culture of state theatres are associated with changes of climate for creativity and factors influencing it.
2. The supportive (clan, family type) and creative (innovative, adhocracy) values of desired culture is being characterized by a greater effect size on climate for creativity in state theatres in Latvia.
3. The bureaucratic (hierarchical) and market values of the desired culture are being characterized by a lower effect size on climate for creativity in state theatres in Latvia.

**Theoretical Significance and Scientific Novelty of the Study are:**

1. Potential theoretical concept for the empiric research of interrelation between organizational culture and climate for creativity in creative and other industry organizations was developed as a part of the paper.
2. Research includes a study of interrelation management between organizational culture and climate for creativity in state theatres.
3. KEYS methodology and respective research instrument (KEYS – Tool for Assessing the Climate for Creativity) is used in climate for creativity research. It is possible to compare the obtained results with the data of different industries and statistic data of organizations created by Creative Leadership centre and standard deviation base results in creative economy.
4. Design of the research methodology as well as the model for interrelation management between organizational culture and climate for creativity was developed as a part of the paper and can also be used in research in other industries.

2.**THEORETICAL DESCRIPTION OF ORGANIZATIONAL CULTURE AND CLIMATE IN MANAGEMENT SCIENCE**

The first chapter of the paper is focused on the analysis of theoretical approaches of organizational culture and climate in management science in state theatres in Latvia. Concepts of organizational culture and climate for creativity are defined and convergence of organizational culture and climate is described.

Organizations are affected by their internal and external environments. The author of the paper explores the internal environment.

J. Heskett distinguishes between four main internal factors that determine organizational performance: an effective organizational culture ("know how"), goals ("know why"), strategy ("know what, when, and where"), and performance ("know who"). The author does not highlight resources as they are considered a base factor of internal environment (see the figure 1.).
Organizational culture is also the reflection of all the internal environment factors. Culture plays a crucial role in implementing the strategy.

Organization’s internal environment is a result of management. Culture is a set of main organizational conditions that drive performance.

Interrelation between organizational culture and climate for creativity is studied in this research. On the one hand, the fact that not all internal factors are in the scope of this study is a research limitation. On the other hand, global research practice in management science relates the organizational culture specifically with the level of climate for creativity. Organizational culture and climate for creativity are related to human resource development – promotion of individual creativity.

After evaluating different perspectives, the author concludes that in general organizational culture is defined as a set and system of common values and assumptions, as well as the way of thinking that characterizes the organization and its members. Such opinion is expressed by the leading organizational culture researchers in management science (Schein, 2010; Cameron, Quinn, 2006; Heskett, 2012; Wallach, 1983; Vanaerde, Jownee, 2003).

Theoretical framework of the research is based on organizational culture theories by K. Cameron, R. Quinn and E. Wallach.

Competing values framework by K. Cameron and R. Quinn is based on organizational effectiveness research (Cameron, Quinn, 2006). It is designed by integrating a variety of organizational culture research findings.

The theory distinguishes four dominating types (value systems) of organizational culture:
1. Hierarchy (bureaucratic);
2. Market;
3. Clan (family);
4. Adhocracy (innovative);

The typology is based on two dimensions of organizational culture effectiveness:
1. Flexibility and discretion // stability and control;
2. External focus and differentiation // internal focus and integration

The main values of the hierarchy or bureaucratic culture are formalized and structured environment, power hierarchy, goal orientation, stability and competitiveness (Orientation to internal focus, stability). The main values of the clan or supportive culture are positive microclimate, team awareness, high self-motivation, as well as respect for traditions and personalities (Orientation to internal focus and flexibility).

The main values for the adhocracy or innovative culture are creative environment, freedom for creativity, orientation towards change and risk, as well as high internal motivation (Orientation to external focus and flexibility). The value system of the market culture is oriented towards high competition in the external market and stability.

In this study, the author has used research instrument OCAI, which is based on organizational culture typology theory by K. Cameron and R. Quinn. According to research in management science on a global level, adhocracy and clan culture values are the ones that positively correlate with organizational climate for creativity.

E. Wallach’s theory does not differ very much from the typology by K. Cameron and R. Quinn. Similarly to K. Cameron and R. Quinn and other authors, E. Wallach believes that to understand the culture means to understand the difference between the current and preferred situations in an organization. OCAI research instrument examines both levels. (Wallach, 1983).
Wallach’s description of cultures is similar to the theory by K. Cameron and R. Quinn. In her culture analysis she emphasizes the role of functionality in culture and recommends collecting information about two or three different functions (subcultures – L.D.) within organization. For this purpose the questionnaire OCI can be used. This instrument has been used in the paper, to study management and actor subcultures. Unlike K. Cameron and R. Quinn, E. Wallach does not separate market dimension of the culture. She connects the market orientation to the innovative culture dimension (Wallach, 1983).

Typology theories are theoretical concepts (categories of thinking process) that are based on the research. Value of the typology theories is determined by the extent to which they allow navigation when dealing with the complex organizational reality. At the same time, the problem of typology theories is simplification of reality. This type of theories limits research perspective focusing only on certain dimensions while ignoring subcultures.

However, research instruments based on typology theories are widely used in research practice. The research paper is based on organizational culture definition by K. Cameron and R. Quinn, which essentially does not differ from other definitions in management science. It is similar to the most well-known definition by E. Schein and in fact, is not different from E. Wallach’s view. The empirical research of the research paper is based on organizational culture theories by K. Cameron, R. Quinn and E. Wallach. Value systems in those theories are related to organizational climate and the theories also describe creative types/dimensions of the culture.

Research has shown that it is possible to balance the improvement of organization’s business performance and promotion of creativity. To achieve that, it is necessary to understand factors that promote and distract creativity.

Research literature often associates creativity and innovation with organizational climate (McLean, Laird, 2005; Amabile, at all 1996). The range of climate definitions is wide enough, however researchers are more focused on human perception of internal environment, including organizational culture. Individual perception is a reality that affects the internal environment factors of an organization. The climate is more sensitive to power – more easily manipulated and influenced (Denison, 1996).

In KEYS methodology, which is used for empiric research of the paper, organizational climate is defined as human perception of work environment factors. This perception affects their personal activities, including creative activities. On the other hand, creativity is defined as human ability to generate new ideas that have a useful value. Research is based on the organizational climate definition provided in KEYS methodology. Subjectivity of climate largely explains why the research literature relates creativity and innovation to organizational climate instead of culture (Center for Creative Leadership, 2010; Amabile Center for Creativity, 2010).

In the management science literature:

1. Individual creativity is not separate from the level of creativity of organizational climate and factors influencing it.
2. Creativity and innovation are complimentary, interdependent and at the same time different concepts.

The conceptual model of climate for creativity developed by T. Amabile and other authors distinguishes ten dimensions/scales: freedom, challenging work, managerial encouragement, work group supports, organizational encouragement, organizational impediments, sufficient resources and workload pressure. The end result of these factors is the level of creativity and productivity in the organization (Amabile 1985; Amabile, et.al.,1996).

There are three main conceptual approaches, when it comes to interaction between organizational climate and culture that largely determine research interests of the authors:

1. Organizational culture and climate are two significantly different concepts;
2. Organizational culture and climate are complimentary concepts;
3. Organizational culture, climate and change (therefore also creativity and innovation process – L.D.) are closely interrelated, and constitute a kind of trinity. They are supposed to be studied in parallel and simultaneously (Ashkanasy, Wilderom, Peterson, 2000).

This research is based on the third conceptual approach. The author suggests that all three views actually recognize cultural impact on the climate and creativity. This assumption is a logical consequence of theoretical concepts mentioned above.

The concept of culture is much broader and deeper than climate, but they are related and characterized by convergence and complementarity. Research of creativity in organization is based on dyadic approach: culture and climate are supposed to be studied in parallel and simultaneously.
3. RESEARCH METHODOLOGY

The research base of the paper is state theatres in Latvia. Actor and management subcultures were studied. The size of population (N) is 198 respondents, while the sample size (n) is 130.

In order for the standard error not to overreach 0.05, sample size of 130 respondents is required. The sample size is sufficient to ensure the validity of the study. It is also appropriate to KEYS methodology and the generally accepted sample size compared to the population size in research.

Five research instruments were used in the study:

1. **Organizational Culture Assessment Instrument – OCAI** by K. Cameron and R. Quinn is used for organizational culture research. The questionnaire allows to measure existing and preferred organizational culture typological models from different (actors, managers) subcultures perspectives. The instrument allows to diagnose the dominating cultural value orientation, type, strength and congruence.

2. **The Organizational Culture Index – OCI** is also used in the study. In general, it is similar to theoretical concept of OCAI. OCI is used to re-test purposes in order to test the reliability of OCAI data.

3. **KEYS – Tool for Assessing the Climate for Creativity** is used to research climate for creativity. In total 186 organizations from different industries (including the creative industries) have been tested by using this instrument. Based on studies a database with results and possible standard deviations for all KEYS dimensions has been created. This allows a comparison of research data.

Research results are directly related to statistical data and standard deviations included in the calculation formula of the instrument. There does not exist such a database in the Baltics and Europe. The database also does not include specific information about theatres as a part of performance art industry. Taking into account all the above-mentioned as well as cultural differences, KEYS results leave space for interpretations in different climate dimensions.

4. Another instrument used in the study is a questionnaire. The target audience of the questionnaire is a group of producers – experts. It consists of 9 producers from state theatres in Latvia (middle and top level management).

5. In order to evaluate results of the empiric research and to clarify the possible preferred changes in culture and climate in the theatres, directors of four theatres were interviewed. In one of the occasions, the public relationship manager gave an interview after it was confirmed with the director.

6. Statistical methods (descriptive and inferential statistic methods for exploring relationships among variables):
   a) measures of central tendency;
   b) correlation;
   c) analysis of variance;
   d) standard linear regression.

Data to be collected are processed and analysed using MS Excel and SPSS

4. RESEARCH RESULTS

OCAI and OCI questionnaires were used as a data collection method for organizational culture analysis in state theatres. The data analysis reflects separate perspectives of management subculture and the actor subculture as well as their common view. The existing and preferred organizational culture typology from common view of both subcultures is reflected in the figure 2.
Figure 2. Percentage frequencies for existing organizational culture of actors and managers subcultures and taken both together accordingly by OCAI

Source: Compiled by the author

The analysis was carried out by using frequency distribution expressed in frequency percentage rate available in MS Office 2010 Excel software. The figure 3 shows that the dominant culture type in the existing model is hierarchy culture with the percentage rate 29%. The percentage rate for clan culture type is 1% lower – 28%. Accordingly, median values for both cultures are – 27.5 for hierarchy culture and 26.5 for clan culture. This indicates that the current culture model is characterized by the internal focus and integration, which is characterized by maintenance of the status quo.

Activities of state theatres are currently focused on keeping the existing clients (spectators) with an appropriate repertoire, pricing policies etc.

There are statistically significant (expressed by M) differences between clan culture and other culture types. However, it must be asserted that results of questionnaires in subcultures prove the typology of organizational culture on the whole in OCAI version.

Theoretically, hierarchy and clan cultures are interested in fostering climate for creativity. However, the author believes that the two are not characterized by strong emphasis on innovative orientation focused towards market expansion.

The typology of the existing organizational culture is also confirmed by the results of OCI questionnaire.

Percentage frequencies of exiting organizational culture dimensions taken both subcultures together accordingly by OCI methodology are innovative dimension 31%; Supportive dimension – 34%; Bureaucratic dimension – 35%

OCI questionnaire was used as the re-test instrument.

Results by OCI confirm the results by OCAI. Validity of the study is also supported by dispersion analysis.

To understand the culture means to understand the difference between the existing and preferred situation in the organization.

Preferred culture model in state theatres is shown in the figure 3.
The figure 3. shows that dominating types in the preferred culture are as follows: clan culture type 35%; adhocracy culture type 26%; market and hierarchy culture types 20%.

Both subcultures, in general, are dominated by clan and adhocracy culture values, which in management science are positively associated with climate for creativity. Increase in clan and adhocracy culture values is based on proportional decrease of hierarchy values in overall culture and actor subculture. From management perspective the decrease in hierarchy culture is smaller by 1%.

The author argues that formalized, strongly structured and stable internal environment at least on a subjectively desired level provokes clan or family culture values: development of human resources (individual creativity), team, and other values. Such environment also provokes adhocracy values – desire to express individual creativity.

Differences between the existing and preferred organizational culture models are shown in the table 1.

<table>
<thead>
<tr>
<th>Organizational culture type</th>
<th>Organizational culture level</th>
<th>Median (Me) existing</th>
<th>Median (Me) preferable</th>
<th>Z value</th>
<th>p (level of significance)</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan (taken together)</td>
<td>existing</td>
<td>26,25</td>
<td>30,00</td>
<td>-2,032</td>
<td>0,042</td>
<td>Statistically significant difference</td>
</tr>
<tr>
<td>Adhocracy (taken together)</td>
<td>existing</td>
<td>20,00</td>
<td>25,00</td>
<td>-2,060</td>
<td>0,039</td>
<td>Statistically significant difference</td>
</tr>
<tr>
<td>Market, (taken together)</td>
<td>existing</td>
<td>20,00</td>
<td>20,00</td>
<td>-0,447</td>
<td>0,655</td>
<td>Statistically no significant difference</td>
</tr>
<tr>
<td>Hierarchy (taken together)</td>
<td>existing</td>
<td>27,50</td>
<td>20,00</td>
<td>-2,070</td>
<td>0,038</td>
<td>Statistically significant difference</td>
</tr>
</tbody>
</table>

The Wilcoxon rank criterion shows significant differences (large effect) in clan, adhocracy and hierarchy culture types. Statistically, the less significant difference (small effect) is detectable between the existing and preferred market culture values in both subcultures separately and in general.

The difference between the existing and preferred organizational cultures is generally valued as
statistically significant. Consequently, the existing organizational culture cannot be classified as integrated, strong and effective. It is characterized by certain features of entropy.

The Analysis of climate factors influencing creativity in Latvian theatres is presented in the table 2.

**Table 2**

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Factor groups</th>
<th>T value actors</th>
<th>T value staff</th>
<th>T value taken together</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Freedom</td>
<td>23</td>
<td>40</td>
<td>26</td>
</tr>
<tr>
<td>2</td>
<td>Challenging Work</td>
<td>54</td>
<td>58</td>
<td>55</td>
</tr>
<tr>
<td>3</td>
<td>Managerial Encouragement</td>
<td>51</td>
<td>59</td>
<td>52</td>
</tr>
<tr>
<td>4</td>
<td>Work Group Support</td>
<td>61</td>
<td>66</td>
<td>62</td>
</tr>
<tr>
<td>5</td>
<td>Organizational Encouragement</td>
<td>54</td>
<td>56</td>
<td>54</td>
</tr>
<tr>
<td>6</td>
<td>Lack of Organizational Impediments</td>
<td>54</td>
<td>55</td>
<td>53</td>
</tr>
<tr>
<td>7</td>
<td>Sufficient Resources</td>
<td>55</td>
<td>62</td>
<td>56</td>
</tr>
<tr>
<td>8</td>
<td>Realistic Workload Pressure</td>
<td>74</td>
<td>73</td>
<td>74</td>
</tr>
<tr>
<td>9</td>
<td>Creativity</td>
<td>69</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td>10</td>
<td>Productivity</td>
<td>49</td>
<td>59</td>
<td>51</td>
</tr>
</tbody>
</table>

*Source: Compiled by the author.*

The table 2 explains the results of analysis in five levels (by T-scores):
- very high – score of 61 and more;
- high – score from 56 to 60;
- medium – score from 46 to 55;
- low – score from 41 to 45;
- very low – score of 40 and less.

The correlation coefficient between different groups of KEYS factors and results are shown in table 3.
Table 3

Pearson’s product-moment correlation coefficients between KEYS factors for actors and managers subcultures taken together

<table>
<thead>
<tr>
<th></th>
<th>Freedom</th>
<th>Challenging Work</th>
<th>Managerial Encouragement</th>
<th>Work Group Support</th>
<th>Organizational Encouragement</th>
<th>Lack of Organizational Impediments</th>
<th>Sufficient Resources</th>
<th>Realistic Workload Pressure</th>
<th>Creativity</th>
<th>Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freedom</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0.220(*)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Challenging Work</td>
<td>x</td>
<td>1</td>
<td>0.137(**)</td>
<td>0.461(**)</td>
<td>0.302(**)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0.516(**)</td>
</tr>
<tr>
<td>Managerial Encouragement</td>
<td>x</td>
<td>0.337(**)</td>
<td>1</td>
<td>0.530(**)</td>
<td>0.776(**)</td>
<td>-0.445(**)</td>
<td>0.551(**)</td>
<td>-0.258(*)</td>
<td>0.619(*)</td>
<td>0.633(*)</td>
</tr>
<tr>
<td>Work Group Support</td>
<td>x</td>
<td>0.461(**)</td>
<td>0.530(**)</td>
<td>1</td>
<td>0.555(**)</td>
<td>-0.321(**)</td>
<td>0.362(**)</td>
<td>x</td>
<td>0.513(**)</td>
<td>0.488(**)</td>
</tr>
<tr>
<td>Organizational</td>
<td>x</td>
<td>0.392(**)</td>
<td>0.776(**)</td>
<td>0.555(**)</td>
<td>1</td>
<td>-0.449(**)</td>
<td>0.575(**)</td>
<td>-0.241(*)</td>
<td>0.554(*)</td>
<td>0.724(**)</td>
</tr>
<tr>
<td>Encouragement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Organizational Impediments</td>
<td>0.238(*)</td>
<td>x</td>
<td>-0.445(**)</td>
<td>-0.323(**)</td>
<td>-0.449(**)</td>
<td>1</td>
<td>-0.322(**)</td>
<td>0.543(**)</td>
<td>-0.352(**)</td>
<td>-0.439(**)</td>
</tr>
<tr>
<td>Sufficient Resources</td>
<td>x</td>
<td>x</td>
<td>0.551(**)</td>
<td>0.362(**)</td>
<td>0.575(**)</td>
<td>-0.322(**)</td>
<td>1</td>
<td>-0.373(**)</td>
<td>0.541(**)</td>
<td>0.581(***</td>
</tr>
<tr>
<td>Realistic Workload</td>
<td>x</td>
<td>x</td>
<td>-0.235(*)</td>
<td>x</td>
<td>-0.241(*)</td>
<td>0.543(**)</td>
<td>-0.373(**)</td>
<td>1</td>
<td>x</td>
<td>-0.246(*)</td>
</tr>
<tr>
<td>Pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td>x</td>
<td>0.516(**)</td>
<td>0.341(**)</td>
<td>0.513(**)</td>
<td>0.362(**)</td>
<td>-0.322(**)</td>
<td>0.541(**)</td>
<td>x</td>
<td>1</td>
<td>0.684(***</td>
</tr>
<tr>
<td>Productivity</td>
<td>x</td>
<td>0.374(**)</td>
<td>0.633(**)</td>
<td>0.488(**)</td>
<td>0.726(**)</td>
<td>-0.439(**)</td>
<td>0.581(**)</td>
<td>-0.246(*)</td>
<td>0.684(**)</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Compiled by the author.
Table 3 shows the correlation between KEYS factor groups. Presented degree of association is with high reliability.

Comparison between factors influencing climate for creativity in Latvian theatres, the results of KEYS database, experts evaluation and opinion of the World’s leading researchers is reflected in the Table 4.

**Comparative analysis of factor groups for climate for creativity of state theatres in Latvia, KEYS database, expert evaluation and in scientific research literature**

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Factor groups</th>
<th>T value, state theatres in Latvia</th>
<th>Experts evaluation</th>
<th>KEYS</th>
<th>Standpoint from theoretical sources and researches about creativity and productivity (McLean, Lai, 2005; Amabile, Conti, Coon, 1996)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Freedom</td>
<td>Very low</td>
<td>Low</td>
<td>Middle</td>
<td>Important/less important</td>
</tr>
<tr>
<td>2</td>
<td>Challenging Work</td>
<td>High</td>
<td>Middle</td>
<td>Middle</td>
<td>Important</td>
</tr>
<tr>
<td>3</td>
<td>Managerial Encouragement</td>
<td>Middle</td>
<td>Middle</td>
<td>Middle</td>
<td>Important</td>
</tr>
<tr>
<td>4</td>
<td>Work Group Support</td>
<td>Very high</td>
<td>High</td>
<td>Middle</td>
<td>Important</td>
</tr>
<tr>
<td>5</td>
<td>Organizational Encouragement</td>
<td>Middle</td>
<td>Middle</td>
<td>Middle</td>
<td>Important</td>
</tr>
<tr>
<td>6</td>
<td>Lack of Organizational Impediments</td>
<td>Middle</td>
<td>Middle</td>
<td>High</td>
<td>Important</td>
</tr>
<tr>
<td>7</td>
<td>Sufficient Resources</td>
<td>High</td>
<td>Middle</td>
<td>Middle</td>
<td>Important/less important</td>
</tr>
<tr>
<td>8</td>
<td>Realistic Workload Pressure</td>
<td>Very high</td>
<td>Middle</td>
<td>Middle</td>
<td>Less Important</td>
</tr>
<tr>
<td>9</td>
<td>Creativity</td>
<td>Very high</td>
<td>High</td>
<td>Middle</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Productivity</td>
<td>Middle</td>
<td>Middle</td>
<td>Middle</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Compiled by the author.*

The table 4 shows very high scores in work group support as well as realistic workload pressure in state theatres. Score is also high for sufficient resources dimension, but similarly to challenging work dimension, it should be assessed relatively. Freedom or autonomy dimension has a very low score. During the interviews theatre directors explained it by two factors: school of directing as well as limited options of repertory theatre actors. In fact, actors in repertory theatres have no choice of roles and the choice of actors is in hands of the director. Compared to KEYS database, greater dispersion of scores can be observed. This at least partly can be explained by greater consistency of companies in KEYS database – the database does not include studies done in theatres. The table 4 reflects the opinion comparison between the expert group and main theoretical sources in regards to factors affecting climate for creativity (in case of expert opinion, also results). In general, the views match. In the science of management theory, major differences are in scores for such factor groups as realistic workload pressure, freedom and sufficient resources. In some positions there are differences in views of researchers, this includes scores in freedom and sufficient resources. In the table 4 important means high, while less important means medium.

The results of KEYS survey suggest:
1. Groups affecting climate for creativity contribute to a very high level of creativity and medium level of productivity in theatres;
2. In general, there are on average positive and positively low correlation between all factor groups affecting climate for creativity (with exception of lack of organizational impediments, which mainly have a negative correlation);
3. There is a very strong correlation between creativity and productivity;
4. Organizational culture has a strong correlation with managerial encouragement and productivity, moderately positive correlation with work group supports, sufficient resources and creativity, but mainly low negative correlation with the lack of organizational impediments.

Research worldwide has shown that in motivation for creative behaviour there are three crucial dimensions: challenging work, work group support and lack of organizational impediments. On the other hand, less important are dimensions of freedom, sufficient resources and realistic workload pressure. Research in state theatres generally confirms these findings. The exceptions are realistic workload pressure
and sufficient resources.

The impact of existing competing value types on climate for creativity factor groups and results in state theatres was analysed by OCAI version. Linear regression method was used in creation of mathematical model. β standardized coefficient was applied in evaluating state theatre value types and values on dependent variables. Higher β value has a higher impact on the dependent variable. In this model, other dimensions have lower, insignificant effect. In some cases it might be said that the effect does not exist. Interaction between culture and climate for creativity in state theatres from actor and management perspective was analysed. Such integrated perspective on the problem complies with the goal of the research.

Results of the organizational culture and climate for creativity research show similarities in assessment of the existing and preferred organizational cultures in state theatres from actors and management perspective. Differences in opinions in general are not statistically significant.

Linear regressions β values were analysed in the OCAI methodological context. Results are shown in the table 5

<table>
<thead>
<tr>
<th>β values presenting interaction between existing culture and climate for creativity for actors and managers taken together accordingly by OCAI</th>
<th>Systems (dimensions) of organizational culture</th>
<th>Factors and results influencing organizational climate for creativity</th>
<th>β values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan culture value system</td>
<td>Freedom</td>
<td>0.140</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organizational Encouragement</td>
<td>0.288</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of Organizational Impediments</td>
<td>0.302</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Realistic Workload Pressure</td>
<td>0.244</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>0.213</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Productivity</td>
<td>0.210</td>
<td></td>
</tr>
<tr>
<td>Market culture value system</td>
<td>Challenging Work</td>
<td>0.284</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managerial Encouragement</td>
<td>0.209</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subordinate Resources</td>
<td>0.372</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work Group Support</td>
<td>0.248</td>
<td></td>
</tr>
<tr>
<td>Hierarchy culture value system</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled by the author.

The table 5 shows interrelation between culture and determinants as well as outcomes of climate for creativity in state theatres in reliable and prevalent β values. From overall management and actors perspective according to OCAI the prevailing influence on factors forming climate for creativity belongs to the clan culture values.

The current interaction between culture and climate for creativity in state theatres in linear regression β values leads to the following conclusions:

1. In state theatres prevailing impact on factors of climate for creativity (organizational encouragement, lack of organizational impediments, realistic workload pressure, level of creativity and productivity) belongs to supportive or clan culture values.

2. Impact of culture on determinants and outcomes of climate for creativity in state theatres only partly is consistent with the dominant culture types and dimensions.

Analysis of variance (ANOVA) in terms of η² also shows that the current cultural competing values dominants by OCAI do not correspond to their significance of impact on climate for creativity. The current cultural values have different impact on climate for creativity factors and results in state theatres. The impact of market culture values on climate for creativity in state theatres is insignificant. Results of analysis of variance (ANOVA) in terms of η² and linear regressions (β values) are similar. Thus it increases the validity of the study.

In order to make any changes, it is necessary to determine the current situation, find out the systematic relationships and the necessary changes. This is the purpose of the research. Higher management has a crucial role in managing change.

In this chapter the desired interactions between culture and climate for creativity in state theatres are analysed from overall actor and management perspective. This shows an integrated picture of organizational culture and allows to determine accurately the main directions of the development.

The desired interactions between organizational culture and climate for creativity in state theatres in the research are analysed by linear regression method in terms of β values as well as analysis of variance (ANOVA) method in terms of η². Interactions are analysed by OCAI and KEYS methodologies, taking into
account the correlation between influencing factors and results of climate for creativity in state theatres. Results are presented in the conceptual model developed by the author in terms of $\eta^2$. (See the figure 4)

![Conceptual Model for Improvement Interrelation Between Culture and Climate for Creativity in State Theatres in Latvia](image)

**Figure 4.** Conceptual model for improvement interrelation between culture and climate for creativity of state theatres in Latvia  
*Source: Compiled by the author*

The figure 4 shows that the dominant influence on determinants and outcomes of climate for creativity in terms of $\eta^2$ belong to clan and adhocracy cultural values. Impact of clan culture on challenging work is medium, on managerial encouragement – medium low, on organizational encouragement – medium, on creativity – medium, while on productivity – medium high. The correlation between determinants and outcomes of climate for creativity is positive and reliable. A medium positive correlation is also between managerial encouragement, creativity and productivity, while the correlation is very strong between managerial encouragement and organizational encouragement. This is an indicator for cross-compliance between $\eta^2$ and r. Negative correlation between the lack of organizational impediments and all other factors and outcomes needs to be noted. According to all respondents, the impact of clan culture values on the lack of organizational impediments in terms of $\eta^2$ is zero. Adhocracy culture values have the biggest impact on work group support (medium), sufficient resources (medium high) and realistic workload pressure. Mutually reliable and positively low is the correlation between the work group support and sufficient resources. It should be noted that in the preferred organizational culture model in state theatres adhocracy culture values are the second most important after clan culture values, when it comes to the impact on creativity and productivity. In general, preferred culture model according to actors and management is dominated by the value systems described above. Adhocracy values do not affect challenging work, as $\eta^2 = 0$.

The preferred culture model in state theatres is characterized by such values as personnel selection, self-differentiation (resource issue), personal development, personal value and individual contribution appreciation by management and colleagues. At the same time, these are internal and external motivational factors that promote significantly individual creativity.

In KEYS methodology, the above-mentioned values correspond to climate for creativity determining management practice, organizational motivation and resource factor groups, as well as results – creativity and productivity.

Market type values in OCAI preferred culture model have the largest impact on freedom (medium low impact), managerial encouragement (similarly to clan culture – medium low impact), lack of organizational
impediments (medium impact). The positive correlation of managerial encouragement is with low reliability, while managerial encouragement has a reliably low negative correlation with it. Market culture values do not affect creativity as $\eta^2 = 0$.

Hierarchy and bureaucratic culture values actually have no impact on determinants and outcomes of climate for creativity in the preferred organizational culture model: $\eta^2$ effect on freedom, work group support, sufficient resources, lack of organizational impediments, creativity and productivity is zero. There is no prevailing influence of hierarchy culture values on other factors for climate for creativity. They have a medium low impact on challenging work, and low impact on managerial encouragement, organizational encouragement and realistic workload pressure. On the one hand, it confirms the preferred culture typology of state theatres. On the other hand, it increases organizational risks, especially given the status of state theatres, which is a public limited liability company. Hierarchy or bureaucratic culture values provide a framework for existence of the organization and ensures the status quo.

The figure 4 characterizes the author’s conceptual approach, based on theoretical and empiric research results.

The main conclusions are:
1. Factor groups, creativity and productivity affecting climate for creativity in state theatres are mainly determined by clan and adhocracy culture value systems.
2. Typologically different culture values have different prevailing impact on factors and results of climate for creativity in state theatres in Latvia. It is confirmed by the results of linear regression and analysis of variance in terms of $\eta^2$.
3. Analysis of variance (ANOVA) results are broadly consistent with correlation between climate for creativity factor groups in state theatres.
4. Analysis of variance (ANOVA) results in terms of $\eta^2$ correspond to the dominant preferred organizational culture competing values typology from management and actor perspectives according to OCAI.

This is generally confirmed by the results of linear regression in terms of $\beta$. The difference in results can be explained by the diversity in calculation methodology.

In the figure 4 organizational strategy first means defining and communicating the vision, while core of the organization is formed by values. Strategy, organizational culture and climate (internal environment) generally are the result of managing, while culture plays the key role in implementing the strategy. The recipient of internal environment change management in any organization is the top management.

To summarize the main issues of the research, the change of the existing organizational culture model will contribute not only to the increasing level of climate for creativity, internal efficiency and innovation, but also on to higher level of artistic quality in state theatres in Latvia.

Qualitative research method – interview, was used to assess the possibility to increase the level of creativity by using the preferred model of interaction between culture and climate for creativity in state theatres in Latvia. The author choses to interview four directors, who also are chairmen of the board. Theoretical substantiation of the interviews is based on management science knowledge that organizational culture and climate is defined by the top management.

The public relations manager was interviewed in the fourth theatre. The content of the interview was previously aligned with the opinion of the director of the theatre.

Results of the interviews can be summarized as follows:
1. This type of research has not been done in Latvian state theatres before.
2. Research results of the paper are reliable.
3. Dual status of state theatres is confirmed: on the one hand, they are public corporations characterized by hierarchy and market culture values – focus on results, while on the other hand, as cultural institutions, they are characterized by clan and adhocracy culture values.
4. In regards to interaction management between culture and climate in state theatres in Latvia, top management have similar views.
5. Clan and adhocracy culture values are more suitable for culture specifics of state theatres. Values of market culture (mainly competition) are not significant, but do exist. This is confirmed by the preferred model of interaction between culture and climate in state theatres, where market culture values have statistically insignificant impact on climate factors and level of creativity.
6. The impact of hierarchy culture values in culture and climate of state theatres is mainly related to over-bureaucratic politics by the Ministry of Culture.
7. The interviews confirm the possibility to implement the model of culture and climate interaction in partly close (definition of mission, vision and values) but mainly further future (a period of 3-5 years).
Interviews confirm reliability of research results and that the goal of the research is reached. Paper does not include practical results of interaction between preferred culture model and climate, as changes take longer a period of time.

5. THE MAIN CONCLUSIONS / DISCUSSIONS

1. Dominant organizational culture type in actor subculture as well as overall culture is the hierarchy culture type (by OCAI). Management subculture is largely dominated by clan culture values. The less significant is market culture orientation. Proportion of adhocracy culture values in both subcultures is statistically insignificant. Culture in theatres is characterized by internal focus and integration. Results of OCAI and OCI questionnaires in regards to the existing culture from perspective of both subcultures and in general is similar. The differences are evaluated as statistically insignificant. Similarities in the existing culture are confirmed by the analysis of variance of OCAI and OCI.

2. Preferred culture by OCAI according to overall actor and management view is dominated by clan culture based on a decline in hierarchy culture values. There is also an increase in adhocracy culture direction and a decline in market orientation. The preferred culture typology highlights values fostering climate for creativity (in terms of linear regression β and analysis of variance – ANOVA η²).

3. The analysis of Wilcoxon rank criterion shows statistically significant difference between the hierarchy, clan and adhocracy culture types in the existing and preferred organizational culture models in general. Analysis of OCAI results does not confirm strength of the cultures in theatres. Research results prove the features of cultural entropy as the existing values are not consistent with the preferred ones. Determining the level of cultural entropy requires additional research.

4. Factor groups affecting climate for creativity contribute to a very high level of creativity and medium productivity in state theatres. Overall organizational climate in state theatres in Latvia is characterized by very high work group support, realistic workload pressure, and highly sufficient resources. Factors as challenging work, managerial encouragement, organizational encouragement, and lack of organizational impediments are at a medium level. Personal freedom and autonomy dimension is very low.

5. Evaluation of factors of climate for creativity in state theatres from actor and management subcultures perspective is different: it is higher in all dimensions, apart from realistic workload pressure, from management perspective. The level of climate for creativity is rated slightly higher from actor subculture perspective.

6. The research shows that creativity is positively correlated with productivity. In state theatres in Latvia, there is a medium positive and positively low correlation between all factor groups affecting climate for creativity (except for the lack of organizational impediments, which mainly has low negative correlation).

7. There is a strong positive correlation between managerial encouragement and productivity, average positive correlation with work group support, sufficient resources and creativity, but mainly low negative correlation with lack of organizational impediments in state theatres.

8. There is a statistically significant interrelation between organizational culture and climate for creativity in state theatres. The impact of different organizational culture types on results and factor groups affecting climate for creativity is different. The main influence in the preferred model by OCAI belongs to clan and adhocracy culture values. The impact of organizational culture types (dimensions) on results and factor groups affecting climate for creativity is different.

9. Overall dominant management in state theatres in Latvia is not focused on significant challenges, risks, and creative experiments. Instinct to preserve internal environment and climate dominates, which does not exclude the encouragement to maintain the existing level of creativity. This is confirmed by the dominance of hierarchy leadership by OCAI culture typology and results by KEYS.

10. Results of the research support hypothesis put forward in the paper, that the preferred changes in culture in state theatres are associated with changes in climate for creativity and the factors affecting it.

11. Research supports the hypothesis, that the focus on supportive (family and clan) as well as creative (innovative and adhocracy) values in the preferred culture is characterized by a greater impact on climate for creativity in state theatres in Latvia.

12. Research results prove the hypothesis, that the orientation towards bureaucracy (hierarchy) and market values in preferred culture is characterized by a lower impact on climate for creativity in state theatres in Latvia.

13. The developed methodological design and conceptual model for research of interaction between organizational culture and the level of climate for creativity can be used in change management in Latvian state theatres.
Acknowledgments: the author would like to thank personally T.M.Amabile and to the Centre for Creative Leadership (CCL) for permission to use KEYS in this study

REFERENCES
ABSTRACT
Occupational stress and professional deformation is an important issue that should be studied not only within the different industries, but also within each company separately. The results of numerous studies of educational sector indicate on high levels of stress in pedagogical profession; research also indicates on professional deformation of those working in educational sphere for a longer time period. The study (N = 100) involved the academic staff of one of the Latvian state universities, which is famous for its history, traditions and constant values. The aim of the research was to measure the stress level of the academic staff, and to find out if there is a correlation between the occupational stress and professional deformation.

The research applied occupational stress questionnaire (Fontana, 1991) and the survey for studying professional deformation (based upon the questionnaire by Rogov, 1999). For data processing SPSS 22 software was used. The research results highlighted professional deformation features as well as significant correlations between all professional deformation scales and occupational stress – the higher the occupational stress, the more significant behavioural changes.

The paper argues that academic staff should be informed and educated about the signs and expressions of professional deformation. Different techniques for reducing stress can be recommended, and it is also suggested for the management of the academic institution to pay a thorough attention to such issues as stress and professional deformation.

