

CER Comparative European Research 2014

Proceedings | Research Track

of the 1st Biannual CER Comparative European Research Conference

International Scientific Conference for Ph.D. students of EU countries

March 17-21, 2014 | London





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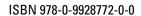
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Introduction

The conference Proceedings you are holding is a collection of selected peer-reviewed texts presented at the international scientific conference Comparative European Research - CER 2014 (17 – 21 March).

The biannual international scientific conference is organised under the auspices of the SCIEMCEE scientific platform every March and October and follows up on activities aimed at providing greater support for the scientific activities of Ph.D. students and beginning researchers. The various biannual CER conferences represent a space for the international assessment of the qualitative standard of scientists and the results achieved by the various academic institutes. The CER conference is an ideal place for comparing the standard of scientific work, particularly on a European scale.

The Proceedings from the 2014 CER conference contains several dozen academic texts whose main purpose is the presentation and sharing of knowledge always in one of ten conference sections. The conference Proceedings prioritise only those articles which are good enough to offer readers new insights into the issues analysed, or which extend the known boundaries of science. The guarantor of the CER 2014 conference is a signatory of the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, and therefore all papers are made available to professionals and the general public via OpenAccess.

The conference committee, comprising experts from several university departments, believes that the CER international scientific conference will attract an ever wider base of participants to join in the discussions and will stimulate further scientific work and interdisciplinary development.

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THE ASPECTS OF EMPLOYEE ENGAGEMENT

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Abstract: The engagement of employees can be explained as a positive connection of employee and company that is manifested by positive attitude towards work, corporate values and loyalty. It is reflected in employee's relation to work, other employees and customers as well. In our research we were interested in opionions of employees in below manager positions in international companies. They should evaluate their manager's behavior – how much he or she trusts them and how much possibilities to use their own creativity at work they have. The results show that most of managers trust their employees but only 66,5 % of managers provides enough opportunity for subordinates to use their own ideas and creativity at work which means that one third of managers don't use the potential that can subordinates bring to work and this aspect can strongly participate on their feeling of disengagement.

Keywords: engagement, commitment, trust, satisfaction

1. Introduction

The employee engagement is now commonly mentioned concept in the field of human resources. Motivation is similar issue, but it is not its synonym. Engagement is related to internal, deep-rooted sense of commitment, pride and loyalty, which does not change immediately. Level of motivation on the other hand is subject to external factors, particularly the expectations, where efforts should bring valuable consideration, such as financial premium. [7]

2. Employee Engagement

One of the first theorist who have dealt with issues of engagement, was an American psychologist William Kahn. According to him, engaged employee is the one who is impressed with his work conative (all his energy is devoted to work, does not go away from work unless he has fulfilled his tasks), cognitive (he pays full attention to work) and emotional (work is for him source of joy), performs work beyond his obligations, on his own initiative assumes a new roles and it is important for him of how the company where he works, has been successful.

This topic is also dealt with William Macey, according to him, engagement means an individual sense of self-discipline and purposeful energy that manifests as own initiative, effort, perseverance and adaptability leading to achieving the goals the company. [6]

Engagement of employees can be explained as a positive connection of employee and company that is manifested by positive attitude towards work, corporate values and loyalty. On this bases engagement can be defined at three levels:

- Agreement employee performs assigned tasks because of his expected fulfillment of something, usually a reward in the form of wages.
- Identification employee performs assigned tasks because he wants to maintain favorable relations in the workplace. He is identified with the enterprise and is proud that he can work there.

 Coexistence - employee considers corporate values as right and important to the extent that they are his own values. Company values coincide with the values of his life. [3]

As engagement, we can also understand the thought and emotional connection of employee to his work, manager, co-workers, other employees, but also to the organization, while this connection stimulates him to give every day the maximum of effort and energy at work. [11]

Engagement of employees is mainly reflected in the following three areas:

- In relation to work the employee is fully dedicated to his work, he is excited and tries to meet the interests of the enterprise by his performance. Employee who understand the link between his work and the organization activities, tends to spend more effort at work and persist for a long time with one employer.
- In relation to other employees engaged employee naturally works in team. Such employees emphasize open communication, work fills them and they feel that they are treated as valuable contributors to the success of the company.
- In relation to the customers engaged employees are more powerful, more active and thus help the organization achieve better results, which will ultimately lead to higher customer satisfaction. [12]

The answer to the question who is engage employee offer several authors. Richman characterizes engaged employee as an employee who:

- uses his skills and dispositions to meet the needs of customers,
- is working for the company because he wants it itself,
- is able to make anything that will benefit the company,
- spends his energy for the success of the enterprise,
- is active and willing to take risks,
- each identified problem considers as solvable,
- believes that contributes to business assets. [9]

German authors Bismarck and Bäumer define engagement as certain employee behavior that refines the concept of commitment of the employee to the company called 3S-concept. According to that engagement can be expressed by three levels of employee commitment to the company:

- Say employee speaks positively about the company and outside the premises as well. This is the lowest level of commitment.
- Stay employee remains in the company longer than is required.
- Serve employee serves to the company. It is a high level of commitment to the company. [2]

Engagement takes on particular importance in the context of bilateral relations between employees and company in which they work. Both of these parties are aware of their own needs but the needs of the other party as well and also a way to support each other in order to fulfill these needs. Engaged employees and engaged organizations are willing to invest in their relationship and do one another a little extra work because of the nature of such reciprocity considered beneficial for both parties. [1]

A highly engaged employees help companies in which they work to achieve better economic results and thus to overtake competitors because their efforts and willingness to work beyond their obligations is the mean by which a company can easily be directed towards meeting its strategic objectives. Specifically, the above-average level of employee engagement is manifested, for example by achieving higher individual performance, lower error rates, lower turnover, lower absenteeism, fewer damaged goods and losses as well as higher productivity and employee performance. [11]

Marciano found in his research of employee engagement when asking the question "How can you tell if an employee is engaged?" these top 10 indicators:

- 1. He brings new ideas to work.
- 2. He is enthusiastic in his work.
- 3. He is proactive.
- 4. He actively seeks how to improve himself, others and the whole organization.
- 5. He constantly overcomes the objectives and expectations.
- 6. He seems curious and interested, he asks the questions
- 7. He helps team members and encourages them.
- 8. He is optimistic and positive.
- 9. He overcomes obstacles and is still focused on his tasks, he is persistent.
- 10. Is dedicated to the company. [7]

The level of engagement depends not only on the will of the employees themselves, but primarily on the ability of the employer to create adequate conditions for employee engagement. If an enterprise wants to have enough engaged staff it should focus more on the psychological and social processes rather than financial incentives. To maintain a high level of employee engagement the company should therefore take the following steps:

 create such a business climate that leads to cooperation and support of team spirit,

- distribute the workload between individual employees fairly.
- allow employees to develop skills and competencies continuously,
- create opportunities for personal and professional growth of the employees,
- delegate the tasks to staff who is able then to act on behalf of the company,
- create and present a future-oriented vision in such a way that employees are aware of not only the meaning of their existence and direction of the company, but mainly their individual role in achieving success,
- direct company focus on product quality and customer service and demonstrate this priority in everyday decision-making. [5]

3. Methodology

The type of research we used in our study is a mapping research. It is a research project to describe and classify the investigated phenomena. [8]

As the research sample we chose 200 employees on subordinate positions in large international enterprises. All of respondents who fill the questionnaire work currently on below manager level positions. Selected companies are long-term existing enterprises in the market and the management of human capital is at a very high level there. We obtained respondents from sectors: electricity, gas and telecommunications. As a research tool, we decided to use questionnaire because of the importance of anonymity needed for examining sensitive issues in relation manager subordinate. In our research we tried to obtain information through a questionnaire of attitudes and opinions on the behavior of their managers. The questionnaire was distributed online – the link to webpage with questionnaire was sent via e-mail. The response rate was approximately 50 %.

The questionnaire was focused on participative management style elements. The items in questionnaire were created by us based on literature findings and were measured on a four – point Likert type scale (yes - rather yes - rather no - no). For this article we would like to introduce results of two selected questions from the questionnaire.

4. Results

Question no.1: Does your manager trust you?

Table 1. Trust in subordinates

	%	cummulative %
Yes	50.5	50.5
Rather yes	37.0	87.5
Rather no	12.0	99.5
No	0.5	100.0
Total	100.0	

Source: self-processed

Question no.2: Does you manager provide you enough opportunities to use your own ideas and creativity at work?

Table 2. Opportunity to use own ideas and creativity

	%	cummulative %
Yes	33.5	33.5
Rather yes	32.0	65.5
Rather no	22.5	88.0
No	12.0	100.0
Total	100.0	

Source: self-processed

As we can see in tables, 87,5 % of subordinates think that their manager trusts them, what is really positive finding. It is first step in building of engaged relationship. What is not so positive is result of second question where we can see that only 66,5 % of managers provides enough opportunity for subordinates to use their own ideas and creativity at work. This means that one third of managers don't use the potential that can subordinates bring to work and this aspect can participate strongly on their feeling of disengagement.

5. Conclusions

This study examined two selected aspects of employee engagement. It demonstrated that subordinates think that their manager trusts them mostly but despite that, they don't have enough opportunity to use their ideas and creativity at work.

Several limitations of the research should be noted. The sample size is small but we believe that similar results would be confirmed even in larger sample.

We incline to the view that human resources are the most important means to achieve results. The company cannot be successful without the financial and material resources, but human resources should be an active element that sets the other ones in motion and keep them going.

The difference is, whether the performance is achieved by encouraging co - operation and activities of the human factor, it means "with people" or "against them". An effective manager has the highest performance due to effective leading style. He uses individual motivation, reinforces the sense of group loyalty and identification with the organization. The ideal situation is when maximum performance is accompanied by employee satisfaction, good relationships within the group and a positive team spirit at work. [10]

Many researches show that engaged employees are more productive in the long run than unhappy and dissatisfied. They don't have so many absences, are less likely to leave the company and work more than what are their duties. Our research aimed to contribute to a deeper knowledge of the attributes of engagement and show the situation in specific issues of engagement - trust and opportunity to use own ideas and creativity at work.

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BARRIERS TO INNOVATION AND THE POSSIBLE ELIMINATION OF SUCH IN SMALL AND MEDIUM ENTERPRISES

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Abstract: Innovative SMEs have a shorter managing process and are more flexible in relation to the shortening of products' life cycles. The role of innovative entrepreneurship is to transform results of scientific - research activity into an implemented form and successfully bring it into the market. Content of this article is the summarization of innovativeness of small and medium enterprises and subsequent definition of barriers to innovativeness of these enterprises. The article examines barriers to innovation and suggests some potential possibilities for the elimination of such barriers in small and medium enterprises (MSP) involved in the production of second-degree wood processing (DSP). When inner barriers to innovation were defined, some possible means for the elimination of such were suggested. The suggestions for the elimination of barriers to innovation from the micro-economical point of view are general, which means that they can be used in any of the MSP types regardless of their field of activity. The basis for successful innovation is its fundamental position in the entire enterprise, its surroundings, together with the directorship through all levels of management and co-workers as well as to external partnership enterprises.

Keywords: barriers, competitive advantages and disadvantages, competitiveness, innovations, small and medium enterprises, the elimination of barriers to innovation

1. Introduction

Wood processing and furniture industries are important, sustainable, innovative and ecologically acceptable industries. Their turnover in 2008 was about 221 billion Euro and these industries employed 2, 4 million people in more than 365 000 enterprises, most of them small and medium enterprises. Almost half of the turnover was accounted for in the furniture industry. The general financial and economic crisis had a significant impact on the whole industry: in 2008 and 2009 the turnovers decreased by more than 20%.

The industry focuses on competitive advantage development, such as:

- flexible production, which enables the production of specifically adapted products,
- specification with regard to the level of quality and technology,
- top design,
- development of values, which are not based on price (e.g. brand creation, positive shopping experience),
- integration of pre and post sale services,
- quick distribution and minimal storage period.

The European furniture industry focuses on a "neverending" process of innovation from the technological, functional and aesthetic point of view.

Innovations not only create competitive advantage but also enable the wrecking of the competitive advantage of other enterprises. Innovative MSPs have a shorter process of directorship and flexibility with regard to the reduction of production life cycles. The function of the innovative enterprise is to transform the scientific – research activity

so that the results lead to their realization and to the subsequent successful launching onto the market.

In the knowledge-based economy, innovation is of the highest priority and it concerns all fields. The Innovative system is becoming a part of the entire economy. As a result of this, innovative policy measures have a cross-section characterization; they are the object of special attention for the government as a whole [1].

The success of the enterprise strategies of mutually competing enterprises, depends on how these enterprises are able to adapt from the traditional management conception of enterprise activities, that highlights production effectiveness in connection with the usefulness of marketing and selling, to a more modern and complex conception, that is based on the personal initiative and creative approach of every single employee. This then leads to the acquisition of specific advantages that cannot be imitated by competitors.

The way to gaining this desired competitive advantage is generally connected with the level of innovation.

2. The term innovation

The term innovation underwent a long the term innovation has undergone a long historical development. It first started to be used at the beginning of the last century by J.A.Schumpeter, who came up with the innovation theory, especially in the technical field. Other authors such as P. F. Drucker and Valenta later continued in this vein. Here are some of the definitions:

According to Drucker [2] innovation is "every change of profitability, everything that changes the potential of existing sources of fortune making."

"Innovation indicates a change in the original structure of the production organism that is the changeover to new state of inner structure. Change of products, technology, means of production, organization and market structure belong to innovation. The changes can be both qualitative and quantitative" [3].

Innovation includes the use of the knowledge of generating and the practical application of new ideas that result in success [4].

According to the COM document [5] 112 by the European commission: "Innovation is the renewal and expansion of production and services scale and connected markets, new production, delivery and distribution methods, adoption of changes in management, organization of work, work conditions and qualification of labour force."

The Oslo manual [6] defines innovations as follows: Innovation is the implementation of a new or markedly improved product (product or service), process, new marketing method or new organization method in trade practice, the organization of the workplace or external relationships.

Innovation is the creation of something new or more precisely the improvement of the former (product, service, production method, selling method etc.). It always has the potential to become an object of customer's attention [7].

2.1 Innovation barriers

Innovation barriers include obstacles and reasons for which innovation activities have not started or for which some projects were delayed or cancelled and did not bring about the desired results [1].

We will not be able to come across theoretical definitions of the term "barrier" in specialized literature, but will rather find there the term "risk". Risk means the degree of danger. It is a level of probability that a certain negative phenomenon will occur [8].

On the one hand, some risk is connected with the chance of extraordinarily high benefits, but on the other, with the danger of failure and losses.

Kováč [9] defined in his publication the main sources of risks that influence the failure of innovation.

The main sources of risk:

 change of demand (change of consumer preferences, entry of substitution products and services onto the market, fall in the customer purchasing power, the entry of competition),

- change of price, or more precisely change of costs material, energy, pay, investment facilities etc., alteration of purchasing power,
- change of technologies (materials, constructions, technological processing),
- microeconomic and political environment (taxes, laws, inflation among others).

Usual (typical) causes of innovation failure – and other sources of risk:

- structural or technological innovation deficits that result in the poor quality (defects) of products,
- real production costs are higher than they were anticipated,
- launching a new product at the wrong time,
- insufficient marketing support for innovation: assumption that a good product will be successful without sales support,
- small market without suitable conditions for development,
- insufficient potential for any further development of the product, or more precisely services,
- lack of service support for a new product,
- the new product is not compatible with the company (image, distribution),
- not taking market changes (psychological, demographic and social questions) into account,
- mistakes in project management,
- new legislative restrictions (e.g. ecology).

Kováč [9] further says that some causes for the lack of product innovation are:

- products that do not correspond to customers' needs,
- products that require a lot of material and energy and are laborious to produce,
- products of poor quality, outdated, uninteresting or scarcely available products,
- products that are made by means of outdated technology and which are thus uneconomic.

Cooper [4] classified the causes of lack of product innovation as occurring when:

- introducing a new product onto the market,
- there are satisfied customers within the competing market,
- the new product is relatively expensive,
- new products are often introduced onto a dynamic market.

Tučeková [10] in her article (Experience of innovation) refers to three obvious barriers that prevent the employees from taking part in the innovation processes:

- Understanding the term innovation is a barrier in itself. Innovation is the application of new ideas, improvement, or new invention. In practice innovations are mainly attached to products and technologies.
- Barriers to formulating differences among comparative objects.

 A barrier is the reluctance to devote time to understanding some basic terms and connections.

Eurostat [11] determines the classification of 12 external and internal factors that hinder innovations and, which are divided into four groups:

- 1) Expense factors: lack of financial resources in an enterprise or in a company, lack of external financial resources, too costly innovation expenses, excessive risk with respect to expense factors.
- 2) Knowledge factors: lack of qualified workers, lack of information about technology and markets, problems with finding partners for cooperation for such innovations.
- 3) Market factors: market dominance of companies, uncertain demand for innovative goods or services
- 4) Other reasons for not innovating: previously realized innovations, no existing goods after innovation.

Domestic enterprise subjects most often list factors as barriers to the innovation process:

- knowledge factors, most often in the form of lack of qualified workers,
- limited financial resources,
- lack of information about the market and difficulty in finding desirable partners,
- an externally controlled market and some degree of risk associated with innovation.

3. The goal and methodology of the survey

The goal of the survey itself was the evaluation of the competitive ability and the application of innovations in some selected small and medium enterprises (MSP) in the realm of second-degree wood processing.

The survey about particular areas of innovations involving the study of small and medium enterprises was undertaken at the exhibition "Furniture and living" in Nitra (as part of a PhD thesis). The respondent sample was created by a random stratification selection in small and medium enterprises of the wood processing industry in Slovakia. The form of the survey was a written questionnaire. The representative of the enterprise filled in the questionnaire independently in the presence of the questioner.

The number of questioned enterprises amounted to 71. The samples were micro-enterprises with 1 to 9 employees, small enterprises with 10 to 49 employees and medium size enterprises with 50 to 249 employees in the wood processing industry in Slovakia. The majority of the interviewed respondents were small enterprises – the total number was 39. The questionnaire was then answered by 18 small enterprises and 14 micro-enterprises. The main production schedule of each enterprise was the production of furniture. From the production of the schedule furniture, it was mainly the production of rustic furniture, furniture for offices and shops, kitchens, living rooms and studies. The first part of the questionnaire included questions that helped to describe y the company in more detail: the name of the company, company regulations, company address,

size of the company, number of employees and production assortment.

The other part contained 35 relevant questions that were structured by the following study fields:

- competitive ability,
- competitive advantage,
- competitive disadvantage,
- innovations.

3.1 Results of questionnaire surveys

On the basis of the results of marketing survey the following conclusions arose:

- Addressed MSPs stated that they use information from exhibitions, educational stays, the Internet and specialized literature.
- MSPs think that they take adequate care of their customer
- MSPs try to put stress on competitive ability of the enterprise on domestic market, monitor competition activities and make a good impression on its goal group by its production programme.
- Respondents consider adherence to terms of a contract, high product quality, flexibility of a company, employee qualification and product innovation as a competitive advantage.
- Addressed MSPs do not consider a low price of a product as an important source of competitive advantage.
- Respondents to a greater extend consider difficulties in getting commercial credits, finding new market area and disadvantageous of Slovak legislation towards MSPs as a competitive disadvantage.
- MSPs stated that they do not consider insufficient knowledge of competition and a small number of employees as important sources of competitive disadvantage.
- Innovations are an important factor for MSPs and they think about this factor in their strategic plan.
- Addressed enterprises to a greater extend consider the birth of innovation centres as important.
- MSPs think that a change in technologies and introduction of difficult technological programmes should rather be done with the help of state.
- Furniture enterprises still use their own sources with innovations.
- The majority of addressed enterprises still consider financial resources as the biggest innovation barrier.
- MSPs think that they give a sufficient time reserve to innovation process in production.
- Only 29 out of 79 addressed MSPs are able to say from which EU funds they can gain financial resources for support of innovations. Poor knowledge of gaining financial resources from European funds could lead to development of innovation barriers.
- MSPs try for a good use of innovations to follow customer's demands.
- MSPs could imagine a better cooperation with contractor's companies. Bad contractor's cooperation

with MSPs could lead to development of innovation barriers.

- MSPs in the area of training stated that to a little extend they enable their employees to educate themselves. Even if the employees are trained, in the majority of cases it is not a regular training and it has no impact on incentive payment of the employees.
- Addressed MSPs stated that they do not consider enterprise culture as motivating.
- If MPSs do not enable their employees to be trained, they do not take their training into account (in their incentive payment) and they do not create a motivating enterprise culture, the absence of these factors can lead to development of innovation barriers.
- MSPs in majority of cases do not consider marketing activities as an investment. Marketing expenses are also an important factor for innovations and their presence can lead to development of innovation barriers.

4. Innovation barriers from the enterprise point of view

Apart from the primary data collection from the source of information for a better determination of barriers to innovation within the wood processing enterprises were also two questionnaires that originated at The Department of Marketing, Market and World Forestry at Timber Faculty of the Technical University in Zvolen as a part of the project VEGA /339/06:

"The determination of barriers to innovation in small and medium enterprises and a proposal for some possible means for their elimination as a potential tool for increasing the level of competitiveness in the market."

The goal of the first questionnaire was "The Realizing of a holistic benchmark in selected wood processing enterprises". The respondent sample was created by 11 furniture companies that were interested in benchmark realization. The already worldwide in use method Benchmark Index was simply applied in the questionnaire [12].

The goal of the other questionnaire was "Finding innovation opportunities and working with innovations". The respondents in this questionnaire were wood processing enterprises that took part in the exhibition "Furniture and living" in Nitra, 2006 and other Slovak wood processing enterprises. 55 questionnaires (51, 9% of the sample) were included in the evaluation of the innovation and innovation potential [13].

On the basis of the questions from the three questionnaires, some basic areas of the study of enterprise innovations were laid out:

- a) Enterprise management, individual directions of study:
- Enterprise policy and strategy:
 - o the use of strategy in the enterprise,
 - o the inclusion of innovations in strategies,
 - o the success of innovations,
 - o the evaluation of innovative enterprise work,

- o the level of entrepreneurship danger.
- The innovation aspect of an enterprise:
 - o innovative ability on the part of the management,
 - o the ability to assess innovations also on the part of management.
- b) Personal area, individual directions of study:
- Enterprise employees:
 - o the creativity of employees,
 - o the training of employees,
 - o the level of satisfaction of employees.
- c) Financial area, individual directions of study:
 - o the use of financial resources,
 - o financial support for innovations.
- d) Production area, individual directions of study:
 - o production preparation,
 - o production and the management of production.
- e) Marketing aspect, individual directions of study:
 - o influence of the enterprise on its environment.
 - o internal communication.
 - o team work,
 - o cooperation with external environment.

The determination of basic directions for the study of enterprise innovations helped to reveal barriers to innovation in an enterprise. On the basis of innovation barriers, some suggestions for the eliminating of innovation barriers in wood processing MSP were put forward (see chart 1).

Chart 1 Innovation barriers at the level of enterprise management

Area	Innovation barriers
Enterprise policy and strategy	formal definition of strategies and goals insufficient devotion to and the evaluation of innovations alternatives for future conditions in an enterprise are lacking
Innovation area of an enterprise	insufficient written records of innovation initiatives the distrust of enterprises towards cooperating with scientific institutions
Personal area	the training of employees is made possible to a small extent employees´ creativity skill is lacking
Financial area	an extensive time period for debts repayment a low level of liquidity, which can cause their insolvency the underestimating of financial analysis
Production area	when realizing ideas employees ,keep on aiding in their production process delayed delivery from suppliers
Marketing area	managers use a few tools for finding out information about customers' satisfaction underestimating of marketing studies

- little use of tools that help to assess and improve customers' satisfaction

- team work of employees is lacking
- bad internal communication among employees

Source: author's data, 2013

Enterprise policy and strategy. It became obvious from the questionnaire that the majority of enterprises define strategy and goals formally and they lack knowledge concerning the meaning of strategic planning. Enterprises rather base their knowledge of their present situation on the given surroundings. Enterprise plans are developed for a short period; they lack prognostication of changes in the surroundings and within the enterprise. Management considers the inclusion of innovations into strategy to be important, because if the enterprise does not improve its products and processes, it loses its competitiveness. Further it becomes evident that managers do not devote enough input into evaluating innovations or they completely overlook this aspect of their tasks. The managers stated that insufficient dedication to evaluating innovations is caused by their reliance on the fact that the customer buys the enterprise's products and by their (managers) reluctance to evaluate innovation efficiency on the part of the enterprises because of the high level of quantification. The majority of wood processing enterprises is convinced that innovations can be brought about without involving any risk and that it is not necessary to take the possible failure of certain decisions into account during the course of making innovation decisions. However there are many important risks connected with every innovation activity and its later success and these risks should be defined as accurately as possible in advance. When making decisions, managers especially from micro and small enterprises often underestimate the advantages of defining a complex of possible future conditions that may have an impact on the results of their decisions (e.g. the establishment of alternatives).

The innovation aspect of an enterprise. The respondents are inclined to believe that written records of innovation incentives take too much time and are therefore insufficient. They are convinced that if the idea is good, it will gain recognition on its own. A team loses out on many possible innovations which the competition can then bring into being before them.

The personal aspect. As far as creativity is concerned, managers have found that enterprise employees do not like to invent something new, they like to stick to proven ways and they do not think about new ways of solving problems. The imagination originality aspects on the part of the employees is generally not at such a level that it can contribute to the strengthening of the competitive level of the enterprise and after employees fulfil their set tasks, they are not interested in anything else.

With respect to the training aspect, the MSPs stated that they bring about the further education of their employees to a certain extent. It is not usually a regular training and it is not reflected in their incentive payment. The questioned MSPs stated that they do not consider the enterprise culture to be motivating.

The financial aspect. In the questionnaires the enterprises considered insolvency to be an innovation barrier. On the one hand, enterprises are not capable of financing their undertaking and on the other; their customers are also not capable of paying for their financial demands. Next the enterprises state that they do not have enough resources to finance their innovative ideas, however on the other hand they do not know which resources they would be able to use in order to finance innovations. The MSPs do not spend sufficient resources on innovations. Financial resources are considered to be the most crucial innovation barrier.

The production aspect. The majority of the questioned enterprises do not consider the existing relationships with suppliers to be good. Improvement should be judged as adequate by virtue of the number of supplies who delivered on time. Managers think that coming up with innovative ideas should be the result of systematic work.

The MSPs regard new technologies as too expensive for them and they would rather solve the renewal of technologies by means of state assistance.

The marketing aspect. The majority of enterprises consider customers satisfaction to be of utmost importance and they endeavour to implement it. Communication with the customer is of paramount importance for subsequent decision-making in the area of production, together with the guarantee of quality inherent in the technological innovations.

Managers are generally not aware of the motivational importance of communication, when they do not need to brief employees on the overall enterprise strategy by which they would ensure their employees' initiative during the course of coming up with new innovation opportunities.

As far as team work is concerned, the majority of good ideas are inadequate. There is always an informal level of leading that is respected by others. Teams have a member who focuses primarily on obtaining all the necessary information and team members must possess the necessary resoluteness to achieve the goals set.

Cooperation with external professional experts is significantly disrupted by virtue of their conviction that universities, research institutes etc. cannot be of much assistance to small and medium enterprises. This state arises owing to insufficient awareness on the part of entrepreneurs and managers of the cooperation possibilities and the existence of insufficient communication between them and universities and other scientific and research institutions. The managers' distrust of the results of scientific and research work often arises from the conviction that the contribution to their enterprises would be purely theoretical, that is it will not have any impact on progress in entrepreneurial activity.

Especially in the case of micro and small wood processing enterprises, the directorate often underestimates the importance of marketing and its innovations are often realized without first being clear about its possible future profitability.

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4.1 Discussion

Individual suggestions for the elimination of innovation barriers are defined from the enterprises point of view – i.e. the directorate of an enterprise. We can define them as barriers in the microenvironment, which means that individual enterprises can try their hand at their elimination. Some already in existence suggestions for the elimination of such barriers to innovation from the microeconomical point of view can be put into practice by the directorate of an enterprise.

Suggestions for the elimination of barriers to innovation from the micro-economical point of view are applicable in general and that is why they can be used in every MSP category, regardless of their nature of activities.

Suggestions for the elimination of individual barriers to innovation are included in some studies of some individual sectors of enterprises:

Enterprise policy, strategy and some areas for innovation in an enterprise:

- The realization of common values and visions in an enterprise. Every person in an enterprise should be convinced of the importance of forming and realizing strategies. If employees know what the enterprise aspires to, they acquire a kind of security. If an enterprise does not have any strategic visions, employees do not see any goals and they behave in accordance with this factor. The strategy should not be conceived of as formal as employees notice this state and they then lose interest in participating in making changes and fulfilling strategic goals in an enterprise.
- The creation of effective strategies in an enterprise. MSPs should have such an innovation strategy that would be effective at all levels of the enterprise management. Some purposes for innovation, which are accepted by an enterprise as future goals, should penetrate to the highest level. Innovation purposes, which relevant project teams are in change of, should be at the middle level. Minor innovations should be at the lowest level of enterprise management.
- The creation of internal and external relationships in an enterprise. Managers should regard innovations as resulting from the process of change. They should also understand that a change is based on relationships within the enterprise. Managers should possess sufficient energy to create suitable conditions for investors and customers.

The personal aspect:

- The establishment of good relationships with employees. Managers should also engage other employees in the innovative process. Employees must feel free to express their own opinion, whether positive or negative. Enterprises should understand that dialogue is crucial for successful innovation.
- The possibility for creating some feedback for an enterprise with its employees. Employees will be ready to put forward suggestions for new innovations, if they know in advance that their new ideas are valued and appreciated. Employees often lose motivation when on the one hand managers ask them to put forward new ideas, and on the other, they

receive no feedback as to why they ideas were not realized.

The marketing and personal aspects:

- The establishing of cooperation within the working team. When innovations are somewhat way out, the human aspect surrounding the innovations activity is often unappreciated. That is why it is important to create the existence of mutual trust and efficient cooperation in a working team.
- The encouragement for the establishing of creativity from the employees. In order to acquire innovative success, capable employees are important. That is why the employees of an enterprise should not be restricted in their creativity task by strict enterprise regulations.

The marketing and financial aspects:

- Support for innovation centres. An ongoing insufficiency in the capacity of financial resources for realizing innovations should give rise to the situation whereby the state supports the development of regional innovation centres, technological incubators for starting out entrepreneurs and MSP clusters to a greater extent.
- The establishment of clusters. The establishment of clusters has a positive impact on innovations and competitiveness, creating possibilities and information, for the growth and long-term entrepreneurial activities.

An enterprise that is a member of a cluster is more flexible, it can concentrate to a greater extent on its strengths s, because activities that are not essential for the enterprise are guaranteed in the form of sub-delivery. It can simultaneously cooperate with other enterprises in those areas for example, where it is effective in supporting furniture export.

Suggestions for eliminating some barriers to innovation apply to the enterprise as a whole. That is why individual suggestions for the elimination of barriers to innovation are defined in various enterprise sectors.

5. Conclusion

Creating of system conditions plays an important role in supporting MSPs development. This is done by overall improvement of entrepreneur's environment especially by creating a transparent legislative framework, reducing administrative demanding nature of small entrepreneurship to minimum and by creating adequate competitive conditions for MSPs.

Supporting measures and tools of MSP should concentrate on eliminating barriers that inhibit the establishment and development of MSPs. This refers especially to approachability of finances and tax reliefs, to development of manager's abilities by means of training and consulting, to improvement of access to domestic and foreign market. With globalization of economy and growing competition at domestic and foreign markets the importance of innovations rises. Innovation centres that create a scope for transfer of science and research information play an important role in this environment. Many innovation intents are not unsuccessful because a company is not able to handle technologies but because it is not prepared for

the market. When supporting successful innovation intent it is important to find new sources, create new processes and to determine new values and priorities in entrepreneur's decision making.

Innovations require team work. Team environment can manifold final positive effect. Work ability in a team together with communication abilities enables enterprises to realize their potential in the environment of mutual support and mental enrichment.

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UNIVERSAL PROCEDURE FOR USABILITY TESTING BY EYETRACK TECHNOLOGY

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Abstract: We focus on usability testing by Eyetrack technology. We have created Universal procedure based on theoretical experience gained from the available literature and usability studies of experts in Eyetrack field and on practical experience gained by performing usability studies by Eyetrack equipment in University of Žilina property. The universal procedure contains part at which we focus on usability errors. It is the main practical benefit of the main author dissertation thesis. Use of the universal procedure should lead to implementation into practice. Junior researchers will provide basic data that is need to carry out research by Eyetrack technology. The universal procedure uses terminology of outputs from SMI Company. University of Žilina has in possession Eyetrack hardware and software from SMI Company.

Keywords: usability testing, eyetrack, universal procedure

1. Introduction

Technology development in the world is constantly accelerating. Postal operators in Slovakia are not able to respond to market changes in a sufficient speed. Unused potential of new Technologies represent a possible positive growth for postal operators and for users of the postal operator services.

Nowadays there is not a single branch of human activity, which would be not characterized by the active usage of the information technology. Hardware and software affordability has allowed mass use of computers not only in industry but also in non-industrial areas of the human activity. The current characteristics of manager's funds are rapid development of hardware and especially information technology. On the computer market is literally an explosion of the software offers. There is a problem with orientation in software and hardware products. [1]

Main objective of the paper: Summarization of the theoretical and practical knowledge into practical design of an universal procedure for conducting research by Eyetrack technology usage. Theoretical knowledge is gained from the literature. Practical knowledge and skills are gained from the Eyetrack research.

2. Eyetrack technology

We define Eyetrack technology as hardware, software and peopleware that we need to carry out studies. Studies are focused on eye movement monitoring and users gaze impact. In paper we further define Eyetrack technology that is available in the University of Žilina laboratory. We have Access to hardware and software of this laboratory. University of Žilina own equipment from SMI Company. Hardware is called i-view X RED 250. It is a high-speed camera that can capture eye movement and gaze impact in necessary speed for the analysis performance. Software for eye movement and gaze impact scanning is called SMI Experimental Center. Software for analysis performance is called SMI BEGAZE. The SMI BEGAZE is designed to perform the analysis of the eye movement on the screen, or on another solid state drive.

2.1 Hardware

SMI i-view X RED is a high-speed camera that allows eye movement and gaze impact capturing. X RED is used to perform simple studies by Eyetrack technology. X RED camera can be used in two ways. First it may be attached to the underside of the monitor (minimum size of the monitor is 19"), or placed on specifically made board for X RED cameras. Second method allows non-computer consumption intended objects examination. In our case, only first method can be used with universal procedure we have design.

The camera allows free movement of subject's head and relatively high accuracy $(0, 4^{\circ})$. X RED camera has 3 modules for calibration: 2, 5, 9 point modules. Calibration takes approximately three seconds for each two points in modul. X RED camera technology can work with people who wear eyeglasses or contact lenses. In most available devices eyeglasses and contact lenses are causing incorrect calibration. Incorrect calibration affects the results of the analysis in the negative way.