Keywords: professional deformation, occupational stress, academic staff

1. INTRODUCTION

Stress impacts the effectiveness of work in both, positive and negative, manner (Selye, 1978; Lazarus, 2006). Occupational stress has always been discussed as a present issue in the educational professions (Weissbourd, 2003; Motowidlo, et al., 1986). Professional deformation is argued to be present specifically in a pedagogical profession (Gordijenko, 2008; Fontalova, 2011).

Occupational stress is often defined as a psychological or physical overwork, which is caused by the discrepancy between the work demands and actual capabilities of the employee (e.g. Roja, et al, 2006). There is a notion that occupational stress can actually improve work’s quality and productivity (LBAS/LM, 2010). If an employee however has demonstrated high work performance and has been over-mobilized, he/she is often expected to keep up the same level, which may result in a high occupational stress level and may eventually lead to a burnout (Volti, 2008). Stress therefore cannot be considered as a motivational factor in a long run (LBAS/LM, 2010).

Educational institutions can be considered as a violent system, which disclaims human factor (Hirigoyen, 2006). Working in unsociable and unhealthy organizational climate creates negative emotions that affect all the parties involved (Lipman-Blumen, 2006). It emerges as frustration, psychological pressure, avoidance, apathy and alienation from work, leading to professional stress (Ghodsy, 2008). On top of that, nowadays the work of lecturers is no longer a prestigious and well-paid job, salary hardly covers expenses, and financial vulnerability becomes another cause for stress (Zhuravlev & Sergijenko, 2011).

In the course of professional action, personality growth occurs as well. Professional role influences personality; worldview and moral values are getting shaped due to profession and a particular organizational culture have an impact on the person’s self-image and self-worth. Professional deformation gradually emerges in the course of professional action, actualizing certain traits and personal characteristics (Vodjahna, 2012).

This article deals with the problem of occupational stress and professional deformation of the academic staff, paying attention to this important issue. Further, the brief literature analysis will be presented, followed by methodology and results of the research. Conclusions and discussions introduce with the main...
conclusions of the research and provide some comments of the authors and recommendations.

2. LITERATURE REVIEW

Occupational stress can be defined in terms of interaction between the employee and his/her working environment. Stress is experienced when the demands of the work environment surpasses the abilities of the worker (LIZDA, 2011).

Among the main reasons of occupational stress often are mentioned the following ones: high workload, too short and strict deadlines for performing tasks, high work quality requests (Ozolina – Nucho & Vidnere, 2004). According to Zhdanov (2008), there are employees who feel like “stuck in the frame” because of the unreasonable work regulations: too rigid control of employees evokes irritation, anger and unwillingness to work.

According to European Agency of Safety and Health at Work, educational employees are one of the professional groups, where employees are the subjects of highest stress. According to European Agency for Safety and Health at Work (EU – OSHA, 2011) in the field of education and pedagogical profession there is the second highest stress level in comparison to other fields and professional groups. The occupational stress increasingly influences the health and wellbeing of educationists (ESENER, 2009). This is the main reason why The European Trade Union Committee for Education conducted the research of the impact of stress in pedagogical profession. ES and EFTA states took a part in this research – altogether 500 schools and 5500 lecturers. The main goal was to determine the cause of occupational stress of academic staff and to understand how it could affect their professional actions.

The research results showed that among other European countries stress levels in work place are one of the highest in Latvia, Lithuania and Estonia (ETUCE, 2013). Comparative research conducted in Finland and the Baltic states has demonstrated that in Latvia there is the highest work intensity and increased tendency of workplace conflicts (Antila & Ylostalo, 2003). The Latvian Trade Union of Education and Science Employees (LIZDA) has introduced with shocking data that in Latvia there is the highest level of mobbing in Europe (34%), the highest level of insults at the working place (verbal violence) (56%), almost the highest level of reported insecurity of employees (50%), reports indicated on very high pressure for controlling one’s emotions (64%), and the feeling of being ‘on the edge of burnout’ (49%). Educational sphere employees of Latvia estimate theirs physical health state lower comparing to educationers in other European countries and they feel ‘rarely satisfied with their work and life in general’ (59%), while in Lithuania for example, 67 percent of pedagogues are satisfied with their lives (LIZDA, 2011a).

This corresponds to the research conducted earlier in Latvia, according to which 54% of higher education lecturers in Latvia consider their profession as highly stressful. Among the main sources of stress there were: inadequate behaviour of students; inadequate demands and unbalanced responsibility required from institutions; work organization per se; workload and lack of time (Uzole, 2009). Often in literature it is also argued that the main source of stress in pedagogical profession happens due to emotional linkage between separate students and professor/lecturer (Zhuravlev & Sergijenko, 2011). Other factors that evoke tension are: perception of social inequality among educationers and representatives of other professions, decrease of social status of the profession; and these factors in turn create insecurity towards pedagogues’ own work evaluation and, therefore, hinder their professional development (Uzole, 2009). As a common cause of stress experienced by academic staff there also can be mentioned a role conflict and uncertainty in evaluating the morality of actions (Kuzmina, 2004). Academic staff stands in a spotlight, their professional actions are judged and they are required to maintain high work performance. This by itself results in emotional tension and may lead to a burnout and reduced self-reflection (Kurapova, 2009).

Another important and related topic is psychological health of academic staff. Lecturing not only requires the exchange of information and delivering of knowledge, foremost, it involves responsibility towards personal and students’ emotional wellbeing (Zhuravlev & Sergijenko, 2011). Therefore, it is assumed that a lecturer is a psychologically stable person. Taking into consideration the amount of stressors, psychological stability becomes a critical point of discussion. Consequently, occupational stress is undesired in pedagogical work.

Professional deformation of personality is a social phenomenon and it can be defined as changes in personal characteristics, which affect professional actions, which can be expressed in the usage of professional jargon, certain behaviour and even physical image (Mihailiukova, 2005). As many professional capacities and personal resources are not being used and several professional characteristics get transformed in the course of time, modification of personality traits can happen and, paradoxically, it causes disturbing effects (Gordijenko, 2008). Professional deformation spreads over the professional realm having an impact
It happens particularly often if a person is working in a specific field for a relatively long period of time loses interests in other topics and lacks contacts with other people outside of own professional circle (Romane, 2013). Among the academic staff not only changes in professional traits, but also in personality traits were observed (Veniaminovich, 2011). Professional deformation of personality in pedagogical work can emerge as a desire to manipulate with others, egoism, inadequate use of authority, rigidity, un-criticality, which influences professional work of pedagogues in a negative manner (Veniaminovich, 2011).

As argued, professional deformation mostly occurs in professions, where work is closely related with the presence of other people: teachers, academic staff, psychologists, managers, medical staff, etc. (Nozhenika, 2009; Bykov, Liapina, 2013).

Table 1

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Signs of Deformation</th>
<th>Expression on Deformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inadequate use of authority</td>
<td>Non-acceptance of diversity of opinions during the whole study process.</td>
</tr>
<tr>
<td>2</td>
<td>Demonstrativity</td>
<td>The main goal is to become the center of attention.</td>
</tr>
<tr>
<td>3</td>
<td>Didacticism</td>
<td>Explanatory-illustrative educational method; a wish to interpret everything individually; transfers outside of a workplace into everyday life.</td>
</tr>
<tr>
<td>4</td>
<td>Pedagogical dogmatism</td>
<td>Attitude built in the course of time – simplification of the realms, careless attitude towards other scientific paradigms and novelty, rise of self-confidence and downfall of intellect.</td>
</tr>
<tr>
<td>5</td>
<td>Dominance</td>
<td>Exercising power (common for almost every lecturer with more than 10 years of pedagogical experience).</td>
</tr>
<tr>
<td>6</td>
<td>Pedagogical apathy</td>
<td>Emotional emptiness, carelessness towards students’ individuality. Develops out of negative pedagogical experience, emotional and physical fatigue.</td>
</tr>
<tr>
<td>7</td>
<td>Conservatism</td>
<td>Observed among professors who do lecturing in the same topic for longer period of time, similar to dogmatism and didacticism.</td>
</tr>
<tr>
<td>8</td>
<td>Pedagogical aggression</td>
<td>Arrogant attitude or ignoring attitude towards unconcerned and unsuccessful students that raises out of a desire for immediate conformity and implementation of certain norms.</td>
</tr>
<tr>
<td>9</td>
<td>Expansion of a role</td>
<td>Immersion in the profession – highlighting particular personal problems and hardships without an ability to understand others.</td>
</tr>
<tr>
<td>10</td>
<td>Social hypocrisy</td>
<td>Insincerity, play-act and moralization, often turned towards colleagues.</td>
</tr>
<tr>
<td>11</td>
<td>Professional overtaking</td>
<td>Bad habits and speech simplicity being imitated and adopted from students.</td>
</tr>
<tr>
<td>12</td>
<td>Informational passivity</td>
<td>Loss of interest in the fields other than own subject matter, lack of self-educational practices.</td>
</tr>
</tbody>
</table>

Source: Vodjaha, 2012, with adaptation by authors.

Professional deformation is closely related to the content of work, but it depends on individual psychological predispositions of personality (Vodjaha, 2012). Professional deformation is an integration of professional and comprehensive skills, of knowledge and stereotypes, thinking and characteristics into everyday life. Interestingly, if the professional deformation has occurred, it is very reluctant to corrections (Gordijenko, 2008).

Research showed that academic staff has notable professional deformation (Fontalova, 2011, Poronjushkina, Nazarova, 2012). We assume that high demands from the organization as well as workers’ own ambitions to succeed, may result in a professional deformation of personality, which means incompatibility between organization’s professional requests and employees’ personal resources. Working for a longer time in one profession or organization by itself may lead to personality deformation, which can be demonstrated as one person is shaped according to the forms and standards of the organization and professional demands, and ‘exits’ out of it being de-formed, as symbolically is demonstrated on Figure 1 below (see Figure 1):
Professional deformation may occur when the lecturer works in the same position for a significant period of time. Also, as argued, high stress level fastens or contributes to occurrence of professional deformation.

Studies of stress show that pedagogical work contains significant amount of stressors (Catano, 2007). Lecturer’s professional action is often evaluated and high productivity is requested. On everyday basis lecturer must work with students, be psychologically healthy and stand as an authority. Professional deformation has not been widely studied in Latvia, and this study addresses both issues – occupational stress and professional deformation among the educators of one of the universities of Latvia. Research background was dictated by practical question: how can an academic staff work for a long period of time (more than 25 or 30 years) without developing a burnout or professional deformation?

The goal of the current research was to find out whether there is a correlation between the occupational stress and professional deformation and to provide suggestions to management of a particular university which can enable preventative actions on diminishing the signs of the occupational stress and professional deformation. In order to obtain the goal the research questions were raised:

1. Is there a correlation between the professional deformation and occupational stress?
2. What kind of signs of professional deformation the academic staff of university X possesses?

3. METHODOLOGY

The research took place in one of the Latvia’s biggest state universities with its strong traditions and good reputation. About 500 lecturers are employed by this university. Questioners were electronically sent to full-time employees, out of which 100 valid questionnaires were returned and therefore selected for further analysis. Out of 100 respondents, there were 73% women and 27% men. The age of respondents varied between 23 and 73 years old. Mostly lecturers were in an age of 36 to 50 (39%); in an age group of 51 to 65 there were 27% of respondents, but 23% of respondents represented an age group of 23 to 35. Less represented were the lecturers/professors in an age group from 66 and up (11%). Mostly respondents had work experience as an academic staff lasting from 21 to 30 years (26%), 24% of respondents work in the position from 6 to 10 years, and 23% of respondents answered, that their professional work as an academic staff is lasting from 11 to 20 years. 16% of respondents work as lecturers 5 years or less and 11% of the respondents dedicated more than 31 years to the educational profession in academic setting.

To detect the professional deformation a questionnaire of 40 questions was developed (adapted from Rogov, 1999). Three professional deformation scales were used: behavioural deformation, inadequate use of authority, and demonstrativity. The scale of behavioural deformation included: behavioural change, pedagogical aggression and professional overcome. Inadequate use of authority implies: inadequate use of authority and dominance. Demonstrativity is also sub-divided into two sub-scales: demonstrativity itself and the expansion of role. This questionnaire does not measure such deformational features as pedagogical dogmatism, pedagogical apathy, conservativism, social hypocrisy, informational passivity, and professional didacticism. This can be a subject of further studies.

To determine the level of occupational stress, the test of Occupational stress by Fontana was used (Fontana, 1991). The coefficients of Cronbach’s alpha of Occupational stress test was 0,913. Applying Kolmogorov-Smirnov Z test for calculating the correspondence to the normal distribution, it
was found that results do not correspond to the normal distribution. It can be useful to conduct a further research in a larger selection with possibility to differentiate respondents according to their age and years of experience. In our study a nonparametric statistical method such as the Spearman’s rank correlation coefficient was used.

Additionally, the question of personal character was asked, it concerned the matters of dedication of time to oneself (health and beauty procedures), and it was formulated: do you feel you can devote time for taking care of your health and appearance? This question assumed a “yes / no” answer, the space was also left for comments, if respondents would wish to provide them.

4. RESULTS

The results of the questionnaire of the occupational stress have revealed that most of the respondents were familiar with different stress indicators (see Table 2).

<table>
<thead>
<tr>
<th>Most common stress indicators for academic staff</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue and loss of energy</td>
<td>64%</td>
</tr>
<tr>
<td>Inability to say “No”, when something is asked</td>
<td>63%</td>
</tr>
<tr>
<td>Inability to cut out the thoughts about problems</td>
<td>63%</td>
</tr>
<tr>
<td>More duties than it is possible to manage</td>
<td>63%</td>
</tr>
<tr>
<td>Inability to relax in the evenings</td>
<td>49%</td>
</tr>
<tr>
<td>Discontinuous sleep during the night or in the mornings</td>
<td>36%</td>
</tr>
<tr>
<td>Difficulty to arrive at a decision</td>
<td>24%</td>
</tr>
<tr>
<td>Indigestion</td>
<td>24%</td>
</tr>
<tr>
<td>Difficulty to fall asleep</td>
<td>24%</td>
</tr>
<tr>
<td>Feeling of hopelessness</td>
<td>23%</td>
</tr>
<tr>
<td>Tendency to fire up about trifles</td>
<td>13%</td>
</tr>
<tr>
<td>Unwillingness to meet new people or new experience</td>
<td>13%</td>
</tr>
</tbody>
</table>

Additionally, the question of dedication of time to oneself (health and beauty procedures) was asked. Only 37% answered positively that they do ‘find time to themselves’.

The results gained from the questionnaires of professional deformation showed that the academic staff has significant signs of professional deformation in all three scales: behaviour, inadequate use of authority and demonstrativity. The findings show that lecturers have features of professional deformation of: behaviour (obtained 602 answer values), pedagogical aggression (511 values) and professional transfer (537 values). Finding also show that academic staff have features of professional deformation of: inadequate use of authority (1000 values) and dominancy (133 values), as well as professional deformation of: demonstrativity (494 values) and expansion of role (516 values).

To determine the correlation between the scales of professional deformation and occupational stress, Spearman’s correlation was applied (see Table 3).
The results of the research show that there exists significant correlation between the scale of behavioural deformation in the questionnaire of professional deformation and the occupational stress (0.95). It can be assumed that the higher the stress the more behavioural changes occur. The results of the research show that significant signs of deformation - behaviour, pedagogical aggression and professional transfer are connected to the stress level.

Significant correlation was also established among the scales of inadequate use of authority in the questionnaire of professional deformation and the occupational stress (0.94). Therefore, it can be predicted that the higher stress level, the bigger are the signs of pedagogues’ inadequate use of authority. Lecturers in higher education admit they see themselves as authorities, which students and colleagues should respect. It can be assumed that if the stress level of academic staff gets higher, the inadequate use of authority may occur.

It was also found that a significant correlation between the scale of demonstrativity in the questionnaire of professional deformation and occupational stress (0.94) exists. If the academic staff in university X has high stress level, they are tend to expose demonstrativity.

5. CONCLUSIONS AND DISCUSSION

Based upon the brief literature analysis it can be concluded that occupational stress emerges if work demands are higher than ones’ actual capabilities to meet them. Occupational stress for the academic staff emerges mostly from too high workload, variety of relationship with different students, high amount of paperwork, high requests on quality, and low social status of the profession. Occupational stress, particularly in educational setting is a widely studied topic (e.g. Winefield et al., 2002, Tytherleigh et al., 2005; Poronjushkina, Nazarova, 2012). Often occupational stress is studied in relation with career contentment (Catano et al., 2007). In this research occupational stress was studied in relation to professional deformation.

The results of the questionnaire of occupational stress indicated that academic staff of university X has different kinds of stress expressions: fatigue and loss of energy, inability to say “No”, inability to forget about everyday problems, and awareness that there are more duties than it is possible to handle. Only 37% of
academic staff has confirmed they devote some time “to themselves”, which means that most of the lecturers for some reason are not able to find time for their health and beauty/appearance conditions.

At the beginning of this research two questions were raised, which were answered in the course of the research. Answering to the first question - Is there a correlation between professional deformation and occupational stress? - The results indicate that statistically significant correlations exist between all scales of professional deformation and occupational stress. Therefore, it can be assumed that the higher is the occupational stress, the more significant are the signs of professional deformation.

The second question - What signs of professional deformation academic staff of organization X have? – Results revealed such signs: professional aggression, temptation to manipulate and criticize, unreasonable pretension and showoff.

Data of professional deformation questionnaire has also indicated that academic staff had high indexes in all three scales. In the scale of behaviour there are significant signs of behaviour, pedagogical aggression and professional transfer. In the scale of authority there is significant signs of inadequate use of authority, but in the scale of demonstrativity there are significant signs of demonstrativity and expansion of role.

Theoretical analysis of different researches has shown that academic personnel might develop a professional deformation by working for a longer time. It might lead to lowering of the quality of work.

As a result of this research, following recommendation to the management of university X was developed: To involve a professional psychologist or a lecturer in psychology of stress management in order to explain the signs of stress and the signs of professional deformation to the academic staff and the management of the university. In order to avoid professional deformation of academic staff and foster self-actualization, to involve a psychologist who could take regular meetings either as an open lectures- seminars or coach sessions, which would help to realise the features and expressions of stress and professional deformation;

To carefully analyse student’s evaluation questionnaires about academic staff and to involve psychologist who could give some consultations and support to those lecturers, who have significant signs of professional deformation”;

To promote open communication; create the confidential room or an ethical center where the employees can pose questions and get support, which is aimed on reduction of stress and the risk of emotional burn-out.

For the academic staff it is recommended to learn to recognize the early signs of stress and professional deformation, and search for a balance between the work and self-maintenance. It is also important to evaluate own abilities and capacities in relation to the workload. Building good colleague relationships and working in a team should be acknowledged. Academic staff should also learn to ask for a help and support when needed; proper time scheduling and implementation of breaks, as well as maintaining of overall positive attitude towards life should take place.

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THE ROLE OF LEADERSHIP IN CREATION OF ORGANISATIONAL TRUST

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ABSTRACT
Purpose: This research paper introduces with the empirical results of a study exploring the relationships between the concepts of leadership and organisational trust. The sample used in the analysis (N = 215) was selected in Latvian companies, both of Latvian and foreign capital. This paper argues that trust in organizational life is a necessary foundation of working relationship and it can be enhanced due to the leadership behaviour.
Design/methodology/approach: The empirical part of the study shows the relationship between cognitive and emotional components of trust and ethical leadership, which was measured by leader–member exchange (LMX) scale. Statistical analysis (using SPSS 22) based on a survey of employees of 4 different organisations within Latvian business context was applied.
Findings: The results of the study indicate that relationship – oriented leadership, which implies an ethical connotation, has a positive correlation with trust, and organisations as to leadership – trust relationship differ statistically.
Research implications: This study contributes both to the literature on organisational trust, as well as to the emerging theory on leadership and ethical leadership, adding data of Latvian business context.
Practical implications: It is suggested that organisational trust should be addressed as a strategic question for the companies. Moreover, leaders should take responsibility for the quality of the leader-member relationship in order to develop organisational trust.
Originality: This article makes a theoretical contribution by examining the linkages between organisational trust and leadership, and also adds Latvian data to the field of study of interrelationship between the phenomena.
Keywords: Leadership, Trust, LMX, Latvian business context.

1. INTRODUCTION

Organisation foremost is the people. As stated by Drucker (Drucker, 2005 In: Forands, 2007, p. 162) organisation is based upon “human, its social and moral phenomena”. A major part of the leader’s work, as it continues to be highlighted in managerial literature, is dealing with people. When leadership relationships induce organisational trust, the overall organisational context gives spontaneous sociability (Fukuyama, 1995), which means willingness and ability of participants to form co-operation within the terms of reference partners. Organisational trust is a positive attitude held by one organisational member towards another assuming that the other party will act honestly and will not take advantage of one’s vulnerability and dependence in a risky situation (Das & Teng, 1998).

As stated by Nyhan and Marlowe (1997), in order to lead succesfully a leader has to have an access to the information. Trust forms the effectiveness of co-operation with followers providing such access to information. It is argued that trust in a leader is a basis for effective functioning of the organization and it is the level of confidence that employees have in their leader’s competence. When followers trust a leader, they are ready to sense the visions and objectives, being confident that their rights, interests and energy will not be neglected (Nyhan and Marlowe, 1997).

Morris (2014) defines a leader as someone who looks ahead and visualises the future. Zaleznik (1992) states that leaders directly work with values, they define the contexts and meanings to others. In literature we also find that the leader has an important role as a catalyst of change in the organisation (Trevino, & Brown, 2004). The attitudes and decision-making of top leadership influence an organisational culture and resonate throughout the entire organisation. The research by Mayer (2011), Ciulla (2005), Trevino et al. (2003) demonstrate that executive leaders play an important role in communicating ethical standards. Values of leaders get transformed into organisational values. If the leader works for building trustful dyadic relationship with the subordinates, it gradually gets transformed throughout the entire organisation (Fukuyama, 1995). Research indicates that ethical leadership positively affects developing of a strong organisational culture (Trevino et al., 2003), and contributes to strengthening of the organisational trust (Lamsa & Pucetaite, 2006). Although the exact meaning of ‘ethical leadership’ is still a matter of discussion in theoretical and practical terms (Ciulla, 2005; Maak & Pless, 2006), this research is concerned with the impact of leadership’s ‘ethicality’ on such outcome as organisational trust in Latvian business context. Theoretical background further will introduce with the main arguments, which served as a theoretical basis of this research. Methodology part will briefly discuss the methods used; results part will demonstrate the
results gained in the research, followed by conclusion and discussion parts.

2. THEORETICAL BACKGROUND

Trust has been defined in many different ways; already Stack (1978) and Wrightsman (1991) in the field of social psychology have reviewed trust as an individual predisposition, it was also observed as a psychological state (Lewicki et al., 2006; Rosseau et al., 1998) and as a behavioural response (Mayer et al., 1995). Often the definition of trust by Mayer et al. (1995) is provided in leadership research: trust is „the willingness of a party to be vulnerable to the outcomes of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer, Davis, & Schoorman, 1995, p. 712). This confidence in the other party’s benevolent behaviour develops from the experience and belief that the trustee has earlier followed the same values and principles (Connell, Ferres, & Travaglione, 2003). As to Sako (2000), trust cannot be formed without a prior basis for it. It usually develops when two parties regularly comply with the same ethical or/and social norms and regulations (Fukuyama, 1995). Trust therefore, depends on organizational members’ work morale and competence (Lamsa & Pucetaite, 2006), and it includes perception, interpretation and belief, resulting in a high intention for further collaboration (Kuan and Bock, 2007).

As the vast body of literature suggests, trust is a multifaceted construct comprising cognitive, affective, behavioural, economical and ethical components. Trust may bring positive or negative results and it can be manifested at the individual, group, organisational or societal levels (Pucetaite, Novelskaite, 2014). Trust may be felt towards individuals and organisations alike (Luoma-aho et al., 2012), and, once established, it builds a certain context, which enhances ‘communities of practice’ (Brown & Duguid, 1998). Such ‘communities of practice’ are characteristics of so called ‘learning organisations’, where openness, knowledge sharing and emotional support take place (Easterby-Smith, Crossan & Nicolini, 2000).

The study by McEvily and Tortoriello (2011) has revealed that there exist 42 different instruments to measure trust in the organisational context. Among the trust measurement instruments (e.g. Gillespie, 2003, Cummings and Bromily, 1996), the instrument by McAllister (1995) was chosen for the purposes of this study. According to McAllister (1995) trust is divided into cognitive and affective components, where affective trust is connected to psychological and emotional aspects, which make people to wish to share their feelings, hopes, and fundamental believes. Cognition-based trust tackles evaluative dimension, based on critical attitude towards one’s performance, decision-making and consistency. The cognitive component of organisational trust refers to a certain experience based on the fact that a partner has been acting in a competent way in the past and can be expected to do so in the future (Gulati & Sytch, 2008). Cognition-based trust works in short-term affairs, meanwhile in sustaining the long-term relationship, an affect-based trust is required. Affect-based trust can be found in reliable, mutually-rewarding and effective relationships (Gulati & Sytch, 2008; Lamsa & Pucetaite, 2006).

The LMX theory (primarily was called as Vertical Dyad linkage theory by Graen & Cashman, 1975) is focused on the development of relationship between the leader and subordinates, and it has its roots in the theory of social interrelations - e.g. in social exchange theory (Blau, 1964). According to this approach, there exists an exchange of information and emotions between the parties involved, and it can be referred to as low and high LMX (Anand et al., 2011). High – exchange relationship (high LMX) imply high quality of informational exchange, trust, loyalty, emotional comfort. Such relationships are getting formed by a leader (Dansereau et al., 1975) with the subordinates who constitute the „in-group” circle. In- group followers are empowered with greater responsibilities, they receive more attention of the leader, are given more freedom for performing their roles, and they get more rewards. The influence has a two-way direction, parties are willing to contribute to the emotional well-being of each other, and relationships exit the boundaries of the formal contract. In the case of „out-group members”, the exchange of quality of information and emotional support is low, the influence goes the direction from the leader towards the subordinate, there is lower level of trust, more control is used from the part of the leader and less initiative from the part of subordinate. Such relationship can be characterised as formal and emotionally neutral or rather cold and indicate on low LMX (Graen & Uh! – Bien, 1995).

As discussed, values of leader, gradually are getting spread throughout the working environment and can start to form an affect-based organizational trust, as participants start to feel that their values are accepted and partners perceive the congruence between own and organisational values (in-group employees). As demonstrated in a recent studies (Ellemers et al, 2013), value congruence contributes to the increase of intrinsic motivation, which in turns serves as a base for co-operation, creativity and sustainability of the organisation (e.g. Liao et al., 2010) satisfaction and commitment (Gerstner and Day, 1997; Podsakoff et al.,
1996). Interestingly that in the case of low LMX a cognitive trust may be present, and although it rests on contractual commitments, the reliance on other party’s professionalism may result in high effectiveness as well, especially if it concerns short-term relationship (Pucetaite, 2014).

The academic discourse on leadership has related the concepts of LMX and that of ethical leadership (Hansen, 2011, Pucetaite, 2014), arguing that the characteristics of high LMX such as respect, trust, reciprocity, and empowering of followers indicate on ethical dimension of leadership. Indeed, transformational leadership idea (Avolio & Gardner, 2005) which gave rise to the discussion of leadership ethicality (Northouse, 2010; Yukl, 2012) draws a particular attention to such characteristics of leadership as encouragement of employees, risks-taking, creativity, sharing of visions (Brown, 2006). Transformational and, further, ethical leadership is often associated with sharing the visions, values, empowering of the subordinates, sharing of responsibility, leaders’ servant-ship (Greenleaf, 2003). Ethical leadership often speaks of integrity and character. Indeed, high LMX indicates on such qualities of the leader and subordinates’ reliance upon leaders’ integrity (Wilson et al, 2010). Although there are arguments against attributing LMX theory to ethical leadership (Yukl et al, 2009), moreover, the studies demonstrate that LMX have another conceptual platform than that of ethical and transformational leadership (O'Donnell et al, 2012), it is not contradictory for the purposes of this study. The aim of this research was to observe what role the behaviour of a leader plays in the formation of organisational trust. Leaving apart the discussion as to what degree the LMX can or cannot be attributed to ethical leadership theory, the LMX measurement allows one to understand how the quality of relationship between the followers and the leaders are perceived by followers. The moral responsibility of a leader for forming relationship with subordinates and within the organisation was discussed above.

Therefore, two research questions were established:

- Is there a link between the behaviour of leader and organisational trust?
- Do organisations differ in their levels of organisational trust? If so, can the differences be attributed to leaders’ behaviour?

3.METHODOLOGY

The survey for the present study was administered in 2014 by author in four different organisations of different industries. They were chosen in order to represent service and production organisations, which, using statistical data are representing Latvian business context most, by the number of people involved in these industries. Organisations were deliberately chosen of different industries, as studied phenomena rather than the industry were in the focus of the research, which is argued to be a valid and applicable approach for social science (Schwab, 2005).

Participants (N =215) were aged 24 – 63, medium age 42. Men – 62%, women – 38%, both, Latvian and Russian nationals, high management position – 9%, middle management – 15%, and 76% employees – specialists. Data were collected using printed questionnaire version. Confidentiality was guaranteed to respondents.

In order to study the relationship between ethical leadership and organisational trust, the seven-item LMX measure (Graen & Uhl – Bien, 1995), and McAllister’s (1995) organisational trust test (11 questions which are subdivided in 2 scales: emotional and cognitive trust) were used, applying a translation and back – translation method, which is stated to be a valid procedure in social science research (Brislin, 1970). Five - point Likert scale for LMX (1 - strongly disagree and 5 – strongly agree) and a seven – point Likert scale (1 – strongly disagree and 7 – strongly agree) for measuring organisational trust were statistically analysed applying SPSS 22 version.

4.RESULTS

Descriptive statistics has revealed that Cronbach’s alpha for LMX were 0.82, and 0.68 for the Trust questionnaire, which are acceptable results for the socio – psychological research (Kaplan, 2004). Spearman coefficient was chosen to be applied in order to calculate the correlations of the scales, as there was no normal distribution found. Table1 below demonstrates the correlations between the LMX statements and those of trust. Table 2 shows the results of total LMX scale in relation to emotional and cognitive trust.

Based upon the data of all four companies a moderate correlation has been established between the leader – member exchange and organisational trust; It was found though that in organisation A, B and C the correlation among the scales is high (summary result of three organisations = 0.877).

The organisation D had low indexes of LMX, which did not correlate with the organisational trust; some
of the LMX scales in the answers of the respondents of this organisation even had negative correlation with the scales of organisational trust, paradoxically, organisational trust scales were of high results. It seems that relationship among colleagues revealed cognition-based trust although the majority of the people did not correspond to the ‘in-group’ profile as to their relationship with the leader. This organisation belongs to a banking industry. After the banking sector organisation data was extracted from the analysis, the remaining data of three other organisations demonstrated that there exists the link between the leaders’ behaviour and organisational trust (a positive correlation of 0.87 was established).

In another organisation, which belongs to Fashion and model industry, just 11 employees have participated in the survey and this organisation has demonstrated highest standard deviation of results, which can be explained by the small amount of people and the specifics of their sphere, where employees are encouraged to perform as independent professionals who focus more on building relationships with partners outside of the organisation rather than within.

Interestingly that organisation of cosmetics production industry, despite of the fact that it is a production company with a long history of more than hundred years, has demonstrated high LMX and high organisational trust, particularly of emotion-based trust, indicating on ‘family-like’ leadership approach within this organisation.

| The correlations among the scales of LMX and Organisational Trust |
|--------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                         | LMX 1  | LMX 2  | LMX 3  | LMX 4  | LMX 5  | LMX 6  | LMX 7  |
| Trust 1                 | 0.612  | 0.628  | 0.683  | 0.607  | 0.552  | 0.562  | 0.772  |
| Trust 2                 | 0.565  | 0.465  | 0.693  | 0.547  | 0.578  | 0.503  | 0.756  |
| Trust 3                 | 0.451  | 0.465  | 0.629  | 0.572  | 0.562  | 0.485  | 0.660  |
| Trust 4                 | 0.418  | 0.573  | 0.662  | 0.604  | 0.535  | 0.479  | 0.717  |
| Trust 5                 | 0.539  | 0.510  | 0.628  | 0.560  | 0.545  | 0.475  | 0.726  |
| Trust 6                 | 0.480  | 0.569  | 0.539  | 0.498  | 0.544  | 0.435  | 0.631  |
| Trust 7                 | 0.408  | 0.564  | 0.535  | 0.582  | 0.527  | 0.423  | 0.617  |
| Trust 8                 | 0.417  | 0.480  | 0.433  | 0.539  | 0.487  | 0.378  | 0.612  |
| Trust 9                 | 0.426  | 0.430  | 0.494  | 0.526  | 0.432  | 0.432  | 0.574  |
| Trust 10                | 0.414  | 0.492  | 0.564  | 0.538  | 0.432  | 0.414  | 0.587  |
| Trust 11                | 0.324  | 0.447  | 0.540  | 0.509  | 0.566  | 0.363  | 0.663  |

**Correlation among total LMX and Emotional and Cognition – based trust**

<table>
<thead>
<tr>
<th></th>
<th>Emotional trust</th>
<th>Cognition- based trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMX</td>
<td>.629**</td>
<td>.686**</td>
</tr>
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</table>

**. Correlation is significant at the 0.01 level (2-tailed).

5. CONCLUSIONS AND DISCUSSION

This study has demonstrated that organisations differ statistically among themselves in their evaluation of organisational trust, and differences can be attributed to the followers’ perceptions of leadership in their organisations.

The object of LMX theory is the independent relationship between the leader and each of the subordinates. The quality of each relationship is different in different dyads. It means with some subordinates the leader has poor interaction, and LMX results will have lower values, compared to those employees with whom the leader has trustful and open relationship. The objective of the theory is that a leader should try to involve more members into in-group relationship and build high-quality relationship with many subordinates, such that whole working unit works as an in-group ‘community’.

The results have revealed that this actually can take place, and it was the case of the production
organisegion of the cosmetics industry. As follows from the literature review, low LMX often is related to the low job satisfaction. LMX speaks of realisation of leaders’ responsibility in terms of projecting own biases on the followers, which permits to build long-term relationship (Yukl et al, 2009). Current work demonstrates that some leaders are not viewed as reliable partners, and the links between the leaders and employees are emotionally weak. Employees do not feel their leaders as somebody they would refer to in moral terms. Especially this concerns the banking and casino sector. This also corresponds to Boddy (2011) observation of the banking sector leadership.

Current research is a work in progress. Further qualitative method would permit to specify which aspects of leadership are particularly important for Latvian business context, as well as to see closely the reasons of why different organisations had different relationship as to LMX – trust.

Similar research took place in Lithuania in 2013 – 2014, where employees of the public organisation (sample size, n=757) and six private organizations (n=316) were tested (Pucetaite & Novelskaite, 2014). Comparing the results from a cross – cultural perspective, it is interesting to learn that in Lithuania and in Finland (Pucetaite, 2015) trust was studied as a mediator between the LMX and organisational innovativeness, and although its mediating role was found to be rather weak (R²=0.3 B=0.538), it was argued to be a necessary foundation for such important organisational outcome as innovativeness. In their studies LMX and trust were also found to be related.

Overall, the current research demonstrates that a leader plays a significant role in formation of organisational trust, and this study has confirmed that in order to establish high organisational trust the leaders should pay attention to their behavioural standards.

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MENTAL ACCOUNTING AND RELATED CATEGORIZATIONS IN THE CONTEXT OF SELF-REGULATION

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ABSTRACT
Purpose: The concept of mental accounting is part of a new scientific discipline that integrates insights psychology into the area of economic decision-making – behavioral economics. The problem of this research evolves around questions whether mental accounting is kind of universal process as well as around question whether the tendency for mental accounting serves as a function of different mind-sets – deliberative and implemental. The notion of different mind-sets comes from self-regulation theory of action phases and that in relation to goal setting and pre and post decision phase.
Design: All research questions are addressed in the experimental design, conducted on 200 participants. The tendency for mental accounting is measured using five hypothetical situations within context of different mind-sets.
Findings: The research showed that mental accounting is robust phenomenon, which might play a self-regulatory role in the context of saving decision making but not in the condition of experimentally induced manipulation but in the real world decision making.
Originality/Value: The usage of experimental design in analysis of mental accounting and related categorizations; Approach to mental accounting in the context of self-regulation theories
Keywords: mental accounting, framing, self-regulation, deliberative mind set, implemental intentions

1. INTRODUCTION

Mental accounting is as a way of categorization of money within different situational contexts where situations serve as frames that direct economic decisions. Using mental accounting, individuals help themselves to facilitate judging about economic decisions. Nevertheless, some situations lead to activation of different mental accounts and thus different judgments, although these differences are not accounted by economic theory of rational decision-making. Judgment under influence of framing is not supported by mainstream economic theory, which posits that rational behavior is guided by narrow economic rules, among which of them is the context independence of choice.

Openness for various information as well as unbiased and objective valuation of information characterizes rational reasoning, if under “rational” we assume symmetric information. Individual, who reasons, takes into account all available information in the process of reaching a rational decision. According to self-regulation theory of action phases, when a decision is made, individual “closes” himself to available information selectively processing information compatible with his goal. Selective perception includes susceptibility to using heuristics in addition with specific mind-set that encompasses this phase of self-regulation. Different mind-sets – deliberative and implemental, are properties of the pre-decision and after-decision phase. Research done with different modes of thinking has shown that inducing individuals into certain mind set, frames their way of thinking, making them pay more attention to information congruent with the elicited mind set. Induced to deliberative mind set, individual objectively perceives information about goal feasibility, while in implemental mind set individual is biased towards overestimating this feasibility and thus protecting himself from the distractions found out of the goal focus.

Considering all this, it gives us right to assume that subjects induced to deliberative mind set will be less prone to heuristics like mental accounting and related categorizations, compared to the subjects induced to implemental mind set who might show greater susceptibility to heuristical reasoning. In the latter, subject is encouraged to make implemental intentions which help him protect his goal and be more focused to achieving the goal. In the following research, we shall propose that mental accounting existing phenomenon. In addition, in the case of implemental mind set, we assume subjects will be more susceptible to mental accounting as a tool supporting the appointed goal - in our case "saving". In the economic sense, implemental mind set will lead to less rational behavior.
2. THEORETICAL FRAMEWORK

2.1 BEHAVIORAL ECONOMICS

The 1979 paper by Daniel Kahneman and Amos Tversky titled “Prospect theory: An analysis of decision making under risk”, published in most popular economic journal at the time – *Econometrica*, went on to become the most cited paper in social sciences (Kahneman & Tversky, 1979). One could argue that Kahneman and Tversky have provided the most important contributions to the growth of behavioral economics – a scientific discipline that aims at improving economics explanatory and predictive power by providing it with reliable psychological foundations (Camerer & Loewenstein, 2002), as a separate scientific discipline. The main contribution of behavioral economics to mainstream classic (neoclassic) economics is the provision of empirically tested understandings of individual behavior that deviates greatly from the rational assumptions held by orthodox economics found in majority of economic textbooks. At the onset of their careers Kahneman & Tversky were studying intuitive beliefs and choices and limited rationality and their prime goal was to advance the field of decision making in psychology (Kahneman, 2003).

2.1.1 FRAMING AND PROSPECT THEORY

One of the central findings of Kahneman & Tversky is applied to the susceptibility of people to be influenced by the way a situation or choice is presented. The authors equate the term “frame” with a “reference point”, and in the function of that reference point, people change their preferences. According to Kahneman and Tversky (1981), decision-making “frame” involves personal view of the possible options, their outcomes, and the probability of linking options with their outcomes or consequences. The frame may have external or internal source whereby it could be provided by formulation of a problem or it could arise from personal characteristics such as beliefs, attitudes, or habits.

The focal point of Prospect theory is that gains and losses are perceived very differently, meaning, they have different psychological value to an individual. The same amount of loss or gain does not have the same absolute consequences in terms of value. Losses actually hurt more than do gains feel good. Thus, in the prospect of loss, a person becomes loss averse. Further assumptions derived from the Prospect theory include directions on how to frame certain financial outcomes, assumptions that later led Richard Thaler (1990, 1999) to develop the theory of mental accounting.

2.1.2 MENTAL ACCOUNTING AND RELATED CATEGORIZATION

Kahneman & Tversky in their work also studied psychological accounting as a way of framing decisions. Subsequently, Thaler (1999) classified it as mental accounting and defined it as a set of cognitive operations used by individuals or households to organize, evaluate, and track their financial activities. Mental accounting is based on the assumption that people make “irrational” economic decisions because of the way they designed their schemes related to money and consumption. Mental accounting is a phenomenon, which examines the existence and the use of “mental accounts” through a set of cognitive operations that individuals use in order to organize, evaluate and monitor financial activities, specifically gains and losses (Brendl et al., 1998). In this context, they use mental categories that serve to group expenses and transactions associated with a particular event or option. The notion of mental accounting distorts the economic concept of fungibility that assumes the absolute amount of money is equally perceived regardless of the form (e.g. cheque, cash, or card) (Brendl et al., 1998; Thaler, 1999; Chatterjee & Rose, 2012; Chatterjee et al., 2000). Fungibility assumes that individuals are equally inclined to spend money regardless of the form as long as the absolute value of the form of money is equivalent. Due to different mental accounts, studies have shown that consumption associated with each account is perceived differently i.e. it is common for the same amount of money to have a different perceived value through different mental accounts.

Frisch (1993) distinguishes between several framing categories (situations): with different reference points such as gain/loss, relative/absolute value, nominally different mental accounts (the theatre ticket situation, later in the text) and the situation of irreversible costs as a separate framing category.

The method of hypothetical choices in the form of “imagine” is often referred to as the “thought experiment” and it is assumed that the choices in that context are at least a reasonable approximation of behavior that would happen in the “same” real context. Prospect theory by Kahneman and Tversky as well as Thaler’s work on mental accounting is based on thought experiments. Angrner and Loewenstein (2007) commented that Thaler’s hypothetical situations are so real that they excuse themselves from criticism. In most cases in the study of mental accounting, experimental designs comprised of hypothetical situations are
used. The most common form of such an experimental design involves a minimum of two experimental groups that receive different manipulative instructions or are simply placed in two different framing situations. Every situation has two variants where mental accounting is proved by a statistically significant difference in the results between these two situations.

In the context of the elaboration of Prospect theory (Kahneman & Tversky, 1981) conducted a study in the situation of going to the theatre. They examined the likelihood of purchasing a ticket in the situation where there has been a loss of a previously purchased ticket as well as in the situation of previously lost sum of money equivalent to the price of the ticket. In the former scenario, after losing the purchased ticket, only 46% of participants were willing to buy a new ticket. This is significantly less than the 88% of participants who were willing to buy a ticket after losing $10 from their wallet. Mental or psychological accounting demonstrates that the “account” in a situation of losing a ticket has significantly negative balance and therefore influences the decision about not buying a new ticket. Buying new tickets in this scenario falls within the scope of an existing account where the first ticket was already purchased. Losing money is more abstract and it does not belong to any particular topical account thereby making it “easier” for people to give the new $10 for a ticket (Brendl et al., 1998).

The literature on mental accounting also mentions sunk cost fallacy which refers to the tendency of continuing efforts to an activity after investing money, time or effort (Arkes and Blumer, 1983). In the context of social psychology it refers to justifying the effort that is closely related to the notion of cognitive dissonance (Festinger, 1957). Sunk cost leads to further investment in projects and events despite new adverse conditions that reduce the effectiveness of the project as well as the attractiveness of further pursuing the same activity. Arkes and Blumer (1985) and Thaler (1980) suggest that another interesting example in which investing into something leads to the sunk cost effect and commitment to a situation in which they invest despite the adverse conditions. The authors are discussing the phenomenon of increased willingness of going to a concert for which the tickets have been bought in times of adverse financial conditions, compared to participants who received the same ticket. Participants were less likely to close the account in which they have a negative balance (they paid for the ticket) with the loss and to a greater extent, decided to go for the concert. Because money not spent on the ticket is still not part of any account, losing it did not result in any negatively affected mental account. Money per se is quite abstract notion and is hard to be perceived in absolute terms (Ariely, 2009).

When faced with a choice between purchasing a jacket ($125) and a pocket calculator ($15). In each frame there is an offer with an additional saving option in the form of a 20 minute walk to a nearby store where the same product costs $ 5 less ($120 jacket and $10 calculator). The results are indicating that the participants would rather choose walking in the situation of buying the pocket calculator (Tversky & Kahneman, 1981). The study showed that participants were again influenced by topical account. Greater perceived saving in the case of a pocket calculator had a greater impact on the final decision whereby 68% of the participants stated they would prefer to walk for a $5 saving in the case of a pocket calculator in contrast to 29% for the identical saving in the case of jacket (Kahneman & Tversky, 1983). The example also shows that people take into account the context and instead of absolute value, they perceive relative value of the outcome. As a result, they value money less, which encourages higher expenditure and the value of a small discount is decreased.

The effect of windfall gain is related to the house money fallacy. This fallacy is defined by different categorization and a different propensity to spend the money an individual finds not his own but received by prior gambling (Thaler & Johnson, 1990, Milkman et al, 2009). In classical study conducted by Thaler & Johnson (1990), participants were exposed to two situations: 1) possibility to gamble after receiving $30 where by further gambling there is a 50% chance to gain $9 and a 50% chance to lose $ 9, and 2) possibility of gambling where there is a 50% chance of winning $ 39 and 50% chance of winning $ 21. Participants were willing to gamble in the first situation (77% vs. 44%), which the authors called the two step process since in the first step subject "gets money" and in the second step subject is presented with the gamble "at once". As an explanation of this phenomenon Thaler & Johnson (1990) state that after winning, gambling preference depends on the amount of potential loss. Small loss and higher income become integrated, which reduces the impact of risk aversion and risk seeking increases. According to Thaler and Johnson (1990), the second situation does not give the sense that participants were "ahead" of the potential losses in that case the assumption which stands arises from Prospect theory - the loss potentiates risk seeking

According to Chatterjee et al. (2009), mental accounting is one of the most relevant theories of decision making in the last 50 years. It is a rich and descriptive theory about the way humans make economic decisions and the way schemes about money and spending are set up. If we perceive mental accounting as a way of categorizing or grouping, it does not lead to suboptimal economic decisions but provides us with
facilitated approach to information relevant to our goal (Henderson and Peterson, 1992). In this context, mental accounting rather facilitates than undermines reasoning aligned with the goals. Furthermore, mental accounting can be a very useful strategy to organize knowledge. Given that we organize our knowledge in the form of goals, mental categories are becoming goals that include relevant information related to individual goals, their achievement, and reference points for comparison to external factors and contexts (Brendl et al., 1998). Following the logic of mental accounting as way of self-regulation and taking into account the goal of the study where we will try to connect two fields, which are dealing with mental processes and behavioral regulation it is necessary to make an introduction to the theory of self-regulation.

2.2 THE THEORY OF ACTION PHASES

Gollwitzer and Bargh (1996) in their theory of action phases breaks down the process of self-regulation on: 1) Predecision action phase, 2) Making a decision and preaction phase, 3) Action initiation and the action phase and 4) Goal achievement and the post action phase. Mind-set is based on cognitive processes that encourage task solving that is activated precisely with that mind-set. With regard to deliberative and implemental mind set, mode of thinking refers to cognitive process related to the way a person chooses between different options or how a person plans an action to reach desired goal. In the end, theory of action phases has its anchor in numerous empirical studies, experimental as well as applied (e.g. HRM) (Gollwitzer & Bargh, 1996; Heckhausen & Heckhausen, 2008).

In pre-decision phase, deliberative mind set is activated while in preaction and action phase volitional implemental mind set is implied. In the last phase, we return to the motivational process, this time evaluative. Pre-decision and post-action phase imply motivational, while pre-action and action phase imply volitional process – the mere core of self-regulation process. Since motivational and volitional processes activate different mind-sets, there is a strong distinction between mental account assigned to pre-decision deliberation and mental account activated to forming intentions. Different cognitive orientations are adaptive inasmuch as the context of decision making and available cognitive resources. When motivational process is activated, a person is cognitively oriented to deliberation. Individual is thinking about his need and wants to choose the ones which are desired and achievable. The focus is set on reasoning about positive and negative information concerning the goals one is deliberating about. It is shown that experimental induction to deliberative mind set leads to greater openness for information, objective evaluation of the options, cognitive priming to information relevant for goal desirability and lesser susceptibility to self-serving (Gollwitzer et al, 1990, Gollwitzer and Kinney, 1989, Armor and Taylor, 2003; Brandstaetter et al, 2001, Gollwitzer and Oettingen, 1998).

In a phase where a decision about the goal is reached, the individual is planning the action and is focused on information supporting his goal. This includes committing to the favourable opportunities for action and creating implementation intentions. Implemental mind set is characterized by focusing to goal achievement, to questions such as “when”, “where” and “how” to initiate, attain and finish behaviors directed to achieving the goal. Focusing himself to the implementations, individual creates positive illusions and heightens his expectations related to the goal achievability (Taylor i Gollwitzer, 1995). By doing this, a person is assuring itself with an active goal approach.

The key concept in the context of volitional process is making implementation intentions, which in comparison to just deliberating about the goal, have greater influence on the volition toward reaching the goal (Gollwitzer i Bargh, 1996). Implementation intentions are subordinated to goal intention and can be found in the form of “If situation X happens, then I’ll do Y”. This form is relevant in the case that a problem of volition in reaching the goal arises. In their classical study, Gollwitzer and Brandstatter (1997) were looking at the degree in which two groups of students will fulfil their assignment on time. Participants were induced to two different mind-sets and the task included writing a report about their holiday times. The deadline was 48 hours. The research showed that two thirds of participants that planned details on how and when to write the report really submitted the report due to the deadline. On the other hand, only one third of participants who did not write their implementation intentions submitted the task on time.

Taking all into account, the main research question of this paper is to explore if there is a mental accounting effect, or in other words, do the differently framed hypothetical situations elicit different responses and if activating different mind-sets leads to greater susceptibility to mental accounting. We expect that the framing effect exist to acknowledge the construct of mental accounts. Furthermore, we expect to find that by inducing subjects to deliberative mind set will lead to less mental accounting. In the situation of implemental mind set, subjects will be more susceptible to mental accounting since some frames of the situations will be more compatible with their goal than this will be the case in the deliberative condition. The
goal about which our subjects will deliberate or plan action is saving. Activities that people are not at ease with usually involve short-term costs and only long-term benefits and therefore require an intensive self-regulation of behavior and commitment (Gollwitzer and Oettingen, 1998). Saving is just one of those activities. It requires a high degree of self-control and commitment, and assumes that the behavior towards people is neither inherent nor easily conducted (Laibson et al., 1998). If we manage to confirm the assumption about the existence of mental accounting in relation to implemental mind set, it could mean that mental accounting indeed serves as a way of self-regulating behavior. In this line of thought, these findings could be helpful in creating policies that help direct people to certain economic goals that benefit their financial well-being.

The main goal of this research is to verify the existence of mental accounting phenomena and their relation to different self-regulatory mind-sets. Research objectives are:

1. To test the existence of mental accounting and related categorizations by using hypothetical decision scenarios with different situation frames
2. To analyse whether susceptibility to mental accounting can be related to different self-regulatory mind-sets induced by experimental manipulation

3. RESEARCH METHODOLOGY
3.1. RESEARCH DESIGN

Experimental research design consists of two independent measures. Independent variable refers to different mind-sets and has two levels or conditions (IV):
1) Deliberative mind-set that is induced by using questionnaire instructions to deliberate about reasons against and for the goal of saving (IV1)
2) Implemental mind set induced by using questionnaire instructions to make implemental intentions about the goal of saving (IV2)

Dependent variable represents mental accounting scenarios measured by using hypothetical decision-making situations, all of which are related to some kind of money transaction. To provide evidence for the existence of mental accounting there need to be two versions of the situation, and consequently two questionnaire versions. Two different versions of the situations differ in the frame of situation, meaning that situations are economically equivalent but not in the sense of context they describe. The difference in participants’ answers indicates that frames elicit different types of mental environment and thus different judgment and response. Participants respond in the range from 0 to 100% of probability of required action. Since there are two levels of independent variable and every situation requires two versions of the frame, we used four versions of questionnaire. Therefore, we had four independent measures or groups.

3.2. SAMPLING

Research was conducted during 2013. Participants were selected using no probabilistic method. Main criteria for the participant selection were permanent employment or retirement. This criteria is selected because of the assumption that people who have experience with money also have more developed money schemes, therefore, being more appropriate as participants in a research that analyses mental accounting.
Two hundred participants (N=200) participated in this research. Each experimental group consisted of hundred participants (N=100). Age ranged from 21 to 80 years, with a mean of 34 (M=33,80, SD=9,46). There were 57% of males and 43% of females. Majority of participants had some kind of college degree (54%), about one third had master or doctoral degree (31%) while 15% had only high school degree. Average personal income was 7776 kunas (equivalent of 1140 USD) per month. Participants mostly save (72%)

3.3. PROCEDURE

To participants who agreed to take part in this research, the purpose of the research was explained with the notion that their response to it was anonymous. Participants filled out the questionnaires individually and delivered them sealed in provided envelopes. All participants were randomly assigned to the experimental conditions. They had a chance to select the envelope they wanted. Duration for filling the questionnaire was estimated to be 10 minutes.
3.4. INSTRUMENT

Instrument for this research had four versions. Each questionnaire version had different manipulative instruction that was responsible to induce different mind-sets. The instructions were created by modifying the instructions used in original studies conducted by Gollwitzer and his colleagues.

Deliberative mind set (IV11): “Imagine you are thinking about saving. Take your time and think of two reasons of why say YES to saving and two reasons of why NOT to save. Write down your reasons in the lines below” (same instruction to QV1 and QV2). Implemental mind set (IV12): „Imagine that you have decided to save. Take your time and think of at least four key steps or actions you are willing to take so you can stick to your decision about saving. Write down your answers in the form of “In situation …, I’ll try to ...” or “I'll put effort to…” (Same instruction to QV1 and QV2). The control question with regards to inducement of different mind-sets was: “How committed do you feel to behave accordingly to the goal of saving in certain situations?” Participants answered using probabilities in range from 0 to 100%.

After manipulative instructions and control question, participants responded to 5 hypothetical situations using probabilities (0 to 100%) while giving answers to these situations. Every mental accounting situation implies to specific mental accounting phenomena and represents nominal category. Different frames are needed to help demonstrate existence of mental accounting and the effect of these frames. All situations are taken from original studies and/or are in certain degree adjusted or/and changed (Appendix).

4. RESULTS

4.1. TEST OF INITIAL COMPARABILITY OF EXPERIMENTAL GROUPS

When using experimental research design it is necessary to assure random assignment in experimental conditions or groups. This precondition is necessary to ensure that the groups are comparable according to relevant traits so the effects of known and unknown variables are equally distributed to all experimental conditions. Participants in all 4 experimental situations are comparable to all tested demographic characteristics. The test of comparability of experimental groups in relation to gender ($\chi^2=2,693, p>0,01$), education ($\chi^2=4,972, p>0,01$) and saving ($\chi^2=4,275, p>0,01$) are conducted and revealed that all groups do not statistically differ in terms of these variables. (More detailed data can be requested from the authors).

4.2. TESTING THE EXISTENCE OF MENTAL ACCOUNTING AND RELATED CATEGORIZATION

In Table 1, for every situation there is an indication of the direction of framed answer. Since participants answered these situations using the level of probability of certain action, sign “less” or “more” indicates the direction of answer in relation to mean average of the group. In the case of sign “less” (<), framed answer is the one that in this version has smaller (absolute) value.\(^1\)

<table>
<thead>
<tr>
<th>Frame</th>
<th>QV 1</th>
<th>Response direction</th>
<th>QV 2</th>
<th>Response direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theatre</td>
<td>Loss of ticket</td>
<td>&lt;</td>
<td>Loss of money</td>
<td>&gt;</td>
</tr>
<tr>
<td>Concert</td>
<td>Received ticket</td>
<td>&lt;</td>
<td>Bought ticket</td>
<td>&gt;</td>
</tr>
<tr>
<td>Walk</td>
<td>Greater relative saving &gt;</td>
<td></td>
<td>Smaller relative saving &lt;</td>
<td></td>
</tr>
<tr>
<td>Gambling</td>
<td>Prior gain</td>
<td>&gt;</td>
<td>Prior loss</td>
<td>&lt;</td>
</tr>
<tr>
<td>Coin</td>
<td>House money</td>
<td>&gt;</td>
<td>No house money</td>
<td>&lt;</td>
</tr>
</tbody>
</table>

Table 1

\(^1\) For clearer picture please read full situation descriptions and its frames in Appendix
Table 2

Descriptive statistics and ANOVA for effects of frames of all situations of mental accounting

<table>
<thead>
<tr>
<th>Situation</th>
<th>QV 1 M</th>
<th>SD</th>
<th>QV 2 M</th>
<th>SD</th>
<th>SD</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theatre</td>
<td>61.97</td>
<td>36.8</td>
<td>93</td>
<td>13.85</td>
<td>59,613</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Concert</td>
<td>28.09</td>
<td>29.4</td>
<td>61.5</td>
<td>35.85</td>
<td>50,805</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Walk</td>
<td>91.64</td>
<td>15.73</td>
<td>82.77</td>
<td>27.37</td>
<td>7,282</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td>Gambling</td>
<td>32.37</td>
<td>34.71</td>
<td>10.05</td>
<td>16.26</td>
<td>31,923</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Coin</td>
<td>27.19</td>
<td>36.41</td>
<td>15.11</td>
<td>24.22</td>
<td>7,289</td>
<td>0.008</td>
<td></td>
</tr>
</tbody>
</table>

The data in Table 2 is showing that in all situations of mental accounting we found statistically significant difference in average situation frame means. These results indicate that different frames result in difference in responses and, respectively, indicate the existence of mental accounting. Participants are, in general, more inclined to buy theatre ticket after losing amount of money equivalent to the price of ticket rather than after losing already purchased ticket (F=59,613, p<0,05), more apt to go to the concert during a thunderstorm when they have bought their ticket rather than after receiving it for free (F=50,805, p<0,05), more ready to walk for relatively larger amount of savings while buying a smaller product (F=7,282, p<0,05), more willing to gamble after prior gain instead of prior loss (F=31,923, p<0,05) and more prone to gamble in the situation of gambling with house money instead of their own (F=7,289, p<0,05). Greatest difference in responses between different frames was found in the case of concert situation, where the difference in values between two frames amounts 33%, following theatre situation, where the difference between frame response values equals 31%. Frames in these situations result in most significant mental accounting where judgment is influenced by decision context and where deciding in present moment depends heavily on past events. In the Concert situation one’s answer is influenced by sunk cost and in the Theatre situation one’s answer is influenced by different perception of money presented in different forms. The smallest difference in responses is found in two versions of Walk situation where high mean average value indicates great readiness to walk additionally for additional saving in both frames. Rather low mean averages are found in situations that include some kind of gambling – Coin and Gambling situation. In general, participants are more risk averse, especially in the frame of gambling after prior loss and when gambling with own money. In addition, it is interesting to notice the values of standard deviations. High standard deviations in one of the version inside one hypothetical situation might indicate that those frames elicit intensive mental accounts.

4.3. TESTING THE MAIN EFFECT OF MINDSET TO SUSCEPTIBILITY TO MENTAL ACCOUNTING AND INTERACTION EFFECT OF MINDSET AND DIFFERENT SITUATION FRAMES

One of the basic assumptions in this research is that participants induced to implemental mind set and thus more oriented to the goal of saving will be more prone to be influenced by certain situation frames. That is, we anticipate interaction effects between different modes of thinking (mind-sets) and different versions of situations.

| Test of main effect of mind set on goal commitment (control question) |
|--------------------------|----|----|-----|
| Mind-set                 | M  | SD | N   |
| Deliberative             | 60.24 | 31.6 | 100 |
| Implemental              | 69.40 | 23.2 | 100 |
| df                       | 1  |    |     |
| F                        | 5,233 |    |     |
| p                        | 0.023 |    |     |

Related to our theoretical assumptions, manipulative instructions led to statistically significant difference in the level of commitment to saving, following the assumption that different mind-sets will lead to different level of susceptibility to mental accounting. Participants induced to implemental mind set and thinking about
the decision to save show statistically higher level of commitment to saving (M=69%) compared to participants induced to deliberate about saving (M=60%) (F=5.233, p<0.05 (Table 3). Although this difference in mean averages is significant, it is important to notice that on average, most participant estimate relatively high level of commitment to saving irrespective of manipulative induction (around 65%).

The effect of different mind-sets on susceptibility to mental accounting appeared to be insignificant, meaning that different mind-sets have no relation to susceptibility to mental accounting (Table 4). From looking at the significance of interaction effects, we conclude that in each situation of mental accounting there is no difference in mean averages in different mindset conditions. Frames, equally in deliberative and implemental mindset condition, influence participants.

<table>
<thead>
<tr>
<th>Theatre</th>
<th>Concert</th>
<th>Walk</th>
<th>Gamble</th>
<th>Coin</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Deliberative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>28.16</td>
<td>38.42</td>
<td>28.47</td>
<td>30.64</td>
</tr>
<tr>
<td>2</td>
<td>19.13</td>
<td>26.81</td>
<td>66.74</td>
<td>34.85</td>
</tr>
<tr>
<td>Total</td>
<td>23.78</td>
<td>33.45</td>
<td>47.80</td>
<td>37.91</td>
</tr>
<tr>
<td>Implemental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>26.22</td>
<td>34.65</td>
<td>27.70</td>
<td>28.38</td>
</tr>
<tr>
<td>2</td>
<td>10.82</td>
<td>20.54</td>
<td>56.26</td>
<td>36.42</td>
</tr>
<tr>
<td>Total</td>
<td>19.01</td>
<td>29.78</td>
<td>42.42</td>
<td>35.62</td>
</tr>
</tbody>
</table>

Table 4

<table>
<thead>
<tr>
<th>Test of main and interaction effects for different mind-sets across different versions of mental accounting situations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindset</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Deliberative</td>
</tr>
<tr>
<td>Implemental</td>
</tr>
</tbody>
</table>

Since the attempt of inducing participants to different levels of commitment to saving had its effect, there is still possibility that this result is influenced by the fact that some participants save a priori. Therefore, we could assume that the act of saving in real life might interfere with our manipulative instructions and/or influence participants in their susceptibility to frames and mental accounts. Therewith, if we control for the variable of saving we might miss out the difference found in the level of commitment between different mindset conditions. Test of this assumption can be found in Tables 5 and 6.

Table 5

<table>
<thead>
<tr>
<th>Descriptive statistics for the level of dedication to the goal of saving for respondents who save and those who do not save</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Don't save</td>
</tr>
<tr>
<td>Save</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Table 6

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindset</td>
<td>1</td>
<td>2522.129</td>
<td>3.57</td>
<td>0.06</td>
</tr>
<tr>
<td>Saving</td>
<td>1</td>
<td>12800.81</td>
<td>18.16</td>
<td>0.00</td>
</tr>
</tbody>
</table>

We ran ANCOVA while controlling for variable of mindset induction and obtained the result that participants who save have higher level of goal commitment independent of manipulative priming ($F=18.161$, $p<0.05$). Participants who save feel more committed to saving ($M=70\%$) compared to ones who are not saving ($M=50\%$). In this analysis, difference in the commitment level between participants in different mindset condition is not statistical significant any more ($p>0.05$). This result indicates that the manipulation effect is mediated by the saving in real life. Furthermore, we assumed that participants who save in real life will, consequently, in certain mental accounting situations show more susceptibility to mental accounts (Table 7).

Table 7

<table>
<thead>
<tr>
<th>Test of main and interaction effects for different versions of mental accounting situations and different saving behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theatre</td>
</tr>
<tr>
<td>QV</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Considering all the data from Tables 7 and 8, we can conclude that the assumption about the effect of saving on responses in different framing situations is not wholly justified. Nevertheless, there is interesting result in the Concert situation where participants who save show greater sensitivity to the context since there
is an average of 24% probability of going to concert after buying the ticket and an average of 60% probability of going to concert in the frame of receiving the ticket. In the case of participants who don’t save, we found that, on average, there is 42% probability of going to concert in the former condition and average of 64% of probability of going to concert in the later condition (F=3.667, p<0.06). In addition, a difference in susceptibility to context is significantly greater for participants who save when it comes to version of Walk situation. We found significant interaction effect between saving and frames of this situation (F=5.795, p<0.05). Participants who save are more prone to saving and frames of this situation where the amount saved after walking is the same but its relative share in original price is smaller (M=10% vs. M=11%). In the rest of the situation frames we found no significant results.

5. DISCUSSION AND CONCLUSIONS

In the first analysis, we have focused on answering to our first research goal - the test of mental accounting and related categorizations. Hereby, we have tested the effect of frames used in each hypothetical situation. Since there was a statistically significant framing effect in every pair of situation versions, different frames elicited the existence of mental accounting, which has proved to be a quite robust and constant phenomenon. Theatre situation (that is referred to as reference point situation) resulted in strongest framing effect. The other scenarios, reflecting the phenomena of the house money effect, sunk cost fallacy and loss aversion, were proven to exist since the framing effect resulted in statistically significant differences in participants’ responses. By providing different answers to the frames, we can hypothesize that frames activated different mental contexts, influencing, thus, the direction of participants’ responses. Within every mental accounting situation used in this research, we have a frame that elicits strong mental frame or context. From looking at the mean averages, we can notice that participants show indicative level of loss aversion and “spending” aversion. More disruptive frames include lost theatre ticket, bought concert ticket, walking for higher relative saving, gambling after prior loss and tossing a coin while not using house money. Situations that have economically equivalent values from the economic standpoint are assumed to elicit responses independent of the frames and context of a certain economic problem. These rational assumptions deviate greatly from the real life behavior of economic agents.

Concerning our second research goal, the test of the main effects of different mindset effect resulted in the absence of any significant result, suggesting that either directing participants think openly or more economically focused does not result in different susceptibility to mental accounting. Nevertheless, dividing participants to the ones who save and the ones that don’t and looking at their sensitivity to mental accounting, we found some interesting data that slightly lead to a premise that saving could be related to certain uses of mental accounting. This result indicates that our manipulative instruction interacted with the saving that participants encounter in their real life. The statistically significant effectiveness of manipulative instruction has led to a greater sense of commitment to saving in the condition of implemental mindset compared to the level of commitment in the deliberative mindset condition. This result went above the range of acceptable significance level when we controlled for the variable of saving. There is a moderately high level of commitment to saving among all the participants, which can be discussed in the light of current economic situation in Croatia where people save more than before economic crisis. Our manipulative instructions only contributed slightly to already present commitment to saving. Because we found that in some situations participants more focused to save are more sensitive to mental accounting, we could argue that mental accounting can be seen as a self-regulatory strategy. Saving, in an economic context, is rational behavior since its purpose is to assure a better quality of life in the future. Therefore, the right question about the state of mental accounting is not whether it is rational or not, but whether it is useful or not. From that perspective, mental accounting is very reasonable to use if one wants to protect its goals.

In this research, we confirmed numerous violations of rational decision theory that assumes consistency of preferences independent of the way situation is presented. It seems that only one word can influence mental context and lead to different perception of situation and consequently different response. This result is in line with all the research that accentuates the contextuality of people’s decision-making process. Accepting the fact that people do not make decisions in vacuum but in the real-life and very subjective context means that by creating this decision context we can influence the direction of decisions. Applications of this finding show great potential in the arena of public policy. For example, if we make salient the information about saving to people or remind them of their own saving, we could direct them to make choices that are more rational. Choice architecture that takes into account effects of situational framing can
be the tool to "push" people into making decisions that serve in their better interest. Moreover, the finding that instructing people to make implementation intentions to save actually made them feel more committed to saving, could also serve as a great tool to motivate people to be more aligned with the behavior that leads to their goals. The main problem with goal accomplishment is the lack of intentions and actual steps of actions that help achieve the set goals. There is a need to design real-life experimental research that tests these assumptions. One major contribution of this research is its greater real-life validity and experimental design used on people who earn and save their own money. Majority of the research done in the field of decision-making is conducted mostly on students.

Methodological limitations of this research are several. Firstly, making hypothetical implementation intentions is not as strong as making them in real life. Although there is stronger correlation between intention and behavior rather than between attitude and behavior, we still hold on to situations that are only present in mental context. The reason we did not confirmed the main effect of different mind-sets on mental accounting could be assigned to this methodological remark. Likewise, the measure of response might also affect the end results since we used the level of intention expressed in percentages. In most of original studies, authors used categorical responses like “yes” and “no”. We decided to use the scale so we could perform parametric statistics. The way a question is asked can also lead to different answers. In the future, it is advisable to expand the analysis to individual characteristics like personality, cognitive style and similar. In addition, it is commendable to use situations that are more hypothetical or categorize them and develop more situations that represent one type of mental accounting. It would be interesting, also, to develop instrument to measure susceptibility to mental accounting.

REFERENCES


PROFESSIONAL BURNOUT OF SPECIAL EDUCATION TEACHERS IN LATVIA

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ABSTRACT
Professional burnout has been a popular research subject among teachers over the last few years. However, there are not many research studies involving teachers of special education there. The results of the study conducted by the European Trade Union Committee for Education show that the teachers surveyed in Latvia are on the verge of burnout (49%) (Moncada, Llorens, 2013). The aim of the study is to research the levels of professional burnout and the differences in special education teachers whose length of employment in education is 10 and 25 years. The Maslach Burnout Inventory (Maslach, Jackson, 1986) was used to study professional burnout. The study sample consisted of 106 special education teachers. The results of the study do not confirm the hypothesis that there are statistically significant differences in the levels of professional burnout between special education teachers whose length of employment in education is 10 years and those whose length of employment in education is 25 years. The results of the study reveal that teachers have high and medium levels of emotional exhaustion.

Keywords: Professional burnout, special education teachers, Maslach Burnout Inventory.

1. INTRODUCTION

Representatives of the Education and Science Trade Union of Latvia acknowledge that the profession of a teacher is associated with burnout, and the resulting loss of capacity for work cannot be restored by introducing new technologies because the specific nature of the job, i.e., the direct contact with children, cannot be excluded. The effects of various factors cause physiological and psychoemotional changes in the body and lead to loss of the professional skills in such teachers (Grigorjevs, 2014).

Evidence has been obtained in earlier studies that that working in education involves continuous periods of tension and may lead to professional burnout (Antoniou et al., 2013). Environmental diversity, a wide spectrum of communication, emotional and physical loads involved in working with pupils of various ages and levels of development and their parents, and handling complex situations are just a few of the factors which are topical for this profession. Even though the profession of teacher is highly regulated and supervised from the outside, it is not highly appreciated in terms of the salary and respect (Hargreaves et al., 2007; Müller et al., 2007). The research studies conducted by the Organisation for Economic Co-operation and Development also show that most of the countries have very limited possibilities for due appreciation and remuneration of the teachers’ job (OECD, 2005).

In their daily job in a classroom, special education teachers meet children who have explicitly different special features of the nervous system function, have attention deficit disorders, hyperactivity, emotional disorders, development disorders, etc. The mission of the special education teacher in the school is to understand the weaknesses of every child, identify their individual strengths, and, accordingly, provide the necessary support and evaluate the performance of the child. Individual approaches in education create favourable conditions for all-round development of each child and acquisition of knowledge and skills (Tomlinson, 2012).

In summary, one can conclude that special education teachers are exposed to various occupational risks, such as environmental diversity, emotional and physical loads involved in working with pupils of different ages and levels of development and their parents, dealing with complex situations, finding individual approaches to each individual, and limited possibilities for due appreciation and remuneration of such teachers, which are all suggestive of potential professional burnout in this profession.

The aim of the study is to research the levels of professional burnout and the differences in special education teachers whose length of employment in education is 10 and 25 years.

The following hypothesis was proposed: There are statistically significant differences in the levels of professional burnout between special education teachers whose length of employment in education is 10 years and those whose length of employment in education is 25 years.

The study was conducted in three special schools in Riga where 187 special education teachers were employed in the academic year 2012/2013, of which 24 either left their jobs themselves or were dismissed during the year. This indicator of 13% of the total number of employees served as a determinant factor to support the significance of the research study.
2. THE JOB OF A SPECIAL EDUCATION TEACHER AS A PROFESSIONAL BURNOUT FACTOR

After H. Freudenberger first used the term ‘burnout’ to describe the state of chronic emotional exhaustion, this phenomenon has become the subject of many subsequent studies (Kraft, 2007). Later on, K. Maslach et al. conducted a study into on-job professional burnout among employees and described this phenomenon as a syndrome of emotional exhaustion, depersonalisation, and reduction of personal accomplishment, which may occur in individuals working with people (Maslach, Jackson, 1997). For a teacher to become a professional in their field, they must work in the sector of education for 5-7 years in order to acquire the necessary skills. K. Maslach emphasises that the first symptoms of professional burnout appear specifically in this period (Maslach, 1998).