The camera use infrared radiation to capture the eye movement. Infrared signal is focused on the pupil and its position relative to the eye. Secondary camera captures head movement. Head movement capture is important, because it allow test subject to freely observe object of interest. Non-limited head movement enables natural environment creation. Creating natural environment remove emerging deviations due to the test subject real behavior. [2]

2.2 Software

As software we use package from SMI Company, SMI EXPERIMENT SUITE 360. The package includes three software for work on Eyetrack research. In Eyetrack technology meaning, the package was created by a various research done worldwide. It is designed for researchers and professionals who work in the field of marketing research, usability testing, neuroscience and cognitive neuroscience. The platform supports a wide range of studies. It is ideal for media assessment. Media, such

as websites, software, images, video clips and printed or online form of advertising.

SMI iView X is a powerful eyetrack device. It use advanced and adaptable eyetrack algorithms, robust recognition features, automatic eye movement path tracking, intelligent calibration, efficient data recording and on-line event detection. SMI iView X provide intuitive eye movement track scans for software SMI Experiment Center. SMI Experiment Center achieves meaningful results of the eye movement and gaze studies in the SMI BeGaze software. [2]

SMI Experiment Center is software that provides cooperation with high speed camera (iView X). It is used to set experiments and studies scenario and for calibration adjustments.

Experiment Center allows setting up different types of calibration. On the base of calibration is possible to accurately measure the eye movement and gaze impact. Incorrectly configured calibrations may distort the results. Experiment Center is relatively simple software for scenario adjustment, preparation, planning and implementation into natural computing environment. It allows scenario creation with following features:

- universal user interface for various functions management, including preview, live monitoring view and precise timing,
- on-line guide for the optimal object location in front of the camera,
- integrated calibration, including support for animated calibration targets and immediate validation of the calibration quality,
- several stimuli options during the experiment (text, images, videos, web pages, interactive programs with image recording),
- experiment lock function. In the case Eyetrack is used by more than one researcher,
- trial run for scenario control,
- integrated data storage. Data can be analyzed in SMI BeGaze software. [3]

SMI BeGaze software is used to analyze the gaze impact and test subject behavior. It assume scenario and study design from Experiment center with the results of individual measurements. SMI BeGaze user interface is specialized on achieving the maximum usability and optimization of the efficiency. SMI BeGaze allows analysis and structured information about the experiment and test subjects. It can display Eyetrack data and useful graphs for researchers. It contains special additional functions for certain specific studies (video and reading analysis, observational studies, etc.). SMI BeGaze allows creation of the eye movement research analysis, filters usage, achieve different results, raw data export and good structured data for further evaluation. SMI BeGaze was created as a tool to promote scientific publication process. [4]

3. Universal procedure

Universal procedure for the evaluation of testing by Eyetrack technology was created on the basis of theoretical knowledge. Theoretical knowledge was practical verification by the use of the available eyetrack technology in the University of Žilina. Based on practical tests, we created universal procedure suitable for static eyetrack device conditions. We processed the universal procedure in the following subsection, see figure 1. Universal procedure allows you to make the last phase of research through Eyetrack technology, evaluation phase. Universal procedure was developed and tested by usage of the Eyetrack technology model for eye movement measure. We recommend usage of the presented model in case of testing our universal procedure. [5]

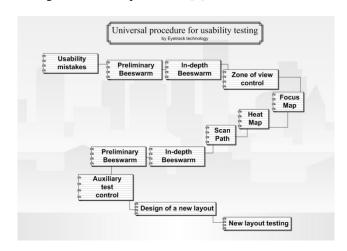


Figure 1 Universal procedure for usability testing by Eyetrack technology.

3.1 Universal procedure

Before evaluation of the testing, it is necessary to inspect the common usability mistakes. Some mistakes are noticeable without Eyetrack technology. Researchers only need to think about them. In the following part we divided usability mistakes into measurable with and without assistance of the Eyetrack technology.

Usability mistakes measurable without assistance of the Eyetrack technology:

- bad purpose pagination,
- duplicate page titles,
- permalinks to blank page,
- wrong processed contact page,
- welcome page,
- need for registration,
- complicated registration form,
- incorrect screen resolution,
- background music,
- long website loading.

Usability mistakes measurable with assistance of the Eyetrack technology:

- inconsistent interface design,
- small hyperlink field,
- complicated vision content,
- mess on website, not enough whitespaces,
- complicated navigation,
- non-organized layout content,
- indiscriminate use of images and animations,
- incorrect search function,
- low quality banner advertisement.

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3.2 Preliminary Beeswarm

After common usability mistakes has been studied and checked, we can move to the evaluation of Eyetrack software outputs. Universal procedure design is based on the software from SMI Company. Subsequently SMI company terms are used to name individual outputs. If researcher has software for another company, he needs to assimilate individual terms with terms from another company. Terms like Heat map, Scan Path, Beeswarm are commonly used by experts in the field of Eyetrack technology. Experts use these terms for appropriate usability testing.

As a first step to search for usability mistakes we determined preliminary Beeswarm. With Beeswarm outcome we mark the outputs from all test subjects participating in the research. Beeswarm output is a video output. It shows eye movement of the individual test subject, all at once. SMI Begaze software allows researcher to set the outputs of individual subject in different color.

To avoid researcher's mistake we set the number of Beeswarm video view counts to number 3. If researcher views preliminary Beeswarm 3 times, researcher will found usability mistakes that he did not caught in first watch. He did not found all usability mistakes during first watch because of concentration loss. According to Harald Weinreich research, average length of full concentration is 8 seconds. [6] Watching Beeswarm video 3 times is based on the statement, that Eyetrack task should not exceed 20 seconds. The example is a task to find an e-mail or phone contact on tested website. If 20 seconds is not enough for test subject, the test subject has already lost focus and we can consider contact web page as an usability mistake.

3.3 In-Depth Beeswarm

Fundamental difference between In-Depth and Preliminary Beeswarm is in the number of test subject used at once. In the preliminary Beeswarm all test subject are launched at once. In the In-Depth Beeswarm there is no need to set color spectrum of individual test subjects because they are launched individually.

In-Depth Beeswarm is more difficult and complex task as preliminary Beeswarm. Researcher need to have higher requirements than in preliminary Beeswarm. In-Depth Beeswarm is a time consuming task. Individual beeswarm outputs are again set to 3 seeing. The task takes the same time, the only difference is in the number of seeing's. In preliminary Beeswarm researcher has to view one video, in which all test subjects, three times. In In-Depth Beeswarm researcher has to view all test subject individually and three times. Relationship between time for In-Depth Beeswarm and Preliminary Beeswarm can be seen in formula (1).

$$tHB = p * tPB (1)$$

where, tHB = Researcher time needed for seeing In-Depth Beeswarm and p = number of test subjects and <math>tPB = Researcher time needed for seeing Preliminary Beeswarm

3.4 Zone of view control

Zones of view are set during scenario, for usability testing, creation. Zones of view are areas that are part of the website and have similar properties during research conducting and evaluation. For example we can set banner advertisement. By usage of the Eyetrack software we can evaluate how long test subjects spent on banner advertisement.

3.5 Focus map

Focus map is used to determinate informations about specific points on the website. Information about what the test subject saw and with what intensity he perceived it. If researcher set the points of interest correctly, we can make use of the informations. Researcher has to test each test subject Focus map individually. If multiple outputs are used simultaneously, results are invalidated.

3.6 Heat map

During Heat Map evaluation we use all test subjects output at once. In Heat map is important entire output. Heat map output shows the tested website and it fulfills the website with stains that present interest view of the test subjects.

3.7 Scan Path

Base of Scan Path is measurement of the Fixations and Saccades length. Scan Path evaluate the value of individual usability mistakes. Scan Path not only create information about the usability mistake existence. Researcher is allowed to create specific solutions to individual mistakes.

3.8 Repeat Beeswarm

On behalf of practical experience in research conduction we added to universal procedure In-Depth and Preliminary Beeswarm again. During research we found out that researchers did not notice some usability mistakes in early stage. After other outputs have been evaluated, researchers have been able to see new usability mistakes in Beeswarm outputs. Other outputs have not proven this phenomenon.

3.9 Repeat Beeswarm

Auxiliary test control is output, in which researchers evaluate the questionnaire created and used to test individual test subjects. Auxiliary test control is only auxiliary output. It shows the difference between what content test subject think he saw and what content he really saw.

3.10 Design of a new layout

On the behalf of other outputs, researchers have to design a new website layout. The new layout has got usability mistakes removed. Sophisticated design has to be re-tested before initiation. By re-test we accomplish last point of universal procedure, New layout testing.

4. Conclusions

Universal procedure is used for conducting usability testing research. It is designed in a way to allow the usability testing for non-skilled eyetrack researchers. Evaluation of the universal procedure and his ability to be done by a non-skilled researcher is still in progress. The full version of the universal procedure is too long for page range of the conference. If any attendant of the conference has questions about our research, feel free to contact first author of the paper.

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IMPLEMENTATION OF SERVICE MANAGEMENT SYSTEM IN SMALL BUSINESSES: PROBLEMS AND SUCCESS FACTORS

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Abstract: Small companies lack guidelines for management of service they provide and for service management system to support their efforts. Existing service management systems are addressed toward large companies mostly in ICT sector. Small and medium enterprises seek for cheap and effective solutions which enable them to effectively manage their service. This article aims to present conditions for implementation of service management system in small businesses. This article presents problems, reasons, success factors and benefits from implementing service management system in small businesses. The results have been obtained from small and medium enterprises in Poland. The results provide useful insights for companies and scientists interested in developing their own service management system.

Keywords: service management, small business, conditions, ITSM

1. Introduction

Micro, small and medium-sized enterprises (SME) represent 99% of all enterprises in Poland as well as in European Union (EU). Nowadays, management of small business is facing new challenges. Economies turn away from production to service delivering. Increasing significance of service sector in today economies entails new challenges, particularly in SME sector. Customer relationship management, shortening of product/service delivery time, change management, constant improvement of product/service quality and ensuring product/service cost effectiveness are the typical concerns of the small businesses. The importance of a service as a crucial factor of product's sales strategy, resulted in new concepts, rules and research methods. Due to fact, that market provides various set of tools for product management, SMEs direct their vision to service quality management tools, which may provide solutions to their problems. However, there is not one overall service quality management system which may satisfy such various needs as the small businesses' provide.

The most advanced branch in service management is ICT, where rapid changes of the market, forces enterprises to delivering more cost-effective, high-quality IT service in accordance with Total Quality Management (TQM) which result in developing IT service management frameworks (ITSM). The most popular frameworks existing on the market are: Information Technology Infrastructure Library (ITIL), ISO/IEC 20000 and Control Objectives for Information (CobiT). ITIL is one of the quality improvements tools or techniques designed to improve IT services and creating added value of the quality in consistence with the organization's business goals [1]. ISO 20000 is the reflection of ITIL and became the first international standard for ITSM. CobiT is a globally accepted framework, providing an end-to-end business view of governance for enterprises.

These frameworks are good examples of IT service management approach which should be transferred into the

non-IT service management ground. However such process is not simple. Its main limitation is a lack of knowledge on conditions for service management system implementation. There is a market demand for spreading effective service management in non-ICT small businesses.

The aim of this paper is to identify main barriers and success factor for implementing service management system in non-ICT small businesses. This paper discusses the role of service management in small businesses and demonstrates problems, reasons, benefits and key success factors for implementing service management system. The aim of this paper is to present the results of the survey conducted on small and medium enterprises about conditions of service management system implementation.

1.1 Literature review

The literature of management provides many theories and frameworks on improving product quality in order to increase customer satisfaction. Little consideration have been given to the service sector. The most popular product quality management frameworks are TQM, Six Sigma and ISO [2]. However, the nature of the service differentiates from product, so the service quality differs from product quality. Service quality is elusive and abstract construct that is difficult to define and measure [3][4][5][6]. In recent past service sector has been growing rapidly. Nowadays factories not only produce goods, but they also produce set of services that are integral with their products, establishing a competitive advantage.

The gap model developed by Parasuraman, Zeithaml and Berry define five service quality gaps in expectation and perceptions of service quality, which influence its deterioration. These gaps are: customer-expectation management gap, management perception-service quality specification gap, service quality specification-service delivery gap, service delivery-external communications gap and expected service-perceived service gap [7]. Closing the gap between service provided and customer's

perception on service quality, improve customer satisfaction.

Businesses implementing service quality management systems notice its advantages and disadvantages. Some advantages of service quality management systems are: meeting customers' needs, increasing efficiency of problem solving and cost reduction [8][9]. The barriers from implementing quality management systems are shown in Table 1.

Table 1 Barriers resulted from implementing quality improvement projects

Item	Aspect	Project
	Customer	
1	Gaps between quality improvement and	ISO 9000
	customer's perception	
2	Customer satisfaction cannot be simply	TQM
	improved by IT	
3	The delay in improving customer satisfaction	TQM
	leads to distrust employees on firm's	
	commitment of quality management	
	Financial	
1	Too much emphasis on problem solving and	TQM
	ignoring the cost of problem solving	
2	Quality improvement cannot be directly	TQM
	reflected in the revenue	
3	Difficult to clearly define the timing of quality	TQM
	improvement	
	Process	
1	The consideration of maximizing organizational	TQM
	profits hinders the willingness of process	
	change	
2	Standardized quality process can be inflexible	Six Sigma
	and inefficient	TQM
3	Lack of supporting systems to facilitate process	Six sigma
	change	
	Learning and growth aspect	
1	Employees' resistance to change	TQM

Source: [10, p.6]

ITIL is set of best practices address to organizational structure and skill requirement for IT organization. The goal for the framework is to establish efficient infrastructure for IT service quality and continual service quality improvement with regard to customer satisfaction. The ITIL framework consists of such areas as: service support, service delivery, planning to implement service management, security management, ICT infrastructure management, application management and the business perspective [1].

Scientific publications about ITSM in relation to SME are very scarce and hard to find. The impact of IT on SME development have been long time ago recognized [11] but issues and opportunities are not clear [12]. According to Küller, Vogt, Hertweck and Grabowski drivers for ITSM in small and medium enterprises are cost transparency, cost reduction, reduction of workload, enhancement of business service quality and business competition [13].

2. Research Issues and Methods

This study seeks to establish the extent to which service management systems has been deployed in the small and medium enterprises. The survey instrument consists on organizations' characteristics, respondents' characteristics, management standards used, reason and problems related to service management system implementation, success factors and benefit from service management system implementation, potential costs and budget needed to implement service management systems.

The study focused on small businesses. The commonly used definition is the European Union definition of SME. According to it SME is the category of micro, small and medium-sized enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro [14]. 130 small businesses from various type of activity in opolskie and śląskie vovoidships were requested to complete the questionnaire. They were selected from yellow pages. The survey was assisted by telephone interviews. Questionnaires were addressed to manager of each firm. The survey instrument began with identification if company is delivering service on different levels and if they implement service quality management system. This was followed by management standards and frameworks implementation and identification problems, reasons, budgeting, success factors ad benefit of service management system. Next, the attitude toward implementation of service level management system and demographic items of respondents were requested.

2.1 Respondents' characteristics

The author received 20 usable responses. The 15% response rate was achieved. Top management constituted 70% of respondents, middle management 15% and lower management 15% of respondents. The percentage of business in service sector was 85%, manufacturing 10% and agriculture 5%. One-man business as well as limited liability companies constituted 40% of respondents each, partnership 10%, join-stock company 5% and foreign company branch 5%. The percentage of micro-sized enterprises was 30%, small enterprises 25% and medium-sized enterprises 45%. Table 2 presents the percentage of respondents in each classification category.

Table 2 Characteristics of Responding Firms and Individuals

Item	Category/ Percent of Respondents			
Age of firm	Less than a year 0.0	1-2 10.0	3-4 5.0	5 and more 85.0
Type of firm	One-man activity 40.0	Limited liability company 40.0	Partnership 10.0	Join-stock company; Foreign branch 5.0 each
Number of employees	0-9 30.0	10-49 35.0	50-249 35.0	

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Annual tumover (EUR mln)	10,01-50 30.0	2,01-10 25.0	< 2 45.0	
Position in organization	Owner 30.0	Top manager 40.0	Middle manager 15.0	Other
Main sector of activity	Other service activity 40.0	Professiona l, scientific and technic activity 15.0	Wholesale and retail trade; transportati on and storage; 10.0 each	Education, Building; Agriculture, forestry, hunting and fishing; Financial and insurance activities; Health care and social assistance 5.0 each

Source: own work

3. Management Frameworks Deployment

The respondents were polled regarding management frameworks deployment in their organizations. Specific issues investigated included advancement in management frameworks deployment and are presented in Table 3. In order to compare the relative implementation of various frameworks, developed by Cater-Steel and Tan [15] a five point Likert scale was used to code the responses: no plans to implementation initiative- 0; starting to implement initiative -1; the initiative is partially implemented- 2; the initiative is largely implemented- 3; the initiative is fully implemented- 4. As shown in Table 3, strong adoption of PN-EN ISO 9001:2009 was reported. As shown in the Table 3, although 12 firms did not plan to adopt ISO 9001, it was fully implemented by 7 firms. A support was also reported for project management frameworks such as PMBOK and Prince 2. ITSM frameworks were found in various stage of implementation: CobiT partially by 2 firms, ISO 20000 starting by 1 company, while all firms do not plan to deploy ITIL.

Table 3 Advancement in marketing frameworks deployment

Service	No	Starting	Partially	Largely	Fully
Management Framework	plans 0	1	2	3	4
CobiT	18	0	2	0	0
PN-EN ISO 9001:2009	12	0	1	0	7
ISO/IEC 20000	19	1	0	0	0
Prince 2	17	2	1	0	0
PMBOK	19	0	0	1	0
Balanced Scorecard	18	2	0	0	0
Six Sigma	20	0	0	0	0
ITIL	20	0	0	0	0

Source: own work

4. Conditions for Service Management Systems Implementation.

The question exploring the organization's problems with service management allowed for multiple responses. As illustrated in Table 4 the most occurring problem in polled organizations was vaguely worded customer expectations – 30% and not defined service quality (30%). Internal disagreements between organization's departments characterizes 30% of respondents.

Table 4 Problems with service management

Ineffective resource allocation	5%
Small or limited knowledge on service costs	10%
Unsufficient customer satisfaction	10%
Lack of service level agreement	15%
Lack of communication between service provider and a client	15%
Other	20%
Not defined service quality	30%
Internal disagreements between organization's departments	30%
Vaguely worded customer expectation	40%

Source: own work

Respondents reported problem of service management not listed in the questionnaire: vague provisions in terms of reference.

The respondents were requested to identify the reasons for service management system implementation. The measurement scale was multiple choice question. The results obtained from respondents are presented in Table 5. Service quality improvement (80%) and customer satisfaction improvement (75%) were the most often picked responses. Polled respondents did not find greater involvement of the client (15%) as an important reason for service management system implementation.

Table 5 Reasons for service management system implementation

Service quality improvement	80%
Customer satisfaction improvement	75%
Increased competitiveness on local and global markets	60%
Ensuring internal consistency of service provided with company's strategic objectives	55%
Cost reduction	40%
Centralization of service management	25%
Greater involvement of the client	15%
Don't know	15%

Source: own work

In order to define key success factors of implementing service management system a multiple choice nominal scale was used. The results are presented in Table 6. The respondents indicate that employee competence (65%) and employee training (55%) are crucial for service management system deployment.

Table 6 Key success factors for implementing service management system

Employee competence	65%
Employees training	55%
The involvement if middle management	50%

The company's ability to implement best practices	45%
Competent external advice	45%
The possibility of obtaining funding	45%
Low cost of implementation	35%
Ongoing support external service	30%
Ease of service level management software's usage	30%
Change management focused on customer	25%
Identification of barriers to implementation of the system	20%
to small and medium-sized enterprises	20%
Training to customer	15%
Service centralization	15%

Source: own work

The final part of the questionnaire focused on the identification of benefits of implementing service management system in respondents organizations. As shown in Table 7 respondents reported that customer satisfaction improvement is the most important benefit from implementing service management system in. Full results are presented in Table 7.

Table 7 Benefits from implementing service management system

Customer satisfaction improvement	65%
Benchmarking	55%
Reputation and image improvement	55%
Adapting services to the business objectives	50%
Effective human resources use	50%
Cost reduction of delivered service	50%
Achieving shorter closing time of the problem	45%
Gaining a competitive advantage based on cost-effective service	45%
Control over problem escalation	40%
Adjusting the response time to set priorities	40%
Increase employee productivity	40%
Revenues increase	40%
Improved continuity of services	35%
Risk reduction	30%
Shorter response time	25%
Improvement to services implementation	25%
Labor costs reduction	25%
Relations between departments improvement	20%
ROI improvement	15%

Source: own work

6. Conclusions and Recommendations

Small businesses face organizational change and sometimes they need to operate under global competitive pressure. Research indicates strong need for service management system deployment in polled organizations. There has been much written about quality of the service, however the literature do not provide enough information about small businesses.

The most popular management standard for SME is continuously ISO 9001:2009, however there are examples of ITSM standards deployment in researched organizations. There is a strong need for spreading the knowledge of importance of such tools in micro, small and medium-sized organizations. The results showed that in polled organization project management standards have been already spotted and implemented.

This survey results draw attention to conditions for service management implementation in polled micro, small and medium-sized enterprises. The respondents in general reported that vaguely worded customer expectation and internal disagreement between organization's departments are the mostly occurring problems associated with the service management.

The reasons for service management system deployment have been largely described in the literature. This researched confirmed prior assumptions that quality and customer satisfaction are in the main focus of polled enterprises.

The issue of key success factors of service management system deployment identification did not give clearly results. The greatest emphasis was put on human resources abilities to implement and realize service strategy of the polled organizations. Half of the respondents indicate middle management engagement as the success factor of service management system implementation.

Research indicates that customer satisfaction improvement is the most often pointed benefit from service management system implementation in polled businesses. Benchmarking was the second most often indicated response. This indicates strong need for self-improvement in researched companies in order to enhance better understanding of customer and processes, measurement and need for cluster cooperation. Such issue should be better investigated in the future research.

As in any study, there are limitations in this research. As the data was collected only for twenty of SME in opolskie and śląskie vovoidships, the findings cannot be generalized to all Polish small and medium enterprises. Further empirical studies are required to replicate this study on representative quantity of organizations.

Quality is the crucial issue for the survival of any organization, especially SME. Small businesses should raise their commitment in formal quality improvement strategy and secure themselves with service management tools/standards. The deployment of quality improvement processes accompanied by professional advice are key success factors for service management system implementation. Companies should put the client in the middle of their focus and continuously improve in order to satisfy the client. The implementation of service management system may give micro, small and medium-sized enterprises a competitive advantage not only in the local market but also in the global one.

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THE POSSIBILITY OF IMPLEMENTATION THE PERSONNEL CONTROLLING IN COMPUTER PROGRAMMING AND CONSULTANCY COMPANIES

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Abstract: The paper analyses the possibility of implementation the personnel controlling in IT companies. We want to introduce personnel controlling as an older approach, but great method for dealing with global crisis and its consequences. We also discuss why a personnel controlling is necessary and the role that it plays in the company and effective human resource management. The personnel controlling has many approaches and implicit methods and tools. Our aim is to choose the best solution for Computer programming and consultancy companies, the subsector of Information and communication companies from NACE categorisation. These companies belong to group of services companies and we want to focus on the lack of knowledge about services management and the questionable personnel indicator's defining. The purpose is to customise the personnel controlling methods and tools for IT companies and create the way for future study. At the end of the paper we want to outline the details of our prepared research and predict the results.

Keywords: personnel controlling, human resource management, information and communication, balance scorecard, performance management

1. Introduction

A global crisis affected the livelihoods of almost every company in an increasingly inter-connected world from the beginning of 2009. Big amount of companies solve problems of downturns and crisis with reducing costs (79.4% companies in EU countries reduced cost base in 2009) and dismissing employees. The remaining employees face pressure on their performance and increasing amount of duties and responsibilities. [2] Companies reduced also HR cost base and budget. In 2009

Companies reduced also HR cost base and budget. In 2009 40% European organizations reduced their HR budget while only 4.9% increased it (see Figure 1). The companies and HR managers search new methods and practises to deal with these changing circumstances. Many authors highlight a talent management and a performance management as the new approaches. We want to focus on a personnel controlling, older method, but weakly supported by authors and HR management. [2]

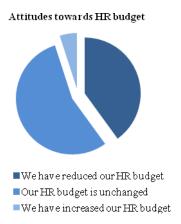


Figure 1: An impact of crisis on HR budget in 2009 (Source: By authors on the base [2])

Generally controlling can be defined as a basic management function of establishing benchmarks or standards, comparing actual performance against them, and taking corrective action, if required. Mann and Meyer, the experts in the field, characterise the controlling as a control of planning, an analysis of deviations from plan, a creation of operational plans, budgets, calculations and transfer prices. [1]

According these definitions Chodasova characterised the controlling philosophy as a complex function of: management, coordination planning, control and information flows, all in dimension of achieving the aims. The system of controlling philosophy is displayed in Figure 2 and shows the hierarchy of acquiring the information for management decisions. [1]

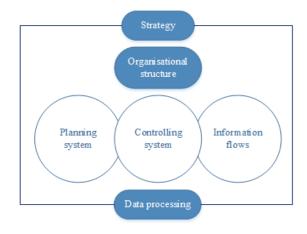


Figure 2. Controlling philosophy system (Source: By authors on the base [5])

This hierarchy and philosophy of controlling in organization can be also implementing in functional area, Human resource department, the subject of our research.

1.1 Personnel controlling

Personnel controlling represents the application of controlling conceptions on level of human resource management (HRM) as a strategic company's field. It deals with concretization of short-term and long-term objectives of HRM and with the assessment of achievement. Its implementation can also prove the contribution of human resources to business success. [3, 4] The main controller's task is to manage the process of personnel activities with personnel indicators, monitor and evaluate them and to take corrective actions based on found deviations. According to Potkany this process can be divided into three activities [6]:

- definition of HR objectives,
- monitoring and evaluation of their achievement,
- transparency in personnel function and its approach to customers' requirements.

Potkany also highlights the importance of objectives set by personnel controlling. They would follow the company's strategic objectives, explicitly define the benefits of Human resource management, be specific and set the penalty for failure. [6]

Personnel controlling and its activities can be done at three perspectives: strategic, tactical and operational. Based on these perspectives personnel controlling is divided into three parts [7]:

- <u>Strategic personnel controlling</u> the system of strategic HR management and HR processes.
 Controller searches the role of HR activities for achieving the company's long-term objectives.
- <u>Tactical personnel controlling</u> the system of HR indicators used for evaluation HR processes and department's efficiency.
- Operational personnel controlling the short-term system of HR indicators used for informing about partial results of HR activities.

Each part of the personnel controlling uses different controlling tool (see Figure 3). Their dividing is based on the strategic/operational view and qualitative/quantitative aspect. The most popular are Personnel Audit or Personnel Costs, but qualitative aspects are also important. The qualitative indicators are difficult to measure and the results are not so explicit but HR managers would not omit them. An Interview with employee or The Personnel Standards (as two of personnel controlling tools) can help to find the gaps and improve the HR efficiency.

Apart from dividing into qualitative and quantitative indicators, we know also another series of indicators defined by Zamecnik and Zeman [13]:

1. category: the indicators used by top management. These indicators provide quick information about company's progress and find the adequate fields for comparison with other companies. Upcoming indicators belong also to this category: personnel costs and benefits, recruitment and personnel planning, personnel management.

2. category: the indicators used by personnel department employees to control the quality of their work. In this category there belong the informative indicators about: *job positions, employee's recruitment and adaptation, dismissal, assessment, education and training, motivation and work satisfaction.*

Pers	Personnel controlling tools Quantitative Qualitative					
Strategic	Personnel audit	Personnel standards				
Operational	Personnel costs	Interview				

Figure 3. Personnel controlling tools (Source: [7])

There are many other dividing and series of indicators, but we consider the two previously mentioned as the most important. According to our meaning we consider them as the best for chosen service sector.

2. Computer programming and consultancy companies

The IT companies which create software, programme applications and design computer programs for customers are considered as the services companies.

In industry standard classification system NACE – *The Statistical Classification of Economic Activities in the European Community* these companies belong to Section J – Information and Communication. We focus on the subsector J62, which has these parts:

- J 62 Computer programming, consultancy and related activities
 - J 62.0 Computer programming, consultancy and related activities
 - J 62.0.1 Computer programming activities
 - J 62.0.2 Computer consultancy activities
 - J 62.0.3 Computer facilities management activities
 - J 62.0.9 Other information technology and computer service activities

2.1. Computer programming and consultancy companies' characteristics

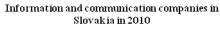
The subsector J62 had in 2010 according to Eurostat the second highest value added (35.7%) and employment rate (45.3%) from all J subsectors. Along with Telecommunication (J61) they generated close to three quarters (73.4%) of sectoral value added and employed almost two thirds (64.2%) of the workforce. [8]

Number of companies in subsector J62 was 500.000 in 2010 in all 27 EU countries and these companies employed 2,614,800 employees. The subsector had the second highest sectoral turnover (360,729.84 million EUR)

and the highest number of personnel costs (120,852.04 million EUR). [9]

In Slovakia we have the statistics only for the whole sector J. The information and communication generated 6.7% of value added and 3% of employment in the non-financial business economy in Slovakia. Together there were in this sector 12.120 companies and 44.301 employees in 2010. The companies admitted personnel costs of 876.3 million EUR. [9]

62% were SME (small and medium enterprises) from 12 thousands companies. As you can see in Figure 4, 36.7% are micro companies (0-10 employees), 7.4% are small companies (10-49 employees), and 17.8% are medium-sized companies (50-249 employees). The large companies (more than 250 employees) represent 38% of all J sector's companies. [8]



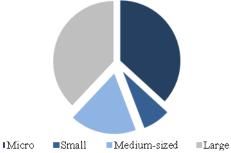


Figure 4 Information and communication's companies size class in Slovakia in 2010 (Source: [8])

Because of the organisations results mentioned above and personnel costs spent, we want to focus on this subsector and search the possibilities of improving and growing.

3. Personnel controlling in Computer programming and consultancy companies

The Information and communication companies like any other services companies have a problem with measuring employee performance and rewarding system. To resolve these and similar problems, Kaplan and Norton have developed a set of measures that give top managers a quick view at organisation's performance. It is called the Balanced Scorecard and it works with four perspectives [12]:

- Financial
- Internal processes
- Learning and Growth
- Customers

A balanced approach to employee performance appraisal is an effective way of getting a complete look at an employee's work performance. Too often, employee performance plans with their elements and standards measure behaviors, actions, or processes without also measuring the results of employees' work. By using balanced measures at the organizational level, and by sharing the results at other levels, managers are providing

the information needed to harmonize employee performance plans with organizational goals.

Because of its contribution to achieving organizational goals, Balanced Scorecard became very popular at measuring main indicators of personnel controlling. Horvath and partners considered it as the most important tool for personnel controlling's and generally controlling's implementation in company. [5]

This idea is shared also by consulting company PricewaterhouseCoopers (PwC). They publish a handbook HR Controlling, which can help the companies to choose right indicators for measuring employee performance, to determine optimal values of indicators and to compare the results with arbitrary company from the same sector. They also publish HR Scorecard tool, which helps companies and their HR managers to individually compare the results and define the new indicators. (HR Controlling)

HR Scorecard from PwC divide the indicators into six perspectives [10]:

- 1. Financial results and productivity
- 2. Rewarding system and employee benefits
- 3. Organization performance
- 4. Employee recruitment
- 5. Education and training
- 6. HR department

The indicators groups are based on standard four Balance Scorecard perspectives and are extended into six. A fresh new perspective is "HR department". This tool takes measure for HR department and employees separately. The idea is really innovative and needed, because HR Scorecard involves the all organizational fields and HR employees often forget to control and manage themselves. Another problem in IT companies is organization structure. Almost all of them have flexible hierarchic structure with the synthesis of more organisation's units and departments and with team and project orientation.

In the <u>projected organization</u>, each project becomes a self-contained organisation with all resources and functions within the project divisions. This project has its own budget, support operations, staff, and facilities. The employees' performance is measured according their work in project's teams. It is the function of project manager to know the assets of employees and their role in team success. [11]

But matrix and functional organizations have more problematic performance measurement. In <u>functional organization</u> employees are grouped into teams or sections according to some particular basic function. The people are only on the project on a part-time basis and the project may not have a dedicated budget. There is problematic comparison of staff in teams and out of team's performance.

<u>Matrix organisation</u> has a little different rules. Staff is organised into functional groupings (specialisms, geography and business) and then brought into projects to work on them when needed. This multiple subordination makes problem with measurement, because employees need to be evaluated by work in more groups and teams.

In all flexible structures personnel controller or controlling department need to work within the HR department and communicate with managers of teams and functions. It requires a lot of communication, negotiation, and meetings with all interested parts and personnel controller.

6. Conclusion

All these aspects and mentioned problems help to create the main structure of our past and future research. To solve the problem of personnel controlling implementation in Computer programming and consultancy companies we recommend to adhere these element steps:

- 1. To implement personnel controlling on both, strategic and operational perspective.
- 2. To use qualitative and quantitative tools to acquire needed answers about employees' performance and results and main companies' processes.
- 3. To use these tools according to 6 perspective of HR Balance Scorecard (from PwC).
- 4. To ensure appropriate indicators to be always available for appropriate management's category (top management and HR management).
- 5. Ensure that personnel controlling (role of personnel controller) is properly implemented in organization hierarchy (according to organization structure).

These steps are able to help companies with personnel controlling tasks and at the same time they open the way to our future research. We want to prove the affirmations of best implementation the personnel controlling to IT companies in practical way. We want to collaborate with two IT companies from our region, find out their solutions and the problem and compare them with our ones. The aim of our research will be making the methodology of personnel controlling implementation and management in sector Computer programming, consultancy and related activities and in similar sectors. At the end we would like to create the handbook of personnel controlling implementation and management for different types of companies.

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HEALTH PROTECTION IN TV COMMERCIALS

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Abstract: The paper touches on the issue of socially committed advertising broadcast on TV Qualitative research was carried out to see whether television is an appropriate medium to transmit appeals of a social nature, particularly those concerning health protection, in the form of advertising spots. The objective was also to observe general attitudes towards television advertising, to establish hypothetically how many people will yield to the force of persuasion contained in commercials, and to examine the features of the most "effective" announcement. The importance of the issue of placing appeals referring to health protection in TV commercials is of particular importance in the context of general situation in this matter in Poland. Taking care of one's health and health prevention should be in the centre of interest on the part of Polish people as there is a huge number of cardiovascular system diseases and cancers. In Poland, the increase dynamics of cancer cases is one of the highest in Europe. The disease attacks people of different ages, most frequently those aged between 45 to 65. The conclusions presented in the paper are based on the survey qualitative research conducted in selected circles.

Keywords: tumors, diseases of circulatory system, TV commercials, survey, efficiency

Introduction

In the summer season, we generally have time for broadcasting social commercials related to life problems, threats that occur around us or growing social pathologies. These commercials are broadcast not only over such a medium as television, but also outdoor advertising is used, e.g. billboards or posters. Advertising of this kind is equated with the social campaign, its purpose is to have the recipient interested in those problems which perhaps are directly linked to him/her, yet they occur commonly. Its function is to make people more sensitive and to impel them to be generous or to undertake other activities in the form of e.g. voluntary services. The involvement of the spectator who is passive by nature is quite difficult and requires considerable effort, ideas and repetitiveness. Appeals repeated on multiple occasions are more effective than a single-time action. This is proved by many examples (e.g. the Great Orchestra of Christmas Aid in Poland).