Based on the discoveries made by scientists that professional burnout has already been observed in various jobs associated with providing assistance to other people and communication between people, one can identify certain risk groups exposed to the risk of burnout. These include doctors, medical nurses, social workers, pharmacists, psychologists, teachers (Koustelios, 2003; Koustelios, Tsigilis, 2005; Tsigilis et al. 2004) etc., people working in shifts; people whose job involves high degrees of responsibility, but low levels of moral and material appreciation as well as authority (Ancane, 2004).

Very many research studies have been conducted particularly among teachers. For instance, there has been a study involving teachers who have just started their careers and ones whose experience exceeds six years (Goddard et al., 2006), several research studies have been carried out into differences in professional burnout in lower and upper secondary schools (Yavuz, 2009; Tsigilis et al., 2011; Antoniou et al., 2013). These studies do not reveal any statistically significant differences between professional burnout in teachers working in lower or upper secondary schools, but they reveal statistically significant differences between male and female teachers (Yavuz, 2009). Other studies show no statistically significant correlations between professional burnout, stress, and job satisfaction (Reddy, 2007). It was discovered during the studies that workloads and shortage of time are among the most significant factors which affect teachers (Tsiaikkiros, Piasiardis, 2002). Results were obtained to claim that the causes of emotional exhaustion include excessive workloads of teachers and disruptive behaviours of pupils (Fernet et al., 2012). Burnout is also associated with demographic properties of pupils, such as age, gender, form level, family status, and cultural context (Schwab, et al., 1986). Several studies suggest that the working environment plays a significant role in the burnout of teachers (Friedman, 2000; Goddard, et al., 2006). A. Friedman (2000) writes about the causes of burnout that teachers have a “reality shock”. It is a phenomenon which involves inability of teachers to provide the necessary knowledge to their pupils on the one hand and pupil discipline problems and behavioural disorders in the classroom on the other hand.

Research studies have also been conducted specifically among special education teachers, for example, in the United States where differences in burnout have been studied between teachers of regular educational institutions and teachers working at special educational institutions. The results of the study showed higher burnout rates for teachers working in regular schools. No statistically significant differences were found with regard to job satisfaction among regular and special education teachers. A weak correlation was found between job satisfaction and burnout in both study samples (Roach, 2009).

Professional burnout develops in employees gradually and discreetly over several years (Montgomery, Rupp, 2005). Burnout is a process which involves 3 dimensions: emotional exhaustion, depersonalisation, and reduction of personal accomplishment (Maslach, 1998).

These three dimensions of professional burnout often overlap and appear to be the cause and consequence of each other, and this is what was researched within this study conducted among the teachers of the three special schools in Latvia.

3. RESEARCH METHODOLOGY AND SAMPLE

According to the information published on the website of Riga City Council Department of Education, Culture, and Sports, there are 12 special schools in Riga (List of special educational schools: http://dati.e-skola.lv/Katalogs/RigaSkolaSVSpec). The study was conducted in three special schools of Riga with 187 special education teachers in the academic year 2012/2013. 187 questionnaires were distributed in these schools in total, and 149 questionnaires were received back. The questionnaires were distributed among the respondents in paper format. 106 questionnaires were fully completed and valid for processing, 62 (58%) of them were received from teachers whose length of employment is 25 years, and 44 (42%) were received from teachers whose length of employment is at least 10 years.
The below research methods were used in the study.

1) Data collection method: The Maslach Burnout Inventory (MBI) for detection of professional burnout. The inventory includes 22 statements, and the Likert type scale was used to assess them. The MBI consists of 3 sub-scales: Emotional Exhaustion, Depersonalization, and Personal Accomplishment (Maslach, Jackson, 1986 acc. to Dreifelde-Gabruseva, 2009).

The obtained test results identified the level of professional burnout, defined as low, medium, or high (see Table 1) (Vodopjanova, Starchenkova, 2009, 207).

<table>
<thead>
<tr>
<th>Professional burnout level score</th>
<th>Low level (points)</th>
<th>Medium level (points)</th>
<th>High level (points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional exhaustion</td>
<td>0-15</td>
<td>16-24</td>
<td>25 or more</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>0-5</td>
<td>6-10</td>
<td>11 or more</td>
</tr>
<tr>
<td>Personal Accomplishment</td>
<td>37 or more</td>
<td>31-36</td>
<td>30 or less</td>
</tr>
</tbody>
</table>

*Source: Vodopjanova, Starchenkova (2009)*

2) Mathematical statistical data processing methods: Cronbach's alpha (data credibility), Kolmogorov Smirnov Z criterion (correspondence of data to normal distribution), the parametric statistics method – the T criterion, and the non-parametric statistics method – the Mann Whitney U criterion (calculation of professional burnout level differences).

4. RESEARCH RESULTS

The Cronbach's alpha was calculated to determine the credibility of the results obtained from the questionnaires used in the study (see Table 1).

<table>
<thead>
<tr>
<th>Cronbach's alpha coefficient</th>
<th>Emotional exhaustion</th>
<th>Depersonalisation</th>
<th>Personal accomplishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's alpha coefficient</td>
<td>0.859</td>
<td>0.559</td>
<td>0.737</td>
</tr>
</tbody>
</table>

Table 2 shows that the Cronbach's alpha obtained for the results on the emotional exhaustion and personal accomplishment reduction scales are higher by 0.6, which indicates a sufficient level of credibility for the results obtained on these scales. The Cronbach's alpha obtained for the result on the depersonalisation scale is equal to 0.6 only after decimal approximation, and this means a sufficient level of credibility of the results.

The next step in the study was determination of whether the empirical distributions of the obtained results correspond to the normal distribution, and calculation of Kolmogorov Smirnov Z criterion (see Table 3).

| The results of Kolmogorov – Smirnov Z test for selection of special education teachers with 25 years of experience |
|----------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| N                                                        | Emotional exhaustion | Depersonalisation | Personal accomplishment |
| Kolmogorov – Smirnov Z test                              | 1.002               | 1.054             | 0.815                 |
| Significance                                             | 0.268               | 0.217             | 0.520                 |

Table 3 shows that the significance score for the results on all scales is above 0.05, and this shows that the results are representable.
Table 4

The results of Kolmogorov – Smirnov Z test for selection of special education teachers with 10 years of experience

<table>
<thead>
<tr>
<th></th>
<th>Emotional exhaustion</th>
<th>Depersonalisation</th>
<th>Personal accomplishment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>44</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td><strong>Kolmogorov – Smirnov Z test</strong></td>
<td>1.212</td>
<td>0.697</td>
<td>1.447</td>
</tr>
<tr>
<td><strong>Significance</strong></td>
<td>0.106</td>
<td>0.716</td>
<td>0.030</td>
</tr>
</tbody>
</table>

For the special education teachers with 10 years of job experience, the significance score is by 0.05 higher for the results on the emotional exhaustion and depersonalisation scales (see Table 4), and this shows that the results are representable. The Kolmogorov Smirnov Z criterion score for the results on the personal accomplishment reduction scale are lower by 0.05, which indicates that the results are not representable.

The next step was the descriptive statistics calculations – the mean arithmetic median mode is the central tendency indicators. If the central tendency indicators are close according to their values, this means that the sample size is sufficient.

The central tendency indicators for the emotional exhaustion and personal accomplishment reduction scale scores are close according to their values, and this shows that the sample size is sufficient for these measurements. The depersonalisation scale central tendency mode value is explicitly lower, and this shows that the sample size is small (see Table 5).

Table 5

The results of Kolmogorov – Smirnov Z test for selection of special education teachers with 25 years of experience

<table>
<thead>
<tr>
<th></th>
<th>Emotional exhaustion</th>
<th>Depersonalisation</th>
<th>Personal accomplishment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>62</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td><strong>valid</strong></td>
<td>62</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td><strong>missing</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Arithmetic mean</strong></td>
<td>25.0323</td>
<td>6.3548</td>
<td>33.7581</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>24.0000</td>
<td>6.0000</td>
<td>34.0000</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>26.00</td>
<td>3.00</td>
<td>34.00</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>9.45909</td>
<td>4.06947</td>
<td>8.32276</td>
</tr>
<tr>
<td><strong>Coefficient of skewness</strong></td>
<td>0.439</td>
<td>1.098</td>
<td>-0.252</td>
</tr>
<tr>
<td><strong>Standard error of the coefficient of skewness</strong></td>
<td>0.304</td>
<td>0.304</td>
<td>0.304</td>
</tr>
<tr>
<td><strong>Excess</strong></td>
<td>-0.999</td>
<td>1.099</td>
<td>0.132</td>
</tr>
<tr>
<td><strong>Standard deviation of excess</strong></td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
</tr>
</tbody>
</table>

A review of the skewness coefficient values shows that the coefficient of skewness for the results on the emotional exhaustion and depersonalisation scales is positive, and this indicates that the results have a tendency towards lower values. The skewness coefficient is negative for the results on the personal accomplishment reduction scale, and this indicates that the results have a tendency towards higher values (see Table 5).
The results of Kolmogorov – Smirnov Z test for selection of special education teachers with 10 years of experience

<table>
<thead>
<tr>
<th></th>
<th>Emotional exhaustion</th>
<th>Depersonalisation</th>
<th>Personal accomplishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>N valid</td>
<td>44</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>N missing</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Arithmetic mean</td>
<td>22.8409</td>
<td>5.2500</td>
<td>32.5227</td>
</tr>
<tr>
<td>Median</td>
<td>21.0000</td>
<td>5.0000</td>
<td>37.0000</td>
</tr>
<tr>
<td>Mode</td>
<td>16.00(^a)</td>
<td>5.0000</td>
<td>40.0000</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>7.92389</td>
<td>3.18518</td>
<td>9.02835</td>
</tr>
<tr>
<td>Coefficient of skewness</td>
<td>1.230</td>
<td>0.358</td>
<td>-0.629</td>
</tr>
<tr>
<td>Standard error of the coefficient of skewness</td>
<td>0.357</td>
<td>0.357</td>
<td>0.357</td>
</tr>
<tr>
<td>Excess</td>
<td>0.539</td>
<td>0.038</td>
<td>-0.983</td>
</tr>
<tr>
<td>Standard deviation of excess</td>
<td>0.702</td>
<td>0.702</td>
<td>0.702</td>
</tr>
</tbody>
</table>

The excess values show that the value is negative for the results obtained on the emotional exhaustion scale, and this indicates that the results tend to spread along the X axis. The excess value is positive for the results on the depersonalisation and personal accomplishment reduction scales, and this indicates that the results have a tendency to cluster around the arithmetic mean (see Table 6).

Considering the fact that the empirical distribution of the results obtained on the emotional exhaustion and depersonalisation scales corresponds to the normal distribution in both samples, the parametric statistics method - the T criterion was used to calculate the differences in the levels of professional burnout (see Table 7).

Table 7

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional exhaustion</td>
<td>-1.255</td>
<td>0.212</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>-1.503</td>
<td>0.136</td>
</tr>
</tbody>
</table>

The T criterion significance values, which are above 0.05, allow concluding that the special education teachers with 10 years of job experience and the special education teachers with 25 years of job experience do not have statistically significant differences in the emotional exhaustion and depersonalisation scores (see Table 7).

Since the empirical distribution of the results obtained on the personal accomplishment reduction scale for the teachers with 25 years of job experience in the samples do not correspond to the normal distribution, and the results for the teachers with 10 years of job experience do not correspond to the normal distribution, the calculations were based on the use of the non-parametric statistics method - the Mann Whitney U criterion (see Table 8).

Table 8

<table>
<thead>
<tr>
<th></th>
<th>Personal accomplishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann Whitney U test</td>
<td>1333.500</td>
</tr>
<tr>
<td>Significance</td>
<td>0.845</td>
</tr>
</tbody>
</table>

The Mann Whitney U criterion significance values, which are above 0.05, allow concluding that there are no statistically significant differences also in the personal accomplishment reduction scores for the special education teachers with 10 years of job experience and the special education teachers with 25 years of job experience (see Table 8).

Further below is a description of the burnout scores obtained for the special education teachers on the three scales: emotional exhaustion, depersonalisation, and personal accomplishment reduction (see Fig. 1 to Fig 4).
A summary of the scores obtained on all the professional burnout scales allows to conclude that special education teachers have a medium (23.44 points) level of professional burnout in the mean scores for emotional exhaustion, a low level of professional burnout in the mean scores for depersonalisation (5.8 points), and a medium level of professional burnout in the scores for personal accomplishment (33.14 points) (see Fig. 1).

The mean scores on the emotional exhaustion scale for the level of professional burnout are high in the teachers with 25 years of job experience (25.03 points), whereas the means scores are medium with a tendency towards high (22.85 points) in the teachers with 10 years of job experience (see Fig. 2), as, according to the Professional Burnout Level Assessment Table by K. Maslach and S. Jackson (see Table 1), a high level of burnout is at 25 or more points.

The means scores on the depersonalisation scale for the level of professional burnout are low with a tendency towards medium (5.25 points) professional burnout level for the teachers with 10 years of job experience, and medium (6.35 points) for the teachers with 25 years of job experience (see Fig 3).
The mean scores on the personal accomplishment scale for the level of professional burnout are medium for the teachers with 25 years of job experience and the teachers with 10 years of job experience, i.e., 33.75 and 32.52 points respectively (see Fig. 4).

5. CONCLUSIONS

The results of the study do not confirm the hypothesis that there are statistically significant differences in the levels of professional burnout between special education teachers whose length of employment in education is 10 years and those whose length of employment in education is 25 years. There are no statistically significant differences in the levels of professional burnout between the teachers with 10 or 25 years of job experience in education.

A summary of the scores obtained on all the professional burnout scales allows to conclude that special education teachers have a medium (23.44 points) level of professional burnout in the mean scores for emotional exhaustion, have a low level of professional burnout in the mean scores for depersonalisation (5.8 points), and have a medium level of professional burnout in the scores for personal accomplishment (33.14 points), and these are signals of professional burnout among the special education teachers. The results of the research study are similar to those described in the theory (Maslach, 1998; Montgomery, Rupp, 2005) or obtained in the studies conducted elsewhere (Skoryk, 2013).

This suggests that further research should be targeted at studying the factors which influence professional burnout, such as working conditions and remuneration, working environment, conflicts 2014; Maslach, 2011; Hakanen, et al., 2006; Jackson, 2004).

The mean scores on the emotional exhaustion scale for the level of professional burnout are high (25.03 points) among the teachers with 25 years of job experience and medium with a tendency towards high (22.85 points) among the teachers with 10 years of job experience. Emotional exhaustion is the main component of professional burnout, characterised by a feeling of depletion of the emotional resources, presence of anxiety, feeling insulted, sense of emptiness, occurrence of the wish to isolate in order to get protection. The person realises that they are not able to feel as they felt at the place of their employment before, the first symptoms of depression and emotional breakdown occur (Maslach, 1998). The results of the study show that already now the special education teachers might have all or some of these symptoms.

The means scores on the depersonalisation scale for the level of professional burnout are low with a tendency towards medium (5.25 points) professional burnout level for the teachers with 10 years of job experience, and medium (6.35 points) for the teachers with 25 years of job experience. Depersonalisation involves negative, cynical reactions to the work performed by other people, the individual is not able to feel free, relax, develops additions to various substances. This is suggestive of potential indifference in communication with other people and pupils in the future and perception of the pupils as work objects. Emotional disassociation from the hardships and problems of the pupils may occur. Thus, the job becomes a formal duty and does not bring the previous enjoyment and satisfaction with the performance. This causes self-dissatisfaction and the results of the work, and potentially higher demands towards the individual himself/herself (Maslach, 1998).

The mean scores on the personal accomplishment scale for the level of professional burnout are medium for the teachers with 25 years of job experience and the teachers with 10 years of job experience, i.e., 33.75 and 32.52 points respectively. This suggests that already now the special education teachers are not willing to succeed in life and have reduced levels of capacity for work. Worsening of the quality of relationships,
and hostile attitudes towards the colleagues may occur in the future and, potentially, already now. Reduced levels of the sense of job competence, self-dissatisfaction, feeling of being nothing, negative self-perception from the professional point of view may occur (Maslach, 1998).

The results are suggestive of the necessity for preventive measures. To preclude further development of professional burnout in the teachers, the management and the employees of the educational institutions should evaluate and consider all the factors which influence professional burnout, i.e., not only the length of employment, but also age, level of education, gender, working environment, professional relationships, salary, personal factors, with no particular emphasis on any single influencing factor.

At policy level regular, paid supervision sessions should be held in order to control the symptoms of professional burnout among the special education teachers, during which it is necessary to discuss any issues the teachers find significant, to provide support in handling complex situations, to suggest alternative ways of dealing with various situations in order to assure that the teachers have clearly defined individual roles and limits of their competence, are encouraged to evaluate and analyse their performance and emotions, understand the targets of their activities, and to achieve them sooner. At school management level alternative stress control measures should also be facilitated, such as mutual consultations and support among the colleagues, informal team-building events (e.g., various field trips, competitions, and joint celebrations).

REFERENCES


ABSTRACT
In 2012, the Retailer acquires the business of Fuel & Retail Company. Each team member experiences certain changes, the volumes of work had increased in the petrol stations, and this changes the psychological climate at work and creates stress.

Objective: To study the psychological climate, management style, workplace stress, and their mutual relations in Fuel & Retail Company.

Methodology: The authors of the Paper used the following tools: The Professional Life Stress Scale, the Team Psychological Climate Survey; the Leadership Styles Questionnaire. The research questions were the following: What is the psychological climate, leadership style in Company? What are the key workplace stress factors? Were there any significant relationships between the psychological climate, leadership style, and workplace stress? The surveys were carried out in April 2014. The total number of respondents in the study was 105.

Findings: Most of the respondents believe that the prevailing management style is authoritarian, the assessment of the psychological climate was more positive than negative. The levels of workplace stress were high.

Research limitations: The authors of the Paper were able to carry out the empirical research study only in the petrol stations of Fuel & Retail Company located in Riga.

Practical implications: The results obtained during the study were presented to the Human Resources and Retail Sales management of Fuel &Retail Company.

Originality/ value: Psychological climate, management styles, and workplace style have been studied by various authors, but none of them has studied it in employees of petrol stations, who work 24 hours a day in an environment of organisational changes.

Classification: case study.

Keywords: Psychological climate, leadership style, workplace stress.

1.INTRODUCTION

Fuel & Retail Company serves more than 30 million customers every week all around the world, is a leading seller of fuel for road vehicles with more than 100 years of working experience in the sector, it owns a wide retailer chain in the Scandinavian Countries, the Baltic Countries, Poland, and Russia. Dynamic economic and labour market developments as well as increased levels of openness in the society and more active cooperation with the EU institutions make human resources one of the most valuable corporate assets. This applies to the increasing global competition and also to the rapidly changing technologies. A company, in its turn, is a complex, dynamic, varying socioeconomic system consisting of interrelated elements: the management object and the management subject, which need to be put in order, organised, managed, motivated, and controlled in a manner as to achieve the targets set by the company. The key to the success of a company today is often its employees. The management of Fuel & Retail Company is strictly determined to lower the costs, and, to attain this, every petrol station must pursue stringent austerity policies with regard to the personnel costs and daily expenses. As a result, the personnel can feel changes in the management style of their managers, i.e., the leaders become strict in their judgements, requirements, because the quality of work with regard to customer service must not suffer. Working in a petrol station is complex because it covers various services, requires maximum caution in handling petrol and gas, and is associated with operation of car-wash facilities and night shifts. In such a situation, the manager must be able to organise the work so that the targets and the financial results are achieved, and also there is trust between the manager and their subordinates, more confidence in the personnel when acting independently, feeling of positive psychological climate, management support, and interest in the well-being of the employees.

Objective To study the psychological climate, management style, workplace stress, and their mutual relations in Fuel & Retail Company.
Theoretical framework of the research

Socio-psychological climate - the qualitative side of interpersonal relationship that manifests as an aggregate of psychological conditions which either facilitates or hinders efficient common activity and versatile personal or group development (Klauss, 2002). Psychological and organisational climate are mentioned to describe climate in literature. Psychological climate refers to an individual (Payne and Pugh, 1976). Good psychological climate must be created and maintained by the manager. Maintaining psychological climate is not only a responsibility of the manager, but also a creative process which requires knowledge of human psychology, relationships, and emotional state (Pocebut and Ciker, 2002). Psychological climate is also defined as the way how members of an organisation perceive and describe their environment (Denison, 1996; Moran and Vilkwein, 1992; Verbeke, Volgering and Hessel, 1998). Psychological climate will mediate the positive relationship between interpersonal aggression and employee burnout (Bedi, Courcy, Paquet and Harvey, 2013). A.Vorobjovs (2002) believes that favourable psychological climate in a team is characterised by full trust and empathy in the attitudes towards each other, unselfish mutual assistance, full satisfaction of the communicative needs, a positive emotional background in the interpersonal relationships is satisfaction with the status distributions among all team members, non-existence of contradicting groupings. The latest research suggests that the psychological climate of the organization is linked with the organizational effectiveness (Kataria, Garg and Rastogi, 2013).

The leader of the team plays a significant role in the creation of the psychological climate in it. In building the psychological climate, the leader performs a significant social role, i.e., they bring in certain personal and human features which determine the style of management, the quality of contact with their subordinates, and their skills in building the motivation of the employees. The relationships between the leader and the subordinate, the psychological climate, and the results of teamwork directly depend on the style of management. The association between leadership styles (transactional and transformational) and organizational outcome were fully mediated by the employees’ perception (Nazir, Akram and Arshad, 2014). Efficient leaders and managers provide opportunities, so that people can feel proud for their job, and set higher targets meant for further growth. As A.Vorobjovs (2002) writes, the authoritarian style of leadership mostly results in a negative psychological climate. In case of the authoritarian style, the leader exercises too much control over the private life and job, or does not try to have a deeper understanding of the problems their employees might have. It should be noted that a democratic style of management least facilitates workplace stress, whereas, right the contrary, an authoritarian style develops it (Horisina, 2004; Zankovskij, 2002). The authoritarian style can assure high levels of job efficiency in terms of quantitative indicators, but not always in terms of quality indicators. For employees’ instrumental leadership is more effective in promoting employee effort and increasing job performance (Mulki, Caemmerer and Hegde, 2015). These may be consequences of the fact that the operation of the company is primarily based on strict control, rather than internal motivation of the employees (Renge, 2007).

The factors that influence the psychological climate in a company include: the employee content in the company, their job specifics, level of education, age, gender, the personality of the leader of the organisation, their management style, type of behaviour, workplace stress, and other.

R.S. Lazarus (1999) mentions that stress is a physiological and psychological response to excessive, unpleasant stimulation and external conditions which imply threat. Stress causes complex changes in the chemical processes of the body, by affecting the individual's mental and physiological processes (Lazarus and Folkman, 1984). Selje (1979) believed that responses of certain types are caused by stress factors. Workplace stress may be an obstacle in the attainment of the targets for the employees and also the organisation. The work stress and its adverse effects on the physical and mental health of an employee (Sohail and Rehman, 2015). The authors of the Paper wish to highlight that workplace stress is one of the risk factors that affect employees. Stress causes a psychological and physical state which occurs when the resources of the individual are insufficient to control the pressure exerted by the requirements and situations. Stress and the resulting tension are as a result of a conflict between the individual abilities of the individual, their skills, and the requirements at the place of work. Causes of stress, as such, cannot cause intensity of tension if the individual is able to minimise stress themselves or with support of others, such as their management, which, in its turn, influences changes in the behaviour in stress situations (Lang and Lee, 2005).

2.RESEARCH METHODOLOGY

The authors used several data collection tools in order to attain the aim: Team Psychological Climate Questionnaire (Parygin, 1999) to investigate the psychological climate. The following scores are offered for
the statements: 3 – The feature is always observed in the group 2 - The feature is observed in most situations 1 - The feature is observed pretty often 0 - Equally observed Climate A and Climate B psychological feature. The Professional Life Stress Scale, (Fontana,1991). The Stress Scale consists of 24 questions. The responses are assessed using the key for the scale, and the score can be between 0 and 60. A score of 0 to 15 suggests that the respondent has low workplace stress levels and that job-related stress has no untoward effects on the physical or emotional condition of the respondent. The Leadership Styles Questionnaire (Iljin, 2012) was used to determine the management styles, a questionnaire developed by the authors was used to highlight the special properties of the business, and an analysis of the internal personnel documents was carried out.

The research questions in the Paper were the following: What is the psychological climate in Fuel & Retail Company? What leadership styles do the managers of Fuel & Retail Company have? What are the key workplace stress factors in Fuel & Retail Company? Are there any significant relationships between the psychological climate, leadership style, and workplace stress? The surveys were carried out in April 2014. The respondents received the questionnaire electronically, to their e-mail addresses, with prior consent of the management of Fuel & Retail for the survey. The total number of respondents in the survey was 105. Out of these, 78 were females and 27 were males. The breakdown of the respondents by their positions was the following: petrol station sales personnel 53%, deputy managers 17%, and managers 30%.

3.ANALYSIS OF RESEARCH RESULTS

The analysis of the documents and the data obtained in the survey designed by the authors reveals higher levels of employee turnover in Fuel & Retail Company at the end of 2013. The explanation for this is outflow of employees to other countries, particularly in the winter months when the number of work hours was reduced and the salaries of the sales personnel decreased by 20%.

The reason for termination of employment for a large part of the respondents (22%) is non-compliance (misappropriation of cash or products). 13% of the new employees demonstrated unsuccessful performance during the trial period, for a wide range of reasons (insufficient expertise, night shifts, high volumes of work). 17% find work in other companies. Trained personnel with good expertise are often enticed by other companies. 8% leave the country, 8% see no career opportunities in the company. 6% have left because of the salary, and 6% have not been able to combine working in shifts and their studies. 6% have left for family reasons. Pretty often, one of the spouses already works abroad, and the other joins him/her in a year.

The personnel turnover calculations done by Fuel & Retail Company show that the percentages of the dismissed employees against the total number of employees at the particular time were18% in 2009, 16% in 2010, 25% in 2011, 29% in 2012, 28% in 2013.

The results of the study into the psychological climate (Parygin,1999) show that the employees’ overall assessment of the psychological climate in the organisation is more positive than negative. The atmosphere in Fuel & Retail Company is favourable, and positive relationships between the employees prevail, the mood in the team is mostly brisk and joyful (64% of the respondents agreed entirely, 33% agreed partially, and only 2% disagreed entirely). Mutual respect dominates in the teams of Fuel & Retail Company, the personnel is united, help the newcomers to the team, help each other in case of illness when it is necessary to fill in for a colleague.

The results of the Management Styles Questionnaire show (Iljin, 2012) that the authoritarian style of management dominates in the organisation (49%), characterised by focusing on the direct job-related issues and ignoring the needs of the subordinates, 48% believe that the managers have the democratic style of leadership when the employees are also involved in the decision-making processes, and 4% of the respondents think that the leadership style is liberal, i.e., that the manager is more like a formalism, and that every employee may choose the job obligations and techniques themselves. The obtained results suggest that the employees do not a common opinion regarding the leadership style of their managers, more than a half of the respondents think that the managers of Fuel & Retail Company have the authoritarian style of leadership. In their responses to the question: How do you evaluate the work of your direct manager? 86% of the respondents have specified that their direct manager provides support and helps with advice, regularly assesses the completed work, and helps to improve performance. This means that the leaders both help and assess daily work, and perform their obligations actively. 10% of the respondents indicate that the leaders allow expressing oneself and showing initiative, which is too little, because too much control results in mechanical performance of the work. This will prove to be a disadvantage when, in a non-standard situation, the personnel will not be able to think of a solution independently because they have never done it before.

When assessing the level of workplace stress (Fontana, 1991), 79 respondents have given the score of 4
For their stress level, a 25 respondents have given the score of 3. When considering this fact regarding workplace stress, the authors of the Paper agree to the opinion expressed by Mahmood and Bisaria (Mahmood, Bisaria, 2008) that the further the individual is from the comfort zone, the higher the levels of stress. The large amounts of work, dissatisfied customers, and the high requirements at work, as demonstrated by the previously discussed questions, might be reasons why the levels of stress are so high. People have individual responses to workplace stress. (Wichert, 2002). The respondents indicate that the key work stress factors are those which make one experience additional tension, agitation, nervousness, alarm, or a physiologically unpleasant process. In response to the question regarding the factor that cause stress at work, those mentioned most frequently were the amount of work and time restrictions, followed by the financial targets of Fuel & Retail Company, high requirements at work, dissatisfied customers and conflicts with them, management style, unclear job tasks. It is important that the knowledge, expectations, abilities, values, and attitudes of the individual meet those of the organisation and vice versa. If, however, there are incompatibilities with regard to these aspects, this may cause stress and lower the levels of job satisfaction (Lovelance, Rosen, 1996; Bretz, Judge, 1994).

To identify the correlations, the authors of the Paper used Spearman's rank correlation coefficient. Spearman's rank correlation was chosen because the data did not match the normal distribution. There is a statistically significant, negative, medium close correlation between the scales "management assessment" and "team characteristics" (r = - 0.214, p < 0.05), which means that the higher scores provided by the respondents for the team characteristics, the lower scores they have provided for the manager (thus lowering their significance). There is a statistically significant, positive, medium close correlation between the scale "team characteristics" and "job selection criteria" (r = 0.214, p < 0.05). The higher the score provided by the respondent for the team characteristics, the more important the job selection criteria are for them. There is a statistically significant, positive, and close correlation between the scale "Positive aspects of psychological climate" and the "Negative aspects of psychological climate" (r = 0.819, p < 0.05). The higher the scores provided by the respondents for the positive aspects of the psychological climate, the higher they assess the negative aspects of the psychological climate too, as both are significant in a job setting.

There is no significant relationship between employee stress levels and the negative aspects of the psychological climate, the job selection criteria, and the team characteristics.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Team characteristics</th>
<th>Stress level</th>
<th>Job selection criteria</th>
<th>Negative aspects of psychological climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management assessments</td>
<td>Correlation Coefficient</td>
<td>-0.214*</td>
<td>-0.085</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.028</td>
<td>0.39</td>
<td>0.942</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>Team characteristics</td>
<td>Correlation Coefficient</td>
<td>1</td>
<td>-0.037</td>
<td>0.214*</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>0.707</td>
<td>0.029</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>Stress level</td>
<td>Correlation Coefficient</td>
<td>-0.037</td>
<td>1</td>
<td>-0.037</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.707</td>
<td>.</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>Positive aspects of</td>
<td>Correlation Coefficient</td>
<td>-0.099</td>
<td>0.031</td>
<td>0.06</td>
</tr>
<tr>
<td>psychological climate</td>
<td>Sig. (2-tailed)</td>
<td>0.316</td>
<td>0.753</td>
<td>0.545</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
</tbody>
</table>

To find out the relationship between the leadership styles and the psychological climate, Spearman's correlation was used (see Table 2). There is a statistically significant, negative, medium close correlation between the personnel management process assessments and the authoritarian style of leadership (r = - 0.198, p < 0.05). Higher scores for the authoritarian style lower personnel process assessments, and exactly the same negative correlation exists between the liberal style of management and personnel process assessments (r = - 0.205, p< 0.05). There is a statistically significant, positive, medium close correlation between
personnel management process assessments and the democratic style of leadership (r = 0.259, p < 0.05). The higher the scores provided by the respondents for the personnel management processes, their performance, the higher their scores for the democratic style of management. The positive aspects of the psychological climate negatively correlate with the liberal style of management (r = -0.207, p < 0.05). This shows that employees do not wish to work with a manager who has only formal powers, and that the characteristics of positive psychological climate would also be lowered then.

Table 2  
Correlation between leadership style, personnel management process assessments and the positive aspects of the psychological climate

<table>
<thead>
<tr>
<th></th>
<th>Authoritarian style</th>
<th>Democratic style</th>
<th>Liberal style</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel process</strong></td>
<td>Correlation Coefficient</td>
<td>0.198*</td>
<td>0.259**</td>
</tr>
<tr>
<td><strong>assessment</strong></td>
<td>Sig. (2-tailed)</td>
<td>0.043</td>
<td>0.008</td>
</tr>
<tr>
<td><strong>Positive aspects</strong></td>
<td>Correlation Coefficient</td>
<td>0.082</td>
<td>0.007</td>
</tr>
<tr>
<td><strong>of psychological</strong></td>
<td>Sig. (2-tailed)</td>
<td>0.407</td>
<td>0.946</td>
</tr>
<tr>
<td><strong>climate</strong></td>
<td>N</td>
<td>105</td>
<td>105</td>
</tr>
</tbody>
</table>

4. CONCLUSIONS/DISCUSSION/SUGGESTIONS

The assessments provided by the respondents for the psychological climate in Fuel & Retail Company are more positive than negative. The atmosphere at the petrol stations is favourable, and the employees enjoy positive relationships which make them feel more secure during change of the management. Most of the respondents (49%) believe that the authoritarian style of leadership prevails in Fuel & Retail Company, and this proves that the leaders have changed and, for the large volumes of work, they opt less for the democratic style of management to thereby quickly achieve that the employees are obedient, disciplined, and efficient. The levels of workplace stress in Fuel & Retail Company are high, and this demonstrates that the management and the employees are not able to adapt to the new circumstances. The job volumes, time restrictions, the high requirements at work, customer dissatisfaction, and conflict situations with them are the main causes of workplace stress in the employees. The employees believe that the assessments provided by their direct supervisors justifiably include both criticism and appraisal. The positive characteristics of the psychological climate most frequently observed in the results of the study are: open communication, mutual trust, joy, optimism, and feeling safe. The employees consider that there are very many job obligations, but they need to be performed. This suggests willingness and attempts to adapt to the new requirements at work. The factors which influence the choice of job (job selection criteria): work in a stable company, working conditions, prestige of the company, stable and fair salary, working with people. These are the most essential for the employees according to their individual systems of values. There is a statistically significant, negative correlation between the scales "management assessment" and "team characteristics", where an increase in one score lowers the other. There is a statistically significant, negative correlation between the personnel management process assessments and the authoritarian style of leadership. Increases in the levels of the authoritarian style lower the personnel management process assessments, and there is exactly the same negative correlation between the liberal style and the personnel management process assessments. There is a statistically significant, positive correlation between the personnel management process assessments and the democratic style of leadership. The higher the score provided by the respondent for the democratic style of management, the higher their score provided for the personnel management processes in the company. The positive aspects of the psychological climate negatively correlate with the liberal style of management, and this shows that the employees do not wish to work with a manager who has merely formal powers. The psychological climate characterises the organisational characteristics, such as structure, management style, and structural complexity. Good psychological climate must be created and maintained by the manager. In building the psychological climate, the manager has an essential social role. They bring in certain personal and human characteristics which determine the style of management, quality of contact with the subordinates, and skills associated with building motivation in the employees, lower stress levels, and overload the employee experiences when the expectation from them is likely to be beyond the limits of their ability or capacity. Workplace stress may be an obstacle in the attainment of the targets for the employees and also the organisation.

The authors suggest that the company management use the scheduled annual discussion with the
managers to develop an action plan which would help the managers to change their leadership styles and optimise their daily workloads. During the monthly discussions, the managers should, together with the Retail Sales management, review the optimal working hours for each Fuel & Retail Company required for the organisation of the business procedure and the performance of their obligations in view of the customer flows. In order to maintain a positive psychological climate and reduce the levels of on-job stress, the management might want to develop clear guidelines, including fixing the work completion deadlines. The Human Resources Department and the Retail Sales Department should develop an action plan which would reduce the levels of on-job stress within Fuel & Retail Company. The authors suggest that the workloads of the sales staff at the counter be reconsidered by providing assistants responsible for the preparation of the snacks, in order to reduce the numbers of stressful situations in the work of the cash registry operators. It might be necessary to evaluate the new project implementation procedures followed by Fuel & Retail Company, i.e., develop methods for bringing innovation into the daily operations without unwanted additional stress. The company management should communicate with the managers of Fuel & Retail Company to fix the work completion deadlines, communicate the objectives, tasks and the workflows to the managers prior to launching any new projects in order to allow time for the assessment of the available timelines and to avoid unwanted stress associated with the deadlines. The authors believe that one must not forget that the key to corporate success in the current competitive environment is its employees. In this context, the manager must be able to organise the work so that the targets and the financial results are achieved, and also so that there is trust between the manager and their subordinates, more confidence in the personnel when acting independently, feeling of positive psychological climate, management support, and interest in the well-being of the employees.

The results obtained during the study were presented to the Human Resources and Retail Sales management of Fuel &Retail Company, including the conclusions and recommendations.

REFERENCES


EMPIRICAL TESTING OF ARCTIC MODEL FOR ASSESSMENT OF COMPETENCE BASED SYNERGY IN ACQUISITION PROCESS

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Abstract

Purpose: the aim of this paper is to develop and empirically test an integrative research model which would help to assess prerequisites of competence-based synergy in acquisition process.

Design/methodology/approach: What we wanted to know was how core competences should be evaluated as sources of synergy in acquisition/alliance? Having answered this question analysis we have researched the latest theoretical findings in antecedents of synergy in merger and acquisition process and empirically tested by means of illustrative case study.

Findings: Based on literature review in depth, an ARCTIC model has been developed. We have selected illustrative case study of Facebook acquisition of WhatsApp by in mid 2014 year and tested empirically developed methodology.

Research limitations/implications: Illustrative case study involved explores the competence transfer as main drivers of successful acquisition process. The author suggests further empirical testing on illustrative case studies and possible development of methodology for evaluation of all six factors.

Practical implications: Research identified four steps to investigate whether core competence transfer in an acquisition process is an important source of synergy and whether it is better to acquire or ally for competence transfer. The ARCTIC model can be used effectively in evaluating core competencies as a means of synergy creation in the M&A context.

Originality/value: The authors believe that six factors of ARCTIC models allow making preliminary evaluation of core competences as sources of synergy in acquisitions and new ARCTIC model should be helpful to managers facing mergers, acquisitions and alliances, as well as to management academic specialists, studying this area.

Research paper: empirical research, testing of a model.

Keywords: synergy, core competence, value chain, M&A process, ARCTIC model.

“We have never once bought a company for the company. We buy companies for excellent people”.

Mark Zuckerberg (CEO of Facebook), at an event in 2010 at Stanford University

1. INTRODUCTION

Acquisitions remain one of the most intriguing and controversial issues in contemporary management science. The process of a new venture birth from combination of different resources and competences in acquisition is very intriguing in terms of synergy. In situation, where one or both companies change business process after acquisition, prediction of synergy and estimation of economic gains from this change has crucial important. This article looks for interdependence between synergy gain in acquisition process and core competences used in it from both sides. The aim of this paper is to develop an integrative and more holistic research model which would help to estimate possible competence-based synergy in acquisition process. In order to reach the aim the research question has been pondered: how core competences should be evaluated as sources of synergy in acquisition? Our previous study developed a theoretical framework ARCTIC which was tested empirically across a sample of twenty five cases of merger, acquisition or joint venture process were selected and analyzed (Chirjevskis and Joffe, 2007). When it comes to current paper, three main sources of information were used in this research: business study literature, news media and company reports. In the beginning of this article, we will explore in-depth sources and types of synergy and significance of core competence concept for company success before we present ARCTIC model in application of Facebook acquisition of WhatsApp.

2. LITERATURE REVIEW

2.1. SYNERGY IN ACQUISITION

Synergy effect has been named as a major motive to initiate the process of M&A. This effect is commonly described as 2+2=5 or according to Rappaport (1998) synergy increasing in competitiveness and resulting cash flows beyond what the two companies are expected to accomplish independently. Recently a valuable piece of study was provided by
Bauer and Matzler (2014) in those researches on antecedents of M&A success. Seth (1990), Homburg and Bucierius (2006), King, Slotegraaf and Kesner (2008) identified and resume in their prominent research stream in strategic management literature that the strategic fit as decisive for M&A success. The central argument of Cartwright and Schoenberg (2006) is that a high fit enlarges market power and productivity. Researchers Pehrsson (2006) as well as Stimpert and Duhaime (1997) using the resource based perspective operationalized the construct of fit with product market, resource, and/or supply chain-related similarity. Meyer and Altenborg (2008) argue that strategic fit is an indicator for the synergy potential of a transaction. According to Cartwright and Schoenberg, (2006), Bijlisma-Frankemka (2001), Lodorfos and Boa teng (2006), Nguyen and Kleiner (2003) one more important factor is cultural incompatibility or misfit, this is one of the most cited reasons for the low success rates of M&As. Although it seems obvious that cultural similarity fosters integration and success, there is empirical evidence that cultural differences have a strong positive impact on synergy and potential realization and, therefore, on value creation as pointed out Cartwright and Cooper (2001), Schraeder and Self (2003), Teerikangas and Very (2006).

The post merger integration phase is often cited to be decisive for M&A according to Haspeslagh and Jemison (1991) and Stahl and Voigt (2008). In the post merger integration phase, well-established operational sequences and patterns are partially or completely changed and, throughout the new company, harmonized as revealed by Haspeslagh and Jemison (1991) and Buono and Bowditch (2003). Therefore, this phase is due to employee resistance and a cultural clash, would be very risky. But acquisitions without any integration, resource redeployment and exploitation, as well as the elimination of redundant resources, are not feasible, it has been found by Homburg and Bucierius (2006); Cording, Christmann and King (2008); Karim (2006) and Pablo (1994). The study of Angwin (2004) also revealed that speed of integration can lead to faster exploitation of synergies and to faster returns on investment. What’s more, Angwin (2004) and Bauer and Matzler (2014) argue that speed leads to a faster exploitation of synergies and returns on investment, reduces uncertainty among employees, minimizes time spent in a suboptimal condition, and takes advantage of the momentum in the direct aftermath of a deal. Thus, synergies in acquisition are a function of strategic similarity which foster internal advantages and relatedness to external settings, cultural fit, and the degree and speed of integration. In absence of one or more elements, the process will go wrong from the very beginning. What’s more, Devers at al. (2013) argue that CEOs will make acquisitions when they obtain information suggesting that the combination of their firm and a target firm offers a firm-specific synergistic opportunity to create value by exploiting one or more common or complementary resources or capabilities.

2.2 RESOURCES, CAPABILITIES AND CORE COMPETENCES

Study of core competencies is very important in context of this article, as they are very hard to find and identify correctly, but at the same time lie at the very core of company competitiveness. Core competences are part of the resource-based theory, so definition of resources is the first step. According to Sirower and Mark (1997) all assets, capabilities, organizational processes, firm attributes, information, knowledge that enables the firm to conceive of and implement strategies that improve its effectiveness and efficiency. Roots of this theory come from Penrose (1959) whose theory of firm growth viewed organizations as bundles of resources, administered by a certain network of individuals and groups. Later studies of 1980-s and 90-s gave way to modern resource-based firm theories. Resources can be viewed by categories. For example, Capron, Dussage and Mitchel (1998) have categorized them into R&D, manufacturing, marketing, managerial and financial. Scholars Hill and Jones (2001) employ a broader view and divide them into financial, physical, individual and organizational capital attributes. Grant research (2002) proposes even easier way of categorization. Grant as a scholar (2002) views all resources as three categories. First – tangible, financial and physical assets of the company. Then intangible resources – brands, reputation, know-how and all other types of nonmaterial assets that by the author are much more important and valuable for most companies than tangible resources. At last, third category is human resources, as abilities, knowledge, experience and relationships of company employees. This resource type is hardly identifiable and cannot appear on the balance sheet, but is still crucial for the success of an enterprise. Salter and Weinhold (1979) specify a resource-based company strategy, when a firm acquires resources that create synergy effect with resources, already under the control of the acquiring firm. Scholar Arnold (2005) implies that an extraordinary resource “is one, which when combined with other resources, enables the firm to outperform competitors and create new value-generating opportunities.

Majority of the authors differ capabilities and competencies from company resources, Hill and Jones (2001) take different approach and outline “unique strengths that allow a company to achieve superior efficiency, quality, innovation or customer responsiveness”. Defining core competence is at a core of modern resource-based approach. Seminal article of Hamel and Prahalad (1990) had issued a brief definition that core competence is a central value-creating capability of an organization. For these authors “core” is used to distinguish one, that are fundamental to a company performance and competitiveness. Markides and Williamson (1993) define core competences of the company as “production function” or catalysts for efficient exploitation of strategic assets. These three characteristics are very important in usage of
competence transferability evaluation, which, in our opinion is needed for M&A activity. These authors again view core competences as managerial mechanism for transferring company resources into competitive advantage.

2.3. CORE COMPETENCE EVALUATION

Capabilities and competencies of an enterprise should be classified and valued in terms of potential benefits they can bring. Hamel and Prahalad (1990) have created a framework for establishing core competence agenda. One more evaluation model has to be mentioned, which probably is the most important one in terms of this study. This is Barney (1996) VRIO framework for resource and capability analysis. Barney evaluates each competence of a company in terms of its value, rareness, imitability and organization. According to Barney, each competence can be a source of sustained competitive advantage only if it creates value, is unique, is hard to imitate or substitute and enterprise has structure, which allows to exploit this competence. Although this model is initially used by the author for evaluation of key strengths of the company, he also outlines the potential benefits of core competence usage in M&A.

Barney’s idea on VRIO framework (1991) has been triggered by publication of another theoretical model - Value Chain that is also crucial for this study. VRIO framework allows us to identify core competences that provide sustained competitive advantage. But company competitive advantages can be analyzed using the Value Chain model as well. Generic Value Chain model, in turn breaks company into collection of different activity types: primary and secondary, all of which provide some kind of value in its functioning.

A model, developed by Michael Porter (1985) is used in terms of this study. He divides all activities into primary and support. Core competences can lie in one or in mix of activities on the value chain. Overall, this framework is primary used to identify graphically to which stages and processes in the company do core competences belong. Also Porter (1985) uses his model to plan sharing activities between different SBU in the company. In this research Porter’s model was selected and applied it for M&A process between two companies. There is not only one way to visualize core competence overlap in M&A process. For example, interesting contributions to the literature on technological acquisitions has been recently provided by Sears and Hoetker (2014). Firstly, authors offer a conceptually and empirically more accurate and nuanced measure of technological overlap in M&A process. Secondly, they show that target and acquirer overlap have distinct, but interrelated, impacts on the value created from each firm’s technological capabilities. Although Porter’s model is not originally designed for this purpose, his methodology fits very well to see, how different resources (not only technological one), capabilities and thus core competences can be combined in the process of M&A. Barney recommends searching for valuable and rare synergies in acquisitions for core competence implication. Barney (1996) states that core competence should be analyzed in terms of their ability to produce valuable and rare synergies and therefore bring competitive advantage to the company. The authors believe, that it is not enough to outline the core competences of merging companies, they have to be investigated and a question should always be asked, if they work together? In order to answer this research question and based on literature review outcomes, we have developed an ARCTIC model for core competence evaluation in M&A.

3. COMPETENCE BASED SYNERGIES TESTING IN M&A - ARCTIC MODEL

Let me to present research model first of all. The model consists of 4 stages. They used a theoretical example of company “A” acquiring company “B”. First, all core competences of both companies are identified using the VRIO framework as shown in table 1 and table 2. On the second stage, type of acquisition is defined and future structure is drawn, using the value chain of Michael Porter. Then, future positions of all core competences to be transferred are shown on this structure. The third stage is competence transferability analysis. ARCTIC (A – Advantage, R – Relatedness, C – Complexity of Competence, T – Time, I – Implementation Plan, C – Culture compliance) model is developed by the authors to evaluate, if core competences can be transferred in M&A process. Use of the model is very similar to VRIO network a shown in table 3. First three factors concern potential compatibilities and similarities of core competence in new organization. Another three factors are more on implementation process. To be implemented in the new structure successfully, core competence has to satisfy all six criteria. Of course, each factor has to be explained in more detail.

Advantage – is value that core competence usage can bring to the company and rareness of this value. If the competence is useless, because it does not satisfy any important needs in the new market, then there is no rationale behind the merger.
Relatedness – ability to bring value strongly depends on relatedness of the environment, in which the competence will be applied. By this, the author means not external market environment, but company business as well. If the competence is valuable, but it should be implemented in a really different perspective, chances of success fall.

Complexity – every competence has a degree of complexity, which hinders its transfer, as to the competitors, so as to the partners. If a competence is based on some special technology, know-how, if it is highly vulnerable and developed upon a great piece of time, its usage gets harder.

Time – it empirically tested, that the longer integration process takes before operations start running in a normal way, the less chances of being successful the acquisition has. Time scale (or speed of integration) can be a very important factor in acquisitions where valuable core competence takes so much time to transfer, that it becomes useless.

Implementation plan – by the time top management evaluates potential acquisition, at least some steps of practical implementation should be developed. When a company enters M&A process without a strict plan to follow, chances again go down.

Culture compliance – at last, it should be tested, how core competences fit other company culture. Cultures are the subject of main importance in acquisition, but as this framework is competence related, management should see, if cultures of both companies accept use of selected competencies. Therefore, ARCTIC framework uses 6 success factors for future acquisition, but apart from VRIO model it does not mean, that a case, lacking at least one of those factors would definitely fail. The authors believe that in cases where 3 or more factors are missing in the model, competence-based M&A is unlikely to succeed.

ARCTIC methodology is designed not for predicting, whether M&A will fail or succeed. It is impossible, because some acquisitions bring value by absolutely other means, than originally planned. This model, of course, needs some empirical testing to assure its effectiveness. Finally, the forth stage is a final decision whether to acquire or ally according to Dyer, Kale and Singh (2004). For final decision making we recommend to analyze three alternative strategies of alliances and acquisitions were evaluated in terms of five major factors as presented in the table 4.

The author has selected Facebook acquisition of WhatsApp by in mid 2014 year to test developed methodology empirically. Case study involved exploration of competence transfer as one of the key objectives of acquisition process.

4. EMPIRICAL TESTING OF ARCTIC MODEL

4.1. FACEBOOK ACQUISITION OF WHAT’SAPPS IN MID 2014

Facebook already had a product for chatting, Messenger, when it acquired WhatsApp. Zuckerberg said that the purpose for Facebook’s Messenger is different than for WhatsApp. People use Messenger to communicate with their Facebook friends, while WhatsApp is more of a text-messaging replacement that people might use with those who aren’t their friends on social media. WhatsApp has built a leading and rapidly growing real-time messaging service. The acquisition supports Facebook and WhatsApp’s shared vision to make the world more open and connected by delivering core internet services in efficient and affordable manner.

The numbers are in for Facebook Inc.’s acquisition of mobile-messaging application WhatsApp Inc.: the social network paid $22 billion for a start-up that generated $10.2 million in revenue last year. The messaging service, which reached 400 million active users in December 2013, generated less than 3 cents in revenue for each one 2013 year.

Chief Executive Officer Mark Zuckerberg said he’s in no rush to make money from WhatsApp, or Facebook’s other growing applications, until they reach 1 billion users. The two products are seeing growth in some of the same countries, he said. For the next few years our focus is going to continue to be on growth,” Jan Koum (2014), WhatsApp’s CEO, “We’re going to focus on growth and not do any kind of experimention with monetization today”.

The combination of two great companies will help to accelerate growth and user engagement across both companies. In order to evaluate if core competences of Facebook and WhatsApp can be transferred in acquisition process, ARCTIC framework was applied.
4.2 APPLICATION OF ARCTIC FRAMEWORK IN CORE COMPETENCE TRANSFER AS AN IMPORTANT SOURCE OF SYNERGY IN AN ACQUISITION PROCESS

Step 1 is to identify core competence of target and acquirer. Their integration required transfer of resources, capabilities and competences, some of which were referred to be core competences of the companies.

The authors didn’t select core competences, but simply outlined the ones, that were named among merger motives. So, the analysis starts with aligning competences on the value chains of two enterprises. The authors have identified four core competences for each of the companies as shown in table 1 and table 2.

Table 1

<table>
<thead>
<tr>
<th>Resources &amp; Capabilities</th>
<th>(V) Value?</th>
<th>(R) Rareness?</th>
<th>(I) Imitability?</th>
<th>(O) Organization?</th>
<th>Type of advantage</th>
<th>Business Strategy</th>
<th>Value added?</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1. User information database</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R2 Brand name and brand management</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>C1. Research of users’ needs and behaviour</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>C 2. Data analytics capability</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SCA: sustained competitive advantage

Sources: developed by author

Table 2

<table>
<thead>
<tr>
<th>Resources &amp; Capabilities</th>
<th>(V) Value?</th>
<th>(R) Rareness?</th>
<th>(I) Imitability?</th>
<th>(O) Organization?</th>
<th>Type of advantage</th>
<th>Business Strategy</th>
<th>Value added?</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1. User phone numbers database C1.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>C1. Quality, simplicity and performance focus in product development</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>C 2. Powerful instantaneous messaging capabilities</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>C 3. Unique value proposition: “No Ads! No Games! No Gimmicks!”</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>SCA</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SCA: sustained competitive advantage

Sources: developed by author

VRIO analysis has identified that Facebook’s strategic competitive advantages come primarily from its largest social networking platform, wide users’ database, quality and excellent users’ experience as well as development of unique features. Type of competitive advantage is a broad differentiation with elements of best cost provider. WhatsApps sustained competitive advantages include the customers engaging new users, unconventional business model, and unique value proposition and user acquisition without any marketing costs. Type of competitive advantages is best cost provider or hybrid strategy.

Step 2 is to visualize what primary and secondary activities of acquirer’s and target’s value chains are underpinned by indentified core competences. This is the case study of two digital technologies providers, combining core competences in several strategically important areas through acquisition. They are aligned on the value chains and illustrated on the figure 1.

Based on the results of VRIO assessment of Facebook and WhatsApp and their visualization on value chains it is possible to say that their core competences and organizational capabilities are compatible and just will enhance each other after acquisition.
The Value Chain of Facebook and Their Core competences

Firm instructive

Support activities

Inbound logistics: Core competence in research of users’ needs and behavior
Operations: Core competence in digital technologies development
Outbound Logistics: Core competence in continuous innovation and improvement
Marketing and sales: Core competence in brand management
Service: Core competence in digital technologies development

Core Competence in social networking platform development

Primary activities

Marketing and sales:
Core competence in brand management

Technology development

Human resource management

Outbound Logistics:
Core competence in digital technologies development

Operations:
Core competence in quality, simplicity and performance

Support activities

Inbound logistics:
Core competence in managing of growing database of smartphone users

Core competence in powerful instantaneous messaging capabilities

Primary activities

Marketing and sales:
Core competence in user acquisition with no marketing costs

Service:
Core competence in unique value proposition: ‘No Ads! No Games! No Gimmicks!’ philosophy

Figure 1. Value chains of both companies and their core competence

Source: developed by author

Step 3 is to develop of ARCTIC model to assess prerequisites of competence based synergy in acquisition process. These core competences were assessed against ARCTIC criteria that prove their appropriateness to be transferred in M&A process as shown in table 3. WhatsApp has built a leading and rapidly growing real-time messaging service.
Table 3

ARCTIC Model for evaluation of competence – based synergies (Facebook acquisition of WhatsApps)

<table>
<thead>
<tr>
<th>Core competence</th>
<th>Advantage? (A)</th>
<th>Relatedness? (R)</th>
<th>Lack of Complexity? (C)</th>
<th>Time of integration? (T)</th>
<th>Implementation plan? (I)</th>
<th>Culture compliance? (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB Core competence in research of users’ needs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>and behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FB Core competence in digital technologies development</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>FB Core competence in social platform development</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>FB Core competence in unique features development</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>FB Core competence in continuous innovation and</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FB Core competence in brand management</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>WA Core competence in apps development</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>WA Core competence in focused product development</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>WA Core competence in unique value proposition: “No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Ads! No Games! No Gimmicks!”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WA Core competence in user acquisition with no</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>marketing costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WA Core competence in continuous innovation and</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: developed by author

The acquisition supports Facebook and WhatsApp’s shared vision to make the world more open and connected by delivering core internet services in efficient and affordable manner. The combination of two great companies will help to accelerate growth and user engagement across both companies.

Step 4 is choosing by between acquisition and alliance. Facebook has spent $19 billion for WhatsApp acquisition and further plans to keep it operating independently without any changes. Spending this considerable amount of money, but with minimal integration raises the question of why a less expensive strategic alliance was not chosen by Facebook. For example, via the alliance a smaller investment could actually accomplish the same alignment, but including less risk. Moreover, the important alliance benefit that it first provides in looking before leaping. However, taking into account the existing gap in product portfolio, new market opportunities as well as competitive pressures Facebook has reasonably taken the aggressive action of WhatsApp acquisition.

This allowed purchasing fast growing app and gaining control over a major competitor that somebody else could have acquired. And the analysis below supports this decision. According to the framework of Dyer et al. (2004) for deciding whether to acquire or ally, three alternative strategies of alliances and acquisition were evaluated in terms of five major factors as presented in the table 4. Taking into account the kind of resources companies plan to combine, the types of synergies they expect, and the market and competitive factors they face, it is justified for Facebook to acquire WhatsApp instead of entering strategic alliance with it. It is supported by all five Dyer’s factors.
Table 4

Choosing by between acquisition and alliances (Facebook acquisition of WhatsApp)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Non-equity Alliance</th>
<th>Equity Alliance</th>
<th>Acquisition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Type of synergies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Reciprocal</td>
<td></td>
<td>V (Yes)</td>
<td></td>
</tr>
<tr>
<td>2. Nature of resources (relative value of soft to hard resources)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low/Medium</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>V (Yes)</td>
<td></td>
</tr>
<tr>
<td>3. Extent of redundant resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>V (Yes)</td>
<td></td>
</tr>
<tr>
<td>4. Degree of market uncertainty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low/Medium</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>V (Yes)</td>
<td></td>
</tr>
<tr>
<td>5. Level of competition (degree of competition for resources and users)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>V (Yes)</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

Sources: developed by author based on Dyer et al.(2004) model

5. DISCUSSION

Acquisition of WhatsApp will bring to Facebook a lot of benefits. Firstly, it will allow Facebook to gain more direct messaging market share and successfully compete with Twitter. Moreover, it will help Facebook to diversify its revenue sources away from US and developed markets where the company shows the ultimate level of maturity in social media space and ensures the strengthening of its footprint in emerging markets. The acquisition enables Facebook to significantly enhance its mobile messaging capabilities and enjoy the opportunities that are opened in a rapidly growing mobile communications industry. In addition to gaining market share in instant messaging with WhatsApp acquisition, Facebook will also be able to increase market share in online advertising. Additional advertising revenue will come from users turning from WhatsApp users to Facebook users. WhatsApp acquisition has a potential to substantially increase Facebook user base as WhatsApp is strong in some countries where Facebook is not widely accepted. Another potential source of advertising revenue is advertising on the WhatsApp platform.

One more reason of acquiring WhatsApp is that Facebook probably has eliminated a serious potential competitor. Start-up is rapidly growing and expanding its user base and it could threaten Facebook’s competitive position. Moreover, with acquisition Facebook now keeps WhatsApp out of the hand of rivals like Google. Acquiring service like WhatsApp makes sense from these perspectives. When tested through ARCTIC framework core competences of Facebook and WhatsApp showed very good results. “Post-acquisition performance is determined by many factors: the underlying reasons for the acquisition, firms’ capabilities and their synergies, the price paid for the target firm, and the post-acquisition coordination of the firms” as argue Agarwal et al. (2012:714). Regarding a Facebook, CEO of WhatsApp wrote in a Facebook post in January 2015, “Today, we’re thrilled to share that WhatsApp has more than 700 million monthly active users. Additionally, every day our users now send over 30 billion messages. ‘As crazy as it sounds, WhatsApp’s massive growth is on pace with what it saw over the past year” (Kim, 2015:1).

6. CONCLUSION, LIMITATIONS AND FUTURE WORK

Use of the ARCTIC framework on illustrative case study shows, that the framework fulfils its purpose and helps in core competence pre-acquisition analysis, thus it is a main author’s contribution to theoretical
and practical issues of the topic of the paper. However, there are several limitations to use of the model.

First, as many strategic evaluation models it is subjective, because not necessary bases on exact numbers. The model does not have a purpose of exact indications, but the author believes that use of different information sources and careful analysis lower the subjectivity problem. Second limitation to framework would be that it does not use all the factors, affecting core competence transfer. The authors tried to group factors into larger group, for example, combining manageability, level of technology into complexity. A third and a very important limitation is that ARCTIC framework views competences at the time of merger and evaluates their potential in a way they are built. Sometimes receiving synergy requires elevating, combining and creating new competences.

Overall, after evaluation and several limitations to the framework, proposed by the author, it may be stated that: six factor framework ARCTIC allows to make preliminary evaluation of core competences as sources of synergy in acquisitions. Our research question aimed to understand how core competences should be evaluated as sources of synergy in acquisition/alliance? The answer to this question can be also represented not only as different models of analysis given in Table 1,2,3,4 and Figure 1 but also as a logical structure of competitive advantage as a product of competences based synergy in merger and acquisition process given in Figure 2.

The author believes that new model should be helpful to managers facing mergers and acquisitions, as well as to management academic specialists, studying this area. ARCTIC model further development is necessary. The author suggests further empirical testing on illustrative case studies and possible development of methodology for evaluation of all six factors. Our main contribution - ARCTIC model embedded in five step process given in Figure 2, lay out also a conceptual framework for our future works adding step 5 and checking competence based synergy outcomes. At last, new competence creation in M&A, as well as competence leveraging and transformation are important issues, as in the context of already developed models of strategic management, so as beyond of it.

**Figure 2.** Conceptual framework of sustained competitive advantages as a product of competence base synergy in M&A process  
*Source: developed by author*

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REFERENCES
OPTIMAL RISK/RETURN TRADE-OFF
OF THE 2ND PILLAR PENSION PLANS IN LATVIA

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ABSTRACT
The 2nd pension pillar in Latvia started to operate in 2001 but systematic quantitative research of all pension plans still has not done. There are 21 pension plans in 2nd pillar and participants always arise a question – which pension plan better to choose. The aim of this research is to make a quantitative analysis of all 2nd pension pillar pension plans and define the best ones for participants with high, medium and low risk tolerance.

The general statistical analysis of the 2nd pillar pension system has done to bring out the risk/return ratio of each pension plan, the holding period return, the assets over participant ratio and the growth speed of the system in the last five years. Markowitz method of optimization is used to determine the optimal risk/return situation in active, balanced and conservative investment plans and identify the best pension plans by its strategy. The risks and returns of each pension plan were evaluated and compared to the several benchmarks. To test the people’s knowledge about their pension plans, the survey was carried out and compared with the viewpoint of professionals.

It was found that there is a large disproportion between the optimal allocation of 2nd pension funds and the actual investment structure. Lack of knowledge of the general public about pension plans was identified. Practical recommendations for pension plan participants have worked out in each risk category, depending on person’s risk appetite.

Key words: pension funds, 2nd pension pillar, Markowitz model, optimal risk/return ratio

1. INTRODUCTION

Latvia is one of the first countries in Central and Eastern Europe, launched a multi-level pension scheme. A similar scheme has also been introduced in Sweden, Poland and Italy. Pension reform started in 1996, when the parliament supported the concept of pension reform. The Law on State Pensions, which provided implementation of 1st pension pillar came into force in 1996 and in 1998 entered into force the Law on Private Pension Funds (3rd pillar). The operation of the 2nd pension pillar started in 2001 with the entry into force of State Funded Pensions Act (State Funded Pensions Act, 2001).

The 3-pillar pension system in Latvia is quite new and it is still very hard for the private persons to aware that every member of a pension plan now is an investor. When young adults start their business carriers, they are often struck by a simple yet very difficult question, which 2nd pillar pension plan to choose? All citizens need to have a concise and impartial review on the whole pension system to maximize the efficiency and returns on their investments. It is important to find the right pension plan provider and the right pension plan. Timmerman (2014) shows that using a personalized search process can help to conduct a successful provider. The assessment of performance of state-funded pension plans is quite important to the state to ensure effective operation of pension system. Unfortunately systematic quantitative research of performance of all 2nd pension plans still has not done.

The goal of the current research is to analyze the current situation in the 2nd pillar pension plan system in Latvia, to carry out quantitative analysis of all investment plans of 2nd pension pillar and define the most favourable pension plans for the participants with a high, medium and low risk tolerance. To make a right option of offered pension plans and further application of appropriate life cycle strategy ensures optimal performance. Antolin, Payet and J. Yermo (2010) showed that maintaining a constant exposure to risky assets during most of the accumulation period, switching swiftly to bonds in the last decade before retirement seem to produce adequate results. They provide higher expected benefits for a given level of risk than other life cycle strategies.

To ensure correct assessment of pension plans the statistical analysis of all 2nd pillar pension plans is carried out, the risk/return ratio of each pension plan, the holding period return, the assets over participant ratio and the growth speed of the system is found out. The 5-year period has chosen for analysis to cover the
same period of all 21 now existing 2\textsuperscript{nd} pillar pension plans. This research follows a purely quantitative method of analysis using statistical and risk management techniques to make conclusions and provide guidelines for participants of the 2\textsuperscript{nd} pillar pension plans. Markowitz model of optimization is used to determine the optimal risk/return ratio in each risk category of investment plans and identify the best-performing pension plans.

In addition, the survey is carried out to test the people’s knowledge about their pension plans. The viewpoint of professionals was found out as well in in-depth interviews and both compared with real situation.

2. STRUCTURE AND OPERATION OF PENSION SYSTEM

According to Fabozzi (2001) there are two basic and widely used types of pension plans: defined contribution (DC) plans and defined benefits (DB) plans. In a DC plan, the plan sponsor is responsible only for making specified contributions into the plan on behalf of qualifying participant. In a DB plan, the plan sponsor agrees to make specified payments to qualifying employees at retirement. Clark and Urwin (2011) point out that nowadays DB pension plans are mostly replaced by DC pension plans in OECD countries. In some cases, this is the result of the closure of DB plans (e.g., the UK) whereas in other countries the dominance of DC plans reflects the evolution of industry structure, employment practices and regulation (e.g., the US) (Clark and Urwin, 2011).

Pension system in Latvia is based on DC pension plans as well. Pension capital is funded by regular payments as a certain percentage of individual’s salary (State Funded Pensions Act, 2001). Pension system reform in Latvia was developed 1994.-1995. (Ministry of welfare, 1996) and realized since 1996 (Zilite, 2000). The system includes a state compulsory unfunded pension scheme as the 1st pillar pension, a state funded pension scheme as the 2nd pillar pension and a 3rd pillar that is a private voluntary pension scheme. The pillars are thought to protect the system’s participants from demographical and financial risks associated with retirement fund management. The pension system serves as both “obligatory (1\textsuperscript{st} and 2\textsuperscript{nd} pillars) and voluntary (3\textsuperscript{rd} pillar)” (State Funded Pensions Act, 2001) demand for retirement fund savings. It combines both individual interests of people to save money for retirement and the solidarity for the elderly participants. The main idea behind the pension system is that if a participant makes “bigger contributions to the system – the larger the retirement fund he will accumulate during his life.

The 1\textsuperscript{st} pension pillar is a state compulsory unfunded or non-accumulated pension scheme (Latvijas Centrales depozitarijs, 2015). The contributions to this pillar are made through a social security tax that is deducted from a person’s gross salary. The funds that have been paid by the existing workforce are divided between the workers themselves and the actual generation of pensioners. This pension pillar follows the logic of social security contributions – as longer the participant is working and paying social taxes as bigger the state unfunded pension he will receive by the time of his retirement (Latvijas Centrales depozitarijs, 2015). To become a member of the 1\textsuperscript{st} pillar pension an individual should have worked at least 10 years in a paid employment (State Funded Pensions Act, 2001).

The 2\textsuperscript{nd} pillar pension started to operate after 1\textsuperscript{st} of July 2001 when the State Funded Pensions Act entered into force and some part of the social contributions was allocated for investments in capital markets. These actions provide the possibility for capital gains of the existing pool of funds in the pension system. The objective of the 2\textsuperscript{nd} pillar is to increase the value of the retirement funds over time by growing capital and investing. The growth of the value of the personal retirement fund provides larger repayments as well as increasing the overall amount of the pension. The main goal of the 2\textsuperscript{nd} pillar pension is to provide “a faster-than-inflation growth of the invested funds” (Latvijas Centrales depozitarijs, 2015). The contributions to the 2\textsuperscript{nd} pillar pension are obligatory if a participant is born after 1\textsuperscript{st} of July 1971 and are made automatically from the gross salary of the participant who is paying social tax (State Funded Pensions Act, 2001). Participant of 2\textsuperscript{nd} pillar pension system do not have to make additional social insurance payments. Total amount of payments for retirement capital (20% from gross income) is constant and is divided in two parts: for 1\textsuperscript{st} pillar pension and for 2\textsuperscript{nd} pillar pension. The proportion between 1\textsuperscript{st} and for 2\textsuperscript{nd} pillar is defined by law. The part of 2\textsuperscript{nd} pillar has varied from 2% to 8% since 2001, and now, in 2015, it is 5% (SSIA, 2013). The 3\textsuperscript{rd} pillar pension is a pension scheme that provides a possibility for participants to accumulate and grow their additional retirement savings on voluntary bases. The aim of this pillar is to increase the potential gains and the volume of retirement savings of a given participant. It means that in addition to the state’s 1\textsuperscript{st} and 2\textsuperscript{nd} pillar pension the 3\textsuperscript{rd} pillar pension participant may receive additional funds (Latvijas Centrales depozitarijs, 2015).
Processing of pension system in Latvia is carried out in accordance with Law on Private Pension Funds (1997). The main counterparts involved in this process are pension funds, investment management companies (IMC), custodian banks, the State Social Insurance Agency (SSIA) and the Financial and Capital Market Commission (FCMC).

The main tasks of the SSIA is to ensure functioning of the 1st and 2nd pillar pension schemes, i.e., register the socially insured persons and their contributions into the personal social insurance account, administer the contributions of the participants of the 2nd pillar pension scheme as well as to perform pension payment out of the resources accumulated from the social insurance contributions made by the employers and employees (SSIA, 2015).

Private pension funds work out pension plans and in accordance with law and those pension plans accumulate and invest the funds of pension plan members to ensure those participants supplementary pension (Law on Private Pension Funds, 1997). Pension plans worked out by pension funds have to be registered in FCMC. Pension funds have the rights to start operations only after receiving license from FCMC. According to the law pension funds can freely choose investment management companies. The State Funded Pensions Act (2000) stated the State Treasury to stop to manage state funded pension plans. 2nd pension pillar can be managed by the private investment management companies, which are registered in the state funded pension scheme managers register, maintained and updated by the Financial and Capital Market Commission (Law on Private Pension Funds, 1997). To become a funded pension scheme manager, an investment management company also has to receive a license from the Financial and Capital Market Commission. The manager makes decisions on investment of funds and is responsible for managing the funds entrusted to him in order to ensure 2nd pillar pension capital preservation and growth. The manager keeps track of financial market trends and makes decisions about where to invest in the most beneficial way. Managers can invest the entrusted funds only in accordance with the investment regulations and investment plan prospectus (Cabinet of Ministers regulation No.72s, 2003). One of the main principles to be observed by the fund manager and that is defined in the investment rules, is the investment diversification. This means that in order to reduce the risk, funds would be invested in various securities, so that fluctuations in individual securities have no negative impact on portfolio as a whole in the long term. Individuals and also government are fully relying on IMC of pension funds. In these institutions responsible for the pension funds typically do not have a stake in the structure and performance of the plan. It gives significant protection to retirement capital of individuals. Dragota and Susanu (2010) are assuming pension plan members (PPMs) to be by default risk averse.

Settlements with pension scheme funds IMC carries out with the custodian bank on a custody agreement basis (State Funded Pensions Act, 2000). The custodian provides custody for the pension fund shares of any given participant. Pension funds are kept in a custodian bank as well.

Monitoring of pension funds in Latvia is based on a double safety mechanism. Firstly, from the part of the state, pension fund investment is supervised by the FCMC. Secondly, fund managers are monitored by the custodian bank, because the monitoring of the pension funds is managed separately from its storage. Manager shall be required to provide regular information to the SSIA, so that it could provide information on fund manager performance and investment plans to the pension plan participants (Latvijas Centralais depozitarijs, 2015). In Latvia according to the law own balance sheet and all financial actions of pension fund management institution is separated from assets of pension fund it is managing. There is only management fee subtracted from fund share value and added to management institution’s profit. Individual gets net share value on which management institution does not have any right. Additionally there are several limitations of investments both in single financial instrument and in certain category or group of financial instruments (State Funded Pensions Act, 2001).

Pension plans in Latvia are divided according to proportion of risky assets in investment portfolio. Most common types according to this division are: with the lowest proportion of risky assets (conservative), balanced and active with the highest proportion of risky assets, but limited to be not more than 50% of pension plan assets (Latvijas Centralais depozitarijs, 2015). Requirements of performance and risk are different for each type of pension plan. It has to be taken in consideration that there will be lower performance results but also lower risk in conservative pension plans and higher – in active plans. Those types differ mostly by proportion of risky and risk free assets in investment portfolio of each pension plan. The focus of this research is performance of 2nd pillar pension plans.