1. Health prevention in Poland: introduction

There are ca. 38 million residents of the country. There have been from 360 to 380 thousand deaths annually since the year 2011, while 47% are women and men are the rest. Cardiovascular system diseases are the most frequent cause of deaths; cancers come second; in total, this accounts for 70% of deaths.

The increase of the number of deaths in connection with breast cancer is surprising in the light of the fact that a preventive programme has been conducted in Poland since the year 2006. Under this programme, every woman aged between 50 and 69 may use a free mammographic examination once every two years. Special invitations are sent out to women, and buses with mammographic laboratories reach small localities. The problem is that these activities are not fully effective as only 35% of women respond to these invitations, and there should be 75% that one could talk about effective prevention. From

the point of view of public health, cancers constitute the problem number one because it is not only the number of deaths related to them that is increasing, but also the number of diseases is growing. It was clearly established that in our state, mortality in connection with malignant cancers before 65 years of age, especially with men, is the highest in the world. Comparing the number of disease cases with the number of deaths, it is evident that cancers are considerably more dangerous than cardiovascular system diseases [1]. Since the situation in our country looks so serious, it is legitimate to cause the level of the awareness on the part society to increase so that every person could consider it their duty to carry out check tests. In Poland, there is little trust towards the health service.

2. Television: an omnipresent and comprehensive medium

For certain, television supplies information, teaches, provides entertainment, warns, advises and encourages; it creeps into every field of life. At the same time, it is commonly criticized for an insufficient quality of programmes because it is unable meet the expectations of every viewer; it tries to deal with this inconvenience by creating many programmes of a different nature. At this point, one may mention the role of politics and television. M. Castells discussed this issue and proved that in the present-day societies, people obtain information and form their political opinions (as many other opinions) mainly through media, and television on the first place. The conclusion is that it is media that determine the framework for politics. Governing is becoming dependent on a daily assessment of the potential influence of decisions taken by the government on the public opinion, which is measured with opinion surveys, focus group and image analyses. What is more, in the world that is more and more saturated with information, the simplest and most dubious messages, one which leave place for people's own projections, are the most effective messages. Audiovisual media are the

most important providers for human minds as concerns public issues [2]. Therefore, television as a medium that accompanies the lives of viewers exerts a huge influence on their attitudes, views and behaviour, even if they were to deny this state of affairs. Television becomes a pretext e.g. to initiate social life (there is something to talk about), and it frequently substitutes social contacts.

3. Force of television advertisement

In view of the fact that television was selected as a proper medium to present slogans concerning health prevention: January – March 2013 campaign entitled "Cancer. This is curable" and another previous campaign entitled e.g. "Be a man - take care of yourself', it is legitimate to introduce the functioning of media and their credibility as a source of knowledge. Every human is different; they have different ways of perceiving the world and their own value system. An advertising message and its interpretation is dependent on those beliefs and views which are stated in the social group where a given individual functions. Psychologists claim that as much as 90% of information included in the advertisement reaches the human awareness with the use of vision. It is evident based on this that the most effective advertising method is television and press as well as outdoor advertisement. Television advertising owes its effectiveness to expansion, variability and dynamics. It is defined as the most aggressive one. The press advertisement, while permanent, does not possess a plot, yet it has those advantages which make it one of the most effective ones. The recipient may devote more time to it unlike the transient television advertisement, which cannot be moved back. In the case of the press advertisement, the recipient may return to it as many times as they wish when they want to. It is also evident that the press advertisement passes on more specific information that is useful to the customer. The television advertisement is to arouse interest in a product within a few seconds in such way so that a given product becomes embedded in the viewer's memory for a long time and at least until the moment they go shopping. Hence, the television advertisement must be characterized by something unusual, attractive and unique [3]. Rules for the production of a press advertisement are accurately determined in such a way so that the message could be the most cohesive, logical and convincing.

Everybody seeks in daily life and in the advertisement something new, different and worth attention; something completely unique [4]. It seems that there are quite many limitations in the press advertisement as concerns the application of a diversity of means, yet it is more credible. B. Kwarciak presented the usefulness of different media based on five criteria: information chaos that is related to advertisements with too much information, which is frequently unnecessary; drawing one's attention, that is a competent way to draw the recipient's attention over a longer period of time; the press advertisement is the most effective in this respect; "temperature": media can be divided into "cold" ones, e.g. television which transmits rich and colourful images that allow the viewer to have second thoughts and reflect over the truth of information transmitted; press and radio that present only the most general information are "hot" media; importunity: television media are recognized to be quite aggressive, ones that exert a great influence on the viewer, while a press advertisement is not able to trigger off such extreme emotions as an advertising spot; the last criterion is prestige: a product of an appropriate quality should be advertised in media with an appropriate prestige [5].

Table 1. Assessment of the importance of the individual features of media in the dissemination of advertisements

Feature	Informatio- nal Chaos	Dra- wing Atten- tion	"Temperatu -re" of the Message	Insisten- ce	Presti-
News papers		++	+++	-	+
Perio dicals		+++	++	-	+++
Radio		+	++		+
Television	-	++	+		+++

Notes to the table: +++/-- high level, ++/-- average level, +/- low level. Pluses (+) denote positive influence and minuses (-) negative phenomena.

As it can be seen, television functions as a medium with the greatest importunity and the greatest prestige, yet on many occasions it is information chaos, i.e. too great a number of advertisements and the information contained in these, that characterize television according to an average viewer.

Placing appropriate characters, objects or situations in the advertising massage is yet another issue. Each of these objects should be different, it should be characterized by something unique and untypical. In the advertisement, reality is idealized; people, their relations and family relations are perfect, the action takes place in a perfect house, garden or in a beautiful car. All of this is for the viewer to realize that if he/she purchases the product being advertised he/she will feel in a special way, just as the people do that occur in the advertisement. To each advertisement, all the objects are selected very precisely. The person who is performing must possess an appropriate hairstyle, clothing and good looks. The woman is the most appropriate person to occur in a television advertisement or to be placed in a press advertisement. The woman, however, is not the only actor in the advertisement. By analyzing advertising spots and photos of different kinds, several types of people that appear in the advertisement were distinguished [6]: experts: for example: doctors; people like us; users; celebrities and well-known personalities; folk and popular heroes, characteristic figures; models; higher spheres.

Whom do we believe? What senders are credible? Numerous investigations serve to convince us that competent senders are credible (those who possess specialist knowledge) with clear intentions (trustworthy because they do not manipulate our views for their own benefit), attractive (those that we like) and are similar to ourselves.. The massages of competent people (who are experts in a given field) result in stronger changes than identical contents promoted by little competent senders.

The latter ones may simply obtain a boomerang effect, i.e. trigger off changes in a direction that is reverse to the intended one [7].

Everyone has their favourite actor, hero, celebrity, and finally their perfect type of the man or woman whom they will see in an advertisement and may even want to identify with him/her and imitate him/her.

4. Persuasion and the effectiveness of advertisement

The way in which the advertisement acts on viewers as consumers has been investigated on multiple occasions in relation to different age groups, professional groups or those that differ with respect to affluence. For industrial, trade and service companies it is important how one with the use of television can be persuaded to purchase the products, and how influence can be exerted on consumer attitudes and behaviours. These companies use various means to persuade the viewer and often manipulate him/her to act. A persuasive act is an action where the author makes an attempt to change the beliefs and attitudes of listeners and tries to change the values believed in; in other words, the author attempts to re-orient their thinking in some essential manner [8].

With respect to different purposes, convincing, stimulating and impelling persuasion is distinguished. The first one viewer's involvement in focusers on the communication process, where the sender does not try to manipulate the behaviour of the other person but he/she tries to convey his/her views in the most reliable and concise way. This is the most desirable kind of persuasion. This kind of exerting influence on others, when controlled well, may bring about the best results in sales. Stimulating persuasion that is campaigning occurs rarely and only in difficult situations, where techniques to influence viewers' emotions are used to a larger extent than in the remaining types. It seems, however, that customers understand impelling persuasion as one which occurs most frequently in sales. This kind of persuasion, also known as propaganda, aims at winning as many as possible supporters of the idea presented. These activities may have an open or secret nature and they do not necessarily appear to be honest [9]. It is really hard to have an influence on people if we do not know their way of perceiving and assessing the world, if we do not know the system of values and motives of conduct.

People have the greatest opportunity of an effective exchange of information when they understand the partner's point of view; for this reason, the listening ability is so important. Not only does it help to understand other people but it provides information required to create a strategy of exerting an effective influence on others [10]. According to the model by W. Mc Guire, the final effect of a persuasive communication depends on at least five stages of its transformation: attention, understanding the content, surrendering to its arguments, maintaining an altered attitude and using it in the recipient's own behaviour. It is easier to attract the recipient's attention and to cause him/her to understand us; it is more difficult to cause him/her to surrender to our arguments, and it is the most

difficult to maintain an altered attitude and to introduce it into one's life [11].

There are also various kinds of persuasion in social advertisements. However, it seems that the same means or ideas are used in the commercial advertisement and in the social advertisement. This is probably because the effectiveness of TV commercials is commonly known and this has an effect on advertisements of other types.

5. Characterization of qualitative research: discussion

Qualitative research was carried out in mid February 2013. Fourteen experts gathered from different professional environments. The joint feature was quite an advanced age (the youngest person was aged 40). The respondents included teachers, musicians, pensioners, an insurance adviser, a policeman and a civil servant. The respondents were asked five questions, and the answers provided (in short) are presented below.

1. Do you remember any social advertisement e.g. one connected with health prevention?

The respondents confused advertisements and they brought back to memory commercial advertisements thinking of them as social advertisements. The "Polsat" Foundation with the slogan "It is worth to help others" was widely recognized. The majority of the respondents remembered advertisements on agents for enhancing male potency, and they regarded them as the most unexpected and funny ones. Wanda, aged 64, a retired manager: I remember the advertisement with Stuhr and Pazura concerning "Cancer. This is curable"; but only because I heard somebody talk about this advertising campaign on the Breakfast TV. Elżbieta, aged 50, a primary school head teacher: I remember this advertisement: "Be a man: take care of yourself" (an advertising campaign from the year 2011). Adam, a musician, aged 40: The advertisement is also a non-verbal message; you look at other visual effects, it is not only the text that matters. As for the persuasion role: my grandmother had a check-up as one of the characters from Klan or Złotopolscy film series did. Social motives occur in different series and in the advertisement, and I think that this is good as it increases the effectiveness of influence.

2. What do you think about advertising on television?

In general, people are opposed to TV commercials, and they strongly emphasize their independence in relation to persuasion that they contain. However, the research shows that it is not only children who surrender to advertising. Janusz, aged 68, a retired person: The importunity of advertisements is so huge, the sound level when commercials are broadcast is increased, it just attacks your mind. This is frustrating and that's why I switch over to a different channel whenever there are commercials. Daria, aged 51, an insurance adviser: I strongly oppose commercial advertisements that are produced for insurance companies. They lead you to believe that when you buy an insurance policy with the slogan: "Oppose cancer", everything will be OK as the insurance company will be protecting you if you are ill. This is pure misunderstanding and manipulation; this is what I think of TV commercials. Elżbieta, aged 55, a teacher of forms 1-3:

The number of TV commercials is appalling, also of those that are related to health and medicines. At the end of the day, you get suspicious about it. In medical advertisements, there's more to it than meets the eye. I keep wondering what it's all about and whether this is really about my health.

3. Is television a good medium to raise important issues? Is it justifiable to have social advertisements, e.g. those concerning health prevention broadcast together with commercial advertisements?

The fact was mentioned above that the respondents found it difficult to see a difference between a commercial advertisement and one where the recipient is not persuaded to buy any specific product. In other states, for example in Great Britain, a social advertisement is clearly distinguished through the use of a specific font or a selected sound signal. Maciej, aged 58, a civil servant: It is no use broadcasting a social advertisement connected with health prevention or any other of this type as they will get lost among other commercial advertisements. Marcin, aged 66, retired: It is TV commercial that is the most effective, there is always something that will remain. Marek, aged 55, a physician: Television is best, the TV set is on from morning till late at night: "tea or coffee", "guest at home", "breakfast TV"; people do not watch selectively, they watch all day long. There is no better medium than TV. Waldemar, aged 50, a policeman: The time of the day when such a commercial is to be broadcast is important. I do not switch over to other channels when commercials are on as I watch sports, I do not want to miss any minute of the match, and so I am forced to watch these commercials, the whole lot of them, and maybe I will remember something, but not always.

Adam, aged 40, a musician: In today's noisy world, we are left with TV only. Janusz, aged 68, retired: I find witty and intelligent TV commercials more convincing. There is a growing tolerance for such commercials. Polsat is a TV station that shamelessly stops the film many times, which then instead of an hour and ten minutes takes two hours, half-and-half with commercials. It is hard to watch films, you lose the plot. There is no other solution, we are only left with TV, no one will resign from it; I think, this has no effect on me. Grażyna, aged 55, a musician: What counts apart from TV is billboards and neon signs, these large ones that attract your attention. Wanda, aged 64, a retired manager: There is something that gets through to you, the numbers of readers are decreasing, and press media will never equal TV.

4. What percentage of viewers aged 45-65 will respond positively to the appeal included in an advertisement that persuades them to have a check-up?

There are many ways to examine the effectiveness of advertisements, yet efforts always aim at their improvement. There are claims that among ever so many commercial advertisements that are broadcast in blocks, some commercials pass unnoticed. Most of the respondents, however, are prone to think that even though they are independent from the influence of advertising on their behaviour, society must believe them as there are so many companies that decide to take up advertising on TV.

Ania, aged 58, a physician: Generally, there is little consciousness in society, and you need to know your organism a little, the awareness of medical prevention does not go hand in hand with education. Adam, aged 40, a musician: TV is a more effective medium, public funds are not invested improperly when a strong and interesting message is produced. Janusz, aged 68, a pensioner: There must be a good idea, and amplifying the sound signal is not good. Wanda, aged 64, a retired manager: It is also hard to convince somebody to do something otherwise than with an advertisement (an commercials are not effective, either), and so very few people decide to have a check-up, perhaps one per cent of viewers aged 45 to 65. Elżbieta, aged 55, a teacher of forms 1-3: It is hard to say how many people will have a check-up after watching a commercial. I remember this shocking spot about diving. It triggered off your imagination. Children would flinch before jumping into water just as in this slogan: "I will have time to think before I jump". Me, as a person who has been battling against a cancer, must admit that an advertisement of this type arouses fear and withdrawal. The fact whether people will listen or not depends on your individual reflections and on the viewer's nature. Wanda, aged 64, a retired manager: I wouldn't count on a commercial alone; personal letters or invitations for mammography are more convincing. I had a heart examination as I received such an invitation, even a priest told us in his sermon to have check-ups. The attack must come from manifold directions. TV alone is too little. Elzbieta, aged 55, a teacher of forms 1-3: An invitation. I don't know what an average citizen knows about diseases or social threats; it might be that people really don't know what mammography is all about. A large number of commercials helps to raise social awareness, even though this is knowledge in a nutshell. It is good to combine convention with avant-garde when it comes to health prevention. Marcin, aged 66, a pensioner: What percentage? I believe this is from 5 to 10 per cent, but even if 10 people make a decision then such a commercial was worth investing. Ania, aged 58, a physician: Social awareness is low. Basic social benefits do not include preventive screening. Health prevention is not planned. Although everybody knows that prevention is better than cure and treatment costs rise threefold, there are no separate prevention services in our system. The system is bad, part of people report for screening on their own. A physician needs to think of his or her finances and orders as few additional examinations as possible as they involve spending his money. The system must undergo a thorough change. I was once invited for a check-up but a nurse discouraged me.

5. How is an appeal (announcement) to be formed for people to be interesting?

This question raised a lot of controversy and there appeared two options among the respondents. Some of them opted for subtle and witty or even drastic commercials, while the other ones would prefer a serious commercial based on authorities, and in particular one that would show those people who have been cured.

Marcin, aged 66, a pensioner: Not a specialist for commercials, not Doda [a Polish famous singer] and that's all. What we need is concretes [12]. Grażyna, aged 55, musician: I find a sharp commercial convincing; it is convincing when it shows results, it must be drastic.

Elżbieta, aged 50, a head teacher: However, an interesting and shocking form cannot destroy the content. One needs to say what you need to draw your attention to; two or three sentences containing truth. Adam, aged 40, a musician: A lot depends on how the content is presented, it's not just "talking heads". You need to know how to "play on emotions" and create something that will be memorable. Marek, aged 55, a physician: It is problematic how to construct this commercial, the other issue is like this: is it possible to realize what we are trying to convince people to? There is no preventive screening at all, the National Healthcare Fund is not interested. There is some effectiveness when we record these slogans: go and have a screening test for cancer; you know, you need to go because you have this spot, go and see what it is, you can cure this. Diseases are embarrassing, it is not appropriate to talk about them or to say that you have a cancer. In our country, a cancer makes you think of the coming death. We constantly hear these stereotypes: cancer is afraid of a knife, light etc. We need to talk of how many people have been cured. Not in a drastic manner; to the point. Mental diseases are embarrassing, too. Talk your friends into seeing a psychiatrist, it is no mean feat, no one wants to be a madman. Cardiology is an elegant topic and it was presented excellently owing to professor Religa, that was a great job; heart is "elegant" and other diseases are embarrassing.

6. Conclusions

- 1. Commercial and non-commercial advertisements related in particular to health are so similar and difficult to distinguish for an average viewer that it is justifiable to repeat many times those connected with health issues so that they could remain in the memory even of an inattentive viewer.
- 2. The respondents maintain that if a social advertisement (also understood as an advertising campaign) in its short form is discussed and commented on in various information programmes (quasi educational ones) on TV, and in particular in those broadcast in the morning hours, and additionally in popular serials (but not in feature films), the appeal is remembered better and it is not so transitory.
- 3. In accordance with the commonly known stereotype: the quantity of advertisements and their importunity is negatively assessed. Manipulative practices, which are currently well recognized, are condemned.
- 4. Advertising is as omnipotent as television: those who watch television must always watch advertisements; hence, it is justifiable to impart information which is essential from the point of view of health in a brief form in the sequence of commercial advertisements. Advertising raises the social awareness of health prevention, yet nobody is able to define the awareness of health prevention in our country.

- 5. In spite of their scepticism and quite a rational approach to TV commercials, the respondents do not see any other medium which could catch up with TV as regards its scope and force of impact. Other media are treated as those that supplement television.
- 6. Usefulness: the idea of health prevention and television advertisement is so important that it is justifiable to broadcast advertisements of this type even if 10 people are to respond to its persuasion. It was predicted that from 1% to 30% of viewers would decide to participate in the research. During discussion, the majority agreed that in reality two or three percent, not more, of those people who watch a given advertisement will respond to the appeal included in it. This was considered to be a high effectiveness.
- 7. Part of people are convinced by an advertisement with an expert who plays the main part, who explains certain complex issues. It may be more difficult in reception yet is more effective. Most respondents wanted "people like us" to provide information on a disease because they are more credible and offer hope for cure (from among those participating in the focus research, two women were cured from a cancer).
- 8. Drastic scenes were not eliminated as they tend more to spur people into action, yet there were quite opposite remarks referring to the fact that an explicit nature scares the viewer off.

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STRATEGIC OBJECTIVES OF TRANSPORT ENTERPRISE IN RELATION TO THE REQUIREMENTS OF TRANSPORT POLICY IN THE APPLICATION OF THE BALANCED SCORECARD METHOD

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Abstract: One of the basic assumptions of achieving and securing sustainable development in the transport sector is the efficient management of transport companies. It is necessary to establish requirements which can ensure the future development of enterprises. This article shows the connection between the requirements of transport policy of the EU and strategic objectives of one specific transport company when applying the Balanced Scorecard Method (further referred to as "BSC"). The BSC offers the possibility to support strategic management's decisions by monitoring weighted indicators so that a strategic framework of national and transnational scope can be incorporated effectively to the functioning of the company. In turn, this will create the conditions for achieving sustainable development. A current problem in many metropolitan areas in the EU is public transport financing, which currently constitutes the largest burden of urban public budgets. Public transport companies can use the BSC that factors in the importance of financial indicators included in the financial perspective; however, emphasizes the interdependence of other perspectives mentioned in this method. The article presents a study on the visual coherence of two perspectives - financial and customer strategy used by the Public Transport Company of the City of Pardubice (in Czech, Dopravní podnik města Pardubic, hereafter DPMP).

Keywords: Balanced Scorecard method, strategy, transport policy, urban transport, Dopravní podnik města Pardubice

1. Introduction

Currently, attention is focused on sustainable development within the European Union which is also reflected in transport in policy of EU member states. In this context, the current issue is urban public transport, which currently represents the greatest burden on public budgets for most urban cities in the European Union.

The effective management of transport enterprises of public transport is one of the basic prerequisites for sustainable development in the transport sector. The problem is how to define requirements for future development of public transport enterprises. A suitable method for the support of such a procedure is the Balanced Scorecard Method (next "BSC"), which is a system of weighted indicators for strategic management and covers not only the financial outlook for the company, but also strategic tools and benchmarks for other areas defined as additional perspectives: customer satisfaction, development and growth and area of internal processes. This method enables a company to effectively take account of national and transnational strategic specifics when deciding on the operation of the business and thus to create conditions for achieving sustainable value.

The aim of this paper is to show the connection between the requirements of EU transport policy and the strategic objectives of one particular enterprise applying the BSC. Due to the extent of the required contribution, only two points of view have been selected in BSC, namely financial perspective and customer experience.

2. Strategic documents in the field of transport

The basic documents of the European transport policy approved by the European Commission, which outline the basic strategic vision of the transport sector for the coming years, are the White Paper and the Transport 2050 itinerary. The effect of their implementation would be to introduce a European competitive transport system that insures increased mobility, growth promotion and employment. It could also reduce Europe's dependence on oil imports and carbon emissions from transport (on schedule in 2050 to 60 %) [1].

The transport policies of the EU member states are in correspondence with the White Paper and Transport 2050 itinerary. The principles and objectives of transport policy are formulated by the state governments on the basis of the analysis of the current development of the transport system, transport demand projections and budget and other requirements (e.g. the need to transport development within the economic framework). Individual areas of importance are developed in separate strategic documents. The strategies of transport companies should be determined in relation to the objectives which are set in the strategic documents of a specific country. The success of the company does not depend only on the field of business, but it depends especially on management's methods used in transport companies. In this context, the authors of this article recommend using BSC), which enables the sustainable growth of a company in accordance with national objectives and strategies. This is coupled with the requirement to invest in assets required for the growth and efficient operation of the company.

3. The specifics of a transport company

Transport is characterized as "purposeful activity connected with moving people and material objects in various volume, temporal and spatial contexts using different means of transport and technology" [2]. The result of the transport process is the transfer of goods or

persons in terms of transportation. How transport companies differ from businesses in other sectors is specific to their particular output, which is a service consisting in the movement of people and goods, or additional services. Transport and transport performance are characterized by the demand for transport - by quantifying the requirements of customers. In contrast, the transport process is determined by the supply of transport, it is similar to the actual manufacturing process in industrial business. That causes requirements for program planning, transport services and ensuring sufficient capacity of transport routes, vehicles and materials (e.g. fuel, spare parts etc.). The transport process is characterized by a system of indicators of operation and operating performance, which represent the link between transport and the company costs [3].

The basic prerequisite for the transport business is to create a competitive environment for the functioning of the transport market, but there are some specifics which are reflected in the principle of so-called "regulated competition". Specific features of the transport market represent the harmonization of the conditions for business activities and provision of transport services (also called public passenger transport) which contributes to the sustainable development of the territorial area of the state, county or municipality.

4. Implementation of transport policy in a Transport Company using BSC

The development of the BSC method reflects changes in the turbulent market environment and thus supports the implementation of business strategies through specific performance measures. The environment of the transport business is affected by transport policy and that is the reason why it must be taken into perspectives of the BSC. In this method, the focus is not only on the preference of financial indicators, but also on the comprehensive evaluation in the areas of customer experience, development and growth perspective and internal business processes perspective [4].

The management of transport enterprises using the BSC transforms strategic aims into measurable indicators and, at the same time, allows feedback to be provided on the implementation of critical management processes, because "any changes planned or feasible within the BSC are quantifiable in monetary terms retrospectively and therefore it is possible to trace their impact on the activity enterprise" [5].

Table 1 shows the specific use of these methods by the DPMP. Due to the limited scope of this article, only financial and customer perspectives have been selected and monitored.

Table 1 Style and font size for papers

Strategic Objective	Monitored Indicator	Examples of Measures	
Financial Perspective			
The use of assets	Return on equity (ROE),	Reduction of the	
and resources to	Economic Value Added	Weighted Average	
increase efficiency	(EVA)	Cost of Capital	

economic		(WACC)
Positive profit based on financial balance	Operating CF	Politics of EU funding and the State Budget
Minimizing operating costs	Operating cost comparison at time	Fuel savings - operation of filling stations (CNG compressed nature gas) The purchase of electricity on the stock exchange The use of blended diesel bus transport
Investing in innovation	Internal Rate of Return (IRR), Return on Investment (ROI)	Innovations of Information Systems
Meeting expectations of the shareholders (Pardubice)	Pay-out Ratio, Profit	Improving communication with shareholders in the area of strategic management
	Customer perspective	T
	The number of applicants for driving school services Number of orders for	Extending the portfolio of services
Developing customer care	domestic and international passenger transport Number of Orders of	Improving fleet and aesthetic appeal
customer care	comprehensive service buses Number of tickets sold in	Improving awareness about services Increase the
	the passenger water transport	frequency of boat rides
Shortening response time to changes in passenger behaviour	The number of passengers using various electronic fare systems	The introduction of a loyalty program for travellers who are looking to save funds
Improving adherence to quality standards in urban transport:	Distances of selected facilities (schools, offices, courts, health care facilities) less than 3 km from pick-up points (unit 1m)	Analysis of the current status and optimization entry and exit points
	Walking distance to public transport under 2 km (unit 1m)	Optimizing structure of lines, the transfer of the necessary capacity to existing lines.
1.Availability	The frequency / intensity circuit (unit number of connections / hr.) The shipment time spent (from source to destination, the unit is minute) Number of transfers (unit is the number of transfers during 1 trip) Fare (the unit is CZK / 1 ride)	Analysis of the economic availability
2. Reliability and regularity	The ratio is between the planned and joints, filling	
of traffic	in timetables%	
The unit is the number of accidents or valuation of the accident in CZK The ratio of green-powered		Analysis of accidents in relation to individual lines and improving the training system
4. Ecology	Increasing the number of environmentally friendly vehicles	

	Occupancy vehicles in% (real demand / capacity offered) or (passenger vehicle / total capacity of the vehicle)	
5. Culture Travel	Improving accessibility for people with disabilities in% (joint with equipment for the transportation of handicapped / total number of connections on the line)	Increasing the number of low-floor vehicles
	Information and check-in systems, vehicle equipment, stations and boarding / exit points (the unit is a measure of passenger satisfaction)	Innovations of Information Systems

Source: authors' work by [6-11], [12], [13]

Within the BSC, the importance of financial indicators in the financial perspective does not deny, however, that links with other perspectives are emphasized. This is evident from the strategic objectives and measurements which support them in the two perspectives shown in Table 1. In essence, the non-financial criteria set by the customer perspective are reflected in the financial situation, because they are recalculated in money.

These causal relationships between the two perspectives can be placed in concrete examples. E.g. If we want to develop customer care in a form that measures the improvement of the fleet, this will be associated with the investment. In financial terms, this means that it is necessary to use EU funds and other grant options to prevent a decline in financial performance. If you want to shorten the response time to changes in passenger behavior and apply measures related to a defined loyalty program, it is clear that there will be some decline in sales from a financial perspective (in case there is a loyalty program associated with benefits such as discounts). This way you can monitor other relationships.

The authors mention that the relations between the perspectives within the BSC are bi-directional. In our case this means that for example, measurements related to the financial objective (defined as an investment in innovation) positively affects customer perspective, because it increases the comfort and convenience of the vehicles. We also improve access to information by IT innovations. Furthermore, this results in more satisfied customers.

Strategic objectives defined in the preceding text are consistent with the expected effects of transport policy, because their purpose is the same. For example urban transport has an emphasis on environmentally friendly vehicles and fuels (according to the plan that vehicles using conventional fuels in urban transport should cut in half by 2030 and be phased out of the city by 2050 [1]. The DPMP implements transport policy objectives into their strategic aims by innovating new vehicles and replacing the classic blended diesel fuel for compressed natural gas (CNG). In the context of transport policy, emphasis is also placed on the development and promotion of urban mass transport which economically causes

a positive impact not only on economic results, but also on increasing assets and financial resources.

5. Coherence ROE and customer perspective

The financial perspective is consistent with the other perspectives in the BSC; but for many of the enterprises, financial indicators are of the main parameters of the company's success. It is a reflection of the firm's ability to convince the customer to buy the product or service. The BSC enables consistent detection of the data obtained with other non-financial indicators and uses them to ensure the sustainable development of the company in the future.

Consistency is shown in the case study. For the financial sector is selected as the top indicator Return on Equity (in the following text as "ROE").

The interaction of individual perspectives can be observed in the following case study of DPMP. The financial perspective is presented on the analysis of ROE, which the management of the company defines as a top indicator.

The financial area is assessed according to a customer perspective, where the customer preferences are tracked as supporting information which can determine customer's satisfaction, see Table 1.

7. Financial Breakdown of ROE

ROE is a top indicator for assessing the company's performance because it appreciates capital. If it makes the pyramid decomposition, it will monitor the impact of changes in individual indicators of its value.

$$ROE = \frac{EAT}{S} * \frac{S}{A} * \frac{A}{E}$$

where, ROE = Return on Equity, EAT = Earnings after Taxes, S = Sales, A = Assets, E = Equity.

Table 2 DuPont analysis of ROE

Name of	2007	2008	2009	2010	2011	2012
Style						
ROE	-0,02	-0,03	-0,01	-0,01	0,00	0,00
EAT/S	-0,06	-0,06	-0,02	-0,02	0,01	0,00
S/A	0,39	0,39	0,32	0,38	0,37	0,38
A/E	1,11	1,22	1,32	1,15	1,14	1,10

Source: authors' work by [6-11]

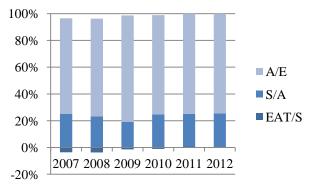


Figure 1: DuPont breakdown of ROE Source: authors' work

In terms of financial perspective the decline of return on equity allows a comparison of how various factors act on this indicator - the factors are as follows: the net profitability of sales, turnover of total assets (increase in the size of sales) and the ratio of total assets to equity (leverage). The profitability of sales moves up from 2011in positive figures, after the public transport fare is adjusted. Next, the profitable effect of financial leverage is obvious. It occurs when debt grows (the size of total assets increases) at the current level of equity. The total asset turnover determines the intensity/ performance of using assets to achieve revenue growth regardless of source protection. From the study's results we can see a trend of rapidly increasing sales compared to total assets.

The financial perspective is limited to the past. Moreover, it is not possible to comprehensively cover all the reasons that led to the circumstances, and therefore not possible to prevent this situation from recurring in the future.

By including an additional perspective of the BSC, management can better track the causes of market reactions and also extend their processes in a way that ensures positive feedback of strategic decisions. Thus it can eliminate the formation of negative economic results and the consequential need for public financing.

On the basis of the data from DPMP, it can be stated that the company is not profitable. That means it would not exist in the market environment in the long term without demonstrable loss payments from the municipal budget and subsidy programs. These results are consistent with the general trend of management of urban transport companies. In the case of the Czech Republic, the amount of the subsidy for the ride is only 40 % of the cost [14].

6. Conclusions

The aim of this article was to show the connection between the requirements of transport policy of the EU and strategic objectives of one specific transport company using the BSC. The framework for the future development of the state of the transport sector is set in the basic strategic documents: White Paper and the Transport 2050 itinerary. In accordance with these documents, transport policy and strategic sub- documents are created by individual countries of the EU. The strategies of transport companies should be determined in relation to the objectives set in the strategic documents of a specific country.

The success of the business in the area of transport depends on the ability of management to effectively manage the business. According to the authors of this article, a suitable method to support management of a transport company is Balanced Scorecard Method, which enables the sustainable growth of a company in accordance with its objectives and in connection with national strategies.

Comparing transport company to businesses from other sectors shows some specifics that need to be taken into account when developing strategies. The environment of transport companies is affected by transport policy and that is the reason why it must be included in the perspectives of the BSC. In this method, the focus is not only on the preference of financial indicators, but also on the comprehensive evaluation in areas of customer satisfaction,

perspective of development and growth and internal business processes perspective. In this article, the causal relationships between only two perspectives are monitored - the case study shows consistency of the non-financial criteria set in the customer perspective and the financial situation in which involves the conversion of monetary criteria.

The authors mention that the relations between the perspectives are bi-directional in BSC. BSC enables the detection of consistency of the data obtained with other non-financial indicators and uses them to ensure the sustainable development of the company in the future.

In the case study, ROE was assessed among others. According to the results of the analysis of the top financial indicator - ROE of the enterprise is not profitable in the long term. If the management of a company pursues only financial aims, it will not be able to comprehensively cover all the reasons why the situation occurs and profitability probably will not increase. But if they follow the strategic objectives according to the customer's perspective, as shown in this study, they will be able to track customer preferences for supporting information about their satisfaction.

The management of a transport company can better respond to the causes of market reactions by including the additional perspectives of the BSC. This can ensure positive feedback of strategic decisions. This also can eliminate the formation of negative economic results and the consequential need for public financing.

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THE BENEFITS OF APPLYING GREEN MARKETING PRINCIPLES IN THE INDIVIDUAL ROAD TRANSPORT

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Abstract: Recent decade is characterised by the deteriorating state of the environment. Current situation have made stakeholders to think about solutions. Transport services ensuring relates to ensuring the access to basic needs for population. Transport contributes to global warming by emissions formation and it has significant health and environmental impacts. This paper is focusing on road transport, especially individual automotive transport and method of choice of tyres. Research is going deeply to this topic, because our study and literature review found out that road transport belongs to main sources of air pollution and tyres have great effect on fuel consumption of car. The aim of this contribution is to highlight, that the price has still driving force for purchasing. Furthermore, it provides how customers adopt green new industrial tyres. This study applied the questionnaire survey to verify developed hypotheses. Results were tested by chi-square test and non-parametric binomial test.