3. RESEARCH METHODOLOGY

The research was divided into three parts. For each of the parts a separate research methodology was
used.

In the first part the collection of secondary data was carried out through the download of daily values of each pension plan on the manapensija.lv domain (Latvijas Centralais depozitarijs, 2015). To cover the same almost 5-year period of all now existing pension plans the downloaded information spans from 2nd of February 2009, when the last of the 21 current pension plans started its operations, till 19th of December 2014. The daily prices of the investment plans have been converted to weekly by taking every 5th price of the distribution, as the pension plans do not evaluate their shares on weekends and holidays. All in all secondary data counts 6237 weekly prices of the investment plans and 6216 weekly continuous returns. In order to analyze the secondary data, general statistical functions, such as continuous returns, average of continuous returns (mean expected return), standard deviation of continuous returns (expected risk), holding period returns, holding period yields, growth and risk/return calculations have been used. Applying these calculations to the benchmarks gave the perspective tendencies of the 2nd pillar pension plans to the general market.

In the second part of the research the secondary data from the first part was analyzed using the mean-variance model (Bodie, Kane and Marcus, 2014). The risks and returns of each pension plan were evaluated and compared to the several benchmarks. The following analysis procedures were carried out:

- Evaluation of the average weights of each of the above mentioned financial indices.
- Construction of the covariance matrix using the MS Excel available data analysis tools and the calculated daily holding period yields of each pension plan.
- Minimization of the variance of the portfolio of pension plans by strategy in order to achieve the minimal variance portfolio.
- Maximization of expected return of the portfolio of pension plans by strategy in order to achieve the target return portfolio.
- Maximization of the slope to the efficient frontier enabled evaluation of the best performing investment plan by percent’s in the portfolio weights.

All six steps mentioned above were used to determine the best performing investment plan by strategy.

In the third part of the research the survey was carried out to test the people’s knowledge about their pension plans. In order to achieve statistically significant results 521 random people was surveyed in the age of 18 to 65. The respondents were asked to answer 4 simple questions elaborating on their age, 2nd pillar pension plan that they enlisted for, the expected annual return on their contributions to the plan and the probable risk of losing a portion of their investments. To compare the opinion of ordinary people to professional one, the same questions were asked in in-depth interviews to 5 professionals from banking sector.

GENERAL STATISTICAL REVIEW OF THE 2ND PILLAR PENSION PLANS

During almost the 5-year period from the inception date of the last of now present investment plans (02.02.2009) to the end of 2014 the 2nd pillar pension system in Latvia according with the publically available information (Latvijas Centralais depozitarijs, 2015) has grown significantly (see Table 1.).

<table>
<thead>
<tr>
<th>Category</th>
<th>Date</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>02/02/2009</td>
<td>19/12/2014</td>
</tr>
<tr>
<td>PARTICIPANTS</td>
<td>1 074 549</td>
<td>1 249 433</td>
</tr>
<tr>
<td>ASSETS, EUR</td>
<td>707 730 335</td>
<td>1 989 125 470</td>
</tr>
<tr>
<td>SHARE PRICE (average)</td>
<td>1.62127</td>
<td>2.18358</td>
</tr>
<tr>
<td>ASSETS/PARTICIPANTS</td>
<td>658.63</td>
<td>1 592.01</td>
</tr>
</tbody>
</table>

Source: Latvijas Centralais depozitarijs (2015)

For the past 5 years the number of 2nd pension pillar participants has increased by 16%, meaning that workforce and the general labour climate has improved in Latvia. The assets under management have almost tripled over 5 years. However the increase of 35% in 1 share price of all pension plan portfolios have lowered the rate of generating of these shares in the pension accounts. An increase of 142% in assets under management (AUM) over participants is a major improvement in the expected return of these portfolios.
At the end of December 2014 there were 21 investment plans of the 2nd pillar pension in Latvia held by 7 investment management companies (IMC) – mostly subsidiaries of corresponding commercial banks (see Table 2).

### Table 2

<table>
<thead>
<tr>
<th>Investment management company</th>
<th>Investment plan</th>
<th>Category</th>
<th>Share price</th>
<th>Total value EUR</th>
<th>Participants</th>
<th>Binding letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBL Asset Management</td>
<td>“Aktivais pensiju plans”</td>
<td>Active</td>
<td>2.5403049</td>
<td>206 125 006</td>
<td>123 760</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>“Universālas pensiju plans”</td>
<td>Conservative</td>
<td>2.3579823</td>
<td>86 227 949</td>
<td>56 155</td>
<td>B</td>
</tr>
<tr>
<td>DNB Asset Management</td>
<td>„Aktivais ieguldījumu plans”</td>
<td>Active</td>
<td>2.1385527</td>
<td>62 173 912</td>
<td>33 069</td>
<td>C</td>
</tr>
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<td></td>
<td>„Konservatīvais ieguldījumu plans”</td>
<td>Conservative</td>
<td>2.2446768</td>
<td>60 259 852</td>
<td>33 179</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>„Sabalantētās ieguldījumu plans”</td>
<td>Balanced</td>
<td>2.1590238</td>
<td>76 599 336</td>
<td>37 355</td>
<td>E</td>
</tr>
<tr>
<td>Finasta Asset Management</td>
<td>„Konservatīvais ieguldījumu plans”</td>
<td>Conservative</td>
<td>2.3771415</td>
<td>17 899 536</td>
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<td>F</td>
</tr>
<tr>
<td></td>
<td>„EKSTRA PLUS”</td>
<td>Active</td>
<td>1.8226379</td>
<td>12 183 934</td>
<td>14 269</td>
<td>G</td>
</tr>
<tr>
<td></td>
<td>„KOMFORTS”</td>
<td>Balanced</td>
<td>1.9617551</td>
<td>10 246 463</td>
<td>9 992</td>
<td>H</td>
</tr>
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<td>Nordea Pensions Latvia</td>
<td>„Aktivais ieguldījumu plans”</td>
<td>Active</td>
<td>1.762524</td>
<td>64 975 125</td>
<td>21 062</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>„Konservatīvais ieguldījumu plans”</td>
<td>Conservative</td>
<td>1.6360245</td>
<td>22 361 748</td>
<td>10 069</td>
<td>J</td>
</tr>
<tr>
<td>Norvik ieguldījumu parvaldes sabiedriba</td>
<td>„Daugava”</td>
<td>Conservative</td>
<td>2.2051143</td>
<td>21 996 993</td>
<td>24 400</td>
<td>K</td>
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<tr>
<td></td>
<td>„Gauja”</td>
<td>Active</td>
<td>2.4531193</td>
<td>30 287 179</td>
<td>31 029</td>
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<tr>
<td></td>
<td>„Venta”</td>
<td>Balanced</td>
<td>2.1961173</td>
<td>25 259 306</td>
<td>24 243</td>
<td>M</td>
</tr>
<tr>
<td>SEB Wealth Management</td>
<td>„Aktivais plans”</td>
<td>Active</td>
<td>2.2505069</td>
<td>195 179 033</td>
<td>117 205</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>„Eiropas plans”</td>
<td>Active</td>
<td>2.2116149</td>
<td>30 801 670</td>
<td>17 657</td>
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<tr>
<td></td>
<td>„Safari”</td>
<td>Active</td>
<td>2.4345695</td>
<td>16 302 659</td>
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<td>120 960 941</td>
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</tr>
<tr>
<td></td>
<td>„Sabalantētās plans”</td>
<td>Balanced</td>
<td>2.2585562</td>
<td>85 832 011</td>
<td>47 610</td>
<td>S</td>
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<tr>
<td>Swedbank Ieguldījumu Parvaldes Sabiedriba</td>
<td>„Dinamika”</td>
<td>Active</td>
<td>2.1726269</td>
<td>642 873 630</td>
<td>415 026</td>
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</tr>
<tr>
<td></td>
<td>„Stabilitāte”</td>
<td>Conservative</td>
<td>2.2128403</td>
<td>186 796 886</td>
<td>108 622</td>
<td>U</td>
</tr>
</tbody>
</table>

Source: Latvijas Centraļais depozitarijs (2015)

The data show (Latvijas Centraļais depozitarijs, 2015) that JSC “Swedbank Ieguldījumu Parvaldes Sabiedriba” with its two investment plans is a strong market leader managing over 42% of the 2nd pillar pension submissions. The second place goes to JSC “SEB Welt Management” with 23%, third to JSC “CBL Asset Management” (IMC of Citadele bank) with 15% of market share. All the first three companies have around 80% of the market share. One can consider risks to individuals and 2nd pension pillar retirement capital as a whole, caused by so high market concentration.

## RETURNS, RISKS AND BENCHMARK TESTING

Every investment strategy has its own unique set of risks and returns. In this paragraph the expected return of each investment plan and the risks associated with these investments have been analyzed. As a background the authors have chosen to analyze weekly changes in the price of the shares of investment plans. It was found that there are 8 pension plans performing worse than the average holding period yield (HPY) of the industry, but 13 are performing better. The leader of the HPY is a pension plan Dinamika” held by “Swedbank Ieguldījumu Parvaldes Sabiedriba” with an increase of more than 51% over 5 year period, but
at the same time it has a very high risk/return ratio, which makes it possibly risky investment. Then come two investment plans, which carry 2 times less risk and have approximately the same HPY as the leader. In any case investment plans “Gauja” and “Venta” from “Norvik Ieguldijumu Parvaldes Sabiedriba” are the best performers considering risk and return.

We would also to point out that between all 2nd pillar pension plans “Nordea aktivais ieguldijumu plans” has the largest assets/participant ratio (3084.95 EUR, when the average assets/participant ratio in 2nd pillar is 1592.01 EUR), but at the same time – high risk and gives only 24% HPY over 5 years, 9% lower than the average industry return.

The authors choose benchmark testing as one of the reasonable way to get the big picture of the performance of the financial instrument to the general market indexes. Four benchmarks have been chosen (see Table 3) to test the performance of the pension plans. Each of the benchmarks is related to the European bond and equity markets and to the US Treasury bill market – that is considered a risk-free investment.

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Weekly expected return</th>
<th>Weekly Standard deviation</th>
<th>Risk / Return ratio</th>
<th>HPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAX INDEX (DAX)</td>
<td>0.24%</td>
<td>2.91%</td>
<td>12.37</td>
<td>105.5%</td>
</tr>
<tr>
<td>ISHARES EURO CORP BOND FUND (IBCX LN)</td>
<td>0.05%</td>
<td>0.53%</td>
<td>10.13</td>
<td>17.05%</td>
</tr>
<tr>
<td>US TRESURY 5-7 YEAR BILL FUND (IEF US)</td>
<td>0.09%</td>
<td>0.93%</td>
<td>10.25</td>
<td>32.08%</td>
</tr>
<tr>
<td>S&amp;P 500 INDEX (SPY US)</td>
<td>0.31%</td>
<td>2.32%</td>
<td>7.41</td>
<td>161.3%</td>
</tr>
</tbody>
</table>

The table shows that the holding period yield of the equity markets has performed fabulously during the past 5 years with S&P index fund achieving 161.3% growth over this time with German DAX index earning 105.5%. The EU large capital corporate bond traded fund as well as the 5-7 year US Treasury bond fund performed weaker than the equity indexes, earning just 17.05% and 32.08% respectively. On the other hand the US treasury bills are considered to be risk free assets, so an increase of 32% over this period gives a hint on the actual risk free rate in the US. Fig. 1 demonstrates the result in more clear way - the weekly expected returns and weekly risk of all the investment plans and benchmarks.
As seen from the graph five distinct patterns emerge. Two of them are bond and equity benchmarks. Equity benchmark has both large expected return and risk. Two bond benchmarks are both below the average expected return of the 2\textsuperscript{nd} pillar pension system and the risk is above average. This makes them worse investments than the general 2\textsuperscript{nd} pillar pension system. There are four outliers – a conservative and active plans held by IMC “Nordea Pensions Latvia” and two active plans held by IMC “SEB Wealth Management” - “Eiropas plans” and “Aktivais plans”. When a conservative plan of “Nordea Pensions Latvia” has less expected return than the average in the industry, it has less risk. “Nordea aktivais ieguldījumu plans” and both IMC “SEB Wealth Management” active plans - “Eiropas plans” and “Aktivais plans” have higher risk and less return comparing to the industry average and perform somewhere in the middle of US and EU bond funds. General tendency of the industry is represented by most of the investment plans, however there are two distinct leaders – both active plans, “Gauja” from IMC “Norvik Ieguldījumu Parvaldes Sabiedriba” and “Dinamika” from IMC “Swedbank Ieguldījumu Parvaldes Sabiedriba”. While “Dinamika” could be a leader under a question mark due to high risk associated with it. Thus pension plan “Gauja” could be the most recommended choice to make.

Analysis of benchmarking shows that the average 2\textsuperscript{nd} pillar pension plans expected return is well below the return of equity markets, however it has less risk associated with investing. EU and US bond funds perform worse than the 2\textsuperscript{nd} pillar pension system.

Also the authors have identified the best choice for investing from risk/return point of view – an active plan “Gauja” held by IMC “Norvik Ieguldījumu Parvaldes Sabiedriba”.

Figure 1. Benchmark testing results plotted on the Risk vs. Expected return graph
EVALUATION OF THE INVESTMENT PLANS BY THEIR STRATEGY

This paragraph reviews the research into efficient portfolios of active, balanced and conservative investment plans. The best investment plan is determined by the percentage weight in the tangency point portfolio – the greater the percentage – the better.

The table of general statistical data used for evaluation of active investment plans is presented in table 4.

<table>
<thead>
<tr>
<th>General statistics of Active investment plans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>E(r)</td>
</tr>
<tr>
<td>σ</td>
</tr>
<tr>
<td>HPR</td>
</tr>
<tr>
<td>HPY</td>
</tr>
</tbody>
</table>

E(r) – weekly expected return; σ – weekly standard deviation; σ/E(r) – Risk-Return ratio; HPR – holding period return; HPY – holding period yield.

These statistics show that active plans have a greater HPY, yet some of them are lagging behind and have very high risk/return ratios, such as plan “I” and plan “O”. Plan “T”, has the highest HPY and an average risk/return ratio. Investment plan “L” is an impressive candidate for being the best active plan, with the smallest risk/return ratio, yet high HPY.

The author began to construct the joined portfolio of these investment plans to determine, which plan gets the most percent’s in the optimal scenario. Therefore the covariance matrix was introduced using the data analysis of the continuous returns of each investment plan. This matrix is the key to the minimization of the variance of the joined portfolio of investment plans. The variance of the portfolio is calculated through the multiplication of three matrixes and follows the formula (1):

$$\min_{\sum w = 1} \text{variance} = \begin{bmatrix} w_A & w_G & w_T \end{bmatrix} \begin{bmatrix} \text{var}_A & \text{cov}_{AG} & \text{cov}_{AT} \\ \text{cov}_{GA} & \text{var}_G & \text{cov}_{GT} \\ \text{cov}_{TA} & \text{cov}_{TG} & \text{var}_T \end{bmatrix} \begin{bmatrix} w_A \\ w_G \\ w_T \end{bmatrix}$$

By changing weights, where the sum of weights equal to 100% and cannot be negative, of the investment plans in the portfolio the author has optimized the variance of the portfolio to be minimal. In the result the Global minimal variance portfolio for the active investment plans gave the following percentage distribution (table 5).

<table>
<thead>
<tr>
<th>Percentage distribution of Global minimal variance portfolio to active investment plans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Weight</td>
</tr>
</tbody>
</table>

This means that if a participator in the 2nd pillar pension fund is willing to be a member of an active investment plan, but wants to be relatively safe from high volatility of active investments, he should choose between three plans “G”, “P”, or least favourable “L”.

The Expected return of this portfolio was calculated using the multiplication of Expected return and the Weights of the portfolio following the formula (2):

$$\text{Portfolio } E(r) = \begin{bmatrix} E(r)_A \\ E(r)_C \\ E(r)_G \end{bmatrix} \begin{bmatrix} w_A \\ w_G \end{bmatrix}$$

As a result the portfolio statistics for the Global minimal variance portfolio for active investment plans are shown in a table 6.
Table 6

<table>
<thead>
<tr>
<th>Global minimal variance portfolio (active plans)</th>
<th>Variance</th>
<th>Portfolio E(r)</th>
<th>Portfolio σ</th>
<th>σ/E(r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.73*10^{-6}</td>
<td>0.098%</td>
<td>0.3119%</td>
<td>3.1830</td>
<td></td>
</tr>
</tbody>
</table>

Another efficient portfolio is introduced to develop the efficient frontier. This portfolio is configured to be best yielding portfolio with a target return.

Investment plan “T” has the best weekly-expected return, so it will represent the “Target return portfolio”. This investment idea will suit people, who do not care much about risk, their main goal is to earn as much as possible.

The statistics for this portfolio will be the same as for the investment plan “T” and are presented below (Table 7).

Table 7

<table>
<thead>
<tr>
<th>Another efficient portfolio (active plans)</th>
<th>Variance</th>
<th>Portfolio E(r)</th>
<th>Portfolio σ</th>
<th>σ/E(r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.08*10^{-5}</td>
<td>0.14%</td>
<td>0.8415%</td>
<td>6.0283</td>
<td></td>
</tr>
</tbody>
</table>

The Optimal risky portfolio implies another optimization method. This method optimizes the slope to the efficient frontier, enabling to evaluate the best performing investment plan by percent’s in the portfolio weights. In order to do so the author has devised a formula (3):

$$\max_{\text{slope} \rightarrow \infty} \text{SLOPE} = \left[ \frac{E(r)_A E(r)_C E(r)_G \ldots}{\sqrt{w_A w_C w_G \ldots}} \right] - \text{RFR}$$

By changing weights, where the sum of weights equal to 100% and cannot be negative, of the investment plans in the portfolio the slope of CML has been optimized to be maximal. In the result the Optimal risky portfolio for the active investment plans gave the following percentage distribution.

Table 8

| Percentage distribution of Optimal risky portfolio to active investment plans |
|-----------------|---|---|---|---|---|---|---|---|
| Weight          | A | C | G | I | L | N | O | P |
|                 | - | - | 52.22% | - | 47.78% | - | - | - |

Investment plans “G” and “L” are the optimal way of investing in the active plans. They deliver both reasonable return and are optimally balanced in risky situations, therefore being less volatile. As a result the portfolio statistics for the Optimal risky portfolio for active investment plans are shown in a table 9.

Table 9

| Statistics of the Optimal risky portfolio of active plans |
|-----------------|----------|----------------|-------------|--------|
| Slope           | Variance | Portfolio E(r) | Portfolio σ | σ/E(r) |
| 0.2773          | 1.16*10^{-5} | 0.1157%        | 0.3409%     | 2.9472 |

This leads to the construction of the efficient frontier and plotting these three portfolios on it. The process of portfolio optimization has been finished by the author, yet there is one more thing to be calculated – the covariance between the Global minimal variance portfolio and the Another efficient portfolio. The formula (4) used for calculations is shown below.

$$\text{Cov}_{\text{efficient port}} = \left[ w_A^M \quad w_C^M \quad w_G^M \ldots \right] \cdot \left[ \text{var}_A \quad \text{cov}_{AC} \quad \text{cov}_{AG} \quad \text{cov}_{CG} \ldots \right] \cdot \left[ \begin{bmatrix} w_A^E \\ w_C^E \\ w_G^E \end{bmatrix} \right]$$


By multiplying the weight matrixes against the covariance matrix, the covariance between two portfolios is calculated to be $1.676 \times 10^{-5}$. Looking back at the conducted research on the active investment plans, a summary table of the proposed portfolios has developed (table 10).

### Table 10

<table>
<thead>
<tr>
<th>Efficient portfolios (active plans)</th>
<th>Variance</th>
<th>Portfolio E((r))</th>
<th>Portfolio (\sigma)</th>
<th>(\sigma/E((r))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal variance</td>
<td>9.73 \times 10^{-5}</td>
<td>0.0098%</td>
<td>0.3119%</td>
<td>3.1830</td>
</tr>
<tr>
<td>Another efficient</td>
<td>7.08 \times 10^{-5}</td>
<td>0.14%</td>
<td>0.8415%</td>
<td>6.0283</td>
</tr>
<tr>
<td>Optimal</td>
<td>1.16 \times 10^{-5}</td>
<td>0.1157%</td>
<td>0.3409%</td>
<td>2.9472</td>
</tr>
<tr>
<td>Industry average</td>
<td>-</td>
<td>0.098%</td>
<td>0.590%</td>
<td>6.3901</td>
</tr>
</tbody>
</table>

The calculated results from the table have made possible to project the findings on the graph (see Fig. 2), where Optimal portfolio has coordinates of 0.3409%; 0.1157%. Efficient portfolio has coordinates of 0.8415%; 0.14%. The Minimal variance portfolio has coordinates of 0.3119%; 0.098%.

To summarize the research into active pension plans, we can point out the preferably recommended plans depending on the participant’s strategy and risk tolerance:

- **Plan „EKSTRA PLUS“** or plan „Safari“ - if the participant wants his investment to be less volatile, yet being actively managed. Plan „Dinamika“ - if the participant has a large risk tolerance and is focused on the biggest expected return of the industry. Plan „Gauja“ or plan „EKSTRA PLUS“ - if a participant wants a balance between the risk and return in the active investment plan sphere.

Using the same methodology into balanced pension plans, the authors found that investment plan „KOMFORTS“ is the best decision for a participant to invest in balanced pension plans. It has a low risk to return ratio, which is compatible with conservative plans, its HPY is the second in the industry of balanced portfolios. This investment plan fits participants, who want to take additional risk, but are not willing to increase risk to levels of active investment plans.

The research on conservative investment plans showed that, in case a participant wants to participate in a conservative portfolio and has a very low risk tolerance, he should choose to participate in „Konservatīvais plans“ or „Latvijas plans“. If a pension plan member wants to participate in a conservative investment plan,
yet is willing to have the highest possible expected return, he should choose the investment plan „Konservatīvais ieguldījumu plans” In order to achieve a balanced risk/return scenario the participant should choose between investment plans „Latvijas plans”, „Konservatīvais ieguldījumu plans” or „Daugava”. Investment plans “Universalais pensiju plans” and „Konservatīvais ieguldījumu plans” are outsiders of conservative plan category, having the worst risk/return ratios, therefore having no representation in the percentage distribution in any of the optimization processes.

VIEWPOINT ON 2ND PILLAR PENSION PLANS

Pension system in Latvia is quite new, and it is important to understand how close to the real situation is the evaluation of the risks and returns of pension plans by ordinary participants and compare it with the view of the professionals and the real situation.

The survey showed real lack of knowledge of participants. 50. 48% of 521 respondent, taking part in the survey, did not even know in which pension plan they are enlisted in. Thus we observe different pension plan participant behaviour in Latvia. It was shown by Ballester (2014) that “in Spanish, European and International markets a positive, significant relationship between pension plan flows and return, risk adjusted return takes place. Participants make significant contributions to plans that have achieved high returns in the past while the contributions and transfers to plans with poorer returns are smaller and less significant. The legal status of the management company also has a significant effect on the monetary input into the pension plans”. Participants pay increased attention to performance of pension plans during the crisis periods. Dushi, Iams and Tamborini (2013) found that economic downturn had a considerable impact on workers’ participation and contributions to DC plans.

The weighted risk anticipated by the Latvia’s respondents showed a 4.74% standard deviation from mean of weighted anticipated annual return of 7.18%. Applying the risk/return formula the authors has calculated the anticipated risk/return ratio of the respondents to be 0.66. This is a strong indicator that respondents are not aware of the risks that can emerge in investment plans. The Global minimal variance portfolio for Conservative investment plans has a risk/return ratio almost 3 times higher, than the respondents think.

On the other hand the authors have managed to interview some people working in this industry. The professionals were asked the same questions and the authors has performed the construction of the efficient frontier and plotted the efficient portfolios, the real situation portfolio of 2nd pillar pension plans, the situation as it’s been seen by the general public, the vantage point of the professionals and the optimal portfolio (see Fig.3.).

![Figure 3. The constructed graph of the 2nd pillar pension plan system, featuring what people and professionals think and what is the real situation (daily values).](image-url)
Figure 3 shows that the general public tends to overestimate the expected return and underestimate risks. General public underestimates risks that are 6 times larger, than they think, and overestimate the expected return by 1.6% annually. Professionals do better in this question. They consider the risk to be high, because they are familiar with the financial markets. Professionals think that the annual risk in 2nd pillar pension funds is 9% that is not fare from the 8% that the optimal portfolio can offer. Moreover the professionals underestimate expected annual return by 0.56% from the optimal scenario. Looking at the real situation, the professionals underestimate both risks and expected returns, but are far more accurate than the general public.

4. CONCLUSIONS

1. In the investigated period from February 2nd 2009 to December 19th 2014 all of the main indicators of 2nd pillar pension funds in Latvia (total assets, participants and price of one share) grew. Three investment management companies (JSC “Swedbank Ieguldījumu Parvaldes Sabiedriba”, JSC “SEB Welth Management” and JSC “CBL Asset Management”) have taken 80% of the market share thus creating some risk of high market concentration. The most popular single outstanding plans are “Dinamika” held by JSC “Swedbank Ieguldījumu Parvaldes Sabiedriba” and “Aktivais pensiju plans” held by “CBL Asset Management”.

2. Benchmark testing showed that all 2nd pillar pension plans are performing worse than the equity benchmarks, such as the S&P500 index and DAX index, but better than the bond benchmarks, such as European large corporation bond fund and the 5-7 year US Treasury bond ETF.

3. The analysis of performance of all 21 Latvia’s 2nd pillar pensions plan during 5-year period has done in order to optimize risks and returns. To make a right option of offered pension plans the recommendations for participants with different risk tolerance have worked out. A participant with high-risk tolerance should preferably choose active investment plans „EKSTRA PLUS” or „Gauja”. To medium risk tolerance better corresponds balanced investment plan „KOMFORTS”. Participant with low risk tolerance should choose between conservative investment plans „Latvijas plans”, „Konservatīvais ieguldījumu plans” and „Daugava”.

4. The survey showed a lack of knowledge of general public about basics of pension system. 50.48% respondents, taking part in the survey, did not even know in which pension plan they are enlisted in. General public overestimates the annual return and have no sense of the actual risk vs return ratio, evaluating it at 0.66, in comparison to the 5:0 ratio in the real situation. The professionals have a greater sense of the risk/return trade-off and evaluate this ratio at 2.65, which is not far from the Optimal ratio of 1.54.

REFERENCES


EXPLORATORY STUDY OF E-SERVICES INTRODUCTION IN HEALTH INDUSTRY

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ABSTRACT
Health industry nowadays is experiencing fast growing of various electronic services introduction and wide usage of Information and Communication Technology (ICT) for health care quality improvement. A number of studies show increasing interest and necessity for various e-solutions introduction in health industry, such as mobile-health (m-health), e-health, telemedicine etc. (Al Basheer Al Morshid S, Healy J. C, et al.). In Latvia similar process is occurring showing that e-health processes and services implementation is one of the most important issues at the vast majority of hospitals and health care institutions in the Republic of Latvia. The authors of the given research paper have analysed the situation in relevant hospital in Y2014, conducted the survey amongst medical personnel and gathered data set for assessment the satisfaction of ICT level by physicians and patients, which could essentially implicate the success of e-service project introduction. Interpretation of data allowed carry out several recommendations that could be valuable for similar health care institution management while introducing e-health services or another kind of manual operation automation at medical institution.

Objective: according to research goal the authors formulated the hypothesis that introducing of various e-health services at medical institution may substantially increase the satisfaction of the offered services by hospital’ patients and increase the quality of medical care.

Design/methodology/approaches: critical analysis of literature sources, quantitative analysis and interpretation of the data gathered by the survey from the Children’s Clinical University Hospital’ doctors, semi-structured interviews and discussions with the top medical personnel of two biggest hospitals in Latvia.

Practical implications: The research could impact the behaviour of medical institutions’ top management and stakeholders for better governing and managing e-health services introduction for medical care quality improvement.

Keywords: e-health services, information technology, medical care quality

1.INTRODUCTION

Effective usage of Information and Communication Technology for national health care could achieve the main goal of creating and delivering well-designed, efficient and easy-accessible health systems. E-health system should provide the national population of the country improved health services’ quality by ensuring fast access to the medical specialists in various areas and reducing the time needed for visiting the doctor and getting the appropriate service. At the same time while developing and implementing e-health system, we need to respect the human rights of the patients, taking care of their personal data, data about persons’ health status by following strong procedures and rules in information security area.

Many researchers have investigated different factors that could impact successful introduction of e-health, such as Capacity – human resources knowledge and skills in ICT area; Infrastructure – access to information and communication technologies; Enabling environment – policies and strategies to support the information society, etc. (Dunbar A, et al, 2008). Many authors analyse the business and ICT representatives’ cooperation while introducing new ICT solutions (Silvius, A.J., De Haes, Van Grembergen; Silvius, A. J Gilbert; Shpiberg, D., et al.; Spremić, M.; Vasiljeva T, Treiguts E.). They have indicated that business persons’ knowledge and skills in ICT area as well as their equipment with modern ICT devices could considerable facilitate and ease the introduction of new ICT solution at an enterprise.

We suppose it is the proper time to drill very deep in investigating abovementioned factors and clarify the situation in our country learning to what extent the medical personnel in the typical hospital in the Republic of Latvia is ready for wide using of ICT tools and introducing of e-services. To motivate our research the authors asked two research questions:

Research Question 1: How does ICT environment affect the level of IT literacy of the medical personnel at particular typical hospital and encourage adults to use their ICT devices and apply ICT skills for successful introduction of new IT system?
**Research Question 2:** Could we apply the methods of classical business process reengineering to health industry’s enterprises?

We examined these research questions in Latvia, at the Children’s Clinical University Hospital, that is typical hospital in the Republic of Latvia, supplying the standard set of health care services and having typical structure of medical personnel. The main research, observations, data gathering by the survey among Children’s Clinical University Hospital doctors and data quantitative analysis were done in spring 2014. One of the authors has conducted the series of observations and personally surveyed Children’s Clinical University Hospital’ doctors verifying whether survey’ questions were correctly interpreted by the respondents. For quantitative data analysis and discovering the dependencies various statistical methods and IT tools were used, such as IBM SPSS and MS Excel.

Several deep semi-structured interviews with medical personnel at Riga Eastern University Hospital and Riga Stradins University were conducted in autumn 2014 for discussion the results of the research and trying to assess to what extent the research results could be applicable to other similar medical institutions.

2. THE FRAMEWORK OF THE RESEARCH

The World Health Organization (WHO) defines e-health as “the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research” (Denardis L, 2011). In 2005 the World Health Assembly recognized e-health as the way to achieve cost-effective and secure use of ICTs for health and related fields, and urged its Member States to consider drawing up long-term strategic plans for developing and implementing e-health services and infrastructure in their health sectors (Healy J, 2008). The authors fully agree with Denardis L. who defines the following obstacles for introduction of e-health system in any country (Figure 1).

![Figure 1. E-health introduction obstacles (Denardis L, 2011).](image)

In addition to common e-health obstacles, in Latvia the authors see some political, technological and social obstacles while trying to introduce so called electronics health card (Latvijas veselības ministrija, 2014) so we need identify what advantages can the society get from this modern tool. For introducing electronic health card at national level the country needs having common ICT infrastructure as for health services Providers as well for healthy service customers, namely, hospitals and clinics patients. E-health system at national level needs common understanding of procedures, rules and standards for appropriate data exchange between all participants and components of the system. The authors agree with the researchers who recognise the recent trend in e-health service area as growing mobile technology usage (Al Basheer Al Morshid S, 2010).

Trying to define the most important business processes, activities and tasks that are connected with e-health system and providing different kinds of e-services, the authors recognised three main types:
Managerial processes, Operational processes and Supporting processes.

Figure 2. The types of Business processes

Managerial processes are governing the whole system; Operational processes are delivering or keeping core business and deliver added value; Support processes are supporting operational processes. The authors have investigated Support processes in a detailed way to analyse and enhance these processes and modifying them for data processing in an automated electronic way. Taking into account the definition and concept of e-health that includes a wide range of various medical processes and activities, the authors have explored the section of the standardized electronic medical record data and public health data aggregation. In order to determine the data flows of medical documentation and design its possible enhancement we carried out the survey of doctors at the hospital. The survey was carried out taking into consideration the fact that the doctor-related information is a very important section of the hospital in providing medical processes and medical documentation development.

In the given research we have studied four main statements. As a basic for the survey the authors have used some surveys used in a medical area and described by known researchers (Dunbar A, et al., 2014 Survey-of-Americas-physicians) adjusting the set of questions according to our research goal and Latvia’s peculiarities. So, the questions were split into main groups, additionally considering the doctors’ specialization and age:

- access to information technology systems at work and home;
- interest and desire for using the Information System of the Hospital;
- satisfaction with data flows at the Hospital regarding medical information data flows;
- index of information technology usage.

Apart of these purposeful questions, the authors aimed to identify the doctors’ age, gender and speciality. 25 questions were included in the survey, all questions were divided into four groups and after mixed randomly. The survey was made anonymous for non-identification of the respondents personally. The respondents had to answer with their personal assessment for each question by using the following scale: a) during all the time / it is possible during all the time; b) often / it is possible often; c) rarely / it is possible rarely d) I do not use it / I do not need it. The first option of answer was awarded 3 points, the second option - 2 points, the third option - 1 point and 0 points for the fourth option.

The table 1 illustrates the key of the survey in details. The appropriate questions group (item) was evaluated according to the number of points. If the item in the survey has obtained points from 0 - 1 the appropriate group of questions was evaluated as catastrophic; if the assessment ranged from 1.01 to 1.70, an item was considered as undervalued; range from 1.71 - 2.20 means that item was considered as a medium-valued; range between 2.21 - 2.60 means that item was evaluated as good; range 2.61 or more means that item was rated as very good.
The survey was conducted at the Children’s Clinical University Hospital in 2014 February and March, the respondents participated were chosen from various Hospital’ departments, with different specialties. The participants were 34 doctors (5.6 % from all doctors at the Hospital) that means that the research covers sufficient number of respondents and can be considered as valid. Four questionnaires were filled in with some errors so they have not been accepted as complete and we analysed 30 surveys. For data processing IBM SPSS was used.

The results of the survey were deeply discussed with nine leading doctors of Riga Eastern University Hospital and Riga Stradins University in 2014 autumn.

In the given research the authors tried to recognize to what extent e-environment can impact and change health care process and study how e-health could continue affecting the health care system and the routine work of a medical institution in the future.

Analysing the gathered data, the authors have found out that 53% of respondents were man while 47% women, comparing with the common staff structure it should be said that more men have answered the survey as gender structure at the Hospital was 77% women and 23% men.

The validity of the questionnaire was checked using Cronbach Alpha Coefficient, calculating coefficient for the entire study as a whole. Cronbach Alpha Coefficient was calculated 0.643 that corresponds with valid and reliable survey data. Normal distribution can be determined with the Kolmogorov - Smirnov test that compares the data from the questionnaires with data set distributed by the normal sample, which is equal to the average value and dispersion. The normal distribution is useful to calculate, because it shows the average random distribution. In our case the test results showed that the data obtained are representable.

<table>
<thead>
<tr>
<th>Access to Information Technology at work and at home</th>
<th>Interest and desire for using the IS of the Hospital</th>
<th>Satisfaction with medical information data flows</th>
<th>Index of IT usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1.0 Catastrophic</td>
<td>0-1.0 Catastrophic</td>
<td>0-1.0 Catastrophic</td>
<td>0-1.0 Catastrophic</td>
</tr>
<tr>
<td>1.01-1.70 Undervalued</td>
<td>1.01-1.70 Undervalued</td>
<td>1.01-1.70 Undervalued</td>
<td>1.01-1.70 Undervalued</td>
</tr>
<tr>
<td>2.21 – 2.60 Good</td>
<td>2.21 – 2.60 Good</td>
<td>2.21 – 2.60 Good</td>
<td>2.21 – 2.60 Good</td>
</tr>
<tr>
<td>2.61 -3.0 Very good</td>
<td>2.61 -3.0 Very good</td>
<td>2.61 -3.0 Very good</td>
<td>2.61 -3.0 Very good</td>
</tr>
</tbody>
</table>

Descriptive statistics for the whole data set

<table>
<thead>
<tr>
<th>Statistics parameter</th>
<th>Access to Information Technology at work and at home</th>
<th>Interest and desire for using the IS of the Hospital</th>
<th>Satisfaction with medical information data flows</th>
<th>Index of IT usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>11,100</td>
<td>10,9667</td>
<td>20,7667</td>
<td>8,4000</td>
</tr>
<tr>
<td>Std. Error of Mean</td>
<td>.33682</td>
<td>.37900</td>
<td>.65158</td>
<td>.44875</td>
</tr>
<tr>
<td>Median</td>
<td>11,0000</td>
<td>11,0000</td>
<td>20,0000</td>
<td>9,0000</td>
</tr>
<tr>
<td>Mode</td>
<td>11,00</td>
<td>12,00</td>
<td>19,00</td>
<td>9,00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1,84484</td>
<td>2,07586</td>
<td>3,56886</td>
<td>2,45792</td>
</tr>
<tr>
<td>Asymmetry coefficient Skewness</td>
<td>.020</td>
<td>.147</td>
<td>.317</td>
<td>-.334</td>
</tr>
<tr>
<td>Std. Error of Skewness</td>
<td>.427</td>
<td>.427</td>
<td>.427</td>
<td>.427</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-.497</td>
<td>.027</td>
<td>.002</td>
<td>.788</td>
</tr>
<tr>
<td>Std. Error of Kurtosis</td>
<td>.833</td>
<td>.833</td>
<td>.833</td>
<td>.833</td>
</tr>
</tbody>
</table>
Exploring the Table 2 with descriptive statistics for the whole data set we see that the asymmetry coefficient for all the items is approaching zero, in this case, it means that the study corresponds with normal distribution. Other coefficients testify the same evidence.

3. THE RESULTS OF THE RESEARCH

Research Question 1: How does ICT environment affect the level of IT literacy of the medical personnel at particular typical hospital and encourage adults to use their ICT devices and apply ICT skills for successful introduction of new IT system?

For clarifying the situation at the Hospital with ICT environment, the authors have analysed the responses to the survey.

The results gathered for the first item Access to Information Technology at work and at home show the following: more often answers (23.3%) were between 11 and 12 points, that testifies mostly dominated the mean responses with a small deviation to the lower value. At the Figure 3 we can see the average statistical response for this item as 11.10 points, standard deviation 1.845. This distribution curve that is almost in the middle of the set and the asymmetry coefficient is very close to zero, testifies that the results tend to cluster around the average value.

![Figure 3. Access to Information Technology at work and at home](image1)

The results gathered for the second item Interest and desire for using the IS of the Hospital show the following: average statistical response was 10.97 with standard deviation 2.076. Asymmetry coefficient is positive; it shows the results tend to slightly lower values. Kurtosis coefficient is very close to zero, which indicates a tendency to cluster around the arithmetic average – see the Figure 4.

![Figure 4. Interest and desire for using the IS of the Hospital](image2)
The results of the third item *Satisfaction with medical information data flows* show the following: average statistical response was 20.77, standard deviation 3.569. Normal distribution curve is shifted a bit to the right in the centre, which means it is a bit of a negative asymmetry. Kurtosis coefficient is approaching zero that defines the normal distribution and the schedule is neither stretched nor compressed – see Figure 5.

![Figure 5. Satisfaction with medical information data flows](image)

The results of the fourth item *Index of IT usage* testify average statistical response 8.4, standard deviation 2.458, with asymmetry coefficient that shows the results tend to slightly higher values, kurtosis coefficient giving evidence for the trend to cluster around the arithmetic average – see the Figure 6.

![Figure 6. Index of IT usage](image)

According to the research questions the authors aimed to explore the medical staff skills and habit of working with IT and Information Systems, as well as explore doctors’ opportunities and their desire for usage of new technologies. The main emphasis was put on the satisfaction with medical information data flows and the cognition of the potential needs for improving the business processes at the Hospital and introduction of health care e-services.

Initially the authors have estimated the respondents’ access to information technology resources at work and at home. We do believe this factor is critical as in case the doctor has no free access to a computer at work it could seriously complicate usage of IT in general. Access to the computer at home would be extremely important for effective management of on-call services. Using modern technology makes possible to observe a lot of diagnostic data in remote way for patients saving their time and money when compare such behaviour with numerous physical visits to the hospital.
Common statistics for the survey can be seen at the Figure 7 where the results are given in points. The lowest score among physicians - 1.68 was got for the Item Index of IT usage. According to the questionnaire key, this means very low index of technology using. In this item we asked the questions about specific software and devices (like tablets) usage. Questions were formulated for measuring the frequency of using standard software at the workplaces and for assessment of applying IT tools and applications for work tasks executing.

The second low score was gained for the Item Satisfaction with medical information data flows - 2.08 points that means average satisfaction level with medical data and documentation flows. In this item we included ten particular questions thus getting the item as the widest section in the survey. The third item was Interest and desire for using the IS of the Hospital getting 2.19 points meaning the tendency for sufficient level of interest for using IT systems and tools. The authors studied to what extent physicians are using Hospital’ Information System; how widely they are using IS functionality; electronic transmission of the data; exploring the answers of patients’ analysis and other business intelligence functions.

The best and highest results were obtained for the fourth Item Access to Information Technology at work and at home – 2.22 points what testifies satisfactory level of this parameter.

**Research Question 2:** Could we apply the methods of classical business process reengineering to health industry’s enterprises?

For identifying the current status of the existing business processes, defining possible improvement and, finally, finding out the answer for the second research question: Could we apply the methods of classical business process reengineering to health industry’s enterprises?, the authors have deeply investigated the results of the survey as well as analysed in details main processes at the Hospital.

The special section of our research was devoted to extremely important and significant aspect of implementing e-services at the Hospital – the adjustment of existing paper-based business processes and introduction of modern electronic business processes. Our surveys and deep detailed discussions showed the vital necessity of usage e-services for patients and doctors, so, 65.66% of the responses give the evidence of such functionality shortage. 80% of the respondents answered about the exigency for using Hospital’ Information System while helping the patients. Comparing various medical processes that are supplied electronically with other processes that are realised in manual (paper) way, better assessments were obtained for electronic processes. Electronic processes have got the average assessment 81.85% while processes in paper way have got only 64.81% from maximal possible assessment.

The following business processes and sub-processes were analysed:

- Patients’ on-site registration process;
- Outpatient visit;
- Patients’ electronic queues process;
- Patients’ stationary visit.
Using standard business requirements defining and modelling approach we have discovered and classified business sub-processes for each business process supplementing it with detailed description of the sub-process, the description of data used in particular sub-process and finally, clarified the type of each singular sub-process documents and processing – either it is electronic or paper form and is it done in manual or electronic way. The Table 3 illustrates the fragment of one business process investigation, namely, Outpatient visit as the example.

<table>
<thead>
<tr>
<th>Business sub-process</th>
<th>Description of the sub-process</th>
<th>Description of Data used</th>
<th>Processing type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit to the doctor</td>
<td>Patient’s History (life, family, illness and specific diseases) clearance (anamneze)</td>
<td>Text data</td>
<td>Electronic / paper form, both manual and electronic</td>
</tr>
<tr>
<td>Referrals to particular medical specialists for examinations and tests</td>
<td>Document Template</td>
<td>Paper form, manual</td>
<td></td>
</tr>
<tr>
<td>Extract (the applied therapy, conclusion, recommendations)</td>
<td>Document Template</td>
<td>Electronic / paper form, both manual and electronic</td>
<td></td>
</tr>
<tr>
<td>Consultant visit</td>
<td>Answers from particular medical specialists</td>
<td>Conclusion</td>
<td>Paper form, manual</td>
</tr>
<tr>
<td>Laboratory</td>
<td>Laboratory tests</td>
<td>Medical examinations and tests, conclusion</td>
<td>Electronic / paper form, both manual and electronic</td>
</tr>
<tr>
<td>Radiology</td>
<td>Radiographs</td>
<td>Images, description</td>
<td>Electronic form</td>
</tr>
<tr>
<td>Magnetic resonance, Computed Tomography, Scintigraphy</td>
<td>Visual information of medical examinations, description</td>
<td>Electronic form</td>
<td></td>
</tr>
<tr>
<td>Functional Diagnosis</td>
<td>Ultrasonography</td>
<td>Images, description</td>
<td>Paper form, manual</td>
</tr>
<tr>
<td>Electrocardiogram EKG, EEG, EMG, Uralflaometrija, Echocardiography, Endoscopy</td>
<td>Visual moving information, description</td>
<td>Paper form, manual</td>
<td></td>
</tr>
</tbody>
</table>

The medical data flows were found out for all investigated business processes that afforded the authors make the conclusion about the necessity and possibility for implementing new Information System supporting the majority of needed e-services for patients and medical staff. At the same time the authors came to the conclusion that standard approach to business process analysing can be applied in health industry showing good results for modelling business processes that gives the positive answer to the RQ 2.

4. SUMMARY AND DISCUSSION

The given research could be used for generalising some key findings to approve positive answers to the Research Questions 1 and 2. These findings could be valuable for governmental institutions, policy makers and administrative bodies to improve state regulations related to health industry.

Research Question 1: How does ICT environment affect the level of IT literacy of the medical personnel at particular typical hospital and encourage adults to use their ICT devices and apply ICT skills for successful introduction of new IT system?

- However E-health is defined as a way for secure and cost-effective usage of information technology in medicine, currently a unified methodology to measure the progress of e-health in a given country and institution not developed yet;
- Although the e-health program is driven by Ministry of Health of the Republic of Latvia since 2005, the quality of laws and regulations base has not been established, thus disturbing the comprehensive development of e-health projects for local medical institutions;
• The level of using ICT technologies and tools amongst the doctors is not very high however it shows clear trend for improvement in the nearest future;
• During the research the authors could draw the conclusion that the doctors’ society is conservative enough and changes in business processes are accepted relatively slow. At the same time our respondents rated the advantages offered by the electronic process 17% more convenient than manual paper-based processes;
• Based on the study conducted at the Children’s Hospital, the authors conclude that e-health is the way to achieve successful, doctors more comfortable and more accessible to the population healthcare using information and telecommunication technologies.

Research Question 2: Could we apply the methods of classical business process reengineering to health industry’s enterprises?
• While researching business processes at the Children’s Hospital the authors can deduce that a significant attention should be paid to the deep investigation of sub-processes, data flows, business requirements identification for ensuring their amelioration using ICT tools;
• Standard approach for analyzing and modeling business processes and requirements could be successfully applied to the manual processes in health industry institutions to draw new adjusted business processes for e-service offering.
• For the successful realization of e-service project the IT team should include the experts who are competent in both medicine and information technology and could apply the standard approach to business environment investigation. Taking into account the conservative medical environment, a detailed training plan with possible leeway should be developed and approved to introduce ICT reforms.

5. FURTHER RESEARCH

The authors consider the next step for the research should be investigating and testing the hypothesis, that introducing of various e-health services at medical institution may substantially increase the satisfaction of the offered services by hospital’ patients and increase the quality of medical care.

ACKNOWLEDGEMENTS

The authors would like to express the deepest thanks to the doctors at the Children’s Clinical University Hospital, Riga Eastern University Hospital and Riga Stradins University for being extremely responsive, sympathetic, accessible and answerable. Taking into consideration the high level of doctors’ load, we feel deep gratitude to all doctors hoping that the results of our research can be used at other medical institutions for fully leverage of ICT technologies at the hospitals and increasing well-being of population and life quality.

REFERENCES

IMPACT OF THE NATIONAL INNOVATION SYSTEM ON INNOVATION

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ABSTRACT

Purpose. Aim of this research is, firstly – to outline the theoretical aspects connected with the impact of the national innovation system (NIS) on innovation. Secondly – to create and test the methodology for the analysis of the impact of the NIS on innovation for detecting the main innovation barriers. Thirdly – to elaborate recommendations for the companies and the government to promote the implementation of innovation in Latvia by improving the NIS.

Methodology. The research is organized in three sections. Introduction has explained the background and necessity of this research. The three sections include short overview of the main concepts and problematic issues connected with the key concepts of this research, description of the methodology and analysis of the impact of the NIS on innovation and recommendations for the promotion of innovation in Latvia improving the NIS.

Proposed methodology of analysis is based on the analysis of literature carried out by the author of this research. It is tested on the analysis of impact of Latvia’s innovation system on innovation and includes interviews with experts of NIS and survey of innovative companies.

Findings. After analysis of the NIS of Latvia there were identified innovation barriers referring to the NIS in general as well as to the separate functions of the NIS. The research identified the following three broad issues: 1) the main function that initiates the development of knowledge and innovation (influence of the direction of the search) is not being implemented; 2) lack of cooperation between NIS participants; 3) inefficient and fragmented management of the NIS. The main innovation barriers are: lack of financial resources, lack of qualified personnel and the lack of appropriate support services.

Originality. Proposed methodology of analysis may be used by scholars as well as policy makers to assess the impact of the NIS on innovation and to determine the main innovation barriers, to investigate the mismatch between policies and problems, identify policy gaps and devise better policies for the promotion of innovation.

This research can be used by owners/managers of companies in the making of decisions connected with the innovation process.

Category of paper: research paper.

Key words: innovation, innovative company, national innovation system, innovation barriers, innovation system functions

1. INTRODUCTION

The growing importance of innovation in the situation when markets are becoming increasingly global, lifestyle and needs of the customers are changing rapidly and technological opportunities are increasing quickly is widely recognized. Nowadays, the ability to innovate has become one of the most significant determinant of the development and competitiveness of the company. As the innovation is influenced by the numerous internal and external factors, the implementation of innovation is associated with high risk and high degree of uncertainty, it presents significant challenges to the management of the company. Therefore, to reduce the risk and uncertainty, the company needs to understand the nature of the innovation, it influencing factors (especially hampering factors), the available support instruments, as well as their development process.

Successful innovation processes in companies are important also for the government, as the development of the innovative entrepreneurship determines the country's economic development.

Innovation in the company and its influencing external factors are components of the NIS. To identify the main factors influencing and hampering innovation and to develop the appropriate support instruments it is necessary to carry out the analysis of the NIS.

2. OVERVIEW OF THE KEY CONCEPTS: INNOVATION, INNOVATIVE COMPANY, INNOVATION BARRIERS, NATIONAL INNOVATION SYSTEM, INNOVATION SYSTEM FUNCTIONS

Innovation is the key to economic development and competitiveness in the knowledge economy but there is still no single generally accepted definition and classification of concepts “innovation”, “innovative company”, “innovation barriers”, “national innovation system”, “innovation system functions”.

Analysing different innovation definitions proposed in the literature it can be concluded that the term
"innovation" is used as the process (for example, Forest, 1991; Galanakis, 2006; Zizlavsky, 2013) and as the result (for example, Edquist, 2001; Parthasarthy and Hammond, 2002) (Gopalakrishnan and Damanpour, 1997; Quintana et al, 2011). Some authors provide broad scale innovation definition that can be used generally (for example, Barehege et al., 2009 from Lisetchi and Brancu, 2014; Forrest, 1991), while other authors’ definitions refer to a particular innovation type (for example, Parthasarthy and Hammond, 2002). Some innovation definitions explain the concept broader, including a number of aspects – innovation outcomes (for example, new formations, new products, processes, knowledge, services) and/or innovation objectives (for example, to compete successfully and to differentiate the company in the market), and/or used resources (for example, new or existing scientific or technological knowledge, equipment, software and human resources), and/or other aspects, while others – narrowly.

The two most important aspects defining innovation is the aspect of novelty and the economic benefit that innovation brings to the company. Therefore innovation in this research is defined as the development and implementation of new to the market or company or significantly improved product or process that brings economic benefit to the company.

There are different classifications of innovation in the literature, which greatly complicates the understanding of definitions of different types of innovation used by various authors and relationship between different types of innovation. Such a lack of consistency in the classification of innovation can lead to confusion on the subject of empirical research. However as the main innovation categories, which can cover different types of innovation mentioned by various authors product and process, technological and administrative, radical and incremental innovation can be mentioned (Rowley et al, 2011). In addition, any of the first mentioned four types of innovation can be both radical and incremental.

Factors determining innovation have been widely studied in the literature with the aim to understand what factors contribute to the development of innovation and relationship between these factors and activity of the company. Smaller is the number of studies that contain alternative approach and that are focused to the analysis of factors hampering innovation, their role in the innovation process and the extent to which they slow down, premature stop or prevent implementation of innovation (Mohnen et al, 2008; Silva et al, 2007; Lukjanska, 2010). Factors hampering innovation in the literature are called innovation barriers (Mirow et al, 2008 from Hueske et al, 2015). In this research division of innovation barriers into internal and external barriers is used. Internal barriers arise inside the company and are associated with the resistance to innovation (Holzl and Janger, 2013). External barriers result from the interaction of the company with other companies and other actors of the NIS (Holzl and Janger, 2013).

Among small number of studies focused to the research of innovative company only few studies provide clear definitions of the innovative company. Obvious classification of innovative companies also is not provided in the literature. In this research innovative company is defined as the company that has developed and implemented in the company or market new or significantly improved product or process that provides economic benefit for the company.

With the aim to understand and analyse the nature and development of innovation there have been developed a number of models, each of which focuses on different areas that were dominating in the period of their development. Rothwell has grouped these models into five historic generations – the technology push model, the market pull model, the coupling innovation process model, the functional integration model and the systems integration and networking model (Rothwell, 1993 from Hobday, 2005). Over the time the focus has turn from the linear to the systems models that are able better to grasp the complex innovation process in the company – the feedback and exchange of information, knowledge and other resources between the various stages of the innovation process and the external environment. Galanakis (Galanakis, 2006) indicates that a new generation approach – the innovation systems approach was created in the 1980s and 1990s.

There is a consensus between science and policy communities that the most appropriate tool for the analysis of innovation is the NIS approach (Ghazinoory and Bitaaib, 2014; Hekkert et al, 2007; van Hemert et al, 2013). In this research NIS is defined as the set of measures implemented within the cooperation between the public and private sector to create, accumulate, change and use new knowledge with the aim to promote the implementation of innovation and subsequently – the sustainable development of the economy.

Overview and analysis of NIS definitions, functions and methods of analysis is provided in the articles “Measuring problems in small country National Innovation system” (Resele, 2014b) and “Measuring the functionality of national innovation system” (Resele, 2014a).

Innovation system include factors that determine innovation – all important economic social, political, organisational and other factors that influence creation, dissemination and use of knowledge (Edquist, 2008) and affect the learning capacity of organisations and hence the capacity to develop innovation (Lundvall,

In this research as main or direct functions of the NIS are proposed two functions:
- development of new knowledge;
- use of knowledge,

and as support or indirect functions:
- influence on the direction of search;
- supply of resources;
- creation and change of the “rules of the game”;
- formation of the markets;
- facilitation of information and knowledge exchange.

Analysis of the NIS functions helps to determine the impact of the NIS on innovation and to determine the main innovation hampering factors or innovation barriers. Description of the methodology and analysis of situation in Latvia is provided in the chapter two of this paper.

3.METHODOLOGY AND ANALYSIS OF THE IMPACT OF THE NATIONAL INNOVATION SYSTEM ON INNOVATION

3.1.METHODOLOGY FOR THE ANALYSIS OF THE IMPACT OF NATIONAL INNOVATION SYSTEM ON INNOVATION

Methodology for the analysis of the impact of NIS on innovation and for the identification of key factors hampering innovation developed in this research rests on the synthesis of the research of Bergek (2008), Chaminade et al (2012) and Hekkert et al (2007). It includes four steps:
- identification of structural components of NIS;
- identification and analysis of NIS functions;
- identification of innovation barriers;
- identification of key policy issues and elaboration of recommendations.

The first step involves setting the starting point for the analysis, i.e. defining the NIS in focus and identifying structural components of NIS – actors, networks institutions. In the second step functions of NIS are analysed describing what is actually going on in the NIS in terms of the seven key processes (two main or direct functions and five support or indirect functions). In the third step their fulfilment is assessed (how well they are implemented) and innovation barriers are identified. In the fourth step key policy issues related to the innovation barriers (innovation hampering factors) are defined and recommendations elaborated.

Identification and analysis of the NIS is based on the analysis of theory, strategic documents and regulations, studies, indexes and statistics, case studies, interviews with experts (representatives of actors of NIS) as well as survey of innovative companies.

To plot a complex picture of the NIS in Latvia and its impact on innovation viewpoint not only of innovative companies but also of representatives of all actors of Latvia’s NIS is taken into account. There were carried out face to face interviews with 45 experts representing all actors of the Latvia’s NIS from 21 February 2014 to 26 March 2014 and survey of technology innovative companies from 7 May 2014 to 7 August 2014 in this research.

Experts for the interviews were selected on the basis of the following criteria (Lamprinopoulou, 2014):
- belonging of the organization represented by the expert to the corresponding actors category of the NIS and role of the organisation in the NIS;
- knowledge, experience and contribution of the expert in relation to the NIS in general and/or certain its functions, and/or development and implementation of innovation policy;
- degree of influence of the expert in the organisation he/she represents.

Interviews of experts were carried out following twelve pre-prepared open ended questions.

The number of innovative companies, including technology innovative companies in Latvia cannot be determined since in the data base of Central Statistical Bureau (CSB) there are not included statistical data about innovation in the micro companies (companies with less than 10 employees). The lack of this information significantly affects the overall assessment of the innovations in Latvia in both domestic and foreign reports and surveys. According with the data of CSB in 2013 there were 93 775 economically active
individual merchants and commercial companies (excluding agricultural and fishing farms and self-employed persons who perform economic activity), of which 86.2% corresponded to micro company category in Latvia\(^2\).

It should be also mentioned that CSB indicates company as an innovative if during the reference period (three years) it has implemented at least one innovation. Financial criteria that allow estimating the economic benefit the innovation brigs to the company are not used.

Taking into account the lack of information about innovative companies in Latvia as well as non-use of the financial criteria for the selection of the innovative companies as source for the survey of technology innovative companies edition about innovative companies in 2011 in Latvia that have implemented new products and services or new technologies (LIAA, 2012) as well as list of contestants of Export and innovation award in 2011, 2012, 2013 in the category “Innovative product” was used.

Investment and Development Agency of Latvia selects innovative companies following also financial criteria (LIAA, 2012) (two of the following criteria should be met):

- at least 25% of current sales are made up of products that have been introduced or significantly improved over the past five years;
- the profit generated by new products or services that are not older than five years is at least 10% of gross profit;
- sales derived from the introduction of new products or services have increased annual turnover of the company by more than 5%.

The survey in this research was conducted by means of electronic mail. A questionnaire was sent to the technology innovative companies e-mail addresses. 71 questionnaires were received.

The questionnaire included thirteen questions. Five questions concerned the company’s general indicators. Two questions were related to the overall assessment of the NIS. Six questions concerned company’s activities connected with the creation of knowledge and innovation. Intelligibility of questions was tested in the three companies before the questionnaire was sent out to the other respondents.

Experts of the NIS and managers/owners of the technology intensive companies were asked to evaluate the main innovation barriers for companies using five-point scale, 1 – having no impact, 2 – small impact, 3 – average impact, 4 – significant impact, and 5 – large impact.

Data processing and analysis was carried out using statistical methods, including correlation and analysis of variance, factor analysis, ranking, time series analysis.

### 3.2. ANALYSIS OF THE IMPACT OF THE NATIONAL INNOVATION SYSTEM ON INNOVATION IN LATVIA

There are many studies and surveys carried out by various organizations and researchers in the connection with the knowledge creation and use. Fulfilment of the NIS functions can be assessed using these sources of secondary data that can be classified as the external evaluation, such as the Global Competitiveness Report, the Innovation Union Scoreboard. Aim of this research was to obtain the internal evaluation of NIS from all its actors – creators of knowledge, users of knowledge as well as providers of the support functions.

Figure 1 contains evaluation from the experts about the innovation hampering factors – innovation barriers and their initiating factors.

\(^2\) [http://data.csb.gov.lv/pxweb/lv/uzreg/uzreg__ikgad__01_skaits/SR0043.px/table/tableViewLayout1/?rxid=cdb978c-22b0-416a-aacc-aa650d3e2ce0]
Experts admit that formally all the necessary NIS actors exist but the NIS does not function because activities of its actors are not coordinated and focused on the achievement of common aim defined in the innovation policy. Cooperation between primary actors (knowledge creators and knowledge users), cooperation between primary and secondary actors (providers of support) as well as between the secondary actors was evaluated as insufficient. As the main reason for the week NIS and lack of innovation policy was mentioned frequent changes in the composition of political level actors. For example, since 1990 until 2014 17 education ministers have changed. It was also mentioned that employees of public administration organisations lack understanding of functioning principles of the NIS and that dominant is the opinion that market will adjust everything.

The management capacity of public organisations was assessed as low that for example significantly impedes the absorption of the EU structural funds. Requirements stipulated in the laws and regulations are not being met and such a failure does not provide for any sanctions.

Both public and private sector funding for science, research and innovation is significantly small, besides administration of public funding is fragmented, as well as the achievable performance indicators are inadequate. Unstable and scares financing contributes to the situation that number of scientists implementing only scientific activities is small. Topical also is the problem of aging.

One of the main factors hampering capacity of knowledge and innovation creation was mentioned patent acquisition process and it’s financing. Reference was also made to the lack of life science and engineering specialists.

According with the results of factor analysis answers provided by the companies about the main innovation barriers form four complex factors (groups of barriers) – financial limitation, disturbing market conditions, lack of support, uncertainty and risk, which together explains 67.85% of the variance. The first complex factor – financial limitation explains 22.85% of the variance and it includes four hampering factors: limited financial resources, lack of financial support, lack of government support, too expensive financial support. The second complex factor – disturbing market conditions explains 17.13% of the variance and it includes: lack of customers’ interest in innovative products or services, lack of competition in the domestic market, need to meet the legislative requirements of the Republic of Latvia, need to meet the requirements of EU and other international organizations. The third factor – lack of support explains 13.96% of the variance and it includes: lack of qualified personnel, lack of support services, support services do not meet the companies’ needs, lack of information on technology. The fourth complex factor – uncertainty and risk explains 13.91% of the variance and includes: too high risk of failure, too high costs related to the introduction of innovation, lack of information on market demand.

According with the evaluation of representatives of universities and research institutes five main factors hampering innovation for companies is limited financial resources (4.8 from 5 point scale), lack of qualified personnel in the labour market (4.40 from 5 point scale), lack of external financial support (4.40 from 5 point scale), support services do not meet the companies’ needs (4.25 from 5 point scale) and lack of government support (4.2 from 5 point scale) (Figure 2). Providers of the support as innovation barriers also indicated lack

of qualified personnel (3.9 from 5 point scale) and lack of financial support (3.5 from 5 point scale) adding also three internal factors – limited financial resources (4.05 from 5 point scale), too high risk of failure (3.48 from 5 point scale), too high costs related to the introduction of innovation (3.76 from 5 point scale).

**Figure 2. Main innovation barriers for innovative companies**

*Source: composed by the author*

Universities and research institutes, as well as micro, small, medium and large companies indicate external factors more hampering innovation as internal ones, support organizations – internal factors. Significantly that support organizations that include government level actors as relevant mention also the factors that are evaluated by innovative companies as the innovation most hampering factors – lack of financial support and lack of qualified personnel. However, between the representatives of the government level actors’ dominant is the assessment that the proposed support instruments meet the needs of innovative companies that is opposite to the evaluation of the companies. It can be concluded that supply of the support instruments does not meet the demand from the companies.

The evaluation of the main innovation barriers differs between different categories of the companies. Micro and small companies (MSC) as the main innovation barrier indicate limited financial resources (77% of MSC assess the impact of this factor as significant or large and 16% as average), lack of government support (57% of MSC assess the impact of this factor as significant or large and 36% as average), lack of financial support (63% of MSC assess the impact of this factor as significant or large and 26% as average). Lack of financial resources is not mentioned by medium sized and large companies (MLC) in the survey as the main hampering factor. As the main innovation barrier is indicated support services that do not meet the needs of companies (64% MLC assess the impact of this factor as significant or large and 29% as average), followed by the lack of support services (50% MLC assess the impact of this factor as significant or large and 43% as average) and the lack of qualified personnel (57% MLC assess the impact of this factor as significant or large and 29% as average). Lack of internal and external financial resources in the assessment of innovation barriers by medium and large companies holds only the fifth and the sixth place.

Assessment of the scientific activities and capacity of Latvian scientific institutions, Guidelines for the Development of Science, Technology and Innovation for 2014-2020 (STI Guidelines for 2014-2020) and the Global Competitiveness Report 2014-2015 was used as the secondary sources of information for the evaluation of innovation barriers in this research.

While in the primary and secondary sources as the main innovation barrier mostly lack of financial resources is stressed, it should be remembered that the process of knowledge creation starts with the determination/selection/influence of the direction of the research, which is a function implemented by government (seldom – by companies). If this function is not performed effectively, respectively other NIS functions are not performed and the NIS does not work – its members do not cooperate – the activity is not directed at the achievement of common objectives.

Identification of the main innovation barriers provides information about problems that companies face in the innovation process. To remove or at least reduce the innovation barriers there should be appropriate activities both from the government and from companies’ side. Recommendations to promote innovation both in the company and in the state level are provided in the chapter three of this paper.
4. IMPROVEMENT OF THE NATIONAL INNOVATION SYSTEM TO PROMOTE INNOVATION IN LATVIA

The planned public support instruments for this planning period (2014-2020) are highlighted in the STI Guidelines for 2014-2020.

Analysis of the STI Guidelines for 2014-2020 shows that greater number of activities is focused on the support of science and research. To promote innovation development it is planned to continue support of activities of technology transfer contact points, competence centres, business and technology incubators. It is planned to extend the amount of early stage financing instruments, as well as the availability of scientific infrastructure for companies. Corporate income tax discount for the companies that have made investments in the research and development (R&D) and development of the joint technology transfer platform in the form of 2-3 technology transfer centres where the technology transfer experts and expanded technology transfer services will be concentrated are the new planned activities for the years 2014-2020.

Based on the results of survey of innovative companies as the most necessary forms of support tax discount, support for the development of new products and technology and implementation in the production as well as support for the entrance in the foreign markets is mentioned. Important is also financial support of patenting and prototyping as well as receiving credit on preferential terms.

After comparing the planned state support instruments with the needed by companies it can be concluded that the offer partly correspond with the demand. There still is unclear support for many important activities, for example, patenting and prototyping.

From the analysis briefly described in this paper there could be developed several recommendations.

1. Internal innovation barriers can be prevented or reduced by companies on their own but to prevent or reduce external barriers it is recommended to the companies to cooperate with the other actors of the NIS.

2. It is recommended to the managers/owners of the innovative companies in cooperation with the Employers’ Confederation of Latvia and other organizations representing interests of industry with the aim to promote the development of innovative entrepreneurship and improvement of the NIS, to guide the addressing of the following questions:
   a. development and adoption of the main law on innovation – “About innovative entrepreneurship”, that defines and controls innovative entrepreneurship and foresees incentives for innovative companies;
   b. development of the appropriate innovation support infrastructure in the public sector – open and experimental laboratories, pilot factories, as well as providing support tools for the commercialisation activities;
   c. adoption of national programs, regulations, orders with the mutually coordinated periods of activity; provision of permanent financing and constant conditions of the most successful national support instruments;
   d. provision of continuous support for the intermediary services between the researchers and the entrepreneurs; development of the optimal model for this kind of service;
   e. raising awareness about the intellectual property (IP) protection issues, development of the support instruments for obtaining patents, arrangement of the IP protection issues in the laws and regulations, taking into account the examples of good practice of other countries, for example, Sweden;
   f. development of the support programs for academic staff and researchers for obtaining the business knowledge and skills, including contact hours with the entrepreneurs.

3. It is recommended to the managers/owners of the innovative companies in order to prevent or reduce innovation barriers to take the following activities:
   a. to evaluate company’s resources and take into account existence of such external innovation barriers as lack of financial support, lack of qualified personnel, lack of appropriate support services;
   b. to develop the long-term strategy where company's activities are planned also at the international level;
   c. to evaluate the company's management model and its openness to innovation, if necessary, to make changes;
   d. to promote new knowledge and technology absorption capacity of the company's employees;
   e. to carry out training of the employees regularly and to provide an opportunity to participate in the exchange visits;
   f. to build a team of professionals with complementary expertise.

4. It is recommended to Cross-sectoral Coordination Centre to take following activities:
   a. to take the responsibility for the development and management of the NIS and the development and implementation of the innovation policy;
b. to perform purposefully the analysis if the NIS and on this basis to develop and control the implementation of the specific instruments aimed for the promotion of innovative entrepreneurship;

c. to be responsible for initiating laws and regulations and budget allocations;

d. to coordinate the flow of information about innovative entrepreneurship in Latvia;

e. to organize business experience exchange forums and informative educational activities;

f. to evaluate the effectiveness of the organisations providing public support in any form for the knowledge and innovation generation process, make the audit of their functions, to evaluate the performance indicators, based on the results obtained to perform the optimization of the number of the organisations;

g. to promote cooperation between the Ministry of Education and Science, the Ministry of Economy and other public authorities at all levels.

5. Additional recommendations for the promotion of innovation aimed at the prevention or reduction of the innovation barriers indicated in this research:

a. to develop and offer training programs for the change of mind-set and motivation of the entrepreneurs in order to facilitate the transition to the business model that is oriented towards the fast development, international entrepreneurship and sustainable competition;

b. to carry out the assessment of the technology absorption capacity of companies and to develop appropriate tools for the promotion of this capability;

c. to activate the municipalities for the search and development of the new forms of support of innovative entrepreneurship;

d. to develop the regional innovative entrepreneurship information centres or to expand the functions of the existing innovation supporting organizations;

e. to activate the development of the scientific/technological/industrial parks, which operate in the accordance with the world practice by attracting the national, EU and foreign direct investment;

f. to achieve the tax reduction to a level where all the taxes do not exceed the taxes in the neighbouring EU member states and to introduce the tax incentives to boost the number of companies involved in the research, development and innovation;

g. to encourage credit institutions also to evaluate and provide financing for the innovative projects;

h. to ensure the advance payments for the implementation of the companies’ projects approved in the various EU programs;

i. to introduce the instruments for the support of the protection of IP abroad;

j. to increase the public procurement and to promote the public-private partnership projects;

k. to develop and support risk financing program for the early-stage innovative entrepreneurship.

5. CONCLUSIONS

1. This paper contains the main results, conclusions and recommendations of the doctoral thesis.

2. Conclusions and recommendations of this research were sent to the 71 innovative companies that have participated in the survey. Answers were received from 9 companies.

3. None of the owners/managers of the 9 companies have objected to the conclusions and recommendations. Recommendations as a whole were evaluated as good and possible to use in the promotion of the implementation of innovation. Some respondents have suggested preparing some recommendations more detailed.

4. As important issues promotion of the cooperation between entrepreneurs and scientists/researchers, the need to approximate the qualification of workforce to the needs of companies, the promotion of the justice in the country, the promotion of the access to the markets, the optimization of public administration, the improvement of the innovation support infrastructure in the public sector, the establishment of the joint coordinating centre, was highlighted.

5. There is a need for additional research of the impact of the NIS on innovation, of the innovation barriers especially the internal barriers. The illustration of the methodology on the basis of analysis of one NIS is not sufficient to draw conclusions on the usefulness of the framework.

REFERENCES


LITERATURE REVIEW OF IDEA MANAGEMENT: FOCUSES AND GAPS

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ABSTRACT

Purpose: on the basis of idea management literature review identify topical literature focuses, content, existing research gaps and make suggestions on future researches in this field.

Design/methodology/approach: research is based on theoretical research methods, which include literature review and descriptive statistics. This detailed literature review has considered 68 of scholarly empirical publications, conference proceedings, books and popular market reports published over the last 33 years, i.e., from January 1982 to February 2015, in all research fields.

Findings: the results of the research revealed that the amount literature sources created from 2002 till March 2015 has steadily grown, but it is still relatively low. Results probe that idea management mainly described in innovation as well in information technology literature. Idea management is topical and perspective to research, the authors have developed a large range of possible future research ways that shows that this topic is inexhaustible. There is a perspective to create literature review with the focus on the terms of idea management and idea management systems because research results reflect that there is no united view on these terms.

Research limitations: data collection of 7 databases with time focus from January 1982 to February 2015. Future researches must include wider data collection as well as to continue to research dynamics and content of the literature about this topic in future periods.

Originality/value: the paper gives overview about the idea management literature (reflecting the most often used research methods, literature, and theories) and identifies literature and research gaps. This paper emphasis potential research objectives. It is hoped that this article will stimulate scholarly dialog and researches about idea management.