Keywords: green marketing, individual road transport, tyre, purchasing behaviour

1. Introduction

Interest in the environment is still an increasing social trend that is reflected in the behaviour and attitudes of consumers and companies. Environmental issues have been affecting marketing activities for a long time, particularly in Europe and their prominence has increased in recent years. Recent studies on consumer perception and purchasing behaviour show an increasing interest in purchasing from environmentally sustainable companies. Because of the attention of the society, more and more companies are willing to accept the environmental responsibility. However, "green" consumers are concerned about a variety of sustainability issues. Climate change ranked high globally, but respondents from various countries cited also deforestation, energy use, toxic waste reduction, and water management as priorities. These diffuse interests make it difficult for businesses to effectively develop and communicate their environmental strategies. The concept that includes mentioned environmental aspects is called green marketing. In turn, green marketing has become more important for some kinds of products, especially for those, which has the great impact on environment. Transportation is one of them. As Poliak and co-authors have mentioned right, transport services ensuring relates to ensuring the access to basic needs for population such as work, health care and education. Transport is a key to economic growth and social cohesion [4]. Meanwhile, it has significant health and environmental impacts. Transport policies have therefore an eminent role in achieving sustainable growth. This paper is focusing on road transport, especially individual automotive transport and method of choice of tyres. Research is going deeply to this topic, because our study and literature review found out that road transport belongs to main sources of air pollution and tyres have more than 20% effect on fuel consumption of car, so change from used tyres to green tyres can have a great impact on improving the environment.

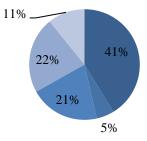
2. Literature review and hypothesis development

The climate change and warming are mainly caused by greenhouse gas emissions. Carbon dioxide (CO₂) accounts for about 77% of total greenhouse gas emissions. Methane (CH₄) primarily from agriculture contributes 15% of greenhouse gas emissions and nitrous oxide (N₂O), mostly from industry and agriculture contributes 7% to global emissions, 1% of gas emissions is produced by fluorinated gases (F-gases) [1]. The result form mentioned facts is that CO₂ emissions, the key greenhouse gas emitted by human activities, make up the majority. The graph1 shows the world CO₂ emissions by sector in 2013. More than fifth of emissions were produced by transport and according to OECD; more than 73% of those emissions were descended from road transport [2]. This information made us to find out the situation in Slovakia. Table1 below shows similar trend as in the world.

The largest share of emissions and polluting substances within the transport operation in Slovakia is road transport. Individual car and freight transport represent 86,4% of total transport emissions. Emissions of pollutants in transport are related to fuel consumption, which negatively affect the technical condition of the operated fleet, capacity utilization of vehicles [3].

Table 1 Comparison CO2 emissions from transport in Slovakia and in the world

Comparison:	Total CO ₂ emissions from fuel	Transport	Road transport
World	3 027 614 186 t	6755 805 472 t (22,31%)	4 972 134 928 t (73,6%)
Slovakia	35 004 317 t	6 852 112 t (19,57%)	5 920 053 t (86,4%)



- Electricity and heat production
- Other energy industry own use**

Graph 1: World CO₂ emissions by sector in 2013

2.1 Green consumerism surveys

Green consumerism and company environmental performance are counted within the broader categories of ethical consumption and green marketing. increased interest, proof of GM influence, and more specifically environmental, initiatives on customer behaviour are contradictory and equivocal. syndrome" is connected with mentioned fact. Firstly, it is the phenomenon in which a third of consumers profess to care about companies' policies and records on social responsibility, but ethical products rarely achieve no more than a 3% market share. Second explanation for "30:3 syndrome" concerns the price of environmentally friendly products. While customers might espouse positive attitudes towards the environment, not all are willing to pay more for products from high environmentally performing enterprises. Polonsky argued that green marketing is not to achieving its potential, both in terms of its impact on customer purchase behaviour and in terms of its effectiveness in improving the environment [5].

On the other hand, from the viewpoint of branding, green marketing activities were not so successful. Despite the positive public reaction to the corporate responsibility, companies neither unaccounted higher consumption nor increase in brand value. The main obstacles are [6]:

- lack of trust from customers (green washing),
- unwillingness to pay more for organic products,
- insufficient implementation, poor communication policy.

3. Hypotheses

According to questionnaire survey provided by Križanová 36% of respondents are making their decisions based on environmental aspect in a case of a car buying, 40% based on price. This means that answers indicated a decisive criterion as a purchase decision, this survey also pointed to the fact that most respondents are selective customers (considering an environmental aspect of the purchase depending on the price of competing products) in automotive industry [7]. Tyres (as important and often replaced spare parts) and their qualities have s great impact on fuel consumption, emission formation, and noise emissions. The significant property of tyre is rolling resistance. Rolling resistance has 20-30% impact on fuel

consumption and fuel consumption has a great impact on emission formation. Unless customers make purchase decisions based on environmental aspects when buying a car, it is assumed that they will also take into account environmental aspect when purchasing tyres.

In our questionnaire, respondents were informed about the new obligations introduced by the European Union (1222/2009). The obligation relates to a new labelling of tyres. Except size designation, tyre load capacity and speed index, three new additional user features were added: rolling resistance, wet grip, noise. We also inform them about the size by which is the rolling resistance contributing to the overall fuel efficiency of cars. [8]

Hypothesis1 (H_1) : Slovak customers' decisions and purchasing behaviour of tyres are based the most on price and environmental aspects (tyre characteristics that have a great impact on environment).

Hypothesis2 (H_2) : There is a positive correlation between level of awareness about new labelling of tyres and factors that influence purchasing behaviour of tyres.

Consumer research shows that customers highly value the direct benefits offered by organic products as greater freshness and taste of food, safety and healthiness and energy saving. The survey results clearly indicate that in terms of ecology, consumers expect high standards from manufacturers. They believe that the company may be in addressing environmental issues more effectively than individual may. Customers expect it from companies. However, consumers are less sure what this exactly implies, therefore, they need credible advice in evaluating statements about products. On the other hand, many analyses show that customers do not buy eco friendly products, because of lack of information what means that companies do not inform their customers about additional benefits of green products.

In our case, green tyres offer following benefits lower fuel consumption (so lower emission formation), lower additional cost, longer tyre life, lower noise emissions.

The lack of information potentially hampers market efficiency in that environmentally conscious consumers who wish to patronize green establishments have limited information, and individuals wishing invest in environmentally conscious businesses have difficulty identifying them. As conclusion of previous surveys, we assume also that customers in Slovakia are not sufficiently informed about mentioned benefits. The challenge for environmentally conscious tyres is to inform consumers about their otherwise ambiguous environmental activities and polices, thus reducing information asymmetries.

Hypothesis 3 (H_3) : Slovak customers are not sufficiently informed about benefits of green tyres.

Another result was that consumers are willing to pay a little more for some eco products, even in times of recession and austerity. In all countries where the survey was conducted, with the exception of China, consumers are willing to pay more for organic products, but only if these products offer more than the usual benefits - if they are tastier, healthier, and safer, or if they help customers save money, such as energy saving. Much greater obstacle than the higher price, according to customer, is lack of

awareness of ecological alternatives and perceived insufficient supply. A third of respondent would be willing to pay 5 to 10 % more for green products if these products offer additional benefits. Consumers have also revealed a willingness to spend 20-50% more for organically produced food, and 3000-8000€ more for hybrid cars over comparable non-hybrid models. That means unless consumers are willing to pay more for hybrid cars because of their additional benefits, they would be willing to pay more for green tyres because of the same reasons.

Hypothesis 4 (H_4) : Slovak customers are willing to pay 10-20% more for green tyres in case of their additional benefits.

4. Methodology

The unit of analysis in this study is the consumer level. This study applied the questionnaire survey to verify the hypotheses and research framework. The object of this research study was purchasing behaviour of green product - green tyres - in Slovakia. The questionnaires were randomly mailed to consumers who own a car. Car owners are basic population of survey. In 2012, according to statistical office records, the number of registered vehicles in the Slovak republic was 2 537 976. For the calculation of relevant sample we have used statistical approach based on formula:

$$n = \frac{z_{t-a/2}^2 * s^2}{H^2}$$

For easier sample size quantification, we used electronic calculator provided by Creative Research Systems, it is free of charge and available on the web page. It determines how many people are needed to be surveyed in order to get results that reflect the target population as precisely as needed. The final sample size was 384 respondents.

For calculation non-parametric binomial test, we used formula:

$$\sigma^2 = \sqrt{n.p(1-p)}$$

where: n=number of trials, p=probability of success, 1-p=probability of outcome.

For calculation correlation, we used chi-square formula:

$$X^2 = \sum \sum \frac{(O-E)^2}{E}$$

where: x^2 =Chi -square obtained, Σ =the sum of, O=observed score, E=expected score.

5. Empirical results

Hypothesis H₁

Respondents were interviewed to answer at least one up to three factors that they are influenced the most by buying tyres. Table2 shows the results. More than 60% of all respondents answered that the price has the great impact when they purchase tyres. More than 57% marked option tyre characteristics, what evokes high impact as well. We also provided non-parametric binomial test which refused

H1₀ (Slovak customers decisions and purchasing behaviour of tyre are not based the most on price and environmental aspects) and supported scientific hypothesis Slovak customers' decisions and purchasing behaviour of tyres are based the most on price and environmental aspects.

Table 2 Results of surveyed factors that influence purchasing behaviour

Factors that influence purchasing behaviour	% - share
Price	60.42%
Tyre characteristics (rolling resistance, wet grip rating, noise emissions)	57.29%
Brand of tyre	34.38%
Recommendations from a friend	23.96%
Own experience	28.13%
Independent tests	8.07%
Other	2.08%

Hypothesis H₂

Respondents were asked to choose one factor that they are influenced the most. Table3 shows results. This hypothesis was tested by chi-square test. Which refused $H_{2(0)}$ (There is not a positive correlation between level of awareness about new labelling of tyres and factors that influence purchasing behaviour of tyres.)

Chi – square : 31.11 Degrees of freedom: (m-1)(n-1) = 12Chi – tab: 28.99 P –value: 0.00189533

Our calculated value is higher than the tabulated (which is 28.99), the chart is located right by the border of the chart value in the field reject the null hypothesis. Thus, we assume that the null hypothesis does not apply. We accept H_1 , so there is a positive correlation between level of awareness about new labelling of tyres and factors that influence purchasing behaviour of tyres.

Table 3 Chi-square test calculation

4	F	actor th	at you	are inf	luenced	d the m	ost	
Are you informed about new EU labelling system?	price	charact.	brand	recommen.	experience	test	other	Σ
Yes, I am.	35	61	14	9	13	3	0	135
No, I am not.	63	41	25	14	12	6	1	162
My seller has never informed me.	34	16	16	10	9	0	2	87
Σ Total	132	118	55	33	34	9	3	384

Hypothesis H₃

Because green marketing is based three dimensions (economical, social and environmental), we divided this hypothesis to 2 steps. We were following economic benefit (respondents were interviewed to answer if they knew that by using green tyres they can save more than 200€ per year-it depends on kilometres travelled, and environmental benefit (respondents were interviewed to answer if they knew that 2.5 kg of CO₂ emissions produced falls on one liter of

fuel consumed and this fact could be also reduced by rolling resistance). We tested them by non-parametric binomial test.

Table 4 Non-parametric binomial test H_{3A}

		Number of respondents	Percentage	Tested share	p value
on	Yes	102	73.44 %	0.50	0.000001
criterion	No	282	26.56 %		
Ė	Total	384	100 %		

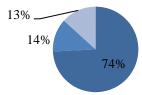
Based on non-parametric binomial test (p-value $0.000001 < \alpha = 0.05$). Hypothesis H_{3A} is supported, Slovak consumers are not sufficiently informed about economic benefits of green tyres.

Table 5 Non-parametric binomial test H_{3R}

		Number of respondents	Percentage	Tested share	p value
on	Yes	56	14.58 %	0.50	0.000001
riterion	No	328	85.42 %		
ĊŢ.	Total	384	100 %		

Based on non-parametric binomial test (p-value $0.000001 < \alpha = 0.05$) ,Hypothesis H_{3B} is supported; Slovak consumers are not sufficiently informed about environmental benefits of green tyres.

We also asked respondents if they would like to receive more information about business research activities aimed at improving the impact on the environment and tyre characteristics in future. Graph2 shows the results.



- Yes, mostly on the companys websides and stores.
- No, I think there is enough information.

Graph 2: Impact

Hypothesis 4

According to survey 60.94% of respondents are willing to pay 10-20% more for green tyres. Based on non-parametric binomial test (p-value 0.000001< α = 0.05). Hypothesis H₄ is supported.

Table 5 Non –parametric binomial test H_4

		Number of respondents	Percentage	Tested share	p value
	10%	103	26.82%	0.50	0.000001
ion	20%	131	34.12%		
criterion	25%	48	12.5%		
22	more than 25%	32	8.34%		

up to 50%	12	3.12%	
I am willing to pay any price, if results on environment are visible.	11	2.87%	
I am not willing to pay more at all.	47	12.23%	
Total	384	100%	

6. Conclusions

This paper offers overview of the analysis and expert opinions about individual road transport related to green marketing. The state of environment is reason why is important to purchase more ecological products - in this case - green tyres. All our developed hypotheses were supported. The results of our survey allow to make simple recommendation. Companies should try to be more effective in communication policy - increase the level of awareness about green tyres benefits, but be also aware of the fact that in spite of other important factors, price is still the most significant in competitive struggle. However, it means that there is a potential for purchasing more green tyres if companies change their communication policy in future. Study annulled evidence that Slovak customers are not willing to pay more for green tyres. They are, but they should know additional benefits and impact on the environment should be visible. Moreover, paper proves the positive correlation between level of awareness about new labelling of tyres, new European regulation system, and factors that influence purchasing behaviour of tyres. The meaning of this contribution will be executed if some of respondents think about their next purchasing and it helps to make better decisions.

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BRAND STRATEGY AND BRAND ELEMENTS

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Abstract: In a world of global competition that we are living nowadays, brands are each time more used by companies as a strategy to create value and differentiation and this way to be one step ahead of their rivals. The aim of this paper is to discuss brand elements and to explore its contribution to brand equity based on some relevant research reviews and some examples of prominent brands where brand elements have played a significant role to reach consumer's head to heart. A brand is the result of the recognition and the personal attachment that forms in the hearts and minds of the customers through their accumulated experience with that brand. These experiences contribute to increased consumer trust and loyalty and allow building strong relationships with the brand. By this way, brands promote the increase of shareholder value and establish a long-term advantage in the marketplace for organization.

Keywords: brand, brand elements, brand equity, brand strategy

1. Introduction

The area of branding has emerged to a top priority for management in the last 20 years. In fact, brands are one of the most valuable intangible assets within a company. [1] The brand name encompasses the years of advertising, goodwill, quality evaluation, product experience and other beneficial attributes the market associates with the product. Customers everywhere respond to images myths and metaphors that help them define their personal and national identities within context of world culture and product benefits. Strong global brand play an important role in that process. In fact one authority speculates that brands are so valuable that companies will soon include a statement of value addendum to their balance sheets to include intangibles such as the value of their brands.

2. What is a brand?

Brand equity, brand management, brand awareness, brand positioning, brand culture, brand strategy, brand functions and brand environment are all conjugated of one single name: brand. The world "brand" finds its origin in ancient times where livestock, criminals or slaves got permanently marked with a branding iron to identify ownership. According to Ries and Ries a brand is special word in the mind of consumers: a noun, with the power to influence purchasing behavior. [2] In the same order of identifying and possession, the American Marketing Association (AMA) defined brand as: "A name, term, sign, symbol, or design, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors." Keller takes a wider perspective making a distinction between the brand definition as set by AMA and the industry's concept of branding. [3] Keller adds tangible and intangible brand elements, rational and emotional brand elements, and symbolic brand elements which differentiate and identity a brand. Hence, Keller's definition is taken from a more holistic point of view: "A brand is therefore more than a product, because it can have more dimensions that

differentiate it in some way from other products designed to satisfy the same needs." [3] For Kapferer the brand is a source of influence; a system of interconnected mental associations and relationships. [4] According to Kapferer, a brand as such, exists when it has the power to influence the market acquired by its sources of cumulative brand experience. The dynamics of branding and the bidirectional contingencies between the brand and the market makes the brand a living system builds around three anchor points: product and service, name and symbols, concept. Finally, it is the brand that differentiates, reduces complexity, and simplifies the decision-making process.

3. Brand strategy and brand elements

The brand strategy plan specifies the direction and scope of the brand over the long term to maintain and build sustainable competitive advantage over the competition. [6] Van Gelder argues that brand strategy starts with an accurate understanding of the business strategy to ensure strategic consistency. Corporate strategy and brand strategy should be aligned in order to create stakeholder value. [7] Brand strategy based on the brand core, brand values associations using building blocks as brand mission, brand architect, brand positioning, brand value proposition, brand promise and brand personality. [5] Brand strategy itself, is the process whereby a company identifies which brand elements are necessary to create the appropriate and feasible brand proposition to the target group. As a consequence, brand strategy should involve a holistic approach throughout the organization and embraces employee's roles as being ambassadors of the brand. Within the strategy process brand elements, brand architecture, brand identity and brand positioning fulfill an important function.

Aaker has created a brand leadership model where the brand manager fulfils a strategic and visionary role. Brand strategy needs to be consistent with the business strategy, corporate vision and culture. To build and become a strong

brand Aaker distinguishes four tasks, which organizations should achieve:

- 1. Organizational structure and processes to build and effective and efficient brand organization.
- 2. Brand architecture to guide and develop a strategic brand direction.
- 3. Brand identity and brand position to differentiate the brand within the appropriate markets.
- 4. Brand building programs to plan, create, develop, implement, execute and monitor effective brand building programs. [8]

Brands identify and differentiate a company's offerings to customers and other parties. A brand is more than a name. Other brand element such as logos and symbols (McDonald's golden arches or Nike's swoosh), packaging (Coca-Cola's contour bottle or Kodak's yellow and black film box), and slogans (VISA's "It's Everywhere You Want to be" or BMW's "Ultimate Driving Machine) play important branding role such as well. [1] Brand elements, sometimes called brand identities, are those trademark able devices that serve to identify and differentiate the brand. Keller completes these four elements as captured by the visual code with a set of additional trade-mark able devices: brand names, URLs, logos, symbols, characters, spokespeople, slogans, jingles, packages and signage. [3] Brand elements can be chosen to both enhance brand awareness and facilitate the formation of strong, favorable and unique brand associations. Next to that Keller distinguishes six general criteria for brand elements, segregated in two groups in which the elements play an offensive or defensive role. Each brand element has its own strength and weakness. Key to brand equity is the mixture and balance between the different elements in their verbal and visual context to maximize their collective contribution.

Table 1 Brand elements

Offensive Role	Defensive Role
Memorability	Transferability
Meaningfulness	Adaptability
Likability	Protectability

On the offensive side, to built brand equity, brand elements should be memorable and distinctive, easy to recognize and easy to recall the sticky factor. Secondly, brand elements need to be meaningful to convey the descriptive or persuasive content. It means whether the customer is able to identify the right product category as well as whether the brand element is credible in this product category. Hence, the descriptive dimension is a determinant of awareness and salience. Persuasive in this context means a determinant of brand image and positioning. It is the specific information about particular key attributes and benefits of the brand. This could even reflect brand personality. The last offensive criterion, likability, reflects aesthetical appealing like the brand style and brand themes. [3] On the defensive side, to maintain brand equity, brand elements should be transferable in such a way that they can cover more than one product, product line, market segments, geographic boundaries, markets and cultures. Secondly, brand elements need to be adaptable and flexible in time to remain relevant. Protectability is the last defensive criteria and considers the legal and unauthorized competitive infringements of the brand.

To balance the most important element across the six general criteria Keller has set a table of brand options and tactics. The main brand elements have been categorized by Keller in five groups, see figure 1.

Criterion	Brand Elements and URL	Logos and Symbols	Characters	Slogans and Jingles	Packaging and Signage
Memorability	Can be chosen to enhance brand recall and recognition	Generally more useful for brand recognition	Generally more useful for brand recognition	Can be chosen to enhance brand recall and recognition	Generally more useful for brand recognition
Meaningfulness	Can reinforce almost any type of association, although sometimes only indirect	Can reinforce almost any type of association, although sometimes only indirect	Generally more useful for non product related imagery and brand personality	Can convey almost any type of association explicitly	Can convey almost any type of association explicitly
Likability	Can evoke much verbal imagery	Can provoke visual appeal	Can generate human qualities	Can evoke much verbal imagery	Can combine visual and verbal appeal
Transferability	Can be somewhat limited	Excellent	Can be somewhat limited	Can be somewhat limited	Good
Adaptability	Difficult	Can typically be redesigned	Can typically be redesigned	Can be modified	Can typically be redesigned
Protectability	Generally good, but with limits	Excellent	Excellent	Excellent	Can be closely copied

Figure 1: Critique of brand element options

The above six general criteria for brand elements, so called visual identity code, reduce the risk of diluting or weakening the brand and form a guideline for consistent brand performance. [3] Understand the interdependencies of the mentioned individual brand elements Arnold categorizes the elements into three groups, as displayed in figure 2. [6] The core of the brand anatomy is formed by essence; the brand personality to differentiate the brand within the market. The benefits in the second ring stand for the wants and needs of the customer that the brand needs to deliver. Finally, the outer ring represents the actual attributes of the product. Arnold claims to work from in to out whereby the product attribute do not class with the brand essence. Consequently they should lever the essence by offering relevant benefits.

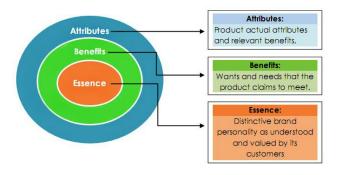


Figure 2: The relationship between the elements of a

3.1 Brand name

"One issue and problem concerning branding strategy today includes the selection of a brand name." [10] A brand name is the basis upon which the brand equity built. The name is a critical, core sign of the brand, the basis for awareness and communications effort. [8] According to Hooley a brand name or symbol is an indication of pedigree and a guarantee of what to expect from the product - a quality statement of a value-formoney-signal. [11]A commonly used definition of a brand name is that it is the component of brand which can be spoken or verbalized. [12] He continues: "It can contain words, numbers or letters." Most introductory marketing textbooks recognize that a good brand name should also have several properties. A short clear brand name is usually preferred over longer more complex names. It should suggest benefits or qualities associated with the product. "A good brand name should be easy to spell, pronounce and remember. It also should be distinctive and free of any negative connotations." [13] The brand name must be chosen with a view to brand's future and destiny, not in relation to the specific market and product situation at the time of its birth. One must therefore distinguish the type of research related to creating a full-fledged brand name – destined to expand internationally, to cover a large product line, to expand to other categories and to last from the opposite relate to creating a product name with a more limited scope in space and time. Emphasis, process time and financial investments will certainly be different in both cases. The founders of Apple were well aware of this: within few weeks, the market would know that Apple made microcomputers. It was therefore unnecessary to fall into the trap of names such as Micro-Computers International or Computer Research systems. In calling themselves Apple, on the contrary, they could straightway convey the brand's durable uniqueness: this uniqueness has to do more with the other facets of brand identity than with its physique; for example its culture, its relationship, its personality etc. [4]

3.2 Logos and Symbols

Visual brand elements often play a critical role in building equity, especially in terms of brand awareness. [14] Brand's visual identity is essential to establishing and maintaining a presence in the marketplace. A visual interpretation of the brand promise that it will be possible to develop highly memorable, easily recognizable and visual brand signals that trigger consumers to build associations between the brand itself and its chosen position. Logos and symbols are successful way to get better place in customer's mind. If customers find something that is easily identifiable, preferably in a positive way, customers feel more comfortable with brands. If there is not a lot of difference among brands, then logos and symbols can be very effective way of differentiating the brands from each other. Moreover, logos can also be used to make the potential customers aware of the origin and ownership of the brand. Logos and symbols help the brand owners to build brand equity through raising brand awareness. Logos are visual icons

providing two basic, yet necessary functions for brand: identification and differentiation. Over time, they directly equate to their given brands. Whether they are viewed from a distance, or out of the corner of eyes, these visual icons are the brands they represent. For this same reason when driving in another country, it is possible to understand that a red octagonal sign mean STOP, even if the language is unknown. This is why children who cannot read yet still recognize the golden arches and cry out: "McDonald's!" They equate the brand signal with the brand. [15] There are many types of logos, ranging from corporate names of trademarks written in a distinctive form, on one hand, to entirely abstract logos, which may be completely unrelated to the word mark, corporate name, or corporate activities, on the other hand. [16] Examples of brands with strong word mark and no accompanying logo separate from the name include Coca-Cola, Dunhill and Kit-Kat. Examples of abstract logos include Mercedes star, Rolex crown, Nike swoosh and Olympic rings. These nonword mark logos are also often called symbols. [14] A strong symbol can provide cohesion and structure to an identity and make it much easier to recognition. Its presence can be a key ingredient of brand development and its absence can be a substantial handicap. Symbols involving visual imagery can be memorable and powerful. The McDonald's golden arches, Nike's "swoosh" or Kodak yellow - each strong visual image captures much of its representative brand's identity because connections between symbols and the identity elements have been built up over time. It just takes a glance to be reminded of the brand. [8]

3.3 Slogans and Colors

Slogans are short phrases that communicate descriptive information about the brand. Slogans often appear in advertising but can play an important role on packaging and in other aspects of the marketing activities to work like shorthand means to build brand equity. [14] Slogans function as useful "hooks" or "handles" to help consumer grasp the meaning of a brand in terms of its positioning, summarize the theme of advertisements and provide continuity when copy is changed both within and across advertising campaigns. In essence, slogans form a link between long-term brand identity and day-to-day marketing activities. [17] According to Aaker, if a brand is packed meaning, a slogan can be the ribbon that ties the package together and provides and extra touch. [8] Slogans can contribute to brand equity in multiple ways such as building brand awareness by playing off the brand name; for example: "Have a break. Have a Kit-Kat." Or by making strong links between brand and product category; for example: "If You're Not Wearing Dockers; You're Just Wearing Pants." Keller 2003 Slogans can be so powerful that they can become a rallying cry for any cause. The vastly successful Nike's "Just Do It" campaign has motivated people to purpose not just personal fitness goals but also worthy social goals. More than just a part of Nike's communication strategy, it has become '90s anthem. Another highly successful slogan is DeBeers', "A diamond is forever." This widely recognized line was coined in 1948 to reverse a trend of declining diamond sales. It achieved goals, and has gone on to become part of American culture. [17]Color is an integral part of products, services, packaging, logos and other collateral and can be effective means of creating and sustaining brand and corporate images in customers' mind. [18] To illustrate its importance, Cooper has shown that color ranks among the top three considerations, along with price and quality, in the purchase of an automobile. For these reasons, color plays a key role in consumers' perception of products and brands in a variety of ways. Consumers use colors as a cue to identify brands. For example, color is used to identify brands of soft drinks - "7-up is green, Coca-Cola is red and Pepsi is blue." [19] The meanings associated with different colors are important to marketers because the tools used to communicate brand image are mechanisms to meaning transfer. [20] For this reason, color is found to be a useful and powerful tool in the creation of international brand identity and awareness. [21]

4. Conclusion

Brand is a mental game where each element tells story about the brand itself and these stories are destined together to single goal to draw a distinct image in the consumer's mind. Differentiation is an inevitable part of the brand management, which can be done by positioning and integrated marketing communication. However, this differentiation starts from developing each brand element distinctively to avoid the "me too" approach. Brand was born to separate a group of products from that of others; but nowadays, brand is used by consumers to differentiate them within society. It has become a public property and consumers have the right to know the differentiating quality of the brand during purchase. Consumers depend on the brand so much that even in a grocery shop, brand works as shorthand to full their shopping cart within shortest possible time. Thus, elements of brand need to be visible and memorable to consumers so that they could recognize their desired brand within a crowd. Since brand is not all about exchange, it is about how to create a profound relation with consumer. The basis of brand equity lies in the relationship that develops between a consumer and the differentiating offerings of a brand. In some cases, product itself is so innovative that brand can easily seek a premium positioning in the market. However, in fast moving consumer goods industry, differentiation is very challenging to create and vital to strike in consumer's memory. Distinctive approach of each brand element works to portrait an image of the brand in consumer's memory and later on, acts as clue to recall and recognize the brand under different circumstances. Exploring some successful and strong brands in the market, it can be concluded that collective strength of brand elements always contributes to build as well as reinforce brand equity since the birth of the brand. As a part of the successful brand management, immense focus and research are required to work out clutter breaking image of the brand.

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BRAND VALUATION IN CONDITION OF SLOVAK REPUBLIC

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Abstract: This paper deals about the brand valuation methods in Slovak Republic. There is the term brand mentioned from several points of views. Also there is defined the method of license analogy. It is based on the regulation 492 /2004 Coll. The value created by this method depends on discount rates. Four types of discount rates can be used here – basic interest, coefficient β , risk extra charge and build up model rate. According to calculated values the best option for choosing the type of discount rate could be advised.

Keywords: brand, brand value, discount rate, license analogy

1. Introduction

Why is the product brand so important? Is it possible to imagine the world of goods without brands? Of course, there is no possibility to produce goods without brands. The value of the product consists not only from the quality, functional attributes and appearance. The brand generates the added value of product. It has a power to catch the attention of customers. It simplifies customer shopping process thank to faster identification. It is the most precious asset of the company. Every company should know the value of its brand.

2. Brand and brand value

There are many different definitions of the brand. "Brand name is name, symbol, creative expression, or a combination of the preceding elements. Its purpose is to distinguish goods or services of one seller or group of sellers' services from the goods or services of competitors [6].

The brand is an important tool of marketing communication. Thanks to experience with the brand, buyers know what to expect from the product. Every costumer has its own preferences. "The brand creates long-term value for customers, increase consumer confidence, user satisfaction etc [4]. For producer the brand extends legal protection of unique product characteristics, support sales of the product and allows the product to be sold at higher prices. Brand name can be protected by registered trademarked.

It is noteworthy to identify the brand as a symbolic embodiment of complex information related to a specific product. Such information may contain a logo, name and other visual elements. It can be concluded that the brand is an integral intellectual part of the product that finds expression relating only to this product whether in name or in design and has a stable and strong communication with the customer [1].

Brand value consists of set of assets and liabilities associated with the name and symbol of the brand which increases or decreases the value which the product brings the company and customer [6].

In this paper the chosen method is applied to the enterprise Kofola, plc. Kofola is part of KOFOLA group, one of the leaders and important producers of soft drinks in Central Europe. Its factories are located in the Czech Republic, Slovakia and Poland. The company globally employes 2000 people, about 400 of them work in Slovakia. The product portfolio consists of traditional cola drinks with recipe KOFOLA, Jupí fruit drinks and Jupík, natural water Rajec further Vinea, TopTopic, American RC Cola, Chito Tonic, Snipp, Orangina. The official year of foundation is the year 1996, even though history of Kofola, plc. binds to the year 1993. Kofola plc. entered the Slovak market in 1998 [7].

Every strong brand depends on the loyalty of customers. Brand value is based on the value of establishing relationships with customers. In Slovak Republic, there are many methods how to evaluate the brand. In this paper there is mentioned the one which is based on the regulation 492/2004 Coll. - method of licence analogy.

It is used when a company has registered its brand (trademark). The basis of this method is the idea that the value of trademark is the same as the price that would be paid for agreement of using the same trademark. The calculation is based on the relation described in regulation and it takes into account annual account of production, licence fee, obsolescence coefficient, appreciation coefficient, and coefficient of capitalization and the share of intangible assets in the production or services.

Very important is to define the period of using the trademark. Although the period of duration for a trademark is ten years, in this paper we will count with the period of five years because of the unstable and problematic economic situation.

The essence of this method is discounting future earnings to present value [3]. The discount factor can be calculated in different ways. In this paper, there are four selected forms how to evaluate it. Then the discount factors will be used in the method of licence analogy. The discount factors depend on discount rates. The complete process of calculating the discount rates and then the licence analogy are calculated in thesis Determination the value of trademark in the Slovak Republic.

2.1 The discount rate – basic interest rate

Basic interest rate is the rate of national bank. It is the fixed rate for main refinancing operations. The national bank offers financial funds to commercial banks for this rate. The rates were obtained from individual websites of national banks and then the average interest rate was [3]. The average rate for Slovakia, Czech Republic and Poland is 1.85 %.

2.2 The discount rate – build up model

The build up model comes from the argument that the basic interest rate is not adequate. The rate has to take into account the factors as business risk or liquidity risk. It is defined as a sum of riskless interest rate and risk premium. Riskless interest rate is calculated as an average of riskless interests of countries (Slovakia, Czech republic, Poland). Each of them is determined as a return of government bonds that were issued at the same time for the same period. Average riskless interest rate is 3.42 %. To evaluate risk premium at first is important to define a degree of market risk. There are four levels of risk and its multiples:

low risk: 1, fair risk: 1.5, enhanced risk: 2, high risk: 2.5.

There are also many types of risks, for example financial risk, liquidity risk, production risk, risk management, operational risk, market risk and department risk. Based on consulting with brand manager of Kofola plc. to every type of risks there were defined the levels of risks (with their multiples) and multiplied with riskless interest rate. From sum of these risks the average risk was calculated. Then the discount rate by build up model was a summation of average risk and riskless interest rate (9.28 %).

2.3 The discount rate- coefficient β

This method of calculating the discount rate depends on the beta coefficient, which takes into account the riskiness of the sector. It can be obtained from the website http://people.stern.nyu.edu/adamodar/. The value of this coefficient for the industry Beverage on this page is 2.58 %. Discount rate was calculated as the sum of riskless interest rate and this coefficient.

2.4 The discount rate- risk extra charge

Discount rate was calculated as a sum of riskless interest rate and risk extra charge. The risk extra charge is calculated according to the formula [3]:

$$REC = r_f * (n-1) * \left(\frac{100 - \beta\beta}{100}\right)$$

where: rf - riskless interest rate

(n-1) – coefficient of the risk extra charge; n - is a period of duration of the trademark

 $\beta\beta$ – the score of Brand Beta analyse

The most important thing is to get the score of the value added by using the Brand Beta score. Each attribute has the interval of points from 0 - 10. All data used in this

method are based on consultation with brand manager of Kofola, plc.

Table 1 - Brand Beta value

Additor	C
Attributes	Score
Time on market	9
Distribution	8
Market share	9
Market position	9
Degree of increase sales	7
Price surcharge	7
Price elasticity	5
Marketing costs	7
Awareness of advertising	10
Brand Awareness	8
Sum	79

It is a type of "credit ability of brand". Brand Beta ranking defines the required rate of income inherent in the valuation of brand. The brand, which achieved Brand Beta 50 will have average discount rate. The brand which rating would be 100 is theoretically without risk and its rate is not risky [3].

The complete process is calculated in diploma thesis Determination the value of trademark in the Slovak Republic. Then the complete rate by risk extra charge is 6.29 %.

2. Calculating the brand value by the method of licence analogy

As we mentioned this method comes from a regulation. It is used when a company has a registered trademark. The fundamental of this method is that the value of trademark is same as the price that would be paid for the agreement of using the same trademark. Calculation is based on relation modified in regulation. The basic formula for calculating annual brand value by license analogy is:

$$AV = \frac{AAP * LF * CO * IA}{CC}$$

where: AV- annual value of trademark

AAP = annual amount of production - this indicator represents the revenue that company achieves or will achieve in future, in Slovakia sales are usually planned for a period of five years

LF = amount of license fee – it moves from 0,5 % to 10 % of revenue from sales, this amount is primarily affected by reputation of the trademark, the duration of protection, duration of use, long tradition of trade mark, for the company Kofola the LF was defined at 7%

CO/CR = the coefficient of obsolescence / recovery - in the case of trademarks the coefficient of recovery is used because there is an expectation that the value of the mark will rise up and not fall, it was defined CR=1 (it is not taken into account the future recovery of trademark because of the unstability of economic environment)

CC = the coefficient of capitalization rate – it is the discount factor by which we get the net present value of future profits

•
$$CC = (1 + dr)^n$$

where: dr = discount rate (basic interest rate, risk extra charge, beta coefficient and build up method)

n = year in which the value is calculated (0,1,2,3,4,5)

IA- the share of intangible assets in the production or services- the determination of the scale of production falling below to trademark, in this case it is 70%, so it means that IA=0.7 [8]

In this part of paper there are four tables with the data needed to evaluate the brand. There is an expectation of 5% growth of sales per year. The sales, LF and AV are in thousands of euros. The year 2012 is considered as a "zero year" and because of this fact it is not taken into account. According to the formula above, the annual value of the trade mark was calculated. The sum of the annual values (AV) is the value of brand for a period of five years.

Brand valuation by the discount rate – build up model Table 2 Calculating the brand value by build up model

	Year	Sales	LF/year	CR	CC	IA	AV
0	2012	329 134	23 039	1	1	0,7	-
1	2013	345 591	24 191	1	1,0928	0,7	15 496
2	2014	362 870	25 401	1	1,1942	0,7	14 889
3	2015	381 014	26 671	1	1,3050	0,7	14 306
4	2016	400 064	28 005	1	1,4261	0,7	13 746
5	2017	420 068	29 405	1	1,5585	0,7	13 207
	Σ						71 645

The value of brand Kofola plc. by using build up model as a discount rate is 71 645 000 euro.

Brand valuation by the discount rate – coefficient β Table 3 - calculating the brand value by coefficient β

	Year	Sales	LF/year	CR	CC	IA	AV
0	2012	329 134	23 039	1	1	0,7	-
1	2013	345 591	24 191	1	1,0600	0,7	15975
2	2014	362 870	25 401	1	1,1236	0,7	15 825
3	2015	381 014	26 671	1	1,1910	0,7	15 675
4	2016	400 064	28 005	1	1,2625	0,7	15 528
5	2017	420 068	29 405	1	1,3382	0,7	15 381
	Σ						78 384

The value of brand Kofola by using coefficient β as a discount rate is 78 384 000 euro.

Brand valuation by the discount rate – risk extra charge

Table 4 Calculating the brand value by risk extra charge

	Year	Sales	LF/year	CR	CC	IA	AV
0	2012	329 134	23 039	1	1	0,7	1

1	2013	345 591	24 191	1	1,0629	0,7	15 932
2	2014	362 870	25 401	1	1,1298	0,7	15 738
3	2015	381 014	26 671	1	1,2008	0,7	15 547
	2013	361 014		1	1,2008	0,7	13 347
4	2016	400 064	28 005	1	1,2763	0,7	15 359
5	2017	420 068	29 405	1	1,3566	0,7	15 172
	Σ						77 749

The value of mark Kofola plc. by using risk extra charge as a discount rate is 77 749 000 euro.

Brand valuation by the discount rate – basic interest rate Table 5 Calculating the brand value by basic interest rate

]	Year	Sales	LF/year	CR	CC	IA	AV
0	2012	329 134	23 039	1	1	0,7	-
1	2013	345 591	24 191	1	1,0185	0,7	16 626
2	2014	362 870	25 401	1	1,0373	0,7	17 141
3	2015	381 014	26 671	1	1,0565	0,7	17 671
4	2016	400 064	28 005	1	1,0761	0,7	18 217
5	2017	420 068	29 405	1	1,0960	0,7	18 781
	Σ						88 435

The value of brand Kofola by using basic interest rate as a discount rate is 88 435 000 euro.

Now, according to the retrieved values, there is a summary graph of brand values. It could be seen that the best option of used coefficient from the financial point of view is the using of interest rate.

The brand value (thousands of €)

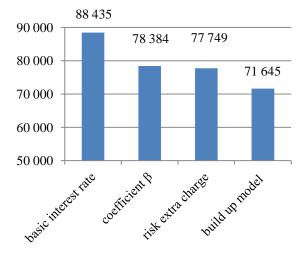


Figure 1: the brand value

3. Conclusions

For companies is very important to identify the value of their brand. It does not depend if they are operating at abroad market or Slovak market. The method showed that the highest amount is achieved by basic interest rate. However, it is important not to forget the fact that this rate does not take into account the risk at the market. Because of it, we think that the best solution for valuation by licence analogy is to use a coefficient β as a discount rate. It is the sum of riskless interest rate and the riskiness of the sector - beverage. It would be appropriate to complete the regulation 492/2004 Coll., because there is the formula of licence analogy introduced, but not what closely the discount rate could be. In addition, this is the biggest problem, because thanks to this fact the expert's reports are very different in calculated values. Completion of regulation could unify assessment procedure, the differences in the values of the various expert reports would be less significant and lawsuits held due to the different values of brands laid down by the experts should be avoided too.

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HUMAN RESOURCE MANANGEMENT AND EVALUATION OF COMMUNICATION IN SMALL AND MEDIUM-SIZED ENTERPRISES

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Abstract: Human resource management, which includes corporate communications and providing information to employees, is essential for small and medium-sized enterprises. In organization is a key subject of communication and a sense of belonging and involvement of employees in the operation of the organization in which they work, due to the changing realities of the market and related business innovation with a focus on the competitiveness of enterprises and their goal is essential. The aim of this paper is to analyze the personnel system focusing on communication within the company. The paper is focused on the fundamental characteristics of companies making strategies for managing human resources and the importance of communication and functionality as areas in the process of human resources management in micro, small and medium-sized enterprises. Data was obtained through a questionnaire survey carried out with owners and managers of small and medium-sized enterprises of the South Bohemian Region of the Czech Republic during 2013 with the help of a grant project GAJU 039/2013/S entitled: Management of human resources of small and medium-sized enterprises.

Keywords: human resource management, communication, evaluation, strategy

1. Introduction

Social cohesion is according to the Task Force on Social Cohesion of the Council of Europe, the capacity of society to ensure the welfare of all its members, while minimizing disparities and avoiding marginalization. Social cohesion takes a look at social welfare and considers harmonious and stable social relationships as an integral part of development and peaceful economic and social coexistence. A key object of interest is the rate at which people feel involved in the company, they feel solidarity and co-responsibility for a set of commonly accepted social goals and values. And the same is true for organizations. This fact is true not only for society as a whole, but also for an organization. In organizations, it is very important to foster employee engagement, a sense of belonging and shared responsibility of the goals and values of the organization in which they work. This is all important and necessary event for small and medium-sized enterprises, which must be modified in order to be competitive [1].

[2] said: "A Company in this age of demanding innovation which is not capable of innovation is doomed to decline and extinction". Managers who want to reorganize and innovate, need to realize that these are innovation be fine under certain conditions. These conditions are the abilities and skills, but also the culture and communication skills [3]. Communication is a basic precondition for change and innovation in an enterprise. From this perspective, communication is value added [4]. The majority of the innovation challenges they will face are sustaining in character, and these are just the sorts of innovations that these capabilities are designed to tackle. Managers of these companies simply need to recognize that these capabilities, culture, and communication practices are valuable [3].

Communication is not a thing, it is process. It is not constant. It is dynamic and ever changing [5]. Communication is only a transfer of information, not only

data and knowledge. Communication is the kind of interaction which causes the coordination of behavior, namely coordination of events, activities and operations [4]. The role of a manager consists of 20% of concrete work and 80% of its enforcement – communicating [6]. Effective communication is an inseparable part of successful organizations. Good communication ensures productivity, job satisfaction, better relationships at workplace and utilization of resources, skills at workplace enables the employees as well as the employer to function

smoothly and effectively, which leads to higher performance and higher productivity. It is often found that people tend to neglect about the importance of having a good communication in an organization. This often leads to a critical situation and the organization faces difficulties in several aspects such as reduced productivity, wastage of resources, delays in deliveries and workplace conflicts. The communication gap could be the biggest enemy within a particular organization which hinders creativity and profit [7].

The quality of leadership provided is also dependent of frequent communications with managers and employees and is based on the new management approach discussed, that pit sold and new management styles against each other [8]. People need to listen to each other and build on each other's ideas. They need communicate openly and freely and have skills (clear, concise, simple and tact) and then to contribute to change and innovation of the organizations [9]. [10] suggest that communication content and frequency were investigated and considered aspects of group learning behavior and explore their effect on group performance. It can be assumed that the communication content and frequency, as well as experimentation, positively affect the performance of the group. If the communication is efficient and effective, it relates to this question of the effectiveness of communication and sharing, giving and receiving of reknown, the effectiveness of communication

itself and also to share communication on the effectiveness of joint activities, interactions and relationships. Energy efficiency is the ratio of the energy used for inline power. It specifies the ratio between output and input. Economic efficiency in terms of inputs and outputs is an effort to minimize costs and maximize benefits [11]. Effective feedback is a problem again because of cooperation of a large number of people in one project. It is important to report on the progress of the work and progress with respect to all co-workers, so that it would prevent waste, such as unnecessary or parallel activities. Information is sent as a copy to all users, so the progress of the project informs everyone, whether they are workers or managers [12].

The quality of communication thus influences: job satisfaction, increased productivity, good relationships with co-workers, optimal usage of resources and more. So, better communication goes hand in hand with the success of any organization or any workplace, for that matter. So it is ideal for the organizations to introduce professional training in communication skills for all its employees. Such training leads to professional success [7].

If we want to change an organization and to innovate and be competitive, we need to measure both quantitative and qualitative goals and values, even in human resources and also in the quality of communication [13].

2. Methodology

Primary data was obtained through a questionnaire survey of 303 owners and managers of small and medium-sized enterprises of the South Bohemian Region of the Czech Republic. The survey, which took place during 2013, focused on the characteristics of the surveyed enterprises, human resource management strategies, evaluation of individual processes according to their importance and functionality of the usage, importance and function of human resource management used in each company's specific level indicators in human resources management. Next, it focused on strengths and weaknesses and problem areas in the process of human resource management, followed by a percentage of forms of communication in the business. The followed an area focused on social responsibility, corporate culture, financial and nonfinancial benefits for employees and collaboration within the enterprise.

For the purpose of this paper there is an article focused on the area of the creation of human resources strategy and communication within the company, followed by a more detailed analysis of this issue of categorization of companies according to micro-enterprises (1-9 employees), small enterprises (10-49 employees) and medium-sized enterprises (50 - 249 employees).

For clarity of information this paper is focused on the fundamental characteristics of enterprises, namely the distribution by number of employees and enterprises represented by the group. The following is a focus in the area of the formation of a human resources strategy is each of the sample of businesses and an evaluation of the communication in a process of human resources management.

3. Results

The questionnaire survey was completed by 303 companies from South Bohemia in the Czech Republic. For this sample there were 6 questionnaires uncategorized due to wrong filling in.

Figure 1 shows the largest component of the company by number of employees of small businesses employing 10 to 49 (52%), followed by medium-sized enterprises with a level of operatives 50 to 249 (29%) and at the end, the micro employing 1-9 (19%).

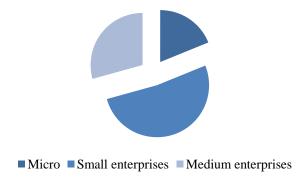


Figure 1: Distribution of sample firms by number of employees

Owners and managers of a sample of firms according to Figure 2 indicated that according to the business group the largest representation has of individual enterprise (77%), followed by the holding of enterprises (12%) with chain networks (5%), franchise agreements, chain and others have similarly large representation (3%).

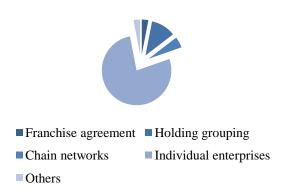


Figure 2: Distribution of sample firms by business group

Owners and managers of selected companies responding to the question, whether they are forming a strategy for the management of human resources had a choice of three options (yes, writing; yes; no). From Figure 3, it is clear that the majority of enterprises (61%) strategies for the management of human resources do not have. These companies have majority representation at the micro and small enterprises. Medium and small enterprises engage in the production of human resource management, but do not process them in written form, i.e. companies in this area have no documentation for this strategy. Medium businesses represent a large part, focused on written documentation of their strategy. However, the low representation of findings from the survey is very worrying.



Figure 3: Creation of a strategy for the management of human resources

The survey is also focused on the evaluation of human resource management. Owners and managers have compiled a list of evaluation of selected areas according to the importance for each business 8 most frequently used areas of human resource management process. In practice, this meant that for each process selected number at 1-8 with the fact that each process had its value. Concerning importance number is the most important issue of the management of human resources and the number 8 is equal to the least important area of human resource management in the enterprise. List of all areas is evident in figure 4 and figure 5. Figure 4 shows that the area of communication with the employees to the company in the process of human resource management is important for micro-enterprises, small businesses and medium-sized enterprises, followed by the area of employee's satisfaction and remuneration.

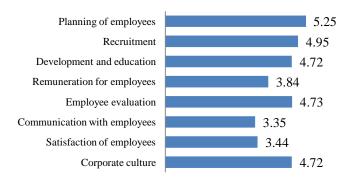


Figure 4: Evaluation of individual areas of process of human resource

Subsequently the surveyed managers and owners reported on the level, that these companies operate in the listed areas. Level scale ranged from 0-100%, where 0% meant a malfunction in the field and equaled 100% error-free areas

of human resources management process. In comparison with all investigated areas, the area of communication is in the second position behind remuneration. Figure 5 shows that all areas according to owners and managers are on the level of 70-81%, which is a pleasant result for all companies at the same time, this fact points to the possibility of improving all areas of human resources management.

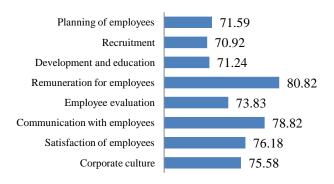


Figure 5: Functionality of process areas of human resource management

If we look at Table 1, we see the score and performance in the field of communication as a process of human resources according to company size. From the results presented in Table 1 that with company size decreases evaluation of communication, ie. this area is losing enterprise size with its importance. At the same time the functionality decreases of this area with company size.

Enterprise size by number of employees	Evaluation of employees	Functionality of communication
Micro	3.13	81.54
Small enterprises	3.23	80.21
Medium enterprises	3.67	74.86

Table 1: Importance of communication according to company size

4. Conclusions

Through a questionnaire survey of 303 owners and managers of micro, small and medium-sized enterprises it 297 questionnaires (98%) were filled in correctly and were usable, where the majority representation formed the small enterprises (52%) as well as separate undertakings by the group.

The alarming results occur in the development of strategies for the management of human resources, where only 7% representation of enterprises have a form of documentation for this area.

On the other hand, interpreting findings led to the fact that the area of communication, in comparison with the other seven most frequently occurring within the area of human resource management is at the top, which means that the area of communication for businesses is all areas of Human Resource Management is an important area. At the same time this area considered as the second best performing region in the companies. But if we look at a deeper analysis of the results, which will focus on the area of communication and its evaluation according to company size, we observe that the size of firms decreases the importance and with it decreases functionality of this process. It is clear that in the micro environment proper communication is between employees along the lines of child- parent and large enterprise managers focus more on evaluating and rewarding employees, or corporate culture. The quality of communication influence the satisfaction of workers, job satisfaction of workers and also increases the productivity, which are associated is in good relationships in the workplace and optimal usage of resources. In conclusion, we can say that the management of human resources and communication on all levels is essential for enterprises and the correct operation of the business, thereby keeping the company on the market and because of the competitiveness of the company. Therefore, it is necessary to constantly monitor the market and market competition, constantly responding to changes is the market and to innovate products and services according to customers, so that customers are coming back and thus assure a positive advertisement of competitiveness.

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THE EFFECTIVENESS OF TEASER CAMPAIGNS IN ALBANIA CASE STUDY OF EAGLE MOBILE

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Abstract: This paper aims to analyze the effectiveness of teaser campaigns in Albania, focusing on Eagle Mobile teasing campaign in 2013, the third mobile operator in the Albanian market. A critical examination of the campaign's objectives and the audience perceptions towards the teaser campaign launched through the above the line media, will shed light on effectiveness of the company's marketing investment in this teaser. This is an attempt to understand how the teaser campaign is perceived from the target group and if it did persuade new customers try Eagle Mobile promoted products. The market response and the surveyed audience perceptions suggest that in order to produce effective teaser campaigns, teaser advertisements shouldn't be limited in just attracting the attention and generating the audience curiosity. The advertising agencies and the creative directors should push the aim of teaser campaigns further more: Arousing the audience interest through a pleasant and likeable television advertisement as well as increasing the customers' engagement through meaningful and relevant messages, which are the main objectives for an effective teaser campaign. This case study explains the strategy of Eagle Mobile teaser advertisement; it inspects the market responses and identifies the customers' behavior towards the brand.

Keywords: teaser campaign, effectiveness, revealer, teaser

1. Introduction of Albanian advertising market

The first attempts of advertising in Albania started to appear in mid 1990, in the very first years of newly born democracy. The new entrepreneurs, who invested in trading sectors, were dealing with the unpredicted market demands. The high market demand for every kind of product or service, even the most basic ones, stirred the development of the market. During these years, the market required no genuine marketing activity. Therefore most of the very first advertising agencies started their activity as small enterprises, which owners and managers had no previous advertising experience.

The goal of these so called advertising businesses was to maximize their own profits. Due to the missing vision of the owners, these small advertising businesses focused mainly on the sell out activity of any possible creative job, just like, logos, packaging design, posters, etc. rather than applying integrated marketing campaigns and managing their clients as potential long term accounts. At this point, the first agencies profiled in media planning and buying were created, even though no media measurement data were available.

In the early 2000s, the market development needed a more professional approach from agencies to boost the advertisers' financial performance.

Thus, in a competitive environment, newly profiled agencies offering graphic design services, product and service sale promotions, direct marketing were born. The media channels increased as well, offering the opportunity of an increased audience to advertisers in Albania.

From 2007 and on, the market shifted towards new challenges. As new companies were are filling the market gaps, worldwide known agencies, like Ogilvy, New Moment, Le Spot, Mccann Erickson, etc. started to open their subsidiaries in our country.

During this time the end consumers started to be more selective towards the goods and services they were purchasing. The big companies started to include in their yearly business plans, budgets for marketing investments. The understanding of advertising in particular and the perception of marketing in general, altered.

From an inevitable expense, the marketing perception of the management teams changed into a necessary investment that would generate profits in the nearly future. Foreign subsidiaries of different fast-moving consumer goods (FMCG) and telecommunication companies were investing a lot and continuously trying to enhance the market demand for their products and services, increasing the audience brand perception. These examples were the best that the new and growing local companies could follow.

Currently there are 45 advertising agencies that operate in Albania. The foreign advertising companies' subsidiaries are the biggest contributors in the market. No real data to show the advertising market size are available, but based on the declared annual revenues of advertising agencies, televisions and the television monitoring data, "Monitor" magazine managed to estimate the market size of this industry and its distribution in media. It is estimated that the market size for 2010 was 55 million euro. Top three industries that mostly invested in advertisement during 2010 are mobile communication companies, FMCG and banking sector. During 2010 mobile communication companies (Vodafone, AMC and Eagle Mobile) are the front line advertisers. The total amount of this industry spent in advertising is assumed to reach 17 million euro. The media distribution of this amount is as follows: 60-70% spent on TV campaigns, 10-15% spent on outdoors and the rest 15-30% spent on print media, radio and web campaigns. FMCG follow the mobile telecommunication companies. Their spent budget for 2010 is estimated to

reach 12 million euro. Banking sector is in the third ranking, noting increase of its marketing spent budgets, which is approximately 9 million euro [1].

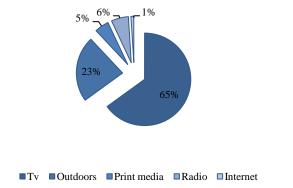


Figure 1: The media share of the advertising market

1.1 Introduction of Eagle Mobile Ltd.

Eagle Mobile, entered as the third operator of mobile telephony in Albania on 12 March 2008. In 2005, Calik Holding joined the privatization tender of Albtelecom, the biggest landline operator of Albania, and acquired stakes of the company in September 2007.

Eagle Mobile is a subsidiary of ALBtelecom, with a majority of shares sold by the Albanian government to a consortium of two Turkish companies, Calik Holding and Türk Telekom. Calik Holding possesses 80% of the Eagle Mobile company and Türk Telekom 20%.

Calik Holding headquarters are located in Istanbul. The company is focused on different major business industries such as construction, energy, textiles, financial services, telecom and media. The company undertakes all its telecommunications projects through its subsidiary CETEL.

2. Literature review

Broadly based on purpose, communication campaigns are divided into three categories: political campaigns, marketing/advertising campaigns and public communication campaigns. Advertising campaign means a coordinated series of linked advertisements with a single idea or theme [2].

Advertising campaigns consist of two parts: the message strategy and its creative execution. The message strategy is the content of the advertisement, while the creative execution is the way how this story or the content is told to advertisement targeted audience.

The same happens even with teaser campaigns. Teaser campaigns are two part advertisements. It consists of the teaser and the revealer.

According to William Wells, teasers are a message execution format. In his book, "Advertising: Principles and Practice", he writes: "Teasers do not identify a product or not give enough information to make sense. These advertisements create curiosity and appeal to anti hard sell attitude of the people" [3]. Therefore the teasers mission is to be creative without giving any information to its audience. At this stage of the teaser campaign, no

information or message is needed. The most important part is the creativity, the way the story is told to its targeted audience.

The second part of a teaser campaign is the revealer, which aim is to persuade the audience. A persuasive revealer should consist of four features: it should contain new, meaningful, distinctive and relevant information about the product or the service being advertised.

The teaser and the revealer not should not only have the same concept, but they should sustain one another. The revealer won't persuade the audience, if the teaser did not intrigue and attract the customers' attention. On the other hand, a great teaser does not guarantee the success of the campaign if the revealer is not as surprising and creative as it is expected to be. Yeshin defines teaser advertising as a creative execution style, commonly used by new products to create an element of intrigue and curiosity to build anticipation and excitement [5].

2.1 Types of teaser campaigns

There are two kind of teaser campaigns, considering the way they are conceived. The first type which is the Classic Teaser Campaign differs from the second one, the Partial Teaser Campaign, only during the teaser execution.

The Classic Teaser Campaign does not reveal any information about the product, service, advertiser or even any single message or logo. On the other hand, during a Partial Teaser Campaign, the teaser helps the audience out by giving some hints about the product which is being advertised, or the advertiser, or some minimal information by showing a logo, etc.

2.2 When to use teaser campaigns

When planning a marketing campaign, especially the advertising campaigns, the first step for the marketing director and the advertising agency is to analyze carefully the life cycle of the product or service for advertising.

The campaign's platform should be built according to the product's position in its lifecycle curve.

Generally wise, the teaser campaigns, due to their own characteristics and features, are used in short term campaigns in order to promote new products or services. But what is more important is the fact that teaser campaigns' aim is to grab interest and generate persuasion in its audience.

There are three cases when the teaser campaigns are used by the advertising agencies.

The first one is to present and promote a newborn product or service. New entry models need a special marketing support. Teaser campaigns if they are done correctly can arouse the end consumers' interest needed for a great promotion.

The second one is the opening of a new business. It is more than crucial for a new business to arouse interest in its target groups prior to its grand opening.

The third one is to remind the audience of an existing brand. This is the case of National Commercial Bank, which celebrated its fifth year in the Albanian market. The teaser campaign consisted in different daily devices or accessories such as telephones, calculators, mobile phones, or even calendars, watches and clocks, in where number 5 was the only number missing. The slogan of the teaser was the same in every different spot: "Where is number Five?". The revealer showed that number five was referring to the five awards that National Commercial Bank won during that year, the bank's fifth anniversary operating in the Albanian market. This teaser campaign was meant to increase the brand awareness and to revive its image towards its loyal customers.

3. Objectives of the study

The main objective of this study is to shed light on the perception that Eagle Mobile teaser campaign generated to its targeted groups. This study aims to understand if Eagle Mobile, one of the biggest companies in the country, did really affect the targeted audience buying decisions.

The teaser campaign of Eagle Mobile started in September 2013. The teaser showed the torso of a woman zipping her leather racing suit. The left side of the suit was yellow and the other side was black. On the yellow part it was written: "He got the Blonde". On the black side the message wrote: "You can win the Brunette". The teaser was 15 seconds long and was launched in every television channel, mostly during prime time, throughout the day for two weeks. This campaign followed a similar one aired in June 2013. The claim was the same: The winner of the draw would win a Porsche Carrera 911. After the draw the winner won a ride for a day with the Yellow Porsche Carrera 911, not the car, as the campaign message suggested.

The revealer campaign showed a group of people meditating in a park. Within the group, the audience can easily see two male teenagers that are not really concentrated, even though the meditation instructor tries hard. During this time, a young, attractive and blonde girl runs by. She has just finished her jogging session and starts to stretch her muscles nearby. The boys' face expressions are very obvious. Both of them like what they see. Even the blonde girl feels these two boys are gazing at her, admiring her. Suddenly, she turns her head to see the teenagers. At that particular moment she understands that the guys are not gazing at her, but they are starring at a black Porsche Carrera 911 parked nearby. The message of the revealer informs the audience that with each prepaid mobile cards, everyone can participate in a draw and have the chance to win a Porsche Carrera 911. This time the Porsche will be black. In may, Eagle Mobile made the same promotion, with a yellow Porsche Carrera 911. No teaser campaign was used. The revealer lasted another two weeks, launched through the same channels, in the same way as the teaser spot.

4. Methodology

In order to obtain the answers of the main research questions, a survey was conducted. Before the field work, the teaser campaign of Eagle Mobile was analyzed. It was identified the targeted group and all the questionnaires were filled in by randomly selected individuals aged 15 to 50. 30 different individuals gave their answers to seven questions. Six of them are used to describe the six axes of Viewer Response Profile, developed by professor Mary

Jane Schlinger. In her research, Professor Schlinger first analyzed the open-ended responses generated in copy tests that had been conducted, to compile a list of statements that reflect the way in which 'viewers responded to advertisements' [6]. The Viewer Response Profile communication model was adapted to the needs of these study objectives. More precisely, the randomly selected teaser campaign's target group, are asked if they find Eagle Mobile teaser campaign Entertaining or Familiar, Relevant/New or Confusing, Aspiring or Alienating.

The seventh question attempts to understand if the teaser campaign would persuade the interviewees to try the promoted offer. The responses are collected in Yes or No form.

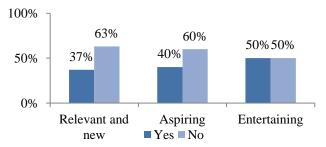


Figure 2: The respondents' feedback to the positive emotions triggered by the teaser campaign

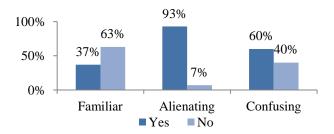


Figure 3: The respondents' feedback to the negative emotions triggered by the teaser campaign

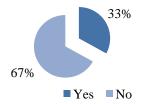


Figure 4: The respondents' persuasion triggered by the teaser campaign

5. Conclusions

The most important dimensions for an advertising campaign are Relevant/New and Confusing. In general advertisements with low impact rates suffer from either brand linkage problems or confusion problems. It is a mistake to assume that an audience will put effort into figuring out what a commercial is about [7].

But as far as teaser campaigns are concerned, the most crucial dimensions are Relevant/New and Alienating.

Normally the teaser campaign characteristics differ from common advertising campaigns. Teaser commercials due to their structure are used to highly arouse interest and generate persuasion. If these two preconditions fail to be fulfilled, then the teaser commercial is not effective. If the teaser campaign does not give relevant and new information, it surely does not arouse the audience interest. And this is the case of Eagle Mobile teaser campaign. The lack of new information decreased the viewers' attention toward it. In Eagle Mobile case, only 37% of its target groups felt the commercial was providing for its viewer relevant and new information. On the other hand, the opposite dimension, Confusing shows a very high rate, 60%. Scores on confusion tend to be very low, so even a fairly low (but higher than average) score on this dimension, can be a danger signal [7].

Also, if a campaign alienates its viewers, surely, it will create a negative impact on the brand and the teaser. In this case study, 93% of the surveyed viewers confirmed the campaign was alienating. Referring to the questions made in the Alienation dimension, such a negative reaction derives from an unclear claim made by Eagle Mobile in their June teaser campaign.

37% of the interviewees find the campaign Familiar, which suggests the viewers are still intrigued by its execution or messages. The 50% rate on the opposite dimension, Entertaining, shows that even though the interviewees are curious about the campaign they are not enthusiastic about it.

By analyzing the characteristics and the message of the campaign, the advertiser's aim was to increase its customer base, therefore to increase its market share. Unfortunately the market feedback was different from the expectations of the advertiser and the advertising agency. Only 33% of the interviewees wanted to try the promotion, and participate to the draw for winning a Porsche Carrera 911. The persuasive ability of the teaser campaign was weak. 67% of the interviewees didn't want to try the promotion. From the marketing investments point of view, the teaser campaign of Eagle Mobile is not effective.

The Eagle Mobile teaser campaign 2013 wasn't effective because:

- I was not coherent with the advertiser's managing strategy. The agency launched a teaser campaign, without testing it first, and without understanding the managing objectives.
- 2. The teaser campaign was not relevant to the viewers anymore, because of the similar teaser campaign aired in June 2013. The audience knew that no one had any possibility of winning the car.

Considering the above mentioned reasons, the advertiser shouldn't advertise the same message twice, knowing the audience brand reliability was at risk, without taking corrective steps at first place.

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360-DEGREE FEETBACK

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Abstract: At the beginning paper deals with ineffectiveness of motivational programs, method to accomplish appraisal interviews and importance of feedback. Consequently, it focuses on one of the effective methods of performing feedback, namely 360-degree feedback, its definition, process of implementation, advantages and disadvantages. In conclusion, the paper examines the reason for inefficiency 360-degree feedback in the banking sector in Slovakia.

Keywords: 360-degree feedback, feedback, appraisal interview

1. Introduction

In the current crisis, it is necessary, that enterprises are aware of the importance of their employees and do not consider them only as one of the production factors. What enterprises can expect from the investment into their employees is not only the reduction of fluctuation but also productivity increase, performance, flexibility, involvement and innovations. Although companies spend a lot of money on various motivational and educational programs, studies show that these resources are not spent effectively:

- only 20% of employees do more at work than is expected [6]
- on average, employees are able to carry out daily performance for 60% of the time [5]
- 66% of employees contribute to fulfilment of objectives less than 33% of their potential [1]
- 65% of employees are actively or passively looking for a new job [4]
- 40% of employees have burnout [2]
- more than 50% of employees do not know what abilities and skills, which could contribute to business growth, should be acquired and improved. [2]
- 26% of employees felt motivated, 32% of employees and only 20% of managers (survey in Slovak banks)

Studies show that currently established motivational programmes are ineffective. At the same time, misconception prevails that enterprises need to spend great amount of money on motivational programmes. One of the causes of the current situation, in enterprises, is also insufficient usage of feedback. In Slovak enterprises, largely predominant managerial style is autocratic with top-down communication. Managers, whether from fear of their position or because of their egotistical approach, do not pay enough attention to their subordinates, as well as they do not seek their own personal development and change their managerial style, thereby would contribute to increased employee motivation without spending large amount of money.

2. Appraisal interview

Appraisal interview is not just a means to determine the amount of employee's remuneration, but it is also a major

motivator. Whether it's formal or informal conversation that takes place once - twice a year, or continuously, provides an opportunity for manager to determine what motivates employee, what are his objectives, what he wants to achieve in his career, to improve mutual communication, the employee may present opinions he is not satisfied with, what he would like to change, and managers can take steps to eliminate it. This also provides an opportunity to present ideas and encourage creativity together with initiative.

In practice, in major small and medium-sized Slovak enterprises the appraisal interviews never occur. Rewards are determined by subjective evaluations and decisions of manager. In large enterprises, and especially in foreign enterprises, the appraisal interview takes place, however the results usually are not objective nor satisfy for employee. The appraisal interview takes place between the employee and the manager when set targets are mostly evaluated (Management by Objectives). Rewards are directly proportional to achieved objectives. At the same time, employee cannot openly express his opinion, because the level of his reward and possible career progress still dependent on the opinion and consensus which employee achieve with manager.

We consider feedback as one of the tools that companies can use to increase performance, at the same time it is low cost approach. One of the possibilities how to conduct feedback, and currently often used in different variations, is 360-degree feedback. Its main advantage, compared to unilateral assessment by the supervisor, is that it provides view on the employee behaviour from multiple perspectives. It is time consumption and costs that discourage enterprises from its use, but its contribution is irreplaceable.

3. 360-degree feedback

In Slovakia, enterprises have begun to use 360-degree feedback more often only in recent years. While it can be considered as very complex, efficient, objective way of obtaining feedback, assuming its correct implementation. Its great advantage is that it may not only be used for feedback and evaluation of individuals as well as teams. At the same time the results of 360-degree feedback can be

further used for example for decisions about career development, transfer to another position or layoffs.

360-degree feedback can be defined as "The systematic collection and feedback of performance data on an individual or group derived from a number of stakeholders on their performance. [7]" Employees are evaluated by their subordinates, colleagues, superiors, but also colleagues from other departments, customers, suppliers. The important part of it is self-assessment where an employee has the opportunity to express his own opinions. In order to ensure objectivity, the anonymous structured questionnaires are used, currently in electronic form.

The process of implementation of 360-degree feedback can be divided into five steps. The first step is very important, namely prepare the company for the process of implementation of 360-degree feedback. Short training courses are recommended for employees, where the basic principles are explained, as well the particular steps, the reasons for implementation, the benefits of 360-degree feedback. Followed by the actual design of 360-degree feedback, where are designed questionnaires, reports, selection of evaluators (whether deliberate or random). Subsequently collection of data is carried out, which is used as a basis for drawing up individual reports, which are complemented by meetings with the coaches or HR where results, strengths, weaknesses and opportunities for development and improvement are consulted.



Figure 1: The process of 360-degree feedback [3]

The 360-degree feedback can be modified to the 180, 540 or 720-degree feedback. In the 180-degree feedback employees are evaluated by subordinates or superiors for example, performance assessment, or just colleagues at the same level. The 540-degree feedback involves in the evaluation process also suppliers and customers. The 720-degree feedback marks later repeated 360-degree feedback.

3.1 Advantages and disadvantages of 360-degree feedback

Objectivity and individuality are considered to be among the most important benefits of 360-degree feedback. Every enterprise may draw it up based on individual requirements, depending on what they need to focus on, which specific areas needs to be improved (performance, professional and organizational skills, approach to work, interpersonal, managerial skills etc.). Therefore enterprise itself sets areas which will focus on, as well as, obtain feedback from different groups of evaluators; 360-degree feedback may be considered as a complex tool.

Its major contributor is that it allows the individuals but also the teams and enterprise development, improvement and performance enhancement. Not only individuals receive feedback, but also managers receive information about their subordinates and themselves, so they can more effectively manage, utilize their skills and contribute to the fulfilment of their needs. At the same time, it highlights the weaknesses and areas where improvement is needed.

Objective feedback ensures involvement, confidence, increased motivation, increased individual needs improvement, realistic and objective view on performance of individual. It can also be used as a basis for setting training and development plans. After the implementation of 360-degree feedback, it provides to the enterprise a control system by which it can assess planned progress, plans, planned changes or the effectiveness of training and development programs.