Paper type: Literature review

Keywords: Idea management, Idea management systems, Innovation, Innovation management, Literature review, Research gap

1. INTRODUCTION

According to Karanjikar (2007) at information age, every organization has access to the same information (tools, techniques, literature, conferences etc.), on the basis of it, the question how to achieve a breakthrough success became more important, and the solution given is idea management. Ideas are the potential trampoline for many innovation ventures, several researchers and practitioners pointed the opportunity to improve innovation through managing improvements in the front-end innovation (Khurana, Rosenthal, 1998; Day, Gold, KuczmarSKI, 1994; Zhang, Doll, 2001), including idea management. Nowadays, organizations seek new ways of innovations (Westerki, Dalagamagas, Iglesias, 2013), but according to Iversen, Kristensen, Liland, Berman, Enger, Losnedahl (2009) there is a gap between the existing importance of innovation and the effectiveness and appropriateness of approaches and methods used to support and accelerate innovation. It emphasizes that it is topical and important to research idea management not as a concept, but also its application, methods etc. to develop appropriate comprehension how to use idea management to accelerate and support innovation. This situation requires to identify the main focuses and research gaps in existing literature to determine topical and unexplored objectives for future researches as well as existing research approaches (methods, theories, etc.) that could help to develop appropriate research structure. The aim of the literature review is to identify literature dealing with idea management to explore topical focuses and existing research gaps. Idea management has some connected terms, like, ideation, suggestion boxes etc., but in this research authors will refer to the idea management as a complex process or tool of generating, evaluating and implementing ideas.

Research aim: on the basis of idea management literature review to identify topical literature focuses, content, existing research gaps and make suggestions to future researches in this field.

Research tasks: (1) to manage research in scientific databases to explore literature where idea management is mentioned and to analyze selected literature; (2) create conclusions and suggestions for future researches.
Research method: research is based on theoretical research methods, which include literature review and descriptive statistics.

Research base: literature sources from 7 databases- Scopus, ScienceDirect, Google Scholar, Sage Journals, Ebsco Academic Search Complete, Emerald, Web Science. In the research mainly secondary sources (scientific papers, books etc.) and some tertiary sources (scientific papers sources for papers which are not currently available in the full version) are used.

There is numerous literature with a modest literature review (most of this literature review sources have literature review elements), but there is lack of specialized and deep literature reviews of idea management. Novelty of this literature review is the count of analyzed literature sources (in this research 68) and the research period (January 1982-March 2015), because the latest specialized literature review (Rose, Jensen, 2012) analyzed only 29 sources from 1982 to 2012.

2.LITERATURE REVIEW

According to Boell and Cecez-Kecmanovic (2010) literature review is one of the most important task for scientific work and has to be done in all scientific disciplines and Boote and Beile (2005) reveals that it impossible to create significant research without first understanding the literature in the field, but there is a negative tendency for many researchers to have poor literature reviews. Authors had summarize the main purposes for literature review from researches (Gall, Borg, Gall, 1996; Hart, 1999, Boote, Beile, 2005; Bolderston, 2008):

1) Delimiting the research problem.
2) Seeking new lines of inquiry.
3) Avoiding fruitless approaches.
4) Identifying recommendations for further research (exploring research gaps).
5) Exploring important variables relevant to the topic.
6) Identifying the main methods, literature, theories that have been used.
7) Give overview about the research field, main findings in the area.

The main purposes of this research are (1) to give overview about the research field (detailed content analysis and general data analysis (form of the literature source, dynamics) and identifying the main methods, literature, theories that have been used; (2) to explore important variables relevant to the topic (research perspectives (IT focus, internal or external idea management focus), structural (focus on design and process) or social focus (focus on social capital, creativity, cognition etc.)); (3) to identifying recommendations for further research, exploring research gaps.

Mostly idea management is connected with innovation literature, but it is important to include different fields in the literature review - many researches (Webster, 2012; Fawcett, 2013; Randolph, 2009) highlight that it helps to add valuable information to the research and to cover the whole field of research. Based on this conclusion this literature review has multidisciplinary view.

Summarized literature covers period from 1983 to February 2015. The study “Idea management in R-and-D as a Human Information- Processing Analog” (Green, Bean, Snavely, 1983), according to research, was the first publication in which the term idea management was mentioned. Scientific databases- Scopus, ScienceDirect, Google Scholar, Sage Journals, Ebsco Academic Search Complete, Emerald, Web Science-research was conducted in March 2015.

Novelty of this literature review is the count of analyzed literature sources (in this research 68) and the research period (January 1982-March 2015), because the latest specialized literature review (Rose, Jensen, 2012) analyzed only 29 sources from 1982 to 2012.

3.RESEARCH METHODOLOGY

Research is based on theoretical research methods, which include literature review and descriptive statistics. Literature review is sectioned in these research stages: (1) to research in 7 scientific databases to explore literature where “idea management” is mentioned; (2) to select literature directly about idea management; (3) to exclude duplicates; (4) to analyze selected literature (including descriptive statistics).

Literature review is not restricted to definite academic field, because idea management could be researched not only in innovation management context but in information technology literature as well.

Results of the literature review are analyzed in several dimensions: (1) general data analysis (form of the literature source, dynamics); (2) research perspectives (IT focus, internal or external idea management focus), structural (focus on design and process) or social focus (focus on social capital, creativity, cognition
etc.); (3) detailed content analysis (research substances and gaps).

4. RESEARCH RESULTS

At the first research stage literature sources in which “idea management” was mentioned were found. At the second research stage literature directly about idea management was selected and duplicates were excluded. The third stage passed 68 literature sources. Detailed literature source count in different stages is reflected in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Stage 1 Sources mentioned “idea management”</th>
<th>Stage 2 Sources directly about idea management</th>
<th>Stage 3 Unique sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scopus</td>
<td>36237</td>
<td>15</td>
<td>68</td>
</tr>
<tr>
<td>ScienceDirect</td>
<td>396435</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Google Scholar</td>
<td>3610000</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Sage Journals</td>
<td>137624</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Ebsco Academic Search Complete</td>
<td>996</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Web of Science</td>
<td>239</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Sum:</td>
<td>4283216</td>
<td>107</td>
<td></td>
</tr>
</tbody>
</table>

After the research, authors conclude that at the first research stage it could be more effective to search “idea management” in define fields, topic, key words, abstracts. Research results show that in all 68 sources the term of idea management was mentioned.

GENERAL DATA ANALYSIS

The results reflect that idea management is in the scope of researchers, because research results indicate that the most frequent literature source is scientific papers or 53% of all research sources (36) and 31% conference proceedings (21). There are also dissertation thesis (4), scientific institute working papers (3), articles in newspapers (2), books (1) and articles in books (1).

Mainly idea management is researched in USA (22%), Germany (15%), Spain (13%), Sweden (7%), Netherland (6%) and Denmark (6%). All summary is presented in Table 2.

<table>
<thead>
<tr>
<th>Country</th>
<th>USA</th>
<th>Germany</th>
<th>Spain</th>
<th>Sweden</th>
<th>Netherlands</th>
<th>Denmark</th>
<th>India</th>
<th>Greece</th>
<th>England</th>
<th>Finland</th>
<th>China</th>
<th>Norway</th>
<th>Ireland</th>
<th>Taiwan</th>
<th>Slovenia</th>
<th>Switzerland</th>
<th>Morocco</th>
<th>Russia</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>15</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
</tr>
</tbody>
</table>

The first literature source with mentioned idea management was in 1982. From 1982 till 2002 literature is fragmentary, but from 2002 there are substantive literature sources about idea management. The results show that in 2015 there is a decrease in literature sources therefore the research period is only to February 2015. See statistics in Figure 1.
Research results show that idea management became especially topical in 2009, but this topic is not broadly researched that is reflected in low numbers of literature sources per year.

Additional data in Google Scholar (2015) and Scopus (2015) represents that the most cited authors about idea management are Bothos, Westerski, Brem, Flynn, Vandenbosch, Sandstrom. Therefore these authors could be considered the main/ most influencing researchers of idea management. The authors agree that this question should be researched not only on the basis of database information, but also that empirical research should be conducted (research based in literature review sources of cited sources).

LITERATURE PERSPECTIVE ANALYSIS

As a result of insight into the idea management literature reviews, the authors reveal that idea management literature in some researches (Rose et al., 2012; Vagn, Clause, Gish, 2013) had been divided into groups - structural and social. Structural literature sources focus on systems, design and the process. Social literature sources focus on social capital, creativity, cognition etc. The literature of the contribution is presented in Table 3.

<table>
<thead>
<tr>
<th>Social</th>
<th>Structural</th>
</tr>
</thead>
</table>

There is a tendency that there is more structurally focused literature (73%), since 2012 there is only literature with structural focus. There are disserations only with structural focus, as well scientific institutes focuses on structural side of idea management.

The authors are interested to research whether there is focus on internal or external idea management.

**Table 3**

![Figure 1. Count of literature sources per year](image-url)
Focus on internal idea management in the literature was especially pronounced from 1982 to 2006. It could be explained by the distribution of open innovation ideas which appoint importance of both internal and external ideas. The authors consider that this topic should be researched more deeply determining what kind of factors influenced distribution of internal or external idea management in literature. Internal idea management ideas are dominated in literature (74%), because only in 9% of literature focuses on external idea management, but on idea management mix - 17% (3 literature sources were without any focus). Distribution of literature see in Figure 2.

Figure 2. Identified literature - external/ internal/ mix focuses

Chesbrough (2003) revealed that organizations should work with smart people inside and outside the organization. Chesbrough is one of the well-known open innovation researchers and with that conclusion he highlights that organizations should use internal as well as external idea sources. The study of Miles et al., (2005) emphasizes the aspects of cooperation in internal networks, but other studies focus (Bothos et al., 2008; Chen et al., 2002) on external networks. The research (Brem et al., 2007) also shows that integration of idea management is important for successful innovation. So, it is important to research both factors and how to integrate them. The research results show that there are few researches which research both.

IT aspects with idea management have been researched since 1986. The pioneer in this area was Applegate (1986). 54% of all researched literature has focus on IT aspects, for example, tools, opportunities etc. It is important to research IT aspects, for example, he study (INSEAD, 2012) revealed that information technologies and their tools are among the elements which enhance innovation process. According to Yoo et al. (2012) there is a growing significance of digital technologies in innovation processes. Coughlan et al. (2008) also insists that with IT development there are accessible new idea management tools. In the study Lin (2007) mentions that frequently these tools are applications which allow users to share with opinions and resources. The researches (Schmidt, 2006; Richter et al., 2006) reflect, for example, WebStorm, Idea Central, Cogni Streamer, which lets manage information, communication, coordination and corporation in social networks and Bakker et al. (2006) emphasizes that their significance only increases.

The authors consider that researched literature sources could be divided in two groups: (1) research of specific idea management systems (for example, Fritz, 2012; Lu et al., 1991), but it is important emphasize that there are researches which stress some specific idea management system features and explore how to improve them, like data linkage (for example, Perez, Larrinaga, Curry, 2013), classifying and comparing ideas (for example, Westerski et al., 2013) etc., (2) researches with the aim to develop new idea management systems (for example, Applegate, 1986; Lindroos, 2006). See Table 4.
Table 4

<table>
<thead>
<tr>
<th>Identified literature with IT aspects</th>
<th>Research/improve existing idea management systems</th>
<th>Develop new idea management systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lu et al.,1991; Fritz, 2002; Nilsson et al., 2002; Boeddich, 2004; Summa, 2004; Bakker et al., 2006; Gamlin et al., 2007; Coughlan et al., 2008; Bothos et al., 2008; Bjork et al., 2009; Barczak et al., 2009; Tung et al., 2009; Bailey et al., 2010; Hrastinski et al., 2010; Westerski et al., 2010; Westerski et al., 2011; Westerski et al., 2012; Holzblatt et al., 2011; Baez et al., 2012; Poveda et al., 2012; Perez et al., 2013; Westerski, 2013; Westerski et al., 2013; Sadriev et al., 2014</td>
<td>Applegate, 1986; Flynn et al., 2003; Vandenbosch et al., 2006; Lindroos, 2006; Bothos, et al, 2009; Iversen et al., 2009; Bansemir et al., 2009; Bettoni et al., 2010; Xie et al., 2010; Bothos et al., 2012; Lower et al., 2014; Narvaez et al., 2015</td>
<td></td>
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</tbody>
</table>

CONTENT ANALYSIS

The authors sum up and sort literature and theories used in literature to understand basic sources of idea management literature. The authors conclude that scientific knowledge primarily is represented not only in innovation management literature (for example in Galbraith, 1982; Green et al., 1983; Flynn et al., 2003; Summa, 2004; Bothos et al., 2009; Bjork et al., 2009; Voigt et al., 2006; Iversen et al., 2009; Sandstrom et al., 2010), but also in literature about software and IT (for example in Nilsson et al, 2002; Poveda et al., 2012, Bothos et al., 2012; Xie et al., 2010). The most often used theories in literature are network theories (for example in Deichmann, 2012; Bjork et al., 2009; Iversen et al., 2009; Bettoni et al., 2010), classical learning theory (for example in Deichmann, 2012), leadership theories (for example in Boeddich, 2004; Pundt et al., 2005; Deichmann, 2012). There are different aspects viewed in the literature connected with idea management, for example, open innovations and cooperation (for example in Bothos et al., 2008; Bothos et al., 2009; Iversen et al., 2009) and behavior of cooperation (for example, Bansemir et al., 2009), human information processes (for example in Green et al., 1983), creativity (for example in Flynn et al., 2003; Coughlan et al., 2008; Bakker et al., 2006), NPD (for example in Karanjikar, 2007; Barczak et al., 2009), social networks (Bjork et al., 2009), involvement (Bansemir et al., 2009) etc. The authors conclude that the idea management is represented mainly in innovation management and IT literature and there are a lot of specific angles how to explore idea management starting from creativity to NPD.

The authors also collected the most frequently used research methods in the literature sources. It has been concluded that the most often used methods are case studies, interviews, questionnaires and statistical methods. The authors chose them as indication for sorting methods, to achieve the research aims. This classification is adapted from classification developed by Beisell- Durrant (2004). See collected methods, objectives and researches where they were applied in Table 5.
More frequently used methods in researched literature

<table>
<thead>
<tr>
<th>Subcategory</th>
<th>Examples of objectives</th>
<th>Research examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>To identify types of idea management, To research the influence of leadership on quality of ideas, To research social network influence on idea management. To research idea management and its systems (problems, motivation etc.) and views about possible improvements (with the aim to introduce new systems). To verify information interpretation.</td>
<td>Saaticioglu, 2002; Vandenbosch et al., 2006; Deichmann, 2012; Bjork et al., 2009; Brem et al., 2007; Bansemir et al., 2009; Gish, 2011; Bailey et al., 2010; Bakker et al., 2006; Lindross, 2006; Vagn et al., 2013; Brem et al., 2009; Klein et al., 2010;</td>
</tr>
<tr>
<td>Focus group</td>
<td>To analyze idea management. To supplement other collected data. To develop and to test new systems.</td>
<td>Lindross, 2006; Vagn et al., 2013</td>
</tr>
<tr>
<td>Questionnaire (managers, participants, experts)</td>
<td>To collect data about idea management system application. To collect data to research correlations, for example, between transformative leadership and employee involvement in idea management and quality of ideas. For case studies, coded-self-administered questionnaires.</td>
<td>Applegate, 1986; Pundt et al., 2005; Bakker et al., 2006; Xie et al., 2010; Deichmann, 2012; Glassmann, 2009; Coughlan et al., 2008; Vagn et al., 2013; Moss et al., 2011; Zejinilovic et al., 2012</td>
</tr>
<tr>
<td>Observation</td>
<td>To evaluate a concrete system, its effectiveness and application, influencing factors.</td>
<td>Bothos et al., 2008; Bothos et al., 2009; Iversen, et al., 2009; Tung et al., 2009</td>
</tr>
<tr>
<td>FromIMS</td>
<td>For idea management system research.</td>
<td>Brem et al., 2009; Zejinilovic et al., 2012; Bailey et al., 2010;</td>
</tr>
<tr>
<td>Data Collection</td>
<td>Case studies</td>
<td>Lindross, 2006; Vagn et al., 2013; Nilsson et al., 2002; Gish, 2011; Westerski et al., 2010; Klein et al., 2010; Poveda et al., 2012; Aagaard, 2012; Barczak et al., 2009; Bergendahl et al., 2014; Perez et al., 2013</td>
</tr>
<tr>
<td>IMS</td>
<td>Statistical</td>
<td>(Applegate, 1986) (Bjork et al., 2009)</td>
</tr>
<tr>
<td>application and participant analysis</td>
<td>To create representative description of system users, application dynamics. To research social tie influences on idea creation. To evaluate result connection with social ties. To research how previous experience influence idea management. To evaluate and develop systems.</td>
<td>(Deichmann, 2012)</td>
</tr>
<tr>
<td>Statistical</td>
<td>To research dynamics, effectiveness, application. To evaluate correlations, for example, between transformative leadership and involvement, or leadership influence on idea quality and other factors- correlations, factor analysis, regression analysis.</td>
<td>(Applegate, 1986; Pundt et al., 2005; Deichmann, 2012; Zejinilovic et al., 2012; Bjork et al., 2009; Bothos et al., 2008; Bothos et al., 2009; Bothos et al., 2012; Tung et al., 2009)</td>
</tr>
<tr>
<td>Analysis of systems</td>
<td>To analyze empirical new methods or systems. To compare idea management systems. To create idea management system classification or ontology.</td>
<td>Faturs et al., 2009; Glassmann, 2009; Bakker et al., 2006; Brem et al., 2009; Narvaez et al., 2015; Summa, 2004; Bothos et al., 2008; Gamlin et al., 2007; Hristinski et al., 2010</td>
</tr>
<tr>
<td>ICT</td>
<td>Simulations</td>
<td>To evaluate a concrete system, its effectiveness and application, influencing factors.</td>
</tr>
<tr>
<td>Basic Literature reviews</td>
<td>Research literature on idea management and connected terms, for example, idea management systems, creativity, decision supporting systems. To create a new system, classification, model</td>
<td>Glassmann, 2009; Deichmann, 2012; Aagaard, 2012; Vagn et al., 2013; Aagaard, 2013; Bassiti et al., 2013; Zejinilovic et al., 2012</td>
</tr>
</tbody>
</table>

As important it is to research used focuses, specific details, as it is important to understand the main explored and researched ideas. Karanjikar (2007) provides a general view to idea management, viewing the idea management of a new product development. He puts forward the idea that in the ideadevelopment the total number of ideas is growing moving beyond a particular product or idea development towards commercialization (Karanjikar, 2007).

One of the first literature sources Green et al. (1983) identified the management needs of idea flow, creating the pattern that indicates various idea management aspects, but Galbraith (1982) study offered a design of organization where there are better conditions for ideas, transactions and arrangements. Rowebotham (1996) described a structured idea management approach, which consists of 7 parts- the development of criteria, preparation for idea generation, idea selection, development of ideas, idea evaluation, ranking of ideas and concept development.

Many studies describe idea management as a part of innovation management, for example, Micznik, 2013. Some literature sources (Aagaard, 2012, 2013; Bassiti et al., 2013; Lindroos, 2006) research idea management in specific part of innovation, like exploring in what way idea management can be applied as a tool in facilitation of putting an innovation in practice, showing how idea management and front end
innovation are related and may support each other. There is even idea management in front end innovations in specific industries researched, for example, in the Aagaard study (2012) pharmacy, proposing conclusions for effective facilitation of idea management. Confronting opinion is expressed by Barczak et al. (2009) who concluded that results about idea management role in innovation management at an early stage is unclear, but confirms the need for management improvement.

Sandstrom et al. (2010) indicated that the nature of innovation over the last decade has changed from incremental innovation to business model innovation and open innovation and these changes also place new demands on the idea management systems, the study revealed requirements of how to meet this need. Bailey et al. (2010) explores idea management in connection with specific innovation type- grassroots innovation. The study researches how idea management could support grassroots innovation.

Saatioglu (2002) detected certain manager archetypes in idea management, also Vandenbosch et al. (2006) described the idea of archetype management, focusing on the leaders and how their personality type affects the management of ideas, understanding of these types can improve management. The paper also highlights an interesting idea that human idea management system can exist by itself, but the IT idea management system cannot, which revealed an important part of various tool application and management. But Selart et al (2011) described two thinking types- value-focused thinking and alternative thinking, concluding that the value focused thinking influences idea management, it decreases the number of created ideas but increases quality of ideas. Wood (2003) created descriptions of 4 types of organizations, which reflects how they handle ideas. In this study the figure that illustrates these 4 types of organizations was developed which shows that not only do we need to generate ideas (be creative), but that we also must have a system to put them in place (to innovate). Wood (2003) looks at idea management as at a process with several stages – an effective idea generation, idea handling, effective idea-evaluation process, idea implementation, recognizing/ rewarding those involved- study describes also the preconditions and factors of these stages to be effective.

Lu et al. (1991) focused on the computerized drawing tools that support the design idea management, focusing on the idea management of groups. Researchers created a compilation of ideas with the group management activities, identifying user requirements and their implementation with CaveDraw system (Lu et al., 1991). Also Goyal et al. (2007) describes the structure how companies can manage employee’s ideas (at various levels). But Coughlan et al. (2008) examined the idea management process on individual and social level, exploring how ideas occur in creative work and the strategies and tools used to represent and develop them.

Vagn et al. (2013) concerns idea management in front-end innovation of R&D organizations. Research shows how managers and employees navigate in organization structures, technical features, creativity and interactions. Vagn et al., (2013) have created new theoretical framework of idea management that suggests a dynamic network structure comprised of the dimensions of space, content and process. But Bergendahl et al. (2014) addressed the paper to collaborative and competitive mechanisms used in firm-internal idea management, revealing that the two approaches can be combined, and explored how their paradoxical coexistence can be managed.

Iversen et al. (2009) and Shani et al. (2011) introduced new idea management concepts which are based on a life-cycle perspective on innovation, where the aim is to support all phases of innovation. But the Bassiti et al. (2013) constructed a new idea management life cycle that aims to support all activities of the front-end of innovation; this cycle consists of four key parts: idea generation, evaluation, implementation and links. The study described techniques that can be used in each part. Also Bansemir et al. (2009) presents the idea that an organization needs new idea management concept- interactive idea management system that includes multidisciplinary creation of teams and social software applications. Voigt et al. (2006) and Brem et al. (2007) recommended involving in the idea management not only internal sources of ideas, but also external ones in a structured way, so creating an integrated idea management system. Brem et al. (2007) also highlights that the earlier an integrated idea management is implemented, the greater is the probability of successful innovations. Enkel et al. (2009) aimed to advance R&D, innovation and technology management perspective. Researcher explored idea management as open innovation tool which could involve internal and external ideas. Enkel et al. (2009) also highlights that the internet provides the opportunity to involve external sources in idea management.

Integration of market pull and technology push in the corporate front end and innovation management was researched by Brem et al. (2009), introducing advanced framework that can be used in today’s corporate environment. But competition and cooperation in idea management were explored by Tung et al. (2010).

Baikker et al. (2006) researched idea management as a creativity management, the study focused on industrial R&D organizations. Researchers developed crea-political process model in which there is an
ample room for the thought that ideas emerge and survive within a social-political context and the research findings challenge the literature of idea management in organization to consider the political activities of ideation in the whole process of creativity. Creativity research was also conducted in Van Dijk et al. (2002) study which summarizes the organizational factors related to the management of creativity to transform the creativity into ideas. Yu et al. (2006) developed an idea management model based on “total innovation management” with the aim to increase innovation results in companies in China, but Xie et al. (2010) established the idea management system that covers the entire idea management process and helps team building.

Lower et al. (2014) presented research results and practical experience regarding implementations of PLM systems in a set of companies, namely, at the early stages of product planning and innovation management. Lower et al. (2014) developed an extended data model in combination with a reference process model for innovation and idea management and described implementation of that in a state of the art PLM system. Moss et al. (2011) analyzed if knowledge management and innovation governance distinguish top innovation performers, reflecting that the aim of idea management systems is to support human idea management to increase innovation capacity. Holzblatt et al. (2011) explores how social media can affect the process of innovation, idea management is viewed in the context of innovation and recommendations were developed to assess and monitor the impact of social media on innovation, business strategy.

Flynn et al. (2003) in the paper present methodology to facilitate the organizational management of idea generation process, an integrated software tool- Creations are also introduced. Software was also researched by Summa (2004). Research mapped 26 existing commercially available idea management software and evaluated the available technologies and software in relation to the idea management needs, evaluated their functions and structures. In this research the author developed software selection methodology and evaluation criteria that can also be used in other studies. Research also highlights that it is unable to rank the software and set out the reasons. From the same Innovation Management Institute, the study (Lindroos, 2006) revealed the development and theoretical basis of an idea management process in a medium-sized organization producing physical products. Idea management in this research was explored in innovation as an initial phase or front-end. In research it was indicated that all ideas management processes and tools should be well introduced and applied. It also outlined the basics of the front end innovation support infrastructure.

Technologies for open innovation were investigated by Hrastinski et al. (2010). The paper explores how current technologies are designed to support open innovation and develops the classification of open innovation systems and one of the categories is an idea management system which lets users suggest, evaluate and discuss ideas openly or within predefined categories. It is concluded that IT systems do not support initial stages and defining of ideas. Also Nilsson et al. (2002) study explored idea management systems and developed recommendations for application of these systems to increase the innovation capacity. It is concluded that idea management systems in organizations strengthen the innovation capacity of enterprises. The paper explores main aspects for more useful applications- specific objectives, IT role, creators’ role in the realization of the idea, the way in which ideas are turned into products (Nilsson et al., 2002).

Futures et al. (2009) developed the performance assessment methodology of idea management, but Glasmann (2009) established model “Glassman Model for Managing Idea Generation”, which helps to control idea management.

Sadriev et al. (2014) considers prerequisites of origins of the idea management systems and analyzes their application, a special attention is paid to software. They also mentioned 3 types of idea management systems, but without substations. The strong point is that the authors created one of the first brief idea management system history. But one of the first researchers who divided idea management in groups was Gamlin et al. (2007). They presented the idea of "active" idea management, so separating the newest idea management type from predecessor 'Suggestion Box' which we could call "passive" idea management. Gamlin et al. (2007) found that more successful idea management results are achieved when idea management is conducted parallel in real life and in the internet. The researcher in the paper discusses possible issues that can be resolved with idea management and the basic elements of a successful IM and possible benefits.

Perez et al. (2013) analyze the impact of semantic-enabled idea management systems within a sustainable innovation process, in particular, exploring how ideas can be enriched with contextual Linked Open Data. A specific questionis also explored by Baez et al. (2012) who presented the design of a dashboard for facilitators in idea management systems, demonstrating how the dashboard helps facilitators in making more efficient and effective decisions. Specific challenges in idea management are solved by a lot of others studies (Westerski et al., 2011; Westerski et al., 2013; Westerski et al., 2012; Westerski et al., 2013a; Westerski et al., 2010; Poveda et al., 2012). For example, Westerski et al. (2012) deal with one of the major challenges in
idea management systems- rapid and automatic assessment of idea value. To address this problem, the paper proposes the use of opinion mining technique and a new metric that summarizes sentiments in the community about ideas introduced. Also Westerski et al. (2013a) focus on the assessment process and propose a number of solutions that allow filtering, comparing and evaluating the submitted ideas in idea management ideas. Westerski et al. (2010) recommend to use semantic networking principles as a possibility for idea management systems improvements but Poveda et al. (2012) describes the design and the use of a semantic search model as an innovation support system. Westerski et al. (2013) established ideas annotation framework to facilitate the creation of ideas and Westerski et al. (2011) described the use of structured data management systems and showed how this relationship can solve problems in idea management systems and presented a new IT tool- idea management system that helps collect, organize, select and manage innovative ideas from people outside the organization.

Deichmann (2012) investigated the role of leadership styles on idea quantity, the role of social ties as an important mechanism that people use to “build” an idea, as well as how success and failure experience of people’s prior idea submission influences submission of new ideas and their performance, the forth idea that he explored is the reciprocal dynamic between outcomes of prior creative ideas and the social structure of the network. A similar research was developed by Bjork et al. (2009) who explored the interrelationship between innovation idea quality and idea providers network connectivity, using social network analysis. The results highlight that it is important that the possibility to interact with others should be supported and facilitated but an open question is if the idea generation and social networks should be formalized. The results show that there is a correlation between idea quality and idea provider network connectivity. Similarly, Deichmann (2012) and Pundt et al. (2005) investigated the correlation between transformational leadership and employee contribution to idea management. The paper revealed a strong correlation between the intellectual stimulation and contributions to idea management as well as the correlation between employee contribution to idea management and transformational leadership is stronger when there is a positive improvement culture in the organization.

In many researches when user innovator idea was researched it is focused on external sources, like, consumers etc., but Zejnilovic et al. (2009) investigate the innovation proposals made by employee-user to an idea management system. The results revealed ways for companies to increase the success rate of the ideas submitted by a broad base of employees to idea management systems and to bring more radical ideas to these systems. But there are studies which focus on external idea sources (Bothos et al., 2008) (Bothos et al., 2009) (Bothos et al., 2012), reflecting that idea management can be used outside the organization in information aggregation markets, where professionals and users choose ideas that organizations implement. Researches show that involvement of external resources in idea management is an effective and useful way how to reduce time and costs by allowing ideas to generate and evaluate in virtual sessions.

Klein et al. (2010) researched BMW Finance Service experience, exploring how idea management helps change management. Specific cases were also explored by Narvaez et al. (2015). The paper offers idea management processes that could support technological transfer between the Canadian Space Agency and industrial partners through ICT, also Bettoni et al. (2010) create a new model for a concrete organization, establishing idea management system for university. Boeddich (2004) describes basic and specific requirements for idea management. The study highlights benefits of internet-based system application: motivation increase, transparency, rapid assessment, retention, less conflict with patent-related problems. Gish (2011) reaches what lets various idea management activities to succeed and what leads to failure. Gish emphasizes, that it is important that managers understand the design of idea management and daily work process, as well as their connection.

Authors also reveal that it would be advisable to create literature reviews with the focus on the terms “idea management” and “idea management systems”, because the research results reflect that there is no united view on these terms. For example, majority of literature sources has described idea management as a process with 2-7 parts (some of them contrasting) and idea management as a part of innovation process. But there are also other views on this term, like Galbraith (1982) term of idea management has used in individual level as cognitive and social process etc. It is also very important to research the term “idea management system”, because this term has been used with wide range of meanings, describing either process, system or tool.

5. SUGGESTIONS FOR FUTURE RESEARCHES OR GAPS IN LITERATURE OF IDEA MANAGEMENT

As important it is to research existing literature content, highlighting gaps is a crucial part of literature.
review. The authors have collected unanswered questions from researches (excluding mentioned under researched questions, but explored in other researches) and developed suggestions for future researches for idea management researchers:

1) To create literature review with the focus on the terms of idea management and idea management systems, because the research results reflect that there is no united view on these terms.
2) To examine connections between idea management systems or idea management networks and different types of innovations, for example, radical and incremental innovations. To research how to encourage a certain type of innovation with idea management, for example, radical innovation. Literature shows that there are differences in idea management processes, but they are not fully researched.
3) To research empirically psychological factors in idea management.
4) To research the best methods and techniques for each idea management stage.
5) To create idea management system classification. For example, the study (Hrastinki et al., 2010) classified open innovation technologies and one of the categories was idea management systems, it would be advisable to create sub-categories for idea management systems.
6) To research quantity and quality of participation in idea management not only of ideas.
7) To probe the correlation between the size of the network and the quality of ideas. The study (Zejnilović et al., 2012) revealed a positive correlation, but the authors’ 5 years of practical experience with idea management systems raise doubts about this conclusion.
8) To analyze if there are differences how social capital behaves in idea management if they generate, evaluate and develop commercial or social ideas.
9) To explore motivation of participation in idea management.
10) To research support infrastructure for idea management systems in internet (from operative and strategic perspectives).
11) To gather information about commercially available idea management software and examine how to integrate them in idea management. The study (Iversen et al., 2009) reflects that there are no idea management systems that support idea management at all innovation stages; the authors consider that it would be considerable to investigate this statement.
12) To research influencing factors. The studies (Cumming, 1999; Dooley, 2000; Flynn et al., 2003) revealed these factors theoretically, but it could also be explored through empirical research.
13) To research problems in contemporaneous idea management systems and holistically investigate idea management success elements.
14) To research what kind of idea sources (internal/external) to integrate in idea management, how to find the balance, what kind of problems and benefits for these integrations. To investigate idea management network factors that influence idea management.
15) To probe intellectual property protection aspect in idea management systems (who owns ideas)
16) To research how to organize idea management and investigate decision making main dimensions.
17) To explore how to develop and improve idea management networks over the time.
18) To explore social ties in idea management after the social exchange or the similarity-attraction theory, to probe how to adjust social- psychological behavior changes in the contrasts of idea management network sizes or strength of ties.

6. SUMMARISATION

Every invention, discovery and social improvement started with an idea. The study Fritz (2002) revealed that we do not give ideas the same sort of attention than to other forms of intellectual property. According to Sadtchioglu (2002) researchers also pay relatively little attention to them, but there is also a contrasting opinion by Zejnilovic et al. (2012) who insists that idea management has been researched for long time and from many perspectives. The authors consider that this contrast arise because of the research advancements in the last 15 years - till 2002 there was a lack of literature on idea management, but since 2002 amount of literature sources on idea management created has grown noticeably. But the authors also esteem that Fritz (2002) and Sadtchioglu (2002) conclusions are still topical, because although amount of literature has steadily grown since 2002, it is still relatively low, and the authors could approve Gish (2011) that there is a growing interest for idea management from researchers. The researches (Nillson et al., 2002) reflect that introduction of an idea management system in organization strengthens innovation capacity, so it is a positive tendency in the development and application of different idea management systems; according to Bansemir et al. (2009) and Shani et al. (2011), for example, even many consulting companies (according to Fritz (2009), like, Price Waterhouse, Ernest & Young) use idea management systems. Idea management is topical and perspective
research subject and the authors have developed a wide range of possible future researches that shows that this topic is not exhausted. Based on the research, the following conclusions can be deducted:

1) The first literature source that mentioned idea management was in 1982. From 1982 till 2002 literature is fragmentary, but from 2002 there are substantive literature sources about idea management.

2) Literature on idea management mainly deals with idea management and idea management system research, exploring their application and problems. Recent literature has begun to probe how idea management systems could be used for specific objectives, for example, technology transfer and how idea management is integrated in organizational processes.

3) The review reflects that idea management is represented in innovation management and IT literature.

4) The most often used theories in literature are network theories, classical learning and leadership theories. There are different aspects viewed in the literature connected with idea management, for example, open innovations, cooperation, behavior of cooperation, human information processes, creativity, NPD, social networks, involvement etc.

5) Most of the literature sources focus on internal idea management, but only few of them reflect internal and external idea management at once.

6) IT aspects are widely viewed in literature.

7) There are structural and social literature focuses, but the interplay between them is not revealed in depth. There is a tendency to have more structural focused literature and since 2012 there has only been literature with structural focus. Less revealed is the social side of idea management, so it is also a perspective research field.

8) There is dominated focus on internal idea management in the literature.

9) The most commonly used methods in literature are case studies, interviews, questionnaires and statistical methods, but idea management research could include a lot of other different research methods. By these or new methods the authors encourage researchers to close the research gaps in idea management literature.

10) There are a lot of possible future researches (according to research gaps), for example:

   • To research what types of innovation we can develop in different types of idea management networks, because according to Dijk et al. (2002) companies invest a lot of finance in idea management systems but there is a lack of radical innovations.
   • To research how to manage idea management, because, according to Gish (2011), without appropriate application there will not be a great result.
   • To create literature review with the focus on the terms of idea management and idea management systems, because the research results reflect that there is no united view on these terms.
   • To examine connections between idea management systems or idea management networks and different types of innovations, for example, radical and incremental innovations. To research how to encourage a certain type of innovation with idea management, for example, radical innovation. Literature shows that there are differences in idea management processes, but they are not fully researched.
   • To gather information about commercially available idea management software and examine how to integrate them in idea management. The study (Iversen et al., 2009) reflects that there are no idea management systems that support idea management at all innovation stages; the authors consider that it would be considerable to investigate this statement.
   • To research influencing factors. The studies (Cumming, 1999; Dooley, 2000; Flynn et al., 2003) revealed these factors theoretically, but it could also be explored through empirical research, etc.

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