The main disadvantages of 360-degree feedback, enterprises in Slovakia, are considered financial and time requirements. The questioners are not always completed electronically, also the drafting of reports and consultations are time-consuming and costly. Financial demands are increased when the 360-degree feedback is done by an external enterprise. On the other hand, the external enterprise can increase anonymity and also it increase professionalism, if the enterprise does not have enough educated and experienced coaches. If 360-degree feedback is not part of the corporate strategy and processes, is not ensured its use and implementation. Because of insufficient knowledge of managers, they tend to focus on the negatives and weaknesses of subordinates.

3.2 360-degree feedback in the banking sector

We conducted survey of usage 360-degree feedback in the Slovak banking sector (banks did not allow us to publish their names). The conducted survey showed that managers do not pay too much attention to the feedback, which is probably due to the predominant managerial style and top-down communication reflected in the statistics where 74% of employees felt to be unmotivated.

In general, more effective use and application of 360-degree feedback is in enterprises with foreign participation. In Slovak enterprises it is used less frequently, or simplified forms.

The basic and most common mistake of usage of 360-degree feedback is that it is not integrated into the enterprise strategy and it is most frequently used as part of the evaluation process, which is linked with financial rewards. The evaluation process takes place mostly annually. Linking 360-degree feedback with financial reward is the biggest barrier to ensure its objectivity. For example, in one bank, one part of the questionnaire complete together manager and subordinate, to achieve the highest possible rewards subordinate could not disagrees with manager. In another bank managers by themselves picked subordinates who evaluated them, which do not ensure anonymity and objectivity.

Managers'approach to the 360-degree feedback is as to the obligations, they have to do them and not as a resource, which can be used not only for personal improvement but also enhance the performance, efficiency, development of subordinates, improve relationships in the workplace, management, communication skills and overall team collaboration. Feedback is received passively and mainly as a source of criticism.

From the managers' position results their attitude to the 360-degree feedback. The fact that they are evaluated by their subordinates is not taken naturally, even if they directly influence them. From the autocratic managerial style is clear, that managers have an idea of their own infallibility, and therefore strengths are obvious and weaknesses do not exist

The results of 360-degree feedback were most commonly consulted by direct superior with their subordinates. Direct superiors, however, have not always been trained how to consult results and therefore managers focused mainly on the negatives and weaknesses than to pick positive aspects. This also relates to fact that managers use more autocratic managerial style, and the best way how to motivate employees is by rewards. Another serious drawback is that managers do not pay enough attention to their subordinates, they primary focus on results, as well as they do not seek their own personal development and change their approach.

Even if inappropriate interpretation of 360-degree feedback was sometimes caused by insufficient knowledge of superiors (not all superiors had adequate managerial education), was not always caused by misunderstanding of results. Even superiors tried to interpret the results as an area where subordinates can improve; some employees took such evaluation as criticism and failed to get over it. Even though they had a lot of positives, focused only on the negative aspects and take it too personally. We sometimes encountered with an effort to find out who gave negative evaluation, and the consequences resulting from it.

A negative attitude to the 360-degree feedback was also caused by the fact that it puts demands on staff. Specific results define the specific requirements either for change or a staff development. Increased demands are taken negatively and not as an opportunity for improvement, development, growth.

Despite the mistakes that have been conducted in the implementation of 360-degree feedback bulk of employees (fewer managers) appreciated the benefits of 360-degree feedback. Employees with a positive attitude were able to benefit from feedback, considered it as an opportunity to change, to improve and develop.

4. Conclusions

The contribution of 360-degree feedback is undeniable. Compared with the appraisal interviews, 360-degree feedback provides a comprehensive, objective view on individuals (teams). Feedback which individuals obtain affects not only them, but on the basis of changes of individuals, it passes through transformation of the entire enterprise. The main reasons of 360-degree feedback inefficiency have emerged from the conducted Slovak

particularly bank survey, incorrect method implementation, was not sufficiently ensured anonymity, and link feedback to financial reward which implies not objective results. We consider as the biggest problem managers' attitude to 360-degree feedback, they do not consider it as an opportunity but as an obligation; and managers' failure to interpret results correctlyy. If enterprises can ensure proper implementation of 360degree feedback, adequately communicate the reasons for its implementation and the possible benefits resulting from its completion, the benefits will perceive not only individual employees but also the entire enterprise.

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LEGAL ASPECTS OF ADVERTISEMENT ON THE INTERNET – THE ISSUE OF SPONSORED LINKS

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Abstract: The subject of this essay's analysis is the presentation of the most popular forms of internet advertisement and related legal issues. The growing interest in contextual advertising on the Internet entails the emergence of numerous legal issues, therefore, the aim of this research is to outline the legal framework for the permitted use of another's trademark by advertisers and search engines in contextual advertising, in the interest of entities using the trademark, consumers and the proprietors of the trademark. Considering the controversies and the variety of issues, the use of keywords in the service of sponsored links will only be discussed.

Keywords: sponsored links, advertisement, advertising on the Internet, legal aspects, Google AdWords

1. Introduction

Advertisement is a prevalent part of our everyday life. It has become a relevant *element* of creating a businessmen's positive view, his success on the market but on the other hand, it appeared to be one of conditions of optimal consumer's use of the market's goods and services. It also plays an important role in the economic development of the European market of media services[1].

Despite its commonness, advertisement is not an easy element to assess and identify. Advertising actions cover various fields of science. It refers not only to marketing actions, but also such disciplines as: economy, psychology, social sciences, law etc. The marketing activity is a set of related actions which infiltrate each other and determine the effectiveness of certain advertising transmissions / content. The specificity of Internet advertising differs significantly from radio or television advertising, which also raises some legal implications. The subject of this essay's analysis is the presentation of the most popular forms of internet advertisement and related legal issues. The growing interest in contextual advertising on the Internet entails the emergence of numerous legal issues, therefore, the aim of this research is to outline the legal framework for the permitted use of another's trademark by advertisers and search engines in contextual advertising, in the interest of entities using the trademark, consumers and the proprietors of the trademark. Considering the controversies and the variety of issues, the use of keywords in the service of sponsored links will only be discussed.

2. The regulations of the advertising activities according to the Polish and European law

Currently in the EU Member States the law regulating the advertisement activity is based on the European Convention on Transfrontier Television from 5th May 1989 and its amendments. The legal regulations in each EU Member State, including Poland, are aligned with the EU regulations [2]. There is no bill in the Polish law that regulates the matter of advertisement or advertisement in

the Internet. The law of advertisement, like in the other EU Member States, does not form a unified system [3].

The law of advertisement, in the objective sense, is defined by a set of legal norms considering economic advertisement. The regulations belong administrative, criminal and international law. Among the regulations related to advertising, it would be worth mentioning those contained in Article 76 of the Polish Constitution, which can indirectly refer to regulation in Article 64 points 1, 2 and 3 of the Constitution. The specificity of the economic activity area is the fact, that many regulations related to the promotion of goods and services are located in various acts. To the most important belongs to the National Broadcasting Council from 29th December 1992, act of upbringing in sobriety and counteracting alcoholism, act of press law, act on combating unfair competition, act of Protection of Health Against the Effects of Use of Tobacco and Tobacco Products, act of the profession of doctor and dentist, act of pharmaceutical law, gambling law. The regulations concerning advertisement could be divided into two groups: the general law of advertisement and the detailed law of advertisement [4]. The general law of advertisement is related to the rules of fair competition with financial law, tax law and regulations of the law of intellectual property. The detailed law of advertisement regulates the ways of running advertisement activities in the area of broadcasting and some products and services [5]. Penalties for non-compliance with regulations relating to advertising can have civil, administrative or criminal-law nature.

3. Advertising on the Internet

The most popular and most commonly used way of marketing over the internet is the internet advertisement. At the very beginning, the advertisement on the internet had the form of a so called mailing, meaning: sending advertisements through email. The invention of the Mosaic search engine in 1993 was a breakthrough, as Mosaic could screen the graphics and frames. Since that moment on, the advertisers could reach larger groups of potential recipients and the advertisement itself, gained a graphic

form. The second half of the 90s was the time of very rapid development of the internet and the related technologies, including advertising. One of the most commonly used forms of internet advertising are banners. Among many popular internet tools which are used for promoting websites, we can find the website positioning programs. A good example of a website positioning tool popular among advertiser is the Google AdWords program. Quite frequently advertisers use invasive forms of advertising such as pop-ups, mousetrapping or overlayer. It is worth noting that in the situation when the closure of such an advertisement is difficult or impossible, it can be considered as non-compliant with the law of unfair competition, which is stated in the article 16 paragraph 1. Point 1 clearly tells us that an act of unfair competition in terms of advertising, is an advertisement contrary to the law, morality or offending human dignity. Moreover, article 8 of the Act of combating unfair commercial practices is also applicable as we can consider aggressive action in terms of market practice significantly reducing or limiting the consumer's freedom of choice or conduct with regards to the product. An Ad blocking the user to surf the internet freely, i.e. mousetrapping abuses the technical aspects of mass media broadcast, which is mentioned in the Article 16, paragraph 1, point 5 of the combating unfair commercial practices act. Such advertisement is also an example of an aggressive marketing practice described in the act of combating unfair commercial practices [6].

The overlayer type of advertisement also raises a lot of legal concerns as it is closely related to a pop-up type of advertisement. Whenever the user tries to close it, the ad moves to another place on the screen and only after several attempts, the ad is ready to be closed. Undoubtedly, this kind of advertising can be defined as troublesome and puts the consumer under pressure. It is prohibited by Polish law to send advertisements containing information that the recipient can resign from its further subscription (so-called opt-out option) as well as sending the initial email querying, whether the user wishes to receive more information. It leads to the conclusion, that the Polish law clearly states that sending information that was not ordered via internet is an act of unfair competition. The same rules apply to the information sent by the social networks like Twitter, Myspace or Facebook. While using internet advertising we need to pay attention not to promote goods or services which seem to be controversial as far as law of intellectual property is concerned or could be regarded as an act of unfair competition. In practice, this issue is very complex and difficult to spot due to the short lifespan of the internet advertisement. In addition, the content of internet advertisements can lead to misunderstandings as they do not have much in common with traditional media, i.e. contextual advertising.

4. The issue of sponsored links

One of the types of contextual advertising, is the keyword advertising which has been recently gaining on popularity and is being bought out by entrepreneurs. Keywords contain characteristic features which are used in trading, such as: firm, trademark or other popular terms like; trips,

flights, sport etc. We can distinguish three kinds of contextual advertising:

- 1) keyword-based advertisement in the internet browsers, that lead to screening certain sponsored links;
- advertisement matched to content of the website in the form of links, graphics or animation displayed next to the web page content;
- 3) advertising that traces the user in the network, particularly the pop-up advertisement.

The Google's AdWords is a service, which allows the websites' owners to buy out some chosen words known as keywords [7]. Each time, the Google users search the question containing a certain key word or a set of keywords, the advertisement of the customer, who has bought the query, appears in the special field of sponsored links divided among the objective results that's called the natural results field. Speaking more precisely, the sponsored links are also called the boxes of search engines. They have a form of a short description and a text link to the advertised website. Entering a keyword into the special field makes the system screen the text links, in most of cases they appear in the upper-right corner of the website chosen by the internet user. Matching is defined by indicating the chosen word by the entrepreneur's keywords with the user's query. If a certain word has been bought by a lot of advertisers, the order of screening links is defined by the highest price paid for screening the keyword, number of entries or the quality of the advertisement.

It is very doubtful if using a foreign trademark within your own keyword for advertising purposes is considered as a form of violation of the trademark usage, especially if using a trademark in such circumstances can be defined as a use of a trademark under the trademark law. We also need to consider if the act of violation is committed by the advertiser, who owns the keyword and uses it in the advertisement of his own products or the owner of the search engine, who "sells" the word, or maybe both entities violate the law? Moreover, is it important, if the advertisement is screened in the list of results or in the separate advertising block marked as a sponsored link? A significant meaning for the interpretation of the municipal regulations of trademarks in the EU Member States, including the regulations of the act on industrial property, has the sentence from 23rd March 2010 pronounced in three related to each other cases from C-236/08 till C-238/08 Google France v. Louis Vuitton. In the mentioned sentence the European Court took into consideration the matter of violation of the registered trademarks in France of "Luis Vuitton" and "LV" by the biggest search engine in the world Google regarding the service of referring AdWords. Google offered the advertisers not only the possibility to choose the keywords referring to the trademarks of Vuitton, but also the option of choosing these words in connection with the imitators of the trademark, such as: "imitation" and "copy" [8]. The European Court underlined, that the essence and result of choosing the key word identical with the trademark is screening the advertisement link to the website, where he offers his own goods or services. The mark chosen as a keyword is a form of recalling the sponsored

advertisement link and, what follows, that the advertiser has previously used this mark "in trade turnover" in the meaning of art. 5 passage 1 letter a of the directive of the European Parliament and Council 2008/95/EC from 22nd October 2008, which aims at standardization of the municipal regulations concerning the issue of trademarks in the EU Member States and article 9 passage 1 letter a of the Decree of the Council (EC) 207/2009 regarding the European Trademark.

The European Court decided that using a foreign trademark in the keyword should be understood as "a use of the trademark of goods and services", because the advertiser uses the trademark itself in the keyword to make the internet user familiar not only with the entitled person's offer of goods and services, but with the advertiser's offer of goods and services as well. From the essence of the services of the sponsored links follows that the advertiser – choosing a keyword identical with the trademark, which belongs to another person – aims at the situation, when the internet users, putting the keyword into the search engine, click on not only the links, which come from the owner of the mentioned trademark, but also click on the advertisement link, which come from the advertiser. Speculating, they are meant to treat his goods as alternative ones, comparing with the goods offered by the person entitled to the trademark. Such a situation, according the European Court, takes place when the advertisement is so unclear as far as the matter of the source of origin of products is concerned, that the sufficiently careful and well-informed internet user is not able to point out, who is the real advertiser. As a consequence, it causes the violation of one of the functions of trademark, which is indicated as the origin of goods or service. The European Court has taken also the matter of liability due to the violation of the right to the trademark by an entity, which offers the service AdWords.

Despite the fact, that the subject offering the service of linking profits from the trade marks which are identical with the marks which he uses as key words for the purpose of gaining new clients and organizes without the permission of the persons entitled to these marks screening his clients' advertisements, and, what follows, does it within the "economic turnover", without using these marks in the meaning of article 5 of the Directive 2008/95/WE and article 9 passage 1 letter a of the Decree (EC) nr 207/2009. It does not directly violate the rights of the entitled person to the trade marks, offered as a key words. In this situation the subjects offering the service of linking are not liable directly, because they offer the services of hosting, in the meaning of article 14 of the Directive 2000/31/EC of the European Parliament and the Council from 8th June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce). According to the position of the Court in the above mentioned sentence, the liability of the subject offering the service of linking in internet is excluded if by performing the services the service provider does not have an active role. The active role would lead to the situation, when he knew about the information or had control over them. As a

result, the liability of the subject performing the service of linking could be taken into account from the moment of the lack of his reaction in case of informing him about the illegality of the activities of the advertiser. The opinion of the European Court regarding the possibility of violation of the right to the trade mark concerning its illegal use of the bought key words is reinforced by the polish jurisdiction. As the sentence of the Court of European Trade Marks and Industrial Patterns from 25th September 2009, the action with use of itself trademark by the unconfirmed person's violation of the right to trade mark. In this situation the unconfirmed person uses the mark to catch the attention of the public opinion for his goods and services while the mark should be associated with the goods or services offered exclusively by the entitled subject. Then, this overuse of a right leads to illegal exploitation of the remarking and marketing feature of the legally protected trade mark. [9].

5. Conclusions

To conclude, it leads to the statement, that the advertisements which are spread by internet raise many law doubts. In polish law there is a lack of regulation concerning internet advertisement. It seems to be correct to make the statement, that the general regulation of the issue of advertisement should be duly applied to the internet advertisement, but with taking into account the characteristic features of this form of advertising.

It is not obvious, how they should be legally classified. The activity of service providers, who provide the hypertext links and performing services of localization tools (including providers of search engines) has been explicitly excluded from the application of the Directive 2000/31. Here comes the doubt, if the service of sponsored links is also excluded from its application or if it should be considered as a service performed in the electronic way according to the Directive 2000/31. The carried out analysis allows to come to the conclusion, that on the basis of the current regulation the search engines operator's' liability and the advertisers' liability are regulated in a different way. The jurisdiction of the European Court indicates, that it is much easier to hold the advertiser liable for violating the legally protected right of the trademark. The advertiser intentionally chooses the key word which reflects the trademark with the aim of attracting more clients. Furthermore, as it has already been mentioned above, the advertiser's activity can meet the dispositions of article 3 and 16 passage 1 point 1 of the act on combating unfair competition, what means, that the entitled subject has more chances to legal protection on the basis of the act that on the basis on the law of trade marks. It is also necessary to make a statement, that the activity of the operators of search engines should be regulated not only in polish, but in European law as well. Owing to still growing interest in this form of internet advertisement, it seems to be necessary to introduce some regulations standardizing the patterns of liability of the operators of search engines for violation of law of intellectual property, including law of trademarks.

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SYSTEMIC WAY OF RISK MANAGEMENT IN CONSTRUCTION COMPANIES IN THE CZECH REPUBLIC

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Abstract: Entrepreneurs can use many different tools, approaches and risk management processes. These approaches could be divided by many differing factors. One of the main ones may be the finding if they approach it by a systemic or intuitive way. This article deals with the issue how systematically construction companies in the Czech Republic approach the risk management. Important is determine basic criterion, according to whose will systemic level of risk management in organization assessment.

Keywords: systematic risk management, intuitive risk management, impacts' duration, revealing the impact, legislative requirements on the risk management

1. Introduction

The determination of the systemic level of the risk management is quite a complicated issue. It might be researched from many different points of view or measured while using a large number of various factors. How to handle this issue then? It is important to define the main criterion by which we will measure the systemic level of the risk management in organisations. The main criterion in this article will be the risk characteristics, if a company, when determining the suitable method in risk management, considers changeable risk characteristics respectively.

There is the important question in further research – what does it mean the risk characteristics and which are the variables? Merna and AL-Thani (2008) consider the level of a risk the basic risk characteristics – the two variables describing impacts probability and the impact size. The risk characteristics defined in this way have been already used as a criterion in the risk management systemic assessment. It was in the research utilised within "Evaluation of the systemic risk management in construction companies in the Czech Republic" (Ameir, 2010) and the result of this research is that from 2019 addressed constructions companies 77 managing their risks in a systemic way.

This article deals with the research in which the risk characteristics are defined in the way described by Crouchy, Galai and Mark (2006). They declare that the following three parameters, among others, are the important variables:

- Impact duration;
- Impact revelation probability;
- Legislative requirements on the risk management.

The criterion defined in this way will be the most important one when assessing if a company manages risks systematically or intuitively.

The objective of this article is find out if the companies managing their risks in a systemic way (Ameir 2010) do so also on the basis of the "new" criterion. This criterion of the systemic way are the impact duration, the impact

revelation, and legislative requirements on the risk management.

2. Research methodology

The research methodology has been divided into two parts for the sake of good arrangement. The first part deals with the method used within the research – with the questionnaire generally. The second part of the method describes the questionnaire used in our research.

2.1 The term "questionnaire"

The use of questionnaires is a common thing. They are occasionally also in newspapers or magazines. However, in some situations, they are good examples of badly prepared questionnaires. Their preparation is definitively not a trivial thing as it might be thought by some people. As Řezánková (2010) says, the determination of the number or the structure (from their age, sex, etc. points of view) of respondents, whose answers should become analysed, must become a necessary part of questionnaire preparations. Horáková (1992) deals with a set of questions; she speaks

about the order arrangement of questions. A questionnaire is presented to a respondent and his or her task is to express his or her personal opinion in the form of answers to the presented questions. If a questionnaire should provide fo valuable information, its setup must be subjected to certain rules:

- A questionnaire should not start with personal or confidential questions;
- There must be no biased questions in a questionnaire, i.e. questions encouraging the respondent to answer in a desired way;
- Questions must not include vaguely determined data;
- There should not be any words strongly expressing feelings in a questionnaire;
- A questionnaire must not include multiple questions.

There are two kinds of questions in questionnaires: the closed ones (the dichotomic ones: with more than two options, the Likert's scale, the semantic differential, the scale of the considered importance, or the evaluation scale) and open questions (free, associational, and free sentence endings).

2.2 The questionnaire in our research

After the research team was introduced and the research purpose was explained, there were questions put forward the objective of which was the company identification. There were questions used in regard to the company name and its size. The company size assessment served also to the finding if companies of different sizes answered the questionnaire.

The questionnaire core related to questions dealing with risk characteristics - more precisely, their variations by individual variables specified in Point 1.

The logical interconnection of questions was important and the questionnaire had been thus created in the way automatically transferring a respondent, in the case of optional answers yes/no, to another questionnaire part relevant for the respondent. He or she thus did not have to click through questions not relevant to him or her.

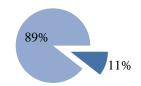
The closed kind of questions was mostly selected in order to achieve the relatively good questionnaire return rate and, also for the benefit of the questions' authoritativeness and the possibility to compare them.

3. The course of the research

- Date of the mass questionnaire posting: 5th of March 2013;
- Number of addressed companies: 77;
- Date of the questioning finish: 29th of March 2013;
- The questionnaire return rate:
- absolute: 34 questionnaires;
- percentage: 44.156%;
- Not delivered: 1 out of 77 questionnaires (a non existing email address);
- Original list: 2019 records;
- Selection criterion: the companies which answered in the "previous" research (Ameir, 2010) that they were managing their risks in a systemic way, according to the selected criterion point of view¹
- The tool used for the questionnaire dissemination and collection: webropol;
- The interim assessment way: Microsoft Excel.

4. Results from the research

The results have not been temporary subjected to a sophisticated statistical assessment like, for example, the logistical regression. They have been gained once again by a simple assessment and processed by the application Microsoft Excel.



- The systemic management 8
- The non systemic management 68

Figure 1: The systemic risk management from among the addressed companies [Ameir, 2013]

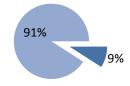
About 10.6% from among the addressed companies manage their risks in a systematic way.



- The systemic management 8
- The non systemic management 26

Figure 2: The systemic risk management from the real number of answers [Ameir, 2013]

About 23.7% from the real number of replied companies manage their risks in a systematic way.



- Systemic risk management 1 enterprise
- Non systemic risk management 10 enterprises

Figure 3: The systemic risk management in small enterprises [Ameir, 2013]

11 small enterprises (1-9 employees) have replied and that means 32% of all replies received. Out of these 11 companies only 1 enterprise manages their risks in a systemic way. This is about 9%, see Figure 3.



- Systemic risk management 5 enterprises
- Non systemic risk management 14 enterprises

Figure 4: The systemic risk management in medium-size enterprises [Ameir, 2013]

19 medium-size enterprises (10-99 employees) have replied and that means 56% of all replies received. Out of these 19 companies 5 enterprises manages their risks in a systemic way. This is about 26%, see Figure 4.

¹ This used criterion was impacts probability and the impact size.

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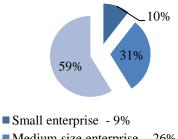
- Systemic risk management 2 enterprises
- Non systemic risk management 2 enterprises

Figure 5: The systemic risk management in large enterprises [Ameir, 2013]

4 large enterprises (100-499 employees) have replied and that means 12% of all replies received. Out of these 4 companies 2 enterprises manages their risks in a systemic way. This is 50%, see Figure 5.

It must be said that the graphs showing the systemic risk management by individual size groups of enterprises (Figures 3, 4, and 5) do not indicate much as the set of respondents has been too small. The number of the used addresses clearly indicated that we would not get thirty or more replies for each size group. That is why the last three graphs have been used just for illustration.

Just for this reason, we present Figure 6 which shows the percentage ratios of the systemic risk management in the individual size groups of enterprises.



- Medium-size enterprise 26%
- Large enterprise 50%

Figure 6: Systemic risk management ratio to the enterprise size (percent in the percentage) [Ameir, 2013]

The graph in Figure 6 indicates that the systemic risk management ratio has been proportional. This law of proportion says that a larger company, meaning by the number of employees, indicates a larger probability that it manages risks in a systemic way.

5. Conclusions

The objective of this study has been detection if the companies managing their risks in a systemic way (Ameir 2010) do so also on the basis of the "new" criterion. This criterion of the systemic way has related to their when determining a suitable consideration, management method, the risk characteristics, variables respectively. These variables are the impact duration, the impact revelation, and legislative requirements on the risk management.

Based on the results gained so far, we might claim that, from the "new criterion point of view, construction companies in the Czech Republic do not manage their risks in a systemic way. This has been found using a questionnaire survey which indicated that only 24% of the addressed companies had managed their risks in a systemic way. The research has shown that large companies managed their risks in a systemic way, but the small set of respondents prevents taking this result as decisive.

It is clear that companies should consider these three important parameters - the impact duration, the impact revelation, and the legislative requirements on the risk management, more. It is important to know that they are the three most important risk characteristics after the probability of an impact and the impact size.

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THE WORKERS' INFLUENCE ON THE SUCCESS OF CREATIVE ENTERPRISES – CREATIVE WORKERS AND KNOWLEDGE WORKERS

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Abstract: At present, the reconstruction of the economy based on knowledge becomes a factor of the social and economic development and improvement of the competitiveness as the ground of creating knowledge economy is the assumption about a direct relationship between knowledge, productivity and the economic increase. Knowledge becomes a basic element playing an important role in deciding on the way of rational use of the remaining factors of the production of a creative enterprise]. The aim of the article is an attempt to assess the process of knowledge management and its influence on shaping innovations in creative workers. The description was created as a result of studying literature of the subject matter, conclusions drawn from survey methodology, and also observations of reality.

Keywords: knowledge workers, creative workers

1. Introduction

Referring to the contemporary concepts of development based on the appropriate knowledge generation, either in the scale of whole economies or of an individual entity - it should be pointed out that a decisive meaning in this process has intellectual capital. A properly educated worker, with definite knowledge and the skill to use it, becomes a valuable source within the range of projecting and implementing, among other things, ways and techniques of management, the aim of which is to fulfil a customer's expectations. In accordance with the contemporary economic stream, the ability to use the achievements of science and practice so that the enterprise could obtain a suitable position in the competitive fight, should be concentrated on the problem of knowledge management1.

2. Knowledge workers - definitional cogitation

Knowledge workers [17,18] are the people for whom knowledge is both raw material, means of production and the work result itself. The share of such workers in the economy is relatively high and the workers themselves are difficult to be replaced. This concept was used for the first time by P. Drucker in his book of 1959 entitled Landmarks of Tomorrow. This concept is relatively new and its creation was resulted from the fact that people possessing a definite range of knowledge that decided about a success of a concrete enterprise appeared. In the last decades the character of work changed under the influence of turbulence of the environment forming new directions of job requirements for specialists of a determined level of knowledge and ability to use it to such a proper extent as to make it possible to generate benefits in the enterprise. For example, F. Horibe thinks that a knowledge worker is someone who uses his/her brains in such a way as to create a new value through new ideas, analyses and projects [7]. Whereas, M. Bratnicki thinks that knowledge workers are experts in their field and therefore they can determine what knowledge elements are the most valuable for making analyses. Their task consists in seizing, storing and maintaining knowledge created by others [2].

The knowledge worker is a value in itself. It can be said that he/she expects neither confirmation nor acceptance by outer entities. These workers make up the organization, decide about its development, but also many a time they can cause its failure due to lack of knowledge, experience and involvement or due to improper attitudes and behaviours.

Table 1. Knowledge workers as a profession

	Attributes of	a professional
	As a resource	Permanently modified, dynamically changeable, instantly and multi-directionally evolving
	The way of acquisition	Studies, professional practice, constant self-training, current following of appearing novelties
Knowledge	The place of acquisition	Universities – only at the introductory stage, then practice, specialist courses and permanent self-training
	The time of acquisition	Non stop, for the whole life
	The knowledge community	Informal participation in virtual discussion groups (on the Web) exchanging information and experience
	Work	As a chance for personal development
Work	Principal value: work treated as	As autotelic activity (play, self- actualization)
value	Main measures of the performed work quality	Pragmatic values, but also esthetic (functionality, usability, but also beauty, elegance of applied solutions)
	Necessary objects	Self-expression – a form of art

¹ A significant contribution to the development of knowledge management was made, among others, by: P. Drucker, P. Strassmann, P. Senge, Ch. Argyris, Ch. Bartlett, D. Leonard-Barton, E. Rogers, T. Alle, D. Engelbart, R. Acksyn, D. McCracken, T. Stewart, I. Nonaka, T. Hirotaka.

requiring creativity, search for new non-standard solutions, passable limits ("human" and "equipment" ones)

Source: [3, 12]

According to the subject matter literature, knowledge workers make up the following groups: knowledge workers, i.e. the people who are not involved directly in knowledge management, but significantly affect its creation, using resources of personal and organizational knowledge in their work, and workers of knowledge management, i.e. people who store, systematize and make knowledge accessible for other workers. The knowledgeoriented project managers whose task is to administer projects related to the presented resource by determining the aims of activity, coordinating the teams and identifying stakeholders' expectations [4] In Drucker's opinion a knowledge worker is a person who, in his/her work, uses his/her mind rather than his/her manual skills². As a matter of fact, work based on knowledge is characterized by large autonomy of the contractor, small structuralization and a low routine character as well as a high level of absorption and complexity. This sort of work requires significant expenditure and investments in intellectual capital by professionals. Hence, in modern economy more and more frequently it takes a team work character [5, 9].

Table 2. Selected divisions of knowledge workers

Author	Division of knowledge workers
I.Nonaka; H. Takeuchi	-knowledge experienced people (knowledge operators and knowledge specialists) -knowledge constructors (knowledge engineers) -knowledge commanders who manage organizational process of knowledge creation in a corporation.
G. Probst, S. Rauba, K. Romhardta	-Chief Knowledge Officer -Competency Specialist -Competency Coordination Specialist -Knowledge Transparency Specialist
M. Porat	-knowledge producers: teachers, engineers, but also lawyers, judges, architects, consultants, accountants -market researchers and coordination specialists: brokers, sellers, commercial agents, some administrative workers -workers who process information: secretaries, accountants, receptionists, proofreaders -workers who service information devices: telecommunication or electronic ones

Source: [10, 13, 14, 15]

The criteria of knowledge workers division can also be shown by their systematization in the following categories: the degree of self-reliance in making decisions and the required level of cooperation; the activities related directly to knowledge; the ideas; the costs and scale; the significance for the enterprise; the mobility [4].

Table 3. Personality types of knowledge workers and a desired by them zone of comfort

	T	
The personality	The attitude to the	The attributes of the comfort
profile of the	performed work	zone
specialist	1 3	-
		-autonomy -a possibility to develop and
	Th£41-	be creative
	The crux of the matter is the	-chances for investing in the
The heritage	creation of	enterprise development
creator	solutions of a	-interesting tasks of the
	constant value	subject matter conditioning
		permanent learning and
		building individual
		competencies
		-cooperation
		-play -clearly defined team and
		task roles
	The essence of	-chances of acquiring new
Professional	work is functioning in a	unique competencies
team player		-a possibility to improve
	group	personal qualifications on the
		basis of learning from others
		and taking their silent
		knowledge
-		-high financial gratuities
	Work constitutes	-flexibility
	one of the	-a possibility to choose tasks
The risk-taker	elements of life	out of a set of many long-
THE HSK-taker	full of adventures,	term options
	challenges and	-loose tasks for realization,
	creative fun	not requiring exaggerated
		scrupulousness
		-flexibility
	*** 1 ' 1	-large social support
	Work provides	-clearly determined working
A carefree	means for a living, however it is not	conditions - a possibility to
person		undertake and resign from
-	(maybe at the time being) a priority	group tasks
	being) a priority	-play -flexible working time
		-activity in virtual groups
Source: [6, 12]	I .	acarity in viituui groups

Source: [6, 12]

Special attention is paid to competencies of the workers among which the literature lists in particular [7, 11]:

- 1. communicative knowledge of foreign languages;
- 2. ability to cooperate interpersonal abilities, ability to manage a conflict, to negotiate, to possess personal culture and to be resistant to stress;
- 3. ability to organise work;
- 4. analytical skills (knowledge arrangement and analysis);
- technical skills related to technical abilities to use the workplace;
- 6. abilities related to creativity and a skill to learn particularly significant due to constant out-dating of knowledge; moreover, the knowledge worker should possess knowledge, experience, skills, innovativeness, self-reliance, responsibility, enterprise, creativity, professionalism, decisiveness and intelligence, assertiveness, ethical behaviour, work culture and ability to cooperate.

Considering competencies that knowledge workers should possess, they have high expectations from their employers, hence it is difficult to make them stay in the enterprise.

 $^{^2}$ In 1968 in his work entitled" $\it The\ Age\ of\ Discontinuity\$ Peter Drucker stated: "During the last 20 years the groundwork of our economy shifted from manual work to work based on knowledge".

The characteristic feature of this kind of workers is their inner state of anxiety resulting from the need of the organization for their knowledge. It often happens that their state of knowledge is much higher than the expectations of the entity, although it is difficult to measure the state of the worker's knowledge.

Table 4. Elements of the building of the name of the employer who sympathizes with knowledge workers

Elements of the building of the name of the employer	Activities related to it
The determination of the enterprise profile	-preparation of true information about the firm for potential candidates, , showing further plans of development of the organization
Attention to the reputation on the job market	-analysis of the competitive position of one's organization on the job market, particularly in one's branch (determination of the items for which the enterprise is respected) -analysis of the reputation in its nearest environment -assessment of the quality of products and services provided by the enterprises -assessment of the activities within the range of social responsibility of the business.
Creation and maintenance of the unique organizational culture	-description of high standards in all the areas of the organization activity -employment of only the best out of the potencial candidates -creation of the climate of openness and honesty -supporting diversity
Provission of the IT support	-implementation of modern technologies in order to facilitate the employees work independently of the area in which they realize their tasks
Creation of the success culture	-promoting the best so that they could be recognized in the organization -defining a high level of expected effectiveness -supporting innovation -precise determination of resources that are at the workers' disposal -supporting research and development
Attention to the system effectiveness of communication	-requiring from or forcing the workers to communicate with coworkers -providing the tools indispensable for efficient communication -elimination of communication barriers
Ensuring effective leadership	-emphasizing an unusually significant role of human resources in the realization of strategic aims of the organization -directions for the future -ensuring access to the management staff for the workers -providing the workers with returnable information about their work - development of the workers' competencies

Source: [1, 12]

3. Empirical verification of the knowledge workers in creative enterprises of the SMEs sector

Therefore a study to identify the conditions that determine the development of the creative sector in West Pomerania province was conducted. In the literature suggested the following division of the sector, which is then used to carry out the research. The creative activities of a cultural nature numbered among these activities, which are rooted in creativity, skill and talent of a man, but at the same time

are associated exclusively with the manufacture of creative products (group 1). These include: literature, visual arts, film, video, business music, performing arts (theater, dance), photography. Within creative activities of utilitarian nature included industries mainly producing commercial products. Element which distinguishes the products of creative activity of utilitarian nature from the products of cultural industries is the process of commercialization of these products. Significant part of products of cultural industries is in fact produced in the public sector and their market entry is possible in many cases only with the support of various institutions and organizations. The creative activity of a utilitarian included (group 2): advertising, architecture, design and fashion design, publishing, radio and television, computer software (including interactive entertainment software). M. Grochowski, S. Dudek-Mańkowska, M. Fuhrmann, T. Zegar introduced the group 3, included the entities which their creative activity based on knowledge. This group include: manufacturing and services in the field of information and communication technologies (ICT), with the exception of software, research and development (R & D). Group 4 was also proposed by these authors and are assigned to it namely the following economic activities within the environment of the creative sector: institutions of culture, art and antiques trade, the media, higher education: the activities related to the exploitation of copyright [16,17,18].

In 2013, study on the diagnosis of creative capital and its impact on the value of the entities were conducted on: group 1- 500 employees; group 2 - 250 employees, group 3 were respondents in number of 123 and 36 employees from group 4. People were chosen at random on the purpose of research. The study consisted in conducting surveys that include closed-ended questions. Among the employees in SME sector were first of all those which focused its activities on the national and regional markets. Only 26% of respondents offered their services or products on the national and foreign markets. Surveyed representatives of the companies were aged 22-44, but the dominance of young people between 22 and 35 years. Education of the respondents were very different. Seniority of establishment of private industry was in the majority short (up to 5-10 years), only one person dealt with this type of activity over 15 years. Among the respondents in this group were people from the public creative sector in the age of the dominant majority were people from 22 to 44 years. The same tendency related to non-profit organizations. Objective taking into account the age of the selected study group was significant because of the level of creativity people who, along with age is reduced. It is a general rule and do not always reflect the individual's characteristics of persons, although showing a certain percentage the above tendency.

In relation with the aforesaid, considering the features of knowledge workers it is worth verifying the question what the potential of the workers in creative enterprises is like. Groups of criteria were selected that describe the knowledge worker, according to which he/she can be classified. While carrying out this research, these

guidelines were treated as the basis according to which the workers in creative enterprises of the SME sector in the West Pomeranian region were verified.

As the first, universal skills were studied. Their classification is shown in the table below. The aim of this examination was to assess general features which can condition development of creative processes among workers so that knowledge was used properly. It is worth noticing that the workers recognized as the so called knowledge workers in comparison to the remaining workers do not possess interdisciplinary abilities developed to a level more than average, to such an extent as it is in the case of knowledge workers. Thus it can be said that the knowledge worker, thanks to certain abilities that he/she possesses, while developing he/she acquires more and more predispositions towards creativity and appropriate use of his/her knowledge.

Table 5. Universal abilities of the workers in the examined creative enterprises of the SMEs sector (%)

Fitness and manual skills	Group 1	Group 2	Group 3	Group 4
fitness		_		
dexterous hands	70	65	50	65
 coordination between the hand and the eye 	50	45	70	55
• movement coordination	75	80	88	92
 speed, strength, endurance 	65	70	74	85
using materials				
• sewing	20	15	25	12
cutting, carving	12	25	14	9
 painting 	24	12	9	11
using objects				
washing, cleaning	92	88	95	92
getting food ready	98	96	99	91
 attention to objects 	92	84	80	91
Abilities to contact with people				
with one person				
• helping	79	82	73	79
• listening	92	93	98	88
 carrying out 	94	98	97	95
 writing letters 	45	37	55	42
• talking by telephone	88	99	94	98
 individual teaching 	67	72	56	65
 advising 	15	35	27	10
 convincing 	12	23	10	8
with groups of people				
 communicating with a group 	78	89	81	95
 team games 	22	38	37	55
 public appearances 	45	31	65	22
conducting a discussion in a	88	99	94	98

group				
• management	77	52	46	42
• leadership	45	37	55	42
 negotiating 	12	23	10	8
teaching a group	15	38	27	15
cooperation in a group	45	37	55	42
organising people	45	39	27	15
Skills in handling data, new ideas, information				
collecting and producing				
• searching	78	89	94	95
 testing 	77	52	46	42
observing people and objects	38	37	65	42
• interviews with people	14	23	27	12
• imagination, inventiveness	15	42	18	15
information management:				
 copying 	85	75	50	86
sorting, selecting	82	75	78	55
analyzing, synthesizing	75	80	88	92
• comparing	55	70	71	83
 interpreting 	70	65	50	65
graphic presentation	65	78	81	92
• translating	45	50	78	68
 calculating 	77	70	72	85
storing				
entering data into the computer	89	95	99	98
• typewriting	40	35	20	15
• archiving	75	80	84	82
 recording (sound, image) 	14	32	10	18
taking photos	77	85	60	75
excellent memory	45	52	38	57

Source: own work

The next analytical problem discussed was the knowledge area of knowledge workers. According to the results obtained in the studies, the workers of the creative enterprises were distinguished first of all by a high level of professional knowledge (45%), then it was the knowledge concerning social communication (22%), and analitical and cognitive abilities (8%). In the successive places there were: economic knowledge, general knowledge concerning the enterprise, informative and related to legal aspects knowledge Then there were fluent knowledge of languages, using a computer, team work, ability to work out reports, ability to conduct presentation and to get acquainted with traditional and on line knowledge.

Next, according to the diagnosis of the workers' features in the studied enterprises, the workes were recognized as the knowledge workers. The results of the study are shown in the table below.

Table 6. Personality features of the knowledge workers creative enterprises of the SMEs sector (%)

Personality fea	tures Group	Group 2	Group 3	Group 4
persons culture	33	70	71	83
self- confide	70	65	50	65
 activity 	65	78	81	92
• openne	ess 45	50	78	68
 regular 	ity 77	70	72	85
 patience 	e 55	70	71	83
 endura 	nce 89	95	99	98
• effective	veness 40	35	20	15
• self-dis	scipline 75	80	84	82
• flexibil	ity 14	32	10	18
resistar stress	nce to 77	85	60	75
 dynam 	ism 55	70	71	83
• mobili	ty 55	70	71	83
• strong motiva	70	65	50	65

Source: own work

Another aspect discussed is proper behaviour According to the investigation the knowledge workers first of all:

- take the initiative in their own hands,
- create networks,
- manage themselves,
- work in groups,
- take the leadership
- support the leader,
- keep a wide perspective
- are communicative
- possess a sense of organising

4. Conclusions

On the basis of the studies it could be ascertained that about 65% of the workers employed in creative enterprises functioning in the West Pomeranian Province were knowledge workers. It seems that the features of creative workers are compatible with the features of a knowledge worker. This can be regarded as a positive aspect because at present it is required to be a knowledge worker whose characteristic feature is creative potential. The set of these features guarantees a success of the entity on the market on which it functions. This knowledge acquisition and its appropriate processing makes it possible to create and select such processes and activities that determine competitiveness and innovativeness of the entity. It is obvious that a satisfying result would be if 100% of knowledge workers were creative workers. Unfortunately it is no so. A part of the workers who possess knowledge do not have creative potential which could help them develop this knowledge in a concrete creative activity. Despite knowledge they do not have features that are necessary for the idea to be changed into action and into such action which will ensure the market success allowing us to gain an appropriate competitive advantage.

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GLOBAL SOCIETY AND INFORMATION SOCIETY IN PROCESS GLOBALIZATION. RELATIONSHIP BETWEEN GLOBALIZATION AND INFORMATION SOCIETY

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Abstract: One of the most important events in the modern world is a progressive globalization process [1]. It supports the rapid development of new technologie [2], bringing in changes in the economic and social planes. These changes are established in the so-called globalization of the great virtual discoveries (last quarter of a century). Globalization is a multifaceted and multidimensional process defined in many ways, which was developed with varying intensity until the late nineteenth century and in the last decades of the twentieth century acquired particular significance[3]. Each civilization is characterized by a different model of society and the economy functioning "The change of civilization model displaces existing models of not only the economy in general, but also the management, investment, trade, education, labor, employment, consumption, even the governments and family models that quickly become outdated. The majority of communication production and trade exchange methods transform." Information society and interdependent technical progress are important, if not the most important, components of contemporary globalization. The aim of this article is to find answers to the following questions: 1) Is there a correlation between globalization, information society and the global society? 2) What affects the process of globalization; can it be clearly defined? 3) Are there any factors, and if yes, what is the most important factor in the following relation: globalization - information society - global society?

Keywords: globalization, information society, knowledge-based economy, global society

1. Introduction

At the beginning of the twenty-first century modification of the economy and communication, especially finance, banking, management and communication of information occurred. Today, the media shape the image of globalization in the minds of millions of people in a local and transnational communities. Through the satellite technology, the Internet and digital television, almost at the same time all over the globe reports of scientific discoveries, political and economic events crop up.

2. Globalization

The changes described above are colloquially referred to as globalization. This word, however, because of its frequent use in different contexts, loses uniqueness and becomes a term that is completely differently understood by various social groups. Multidimensionality of globalization makes extremely hard to understand this growing and omnipresent process. Most globalization is analyzed in social and economic context. The concept of globalization occurred in consciousness as a term defining economic processes. It is difficult to determine the precise time of the creation or development of the phenomena of economic globalization. Many researchers discern primary forms of globalization, its archetypes, in the Phoenicians, in ancient Rome, or the Middle Ages. However, there is no doubt that the economic order formed after World War II had all the hallmarks of the global order [4].

Firstly, on a regional scale: Western Europe, part of Asia, North America, and after the collapse of the ideological dichotomy of the world in the last decades of the twentieth century took on global features. On the eve of the twenty-

first century it has evolved unrestricted by any geographical limits or ideological system of the economy functioning named by researchers and analysts of globalization as the economy of globalization era [5].

Globalization in general sense may be understood as a process that is formed by world-wide phenomena and activities. To present this problem in a more specific way, globalization is a historical process and spontaneous process of liberalization and progressive merging of goods, capital and labor markets, technology and information in one interdependent market. It is a phenomenon of bigger and bigger correlations and increasing interdependencies between countries, groups of countries, their economies and enterprises. Globalization is thus an increase in internationalization of national economies and a clear penetration and convergence of markets [6].

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Globalization changes the nature of social relations by intensifying the disappearance of the "national society" model. By contrast, the organization of global society is indispensable because such a society must regulate deficiencies in the *global system of capitalism* [8].

3. Information society

Global society is undoubtedly the future. Today, the term information society is commonly used in which the main "capital is information"[9]. It should be, however, stressed that in such a society globalized information and globalized economy constitute its determinants.

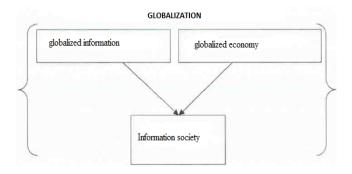


Figure 1. Information society and globalization.

Source: own study on the basis of: A.S. Targowski, *The Taxonomy of Information Societies* [in:] Global *Information Society. Operating Information Systems in a Dynamic Global Business Environment*, edited by Y. Chen, Hershey, London 2005, p. 3.

Globalization in the economic category - globalization of markets means that we make use of economic possibilities located in various parts of the world. Globalization is often interpreted as a global source of development of communication technologies and movements of capital. However, in a most simplified way, it may be understood as the expansion of trade and investment abroad[10].

Therefore, it may be said that we live in a world of globalized markets. Yet, it should be noted, that globalization is no longer solely seen in the category of world trade in goods and the ability to communicate across the globe. Production, trade and communication are factors that in the modern world are more often vulnerable to unstable actions[11].

One reason for this instability is too high concentration of capital in one sector, which makes the rest of the system exposed to slump. The growing digitization of economic activity and electronic flow of capital contributes to it[12]. At the top of the "list" is globalization of knowledge which is the result of lower costs of communication and information exchange. Transfer of knowledge which "reinforced" globalization, is, in turn, one of the major factors contributing to growth in emerging markets. Globalization of knowledge includes not only technical knowledge, but also the ideas that transform both communities and markets[13].

Ability to manage the current phase of globalization is getting out of control. Globalization involves a closer integration of countries in the world and this causes a greater interdependence. Socio-economic success in particular regions of the world depends on how it is possible to manage globalization in most efficient way.

Globalization has therefore become a phenomenon with which one can demonstrate clear differences between industrialism and age of networking[14].

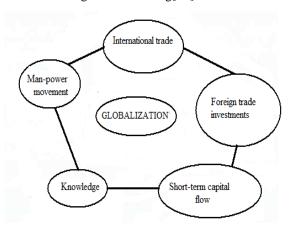


Figure 2. Elements of globalization

Source: J.E. Stiglitz, *Globalization and growth in emerging markets*, "Journal of Policy Modeling" 2004, No. 26, p. 470

We live, therefore, in a new economy, which consists of three pivotal features: 1) it is informational, that is, capable of generating processing and information management determines the productivity and competitiveness of all economic units, 2) new economy is global - financial markets, science and technology, international trade in goods and services, 3) the new economy is networked [15].

Today, the term technocapitalism begins to dominate, which was defined by S. Best, and D. Kellner, which is understood as a decline in the role of the state and increase in the role of the market, connected with the strengthening of transnational corporations. In other words, Best and Kellner specified the approach to globalization as a synthesis of economic and technological development[16]. R. Kuźniar writes[17]: "The processes of globalization are the source of the polarization of the international community. The dividing line created by globalization differs from those that have until recently determined the structure of international reality (ideology, imperial spheres of influence). It is the dividing line between the rich and and growing number of poor people. This line runs across countries and regions, and also inside societies in different countries. (...) Strobe Talbott wrote about new bipolarism, which is no longer the Iron Curtain between East and West. This is a line between stability and instability, integration and disintegration, welfare and poverty"[18].

There is also a division between what is 'local' and 'global' . The differences between this localism" and "globality", and even more particularly between local man and global man, are enormous. According to Z. Bauman,: "In a globalized world, locality is perceived as a sign of social discrimination and degradation. The disadvantages of existence in local conditions result from the fact that public space, in which the meaning is created and

negotiated, is beyond the reach of local existence, and therefore, locality more and more relies on sense creating and interpretive activities over which there is no control.

Also, the technology has contributed to the polarization of the global society, "progress measured by the number of mobile phones, fax machines, computers, internet connections per 1000 population is very large" but the author immediately adds that "the distance that divides the group of developed countries from developing ones and the third world countries is visible"[19]. Furthermore, "eliminating the time and spatial distances owing to technology not only unified human condition but polarized it. It liberates some individuals from the territorial bonds, and gives some of the factors that constitute the community an extraterritorial meaning, at the same time, however, the territory deprived of meaning, in the borders of which the others still live, becomes deprived of the potential to determine human identity" [20].

Along with the formation of new economy the information society is created. In recent years, in publications describing the issue of globalization, more and more often the concept of the information society appears, which function in an international scale. Development and progressive standardization of processing, collecting and transmitting data have become the main reasons for the describing the modern civilization as a "global village" in which the information is transmitted quickly between continents via telecommunications connections.

The information society is a society in which the information is treated as a commodity perceived as a particular kind of non-material good, equal or even more valuable than material goods. In this society the development of "3P" services occurs (storage, transmission and processing of information). The term information society refers to the technical tools of communication, storage and conversion of information [21].

In the information society, more and more spheres are subject to regulation via the market which becomes a universal *locus* of individual and collective life, and less and less is governed by public sphere. The structures of values are based in a lesser extent on the structure of thinking of business people and people from the field of technology [22]. The state loses its strength, the information society is even more market-based than the industrial society was.

4. Conclusion

In conclusion, I believe that the concept of the information society gives the basis to think about the existing paradigms relating to the knowledge-based economy once again. This results from the fact that from the point of view of an individual who is a member of this society, on the one hand, the man becomes more than ever a member of the global society, and on the other, the society allows the man to express individuality more fully. An important element between the knowledge-based economy and information society is electronic currency. In relation to the process of globalization, we must take into account the dynamic growth of the knowledge-based economy, e-

business and e-money. All of these factors may allow us to create a synthetic vision of globalization.

To sum up, I would like to associate this definition with the view of A. Müller who wrote that [23], If we assume as an axiom that globalization is a function of technical progress, we should recognize the statement expressed as Fukuyama that the process of globalization is unstoppable and that it is impossible to inhibit the development of technical progress as true [24]. That means, in my opinion, that globalization is unstoppable.

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THE INFLUENCE OF INTEGRATION PROCESSES ON FOREIGN TRADE IN KAZAKHSTAN

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Abstract: The paper analyzes several consequences that integration processes have on foreign trade in Kazakhstan. The intensifying integration in recent years between Russia, Belarus, and Kazakhstan resulted in already created Common Economic Space. Prior to creation of integration structures the foreign trade of Kazakhstan was more diversified and now undergoes reorientation process towards traditionally dominant trade partner - Russia. The paper focuses on the impact that is produced by harmonization of tariffs and changes in tempos of mutual export and import growth caused by integration processes.

Keywords: Customs Union, integration, common external tariff, export structure

1. Introduction

Recently started integration processes between Russia, Belarus, and Kazakhstan differ in their intensity from other regional ones around the world. The Customs Union (CU) was formed in 2010 and the Common Economic Space (CES) is already functioning since 2012.

After collapse of the USSR more than 90 % of Kazakhstani export was within CIS countries now remaining as main trade partners of Kazakhstan. This was explained by former connections among the economic subjects, similar tastes, traditions, etc. Starting from 2000s foreign trade activities were reoriented towards developed countries of Europe and Asia [1]. Since independence proclaimed government authorities in Kazakhstan were seeking ways of successful integration. The integration with Central Asian states failed as different economic paths and political systems were chosen [2]. Throughout the independence years trade with CU partners was much higher than with the republics of Central Asia [3]. At the same time, Kazakhstan and Russia seem to have similar nature of political and economic systems as well as commitment to a system of international relations structured on regional geo-economic blocks [4]. While most political studies mark that the real ground behind the integration is based on political desires of Russia [5], some researchers argue that this path is undeniably dictated by the Kazakhstani geographic position at the intersection of different economic blocs and world cultures, which is also well reflected in the internal structure of its society [4]. The CES was created according to traditional model of regional integration featuring that leading role in integration belongs to politics. Studies stress that complementarities of the economies of Russia and Kazakhstan necessary for the success is relatively low [6]. According to the World Bank, complementarities' index comprised 35.2 for Kazakhstan and Belarus and only 6.0 for Kazakhstan and Russia [3].

2. Analysis

At initial stage of independence the foreign economic relations were mostly based on direct horizontal

connections of the company leaders, a situation specific for trade relations between companies of CIS countries [1]. During first years if independence Russia was absolutely dominant trade partner of Kazakhstan. However, during following disintegration years the share of the EU and China in trade turnover constantly increased as Kazakhstan tried to diversify its foreign trade. For instance, according to World Bank analysis of import structure of Kazakhstan in 1996-98 and 2006-08 years, Russian share declined from 46.7 % to 36.7 %, while share of China increased from 1.1 % up to 10.5 %. The study also stresses that before the creation of the Customs Union foreign trade of Kazakhstan was reoriented from a predominantly Russian in favor of other markets geographically diversifying them. This trend concerned both general trade and commercial activities in the non-raw materials sector. Currently the trend seems to go back reverting to previous geographical structure of foreign trade. Experts note that the names of the goods exported to Kazakhstan from Russia, the EU and China, in many cases are duplicated: 16 % comes from all three major trading partners, 16 % both from Russia, and the EU. 8 % both from EU and China, and 4 % - both from China and Russia. Moreover, imports from Russia and the EU are more specific, thus, Kazakhstan has real opportunities to replace imports from China [7]. The CU and CES creation already led to a partial reorientation of volumes of trade in favor of Russia, while emphasizing on Kazakhstani specialization in raw materials, minerals and metals providing insignificant opportunities in expanding exports of other goods, such as footwear and machinery [3]. In general, during 2009-2011 the import share of CU partners increased from 32.6 % to 44.5 %, while import share of the European Union decreased from 27.4 % to 19.3 % [3]. According to Statistical Agency of Kazakhstan, Russia's share in import in 2007 was 36.7 % while it comprised 46 % in 2011, thus almost regained its "share strength" lost during early 2000s. According to other study the trade between CU member countries in 2011 increased by 18.3 %, while trade with 3rd countries decreased by 2.39 % if compared to 2008 [5]. Comparing these results with the summarizing foreign trade data with

CU members presented in Table 1 it can be concluded that import from CU members to Kazakhstan grows by much higher tempos than export. Some researchers argue that while Russian goods have full access to Kazakhstan, Russian authorities at the local level have been using double standards to block Kazakhstani goods with the help of various non-tariff barriers. There is a widely shared opinion that Russian companies are using aggressive marketing tactics, actively resort to political and administrative resources, possess much larger capital, and use anti-competitive methods [2]. Dynamics of mutual trade between CU members during 2009-2011 in comparison to 3rd countries for Kazakhstan was also higher than for other CU members due to the fact that tempos of import from 3rd countries to Kazakhstan were lower than in Russia and Belarus. Common external import tariffs developed in the CU were higher than Kazakhstani national and, therefore, increased for 47.7 % of types of goods [7]. Level of tariff protection, thus, became higher, and prices for high technology products assembled in Kazakhstan increased making them further uncompetitive. Several studies conclude that the introduction of higher external tariffs hurt Kazakhstani producers (except for exporters of minerals and metals) and consumers, while the opening of the customs borders did not result in major growth of Kazakhstani exports to CU member-states [2]. The impact of the revised customs arrangements has left a number of Kazakhstani exporters and importers dissatisfied, while the adoption of Russian tariffs has increased the price of goods such as vehicles, electric appliances, textiles and food [4].

Table 1 Trade between Kazakhstan and CU members

Trade flow (in mln. of US dollars)	2008	2009	2010	2011	2012	2013
Export to Russia	6379,0	3697,1	4477,9	6579,0	8617,8	9010,7
In % to previous year		-42%	21%	47%	31%	5%
Export to Belarus	171,8	74,9	405,8	137,0	119,0	82,3
In % to previous year		-56%	442%	-66%	-13%	-31%
Import to Russia	13299,0	9147,1	10795,7	14098,6	15080,3	17460,1
In % to previous year		-31%	18%	31%	7%	16%
Import to Belarus	365,2	313,4	464,8	674,0	806,9	868,2
In % to previous year		-14%	48%	45%	20%	8%

The overall impression of trade increase between Kazakhstan and Belarus is commonly presented by

officials as a real success of launched integration processes. Fivefold increase in the volume of trade between Belarus and Kazakhstan in 2010 most researchers name as explicitly positive result of integration. Only some studies note "flash" character of increase which was followed by corresponding decrease in 2011 while the growth in exports of Belarus to other CIS countries grew faster in 2011 [6]. As it can be seen from the Table 1 in subsequent years the tempos of Kazakhstani export to Belarus continue to fall, and slow down for the figures for Russia signifying that statements about inaccessibility of these markets for Kazakhstani goods are not groundless. The increases in trade in 2010 and 2011 with Russia and in 2010 with Belarus presented as clear achievements of integration as time passes by more and more seem to be questioned. These increasing volumes can be linked not only with the CU, but also with the recovery after the global financial crisis. Some authors link it with general recovery of world economy and favorable conditions on raw materials markets. Favorable prices for raw materials remain crucial for the economy of Kazakhstan. Among current problems researchers usually name the need to improve export and import structure by prevalence of exported goods with high added value and by increasing competitiveness of domestic goods. However, raw materials still dominate the export structure, at present about 90 % of Kazakhstan export to European counties belongs to mineral fuel, oil and oil products, and ferrous and non-ferrous metals [1]. Being a significant part of export structure raw materials are dependent on price situation in the world markets for fuel. In spite of constant government statements about reducing export orientation of trade structure this does not seems to happen. According to study conducted share of mineral products increased from 58 % in 2009 to 73 % in 2012, while production of iron and steel industries reduced from 24 % in 2009 to 15.2 % in 2012 [1].

Since 2008 the export of Kazakhstan to Belarus remains volatile, but does not provide a clear trend, moreover, in the last years the volumes continue to decrease. As concerns imports, the amount doubled since 2008 and was constantly increasing especially in after crisis years. The volumes of trade with Russia increase, but the import growth is also higher. The integration induced increase in tariffs mentioned above increased prices for a number of goods playing negative role in their competitiveness. As concerns exports of raw materials low complementarities between economies of Russia and Kazakhstan will remain a significant obstacle for a long time in future. Limited complementarities effect can be smoothed through access to capacious external markets [6], however, the key partner for both countries is the European Union. In light of recent events in Ukraine, it became clearly seen that the EU's relations with Russia in addition to the apparent contradictions are extremely volatile. Political differences can lead to direct economic actions detrimental to mutual trade.

3. Conclusions

To conclude it should be mentioned that the International Monetary Fund and the World Bank predict slower tempos of growth for Kazakhstan linked with general decline of the European economies. Meanwhile, the integration processes reoriented foreign trade of Kazakhstan in favor of Russia. According to most researchers if Kazakhstan trades less with the rest of the world and more with Russia, Belarus, and the rest of the CIS, this would result in less imported technology from the more technologically advanced European Union and other countries leading to a loss of productivity gains in the long-run [2]. introduction of common external tariffs already negatively influenced competitiveness of national production though the integration processes cleared the situation around expansion of specialization. The tempos of export growth to Russia are quite modest and decreasing for Belarus, while import from both CU members grew substantially. Strong dependence on prices of raw materials is a problem now faced by the Common Economic Space in general. The dominance of raw materials in export structure of trade in Kazakhstan now faces not only traditional problems, but also powerful Russian pressure inside the alliance. The forecasts of export development still greatly depend on future price fluctuations. Simultaneous fall in prices and demand for raw materials would be dramatic for Kazakhstan as investment also greatly depended on revenues from oil during recent years. This could influence budget, social situation, etc. Another problem that deserves attention is a political component. The range of opinions about results of participation of Kazakhstan in integration structures is broad and polarized while the political space for public discussion is absent [2]. General level of freedoms in Kazakhstan under current political regime is extremely low. Tremendous level of corruption is considered as the most problematic in all members of Common Economic Space. A number of experts stress increase in the amount of shadow foreign operations. Bilateral foreign trade data of Belarus and Kazakhstan, published by national statistical offices, contains significant differences in almost all positions associated with the shadow movement of goods and services estimated at hundreds of millions of dollars [7]. Future predictions about the expansion of alliance are hindered by the lack of adequate assessment of the economic benefits for joining states [6]. Excessive politicization of the issue and various ideologically colored speculations in media and even scientific community also makes achievement of objectivity difficult.

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ASSESSING WIDER ECONOMIC BENEFITS OF THE HIGH-SPEED RAIL PROJECT IN THE UK

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Abstract: The assessment of wider economic benefits is beyond conventional project appraisal. Therefore these possible wider economic benefits need to be properly described and better shown on practical example of British high-speed rail (HSR) project. This paper is focused on wider economics benefits mentioned in the study and also shows recommendations how these benefits can be measured if it is possible.

Keywords: wider economic benefits, transport, high-speed rail

1. Introduction

Project called Fast Track Scotland should connect the North of England with Scottish cities of Edinburgh and Glasgow with high-speed rail (HSR). Scotland stands united in support this high speed rail strategy which brings Scottish cities Edinburgh and Glasgow closer to London and the UK's great cities, and which preserves and enhances aviation links with London's airports for the north of Scotland. Within transport, the economic welfare benefits of projects are typically valued in terms of a reduction in travel time. High level analysis of the potential economic welfare benefits has been undertaken by non-profit company Greengauge 21. This high level modelling estimates user benefits over the 60 year appraisal period. According to this analysis it is essential to include Scotland into this project in order to maximize the economic benefits from a high speed rail network [4].

2. Wider Economic Benefits

In addition to the standard economic welfare benefits associated with transport improvements, there is the potential for significant wider economic benefits as a result of the introduction of a high speed rail link to Scotland. According to this study, these wider benefits can arise from the following.

Reduced business costs

The new transport link is likely to impact current business costs, attract new businesses and encourage development around new stations. Current businesses with activity in Scotland will benefit as the reduced journey times will result in a reduction in the cost of travel for businesses. Firms do not necessarily have to pass on the lower costs to consumers as lower prices. However, Department for Transport discussion paper recommends that this benefit can be measured as 10% of business time savings and reliability gains.

Agglomeration benefits

The term agglomeration refers to the concentration of economic activity over an area. Transport can act to increase the accessibility of an area to a greater number of firms and workers, thereby impacting on the level of agglomeration, enabling firms to take advantage of spillovers and synergies. Following math model captures

the effect of increasing employment density leading to increased productivity for existing workers. [2] First step is calculating generalized cost of travel between two zones.

$$g_{ij} = \frac{\sum_{p,m} \left(g_{ij}^{p,m} T_{ij}^{p,m}\right)}{T_{ij}}$$

where, g_{ij} is generalized cost of travel from i to j; $T_{ij}^{p,m}$ is number of trips from zone i to j by purpose p and mode m; T_{ij} is number of trips from zone i to j [2].

Having established the measure of distance via weighted generalized cost, the next step is to establish a measure for proximity to other firms, workers and markets, in the form of effective density, calculated as:

$$d_i = \sum_i \left(\frac{E_j}{g_{ij}}\right)$$

where, E_j is number of jobs in zone j [2].

The final step to estimate agglomeration benefits marked here as WB1 is uplifting GDP of workers through the effect of increased effective density, calculated as:

$$WB1 = \sum_{ij} \left[\left[\left(\frac{d_i^A}{d_i^{B_0}} \right)^{e(WB1)} - \left(\frac{d_i^B}{d_i^{B_0}} \right)^{e(WB1)} \right] \times h_{ik} \times E_{ik}^A \right]$$

where, k is an industry for which agglomeration benefits are being calculated; d_i^A and d_i^B are employment densities of zone i in the alternative situation A and base situation B; $d_i^{B_0}$ is effective density of zone i in the base year; e(WB1) is elasticity of productivity with respect to effective density; h_{ik} is GDP per worker in zone i and industry k; E_{ik}^A is employment in alternative scenario [2]. It is the most complex math model of wider economic benefits mentioned in this paper. Therefore it is necessary to obtain proper and precise statistical data which could be essential problem in some countries.

On the other hand, while we expect the agglomeration effects to be positive in the areas that see improvements in transport, there could be negative effects in other locations if employment is displaced.

Improved labor supply

A high speed rail link to Scotland will also raise the possibility of commuter travel between the North of England and Scotland with the significantly reduced journey time. This view is supported by evidence from Italy where the introduction of high speed rail has resulted in a shift from weekly commuting between Naples and Rome to daily commuting.

There has been done a Scottish survey among forty local businesses. The biggest benefits according to them are reduced time travelling, strengthening existing business links and greater frequency and reliability. New high speed rail link to Scotland should also attract new investment and bring more tourists to the Scotland. There is great scope for modal shift from air on some journeys due to productivity, convenience and environmental considerations, but costs would be a factor.

Regeneration benefits

Regeneration and development around the new railway stations in Edinburgh and Glasgow is also a likely consequence of the new high speed rail link. For example, The arrival of high speed rail in Cologne has supported a major program of redevelopment, including office, hotel, retail and leisure developments, as well as new housing and the redevelopment of the city's main exhibition and conference venues. Furthermore, in Japan, research on the effects of the development of the Shinkansen network suggested that land values in commercial areas with a Shinkansen station rose by as much as 67% over the years 1981-85. These benefits can be measured by Hedonic price model or Market price method. Travel costs method can also be used in some cases.

Inward Investment

Transport infrastructure availability is one of a range of factors likely to contribute to the relative attractiveness of investing in a particular country. Established transport infrastructure will assist in attracting new investment, particularly foreign direct investment, retaining existing investment and expanding existing investment in face of competition from other areas. Scottish survey mentioned above also supports these facts.

Passenger demand and revenue

Faster journeys and more access to other locations will attract more people to travel, and travel more often. Also reductions in journey times will make rail more competitive with other modes, particularly air travel. And additional demand can be generated by better use of capacity freed up on existing lines. It is beneficial to both passengers and railway undertakings. However, there might be some negative aspects related to decreasing share of classic rail or air transport on total transport modal split. So it depends on user's decision making which can be foretold on the basis of proper survey.

Capacity

Capacity is another essential aspect of this project. A new high speed rail line to Scotland will create additional capacity across the network and, by removing longdistance services from existing lines, create new opportunities for local, interregional passenger and freight service provision. High speed rail will introduce significant on-train capacity between Scotland and destinations in England, alleviating problems of overcrowding and providing for passenger growth.

Punctuality and reliability

Users of the high speed rail network should also expect high levels of punctuality, beating delays on the road network, in the air and on the existing conventional rail network. For example, situation from Spain supports the argument that high speed rail can deliver these characteristics. On route from Madrid to Seville it is offered full refund if train does not arrive within five minutes of the advertised time. Records to date show that only 0,16 % of trains have been delayed by more than five minutes. That is a strong positive argument. There is no suggested method how to measure these benefits in the study paper. However it can be measured by travel time savings method, also using econometric analysis on probability of train delay.

Environmental issues

The assessment of a project's environmental impact is a key part of appraisal, particularly as high speed rail is frequently presented as a low-carbon technology. A key determinant of this is the ability of high speed rail to achieve modal shift from air to rail. Embodied carbon represents the carbon emissions associated with construction operations such as constructing the rail infrastructure and trains, as well as the embodied carbon within the bulk construction materials. Emissions from embodied carbon are largely due to the use of high energy bulk materials such as steel and concrete, and high energy intensive construction practices [1, 2].

3. Empirical Work on Wider Benefits

Jeffrey Cohen and Dan Graham illustrate the current state of econometric work on spatial spillovers and agglomeration effects. Making behavioral assumptions implies the possibility that the assumptions are wrong, leading to misspecification. These two examples of this problem were discussed:

- The estimation of spatial spillovers rests on assumption of cost minimization and the treatment of transport as a costly input. The validity of these assumptions was challenged.
- The assumed direction of causation is critical. Most studies assume growth is caused by infrastructure. But as wealthier economies may choose to spend more on infrastructure, infrastructure may follow growth as well [3].

Here are some examples of empirical work on wider benefits. First are spatial spillovers of investment in public capital in transport sector. A study for the US (Cohen and Morrison, 2004) finds that higher highway capital in one State slightly reduces variable costs in neighboring States, while a Spanish study (Moreno et. al, 2004) finds evidence of cost increases. There are similar studies on port infrastructure in the US and on the airports.

Second, the empirical work on agglomeration economies shows that they exist and they can also be quite reasonably measured. The concept of agglomeration is made operational by constructing an index of the amount of economic activity that is accessible to a firm at its location, also called as economic or effective density which is treated as an input in a production function. Agglomeration economies vary strongly among industries. An application for the UK finds they are rather small for manufacturing industries (elasticity of productivity is 0,08 for manufacturing) and large for service-oriented activities (0,22 for business services and 0,24 for banking and finance) [3].

Accessibility clearly depends on available transport infrastructure, so an empirical link between infrastructure and agglomeration can be established. Such a study paper was published on CrossRail project in London, suggesting that this project's benefits increase by about 20 % when agglomeration economies are accounted for.

agglomeration economies However. may become exhausted and can be outweighed by congestion effects. The analysis by Oosterhaven and Broersma from 2007 for a Dutch project indeed found "negative agglomeration effects". Analyses of the interaction between agglomeration, location decisions and transport costs shows that lower transport costs may induce firms to move out of the center. Congestion pricing can also stimulate agglomeration economies if it succeeds in allocating road space to activities that benefit most from agglomerations. Road pricing is for example subject of debate in New York City [3].

In summary, recent research suggests that if project appraisal is to go beyond standard cost-benefit analysis and wishes to include wider economic effects, it should differentiate between direct user benefits and effects on productivity, agglomeration, competitor, and on labor market.

4. Conclusions

This paper has summarized wider economics benefits which have been taken into consideration while Fast Track Scotland project being assessed.

However, there is no mention about potential benefit contribution of this project to the construction industry during the construction works. Such enormous project does have a significant meaning for many construction, transport or logistic companies in the UK.

On the other hand, there is no mention about negatives. For example project Edinburgh Trams has influenced negatively many vendors and businesses due to construction work in the streets. It should be counted for in terms of exchequer consequences of increased GDP as a loss of potential GDP might have been produced.

Wider economic benefits are mostly being taken into consideration in such projects, which should maximize the benefits for people, businesses and agglomeration. However, calculation of these benefits can be difficult due to lack of proper or precise statistical data in certain country. Therefore, methodology of assessing wider economic benefits should be adjusted to economic,

geopolitical and technological conditions in every single country.

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ANALYSIS OF SLOVAK ACCOMMODATION FACILITY FINANCIAL HEALTH AND NON-FINANCIAL CRITERIA USING INDEX IN

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Abstract: The article is devoted to analyzing the impact of selected non-financial criteria for evaluating the financial health of accommodation facilities by using model INDEX IN. The analysis is based on the financial statements of selected Slovak accommodation facilities for the years 2008 - 2011 and the financial situation that has been selected by two variants of the model INDEX IN (IN01 and IN05). The relationship between selected non-financial criteria and conditions of financial health were analyzed by using appropriate statistical methods, that confirmed that the evaluating the financial health of accommodation has affected the type of property, the class of accommodation and size of the enterprises - the number of beds, that are typical characteristics of enterprises providing accommodation services.

Keywords: financial indicators, nonfinancial criteria, Index IN01 a IN05, Slovak accommodation facilities

1. Introduction

Prediction of the financial situation of enterprises in financial business management plays an important role in the time of financial crisis.

Predictive models are among the instruments of financial prediction and divided into creditworthy and bankruptcy, as in [1], [2], [4], [6], [8], [9].

Creditworthy models are based on diagnostics of the financial health of enterprises. Their aim is to the determination whether enterprises are among good or bad enterprises. [6, p. 72]

The aim of bankruptcy models according [3] is to identify whether, in the near future, enterprise threatened by bankruptcy and based on the premise that the enterprise has problems with liquidity, the height of net working capital and return on invested capital.

Table 1 Prediction models

Creditworthy models	Bankruptcy models
ARGENTI MODEL BALANCE ANALYSIS OF DOUCHA QUICK TEST TAMARI RISK INDEX	 ALTMAN MODEL BEERMAN MODEL FULMER MODEL CH – INDEX SOLVENCY INDEX INDEX IN SPRINGATE MODEL TAFFLER MODEL

Source: own processing by [1], [2], [3], [5], [8], [9]

Inka and Ivan Neumaier are the authors of the model INDEX IN (IN), for which they created its modification by 4 (in 1995 - creditor variant IN95, in 1999 - ownership variant IN99, in 2002 - complex variant IN01, in 2005 - modified complex variant IN05). [8, p. 93]

The following table gives you the overview of modifications of the model INDEX IN.

Table 2 Indicators of modification model Index IN

₹95 =	$0.22X_1 + 0.11X_2 + 8.33X_3 + 0.52X_4 + 0.1X_5 + (-16.8)X_6$
	$X_I = Total \ assets / Debt \ capital$
	$X_2 = EBIT / Interest expense$
	$X_3 = EBIT / Total \ assets$
	$X_4 = Total \ revenues / Total \ assets$
	$X_5 = Current Total assets / Short-term debt capital$
	$X_6 = Liabilities$ after the due date / Total revenues

```
IN99 = (-0.017)X_1 + 4.573X_2 + 0.481X_3 + 0.015X_4

X_1 = Total \ assets / Debt \ capital

X_2 = EBIT / Total \ assets

X_3 = Total \ revenues / Total \ assets

X_4 = Current \ Total \ assets / Short-term \ debt \ capital
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IN01 =
$$0.13X_1 + 0.04X_2 + 3.92X_3 + 0.21X_4 + 0.09X_5$$

 $X_1 = Total \ assets / \ Debt \ capital$
 $X_2 = EBIT / \ Interest \ expense$
 $X_3 = EBIT / \ Total \ assets$
 $X_4 = Total \ revenues / \ Total \ assets$
 $X_5 = Current \ Total \ assets / \ Short-term \ debt \ capital$

$$IN05 = 0.13X_1 + 0.04X_2 + 3.97X_3 + 0.21X_4 + 0.09X_5$$
 $X_1 = Total \ assets / \ Debt \ capital$
 $X_2 = EBIT / \ Interest \ expense$
 $X_3 = EBIT / \ Total \ assets$
 $X_4 = Total \ revenues / \ Total \ assets$
 $X_5 = Current \ Total \ assets / \ Short-term \ debt \ capital$

Source: own processing by [5, p.145], [3, p.133], [8, p.94-96]

Comparing individual modifications INDEX IN models, we can conclude that the highest weight is an indicator of return on assets (ROA) in the all modifications. The different models differ from each other by individual weights. A significant change has occurred only for models IN95 and IN99 (number of indicators decreased from 6 to 4). The evaluation of enterprise by model IN99 uses a different classification than the other variants;

divided enterprises into groups create or do not create value.

Table 3	Evaluation	enterprises	hν	Index IN

Intervals	Evaluation financial situation
IN95 ≥ 2	good financial health
1 < IN95 < 2	potential financial problems
IN95 ≤ 1	enterprise in bad financial situation
IN99 > 2,070	enterprise creates value
$1,590 < IN99 \le 2,070$	enterprise creates value
1,220 < IN99 ≤ 1,590	cannot be determined if enterprise creates or
	does not create value
$0,684 < IN99 \le 1,220$	enterprise earlier does not create value
IN99 ≤ 0,684	enterprise does not create value
IN01 ≥ 1,77	enterprise creates value
0,75 < IN01 < 1,77	grey zone
IN01 ≤ 0,75	enterprise is going to be bankrupted
IN05 ≥ 1,6	enterprise creates value
0,9 < IN05 < 1,6	grey zone
IN05 ≤ 0,9	enterprise is going to be bankrupted

Source: own processing by [5, p.145], [3, p.133] [8, p. 94 - 96] [4, p. 93], [1, p.84-85]

The main differences between the models INDEX IN are the following:

- model IN95 is a view of the creditor evaluates the rating enterprise,
- model IN99 is the owner of the view on the creation of value,
- model IN01 is a combination of the two previous models for the industry. [2, p. 124]

1. Materials and methods

using IN01 and IN05.

For analysis of the financial situation of enterprises, there were chosen two modifications model INDEX IN - model IN01 and model IN05. Models are identical in terms of indicators and are the slight difference in weight for the third indicator. Changes are different in criteria for the evaluation of financial situation of enterprises, where the model IN05 is stricter than the model IN01.

The population set consists of accommodation facilities in Slovakia, that are based on the statistical classification of economic activities NACE Rev. 2 section I – Accommodation and catering services and sections 551 – hotel and similar accommodation. The research sample was created by a random selection of the population and consists of 46 enterprises, which financial statements for the period 2008-2011, will become the basis for the assessment of the financial situation by using Index IN (IN01 and IN05). Processing evaluation of financial health has been implemented in MS EXCEL. For analysis there were selected 6 non-financial indicators such as the duration working of an enterprise, the type of property, the legal form, the class of accommodation, the number of employees and the number of beds

in accommodation. Using statistical CHÍ-square test was

verified the existence of contexts between selected non-

financial indicators and financial health status evaluated by

2. Results and discussion

The following section of the article is divided into two parts. The first part is evaluated the financial situation of selected accommodation facilities using the model INDEX IN - IN 01 and IN05. The second part analyzes the contexts between selected non-financial criteria and condition of the financial health of selected enterprises.

2.1 Evaluation financial situation using INDEX IN

In the graphs the financial situation of selected accommodation facilities using the models IN01 and IN05 is shown.

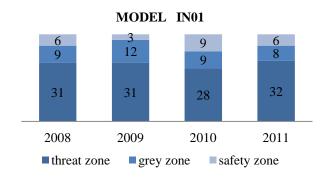


Figure 1: Evaluation of the financial situation using IN01 (Source: own processing)

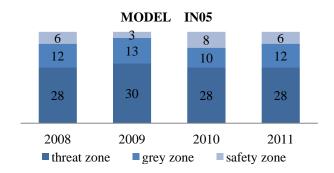


Figure 2: Evaluation of the financial situation using IN05 (Source: own processing)

We can conclude that both models agreed in assigning enterprises according to the financial situation to the safety zone, which are creditworthy businesses. Development in this zone has been fluctuating. 6 enterprises in this area were in 2008 and 2011. In 2009, in this zone there were only 3 enterprises. The change was observed for the year 2010, when their number increased by 200% and reached the highest value (9 companies) during the entire period. The number of enterprises that model IN01 throughout the period ranked in the gray zone did not fall below 10 enterprises and the highest representation was in 2009, when their number has reached 13.

Into the gray zone of model IN05 also most enterprises in 2009 are ranked, but in other years the number has fluctuated between 8-9 enterprises which is less than it was in the evaluation of model IN01.

These models included more than 60% of enterprises in the threat zone. Model IN01 evaluated enterprises the most threatened in 2009, where they were 30 and over the remaining years of their number was constant and the 28 enterprises. Model IN05 identified up to 32 enterprises in bankruptcy in 2011, representing up to 69.56% of enterprises research file.

2.2 Analysis of selected non-financial criteria

Next part of the article deals with the analysis of contexts between selected non-financial criteria and condition of the financial health of the selected enterprises.

The first non-financial criterion is the duration of working of enterprise.

Table 4 The distribution of enterprises by duration working

Duration working of enterprises	Number
(in years)	of enterprises
22 – 18	15
17 - 13	10
12 - 8	12
7 - 5	9

Source: own processing by Statistical Office of the Slovak Republic

The second non – financial criterion is a type of property. In terms of type of property they are represented by 86.96% of enterprises with private domestic property. State and local government property have 2 enterprises and 2 enterprises have foreign and international property.

The third non – financial criterion is a legal form. The research sample has represented 56.5% of the limited liability company and 43.5% of joint stock companies.

The fourth criterion non-financial criteria represented class of accommodation (number of stars).

Table 5 The distribution of enterprises number of stars

Number of stars	Number of enterprises
1*	3
2*	6
3*	15
4*	20
5*	2

Source: own processing

The fifth non-financial criterion is the size category, which was examined in terms of the number of employees and in terms of the number of beds for accommodation facilities.

Table 6 The distribution of enterprises by number of employees

Category	Number	Number
of size enterprise	of employees	of enterprises
Micro	4 – 9	5

Small	10 – 49	22
Medium	50 – 249	17
Large	250 - 499	2

Source: own processing

Table 7 The distribution of enterprises by number of beds

Category of facilities	Number of beds	Number of enterprises
Small	to 25	2
Medium	25 - 99	11
	100 - 249	23
Big	over 250	10

Source: own processing

Using a statistical test Chi - square, there was tested if there is a relationship between the selected non-financial criteria (legal form, class of accommodation, number of employees and number of beds) and condition of the financial health of hotel enterprises, that has been determined by Quick test. The results of this testing are given in the next table.

Table 8 Evaluation of relationship between non – financial criteria and financial health

NON-FINANCIAL	MODEL	CHÍ – SQUARE	p – value
CRITERIA		TEST	
Duration working of	IN01	7.454	0.281
enterprise	IN05	4.386	0.625
Type of property	IN01	13.255	0.010
	IN05	15.035	0.005
Legal form	IN01	1.923	0.382
	IN05	2.506	0.286
Class of	IN01	41.590	0.001
accommodation	IN05	33.951	0.001
Number	IN01	8.782	0.186
of employees	IN05	8.960	0.176
Number	IN01	17.340	0.008
of beds	IN05	21.784	0.001

Source: own processing by STATISTICA V.10

On the basis of the results obtained, it can be concluded that the relationship between selected non-financial criteria and evaluating the financial health using the IN01 and IN05 in selected Slovak accommodation has not been demonstrated for non-financial criteria – duration working of enterprise, legal form and number of employees.

A statistically significant relationship was demonstrated for non-financial criteria - type of property and the financial situation by using IN01 (χ 2 = 13.255, p = 0.010) and IN05 (χ 2 = 15.035, p = 0.005). For nonfinancial criteria - class of accommodation was demonstrated statistically significant relationship with the evaluation of the financial health enterprises using the model IN01 (χ 2 = 41.590, p = 0.001) and IN05 (χ 2 = 33.951, p = 0.001). A significant relationship was demonstrated between the non-financial criteria - number beds and condition the financial health of accommodations by using IN01 ($\chi 2 = 17.340$, p = 0.008) and IN05 ($\chi 2 = 21.784$, p = 0.001).

3. Conclusion

In the article the evaluation of the financial health by selected prediction model - the model INDEX IN (two variants of this model – IN01 and In05) was analyzed.

The model IN05 is stricter for the evaluation of financial situation than the model IN01 and indicator ROA has higher weight as the same indicator in model IN01, but our results of evaluation financial health by model IN05 were slightly better than by model IN01.

In the analysis of the relationship between the non-financial criteria (the type of property, the legal form, the duration working of enterprise, the number of employees, the class of accommodation and the number of beds) and the evaluation of the financial health by using the model INDEX IN (IN01 and IN05) there is a statistically significant relationship demonstrated for the non-financial criteria – the type of property, the class of accommodation and the number of beds.

In conclusion we can conclude that INDEX IN (its modify IN01 and IN05) as a model for prediction of the financial situation is recommended for Slovak enterprises providing accommodation services.

Finally, we conclude, that the evaluating the financial health of accommodation has affected the class of accommodation and size of enterprises – the number of beds, that are typical characteristics of enterprises providing accommodation services and these non-financial criteria could be incorporated into a modified prediction model for accommodation facilities.

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ESTIMATION OF TECHNICAL EFFICIENCY OF CZECH DAIRY PROCESSING FIRMS

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Abstract: The objective of this paper is to apply a Cobb-Douglas, Translog Stochastic Production Function in order to estimate inefficiencies, efficiencies and returns to scale with following selection the better fitting model of milk processing firms in the Czech Republic based on panel data from years 2005–2011. For estimation "True" random effects model with exponential distribution of efficiency term under the assumption of heteroscedasticity was used. For empirical study unbalanced panel data set contained 368 observations of 69 milk processing Czech companies was analysed. Using stochastic frontier analysis and z-test we verified that in the case of Cobb-Douglas function variables (capital, labour, and material) have statistically significant impact on the firms' output. In the case of Translog model capital variable is statistically insignificant, but assuming sign of the slope coefficients (i.e.production elasticities) is consistent with economic theory in both models. Results of efficiency estimation have inconsequential difference between two used models. The criteria of selection showed that Translog model has better properties in fitting the data. The research is financed from grant No.11110/1312/3143. "Inter- and intra-sectoral changes of efficiency and productivity in Czech food processing industry – systematic or idiosyncratic development?" of the IGA, FEM, CULS.

Keywords: Stochastic Frontier Analysis, technical efficiency, dairy products, Czech Republic

1. Introduction

Efficiency is a very important factor for productivity growth. In an economy where resources are scarce and opportunities to use new technologies are limited, inefficiency studies indicate the potential possibility to raise productivity by improving efficiency without necessarily developing new technologies or increasing the resource base.

Inefficiency phenomenon implies that not all producers are able to produce the desired quantity of output with minimum quantity of inputs using available technology. From a theoretical point of view, producers do not always optimize their production functions. The production frontier represent the amount of necessary combinations of inputs for the production of diverse products, or the maximum output with various input combinations and a given technology. Producers operating on the production frontier are considered technically efficient, whereas those who operate under the production frontier are indicated as technically inefficient.

Following Farrell (1957), many different methods have been considered for the estimation of efficiency. Two major widely used approaches are the Data Envelopment Analysis (DEA), which is nonparametric and deterministic, and the Stochastic Frontier Analysis (SFA), which is, on the contrary, parametric and stochastic. For the aims of research we chose the SFA. The strengths of SFA over DEA are in its opportunity to deal with stochastic noise and provide statistical hypothesis testing pertaining to the production structure and the degree of inefficiency[1].

The estimation of efficiency can be considered according to the assumptions and techniques used to construct the efficient frontier. On the one hand, parametric methods estimate the frontier with statistical methods. On the other hand, nonparametric methods rely on linear programming to calculate linear segments of the efficient frontier.

Parametric methods impose an explicit functional form for the frontier and require the distributional assumption of the inefficiency term. Nonparametric methods, in contrast, neither impose any assumptions about functional form of the frontier nor any distributional assumptions about inefficiency. Estimation of the frontier, in turn, allows for random noise in the analysis. Moreover, it lets providing hypotheses testing. Therefore, many authors concluded, that parametric methods, i.e. SFA is more suitable for efficiency analysis in agriculture, where measurement errors, differences in climate conditions take place.

Evaluation of productivity and efficiency became one of the main research topics of economists in the transforming conditions. In the Czech Republic this problem was investigated by some authors: Mathijs a kol. (1999, 2001, 2002), Juřica a kol. (2004), Jelínek L. (2007), Kroupová Z. (2010) a Čechura L. (2009, 2010, 2012).

Both, DEA and SFA, approaches assume that firms are not heterogeneous but inefficient, since all inefficiency scores are estimated by assuming a homogeneous technology available to all producers. This suggests that the impact of inefficiency in the agriculture often is overestimated [2]. Considering significant heterogeneity of food processing firms [3], we used "True" random effects model for efficiency estimation. This model allows to distinguish time-invariant heterogeneity from time-varying inefficiency

The objective of this paper is to apply the Stochastic Frontier Analysis technique in order to estimate efficiencies of Dairy products industry in the Czech Republic using Cobb-Douglas and Translog function for the years 2005-2011.

2.Materials and methods

2.1 Stochastic Frontier Analysis

SFA has its origins in two papers: Aigner, Lovell and Schmidt (1977) and Meeusen and van den Broeck (1977), followed by the works by Battese and Corra (1977). These three original works represent composed error term in the context of production frontier. Since then, the SFA has been developed by several researchers: Schmidt and Lovell (1979), Jondrow et al. (1982), Greene (1980), Stevenson (1980), Lee (1983), Koop and Diewert (1982), Pitt and Lee (1981), Schmidt and Sickles (1984), Cornwell, Schmidt and Sickles (1990), Kumbhakar (1990), Battese and Coelli (1992), among other researchers.

The models of stochastic production frontier address technical efficiency and recognize the fact that random shocks beyond the control of producers may affect the production output. Therefore, in these models, the impact of random shocks (as labor or capital performance) on the product can be separated from the impact of technical efficiency variation. These models were simultaneously introduced by Aigner, Lovell and Schmidt (1977) and Meeusen and van den Broeck (1977).

To study the determinants of TE we used the stochastic production frontier (SPF) methodology developed by Aigner et al. (1977). The SPF method is based on an econometric (i.e., parametric) specification of a production frontier. Using a generalized production function and cross-sectional data, this method can be depicted as follows:

$$y_i = f(x_{ij}; \beta) * exp(\varepsilon_i)$$
 (1)

where y represents output, x is a vector of inputs, β is a vector of unknown parameters, and ε is the error term[4]. The subscripts i and j denote the firm and inputs, respectively.

In this specific formulation, the error term is farm specific and is composed of two independent components, $\varepsilon_i = v_i - u_i$. The first element, v_i is a random variable reflecting noise and other stochastic shocks entering into the definition of the frontier, such as weather, luck, strikes, and so on. This term is assumed to be an independent and identically distributed normal random variable with zero mean and constant variance iid $[N \sim (0, \sigma_v^2)]$

The second component, u_i , captures technical inefficiency relative to the stochastic frontier. The inefficiency term u_i is nonnegative and it is assumed to follow a half-normal distribution.

An index for TE can be defined as the ratio of the observed output (y) and maximum feasible output (y^*) :

$$TE_i = \frac{y_i}{y_i^*} = \frac{f(x_{ij}; \beta) \cdot exp(v_i - u_i)}{f(x_{ij}; \beta) \cdot exp(v_i)} = exp(-u_i)$$
 (2)

Because y is always $\le y^*$, the TE index is bounded between 0 and 1; TE achieves its upper bound when a firm is producing the maximum output feasible level (i.e., $y = y^*$), given the input quantities. Jondrow et al. (1982) demonstrated that farm-level TE can be calculated from

the error term εi as the expected value of $-u_i$ conditional on ε_i , which is given by

$$E[u_i|\varepsilon_i] = \frac{\sigma_u \sigma_v}{\sigma} \left[\frac{f(\varepsilon_i \lambda/\sigma)}{1 - F(\varepsilon_i \lambda/\sigma)} - \frac{\varepsilon_i \lambda}{\sigma} \right]$$
(3)

where $\sigma^2 = \sigma_u^2 + \sigma_v^2$, $\lambda = \sigma_u/\sigma_v$, $f(\cdot)$ represent the standard normal density and $F(\cdot)$ the standard normal cumulative density functions[5]. The maximum likelihood estimation of Eq. [3] provides estimators for the variance parameters σ_u^2 and σ_v^2 . Thus, the TE measure for each farm is equal to

$$TE_i = exp(-E[u_i|\varepsilon_i])$$
 (4)[5]

The questions will be explored by estimating a joint stochastic frontier production function model for the Czech food processing industry.

2.2 "True" random effects model

Unlike fixed effects model, where it is assumed that the inefficiency term is fixed and the correlation with regressors is allowed, in random effect model the opposite situation is considered. The u_i (technical inefficency) is randomly distributed with constant mean and variance, but are assumed to be uncorrelated with the regressors and the v_{it} . The random effects specification is likewise motivated by the familiar linear model. It is assumed that the firm specific inefficiency is the same every year. Thus, the model becomes

$$y_{it} = \alpha + \beta' x_{it} + v_{it} + u_i$$
 (7)[6]

Note that the inefficiency term is now time invariant. In this propositions the model absorbs all unmeasured heterogeneity in u_i . The time invariance of the inefficiency component of this model has been a problematic assumption.

Greene (2005) argued that the random effects model with the proposed extensions has three significant weaknesses. The first is its implicit assumption that the effects are not correlated with the included variables. The second problem with the random effects is its implicit assumption that the inefficiency is the same in every period. For a long time series data, this is likely to be an undesirable assumption. The third shortcoming of this model is that in this model u_i carries both the inefficiency and, in addition, any time invariant firm specific heterogeneity[7].

To avoid the former limitations, Greene (2005) proposed "True" random effects model that is as follows:

$$y_{it} = \alpha + \beta' x_{it} + w_i + v_{it} \pm u_{it}$$
 (8)

where w_i is the random firm specific effect and v_{it} and u_{it} are the symmetric and one sided components specified earlier[7].

2.3 Dataset

The panel data set was collected from the Albertina database. The database contains all registered companies and organisations in the Czech Republic. The analysis uses information from the final accounts of companies whose main activity is food processing in the period from 2005 till 2011. After the cleaning process (removing companies with missing observations and negative values of the variables), the unbalanced panel data set contains 368 observations of 69 dairy product producing Czech companies. The data set represents 14 regions of the Czech Republic.

In the analysis were used following variables: Output, Labour, Capital and Material. Output is represented by the total sales of goods, products and services of the food processing company. In order to avoid inflation changes, Output was deflated by the price index of food processing companies according to the branch. (2005=100). The Labour input is used in the form of total personnel costs per company, divided by the average annual regional wage. The Capital variable is represented by the value of tangible assets. Material is total costs of material and energy consumption per company. Capital and Material were deflated by the price index of industrial sector (2005=100).

For estimation software Stata 11.2 was used.

Table 1 Variables used in production analysis

Variable	Mean	Std. Dev	Min	Max
Output (Y)	613188.1	931894.8	442.96	5822353
Capital (K)	117926.1	173444.8	87.598	1042089
Labour (L)	31101.01	47996.63	16	453521
Material (M)	453966.3	713901.9	81.31	4607265

Source: own processing

3. Results and discussion

3.1 Stochastic Frontier Analysis for Czech Dairy processing industry: Cobb-Douglas Production Function

The results related to the estimation of the stochastic frontier analysis according to the Cobb-Douglas production function is presented in Table 2. In the case of a Cobb-Douglas model, all incorporated variables are significant and have assuming expected signs.

The greatest elasticity observed is that of material variable. This indicates the intense relationship that exists between production and material, dependently of the utilization of other factors that, ceteris paribus, would contribute for productivity. The labour variable reveals the second major elasticity.

The parameter λ is the relation between the variance of u_{it} and v_{it} . Thus, the parameter indicates the significance of technical inefficiency in the residual variation. A value larger than one suggests that variation in u_{it} prevails the variation in the random component v_{it} . The parameter λ , that is in our case 1.42336, suggests that efficiency differences among firms are an important reason for variations in production.

Table 2 Cobb-Douglas Production Function Estimation

Parameters estimation			
		Wald chi2(3) = 8434.46	
Log likelihood =		Prob > chi2 = .0000	
217.3089			
Y	Coefficient	P> z	
K	0.05611	0.0000	
L	0.15195	0.0000	
M	0.71320	0.0000	
Intercept	1.91966	0.0000	
$\sigma_{\!\scriptscriptstyle \mathcal{U}}$	0.08359	0.0000	
σ_v	0.05872	0.0000	
λ	1.42336		
Technical efficiency and	d Returns to scale		
TE	.90788		
RTS	.92126		
Model Selection Criteria	a		
AIC	-416.6179		
BIC	-381.4451		

Source: own processing

Technical efficiency estimated by Cobb-Douglas production model is 90.8%, which means that about 9.2% of the potential output is lost due to technical inefficiency. The branch is characterised by slightly diminishing returns to scale, close to constant returns to scale.

3.2 Stochastic Frontier Analysis for Czech Dairy Processing Industry: Translog Production Function

Assuming a logarithmic transcendental (translog) technology with heteroscedasticity, the parameters estimates of the production frontier and the technical inefficiency component are presented in Table 2. The statistically significant parameters at the level of 5% are essentially related to labour and material, whereas capital does not appears to be statistically significant even at 10% level.

The parameter λ (1.354032) indicates the significance of inefficiency in the residual variation.

Table 3 Translog Production Function Estimation

Parameters estimation		
		Wald $chi2(3) = 8998.27$
Log likelihood =		Prob > chi2 = .0000
259.2082		
Y	Coefficient	P> z
K	0.04056	0.5600
L	0.31348	0.0060
M	0.44597	0.0000
KK	0.02453	0.1190
LL	0.08548	0.0010
MM	0.11604	0.0000
KL	0.01425	0.4350
KM	-0.03012	0.0090
LM	-0.08624	0.0000
Intercept	2.24275	0.0000
$\sigma_{\!u}$	0.08602	
σ_v	0.06353	
λ	1.35403	
Technical efficiency and R	eturns to scale	
TE	.919579	
RTS	0.79999	
Model Selection Criteria		
AIC	-488.4164	
BIC	-429.7952	

Source: own processing

Mean efficiency according to the model under heteroscedasticity assumption with exponential distribution is 92.0%, the median value is 94.7%. The branch exhibits decreasing returns to scale.

3.3 Selection between the two estimated models

Several model selection criteria for comparing alternative models have been developed. In general, likelihood ratio tests (LR test) are useful for choosing between two models where one model is a subset of the other. The LR test compares the log likelihoods of the two models and tests whether this difference is statistically significant. If the difference is statistically significant, then the less restrictive model (the one with more variables) is said to fit the data significantly better than the more restrictive model.

The generalized likelihood ratio statistic is given by

$$2[L(H_1) - L(H_0)] (9),$$

where L(H1) and L(H0) are the values of the likelihood function under the unrestricted and restricted model [8]. In our case LR chi2(6) = 83.80, which confirms that Translog function fits data better than Cobb-Douglas function.

For alternative model selection, Akaike showed the reasonable criterion, known as Akaike's Information Criterion. The AIC is used when comparing several alternative models. This picks the model with the criterion that the model with a lower AIC is the better model. Also, BIC (Bayesian information criteria) was used in the analysis in order to compare the result from the AIC.

The results show that the Translog production model comparing to the Cobb-Douglas production model has lower AIC and BIC criterion, thus indicating the best fit of the former model.

The difference in technical efficiency estimated by two different models is 1.3%, which confirms that we got quite similar results. But returns to scale indicator results differ by 15.2%.

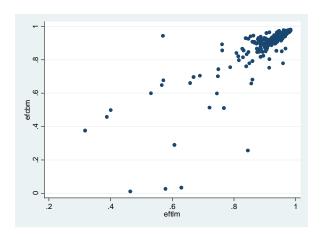


Figure 1: Estimation of Technical Efficiency by Cobb-Douglas and Translog Function

4. Conclusions

In this paper, the technique of Stochastic Frontier Analysis has been applied for the estimation of technical efficiency of Czech dairy processing industry. According to the Cobb Douglas as well as Translog model with exponential distribution of error term under the assumption of heteroscedasticity, we verified that the greatest elasticity exhibits production factor material, followed by labour variable. Production factor capital has low elasticity in the case of Cobb-Douglas model and is insignificant in the case of Translog model. Production elasticities have expected sign, what is consistent with economic theory.

The results of technical efficiency estimation does not exhibit significant difference (1.3%), whereas Returns to scale has gap in 15.2%, the higher value was estimated by Cobb-Douglas model.

For comparing of the models LR test, and AIC a BIC criteria were used. According to the mentioned tests, Translog function fits data better than Cobb-Douglas function.

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POST-2013 EUROPEAN UNION COMMON AGRICULTURAL POLICY – DIRECT PAYMENTS

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Abstract: The Common Agricultural Policy is the largest domestic policy of the European Union. For more than forty years of functioning she was subjected to changes, which aim to adapt to the expectations of its Member States and the economic and social requirements. One of the instruments of the CAP, which best describes the course and evolution of the changes are the direct payments to agricultural producers. Adopted at the end of 2013 a package of new legislation also introduces changes in the functioning of direct payments. The purpose of this article is to present the most important of the changes and to attempt to assess the perspective of the overall functioning of the CAP.

Keywords: Common Agricultural Policy, direct payments, European Union

1. Introduction

Direct payments to farmers are one of the main support mechanisms which are provided under the Common Agricultural Policy. They were subject to, like the rest of CAP, numerous changes and transformations over the past 40 years. These were the changes necessitated by the changing of economic conditions and economical as well as their impact on the competitiveness of EU agriculture. Another factor was the increasing expansion of the administration associated with direct payments and attempts to reduce and relieve farmers of the duties of an administrative nature, and thereby reduce the operating costs of this kind of support. As the last of the factors that has a significant impact on the shape of the entire CAP and direct payments is accession of new Member States to the EU and their influence on the EU's internal policies. The purpose of this article is to present legal solutions relating to direct payments under the CAP, which were adopted in December 2013 and an attempt to discuss of their evaluation.

2. Objectives of the reform of direct payments

The legal basis for granting direct payments to agricultural producers in 2014-2020 is a Regulation of the European Parliament and of the Council (EU) No 1307/2013 of 17 December 2013 laying down rules for direct payments to farmers under support schemes under the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009 [1]. This regulation is not the only act in which are contained the legal framework for granting direct payments. With its application, it is necessary to refer to the provisions contained in the Regulation of the European Parliament and of the Council (EU) No 1307/2013 of 17 December 2013 on the financing of the common agricultural policy, management, and monitoring of, and repealing Council Regulation (EEC) No 352 / 78, (EC) No 165/94, (EC) No 2799/98, (EC) No 814/2000, (EC) No 1290/2005 and (EC) No 485/2008 [2] and rules adopted thereunder. Despite the repeal of that of Regulation (EC) No 73/2009, continue to apply will be provided in the rules

that have been transferred to the Regulation 1307/2013. This applies particularly to the provisions aimed at ensuring compliance with the obligations laid down in the provisions relating to direct payments, including control and application of administrative measures and administrative penalties [3]. This is due to assumptions relating to consistency with other legal instruments of the CAP, particularly in respect of its funding and control [4]. As the most important objective of the reform of mechanisms for direct support to agricultural producers has indicated a requirement of simplification and reduction of administrative burdens (point 2 of the preamble to the Regulation 1307/2013). These assumptions have to be taken into account at every stage of drafting provisions relating to direct support under the CAP.

One of the attempts to cut red tape was a proposal that, in the management of payments, Member States retreat from granting direct payments if the amount does not exceed EUR 100, or where the eligible area of the farm, which support is requested is less than one hectare. However, since the structure of agriculture in the Member States is very diverse and can vary significantly from the average structure of agriculture in the Union, Member States should enable to apply minimum thresholds that reflect of their particular situation [5].

Another purpose of the changes introduced by Regulation 1307/2013 was the avoidance a situation in which support was granted to natural persons or legal entities operating activities, the purpose of which was not or was only marginally related to agricultural activity (paragraph 10 of the Preamble to the Regulation 1307/2013). To ensure the proper allocation of the support, the Member States should not grant direct payments to certain natural and legal persons, unless they can prove that their agricultural activity is non-marginal. In practice, this means that the privileges provided to Member States on the basis of which they may refuse to grant direct payments to certain natural or legal persons in a situation where they will not be able to demonstrate that they conducted their business has no marginal. The regulations provide an exception to

these rights, in the form of granting direct payments to small farms that agricultural activity in the part-time [6]. The new shape of the CAP puts great emphasis on organic farming issues - so called greening. This is also a practical reflections in relation to direct payments, which introduce mechanisms conditioning the receipt of payment direct from the fulfillment of certain conditions related to environmental protection.

Direct Payment reform from 2013 year also includes the entrance to the new Member States. To ensure equal treatment of farmers in Bulgaria, Croatia and Romania, direct payments are covered by a gradual increase to full payment, minimum thresholds in those Member States should be based on the final amounts to be granted after the completion of the phasing of payments. The new Regulation also provides, for the purposes of the CAP support systems may change, depending on the situation. In practice, this means that beneficiaries will not be able to assume that the conditions for granting support will not change [7].

3. New mechanisms of direct payments.

3.1. Aligning of direct payments in the Member States

As part of the modification, has been taken into account the demands brought by the representatives of the new Member States that joined the EU after 2004, relating to equalize the level of direct payments to the level of force towards the countries called. "old fifteen" [8]. Agricultural producers of the indicated countries, will receive direct payments under the mechanism for phasing payments provided for in the Acts of Accession. In the case of Bulgaria and Romania, such a mechanism will continue to apply in to 2015 year, and in the case of Croatia – to 2021 year.

These countries are still allowed to grant complementary national direct payments financed from national funds. [9] In the case of Croatia (and as a supplement to the basic payment scheme in relation to Bulgaria and Romania) to the time to come to full payment.

In the case of Croatia, the authorization to grant complementary direct payments from national funds, will regulate on the basis of the European Commission implementing acts [10].

3.2. Restrictions on payments to large farms

The previously existing model of direct payments has been seen of high granting of financial support for a small number of large agricultural producers. The beneficiaries, thanks to their ability to exploit economies of scale, does not require a unitary support at the same level in order to effectively achieve the objective of income support. The ability to adapt facilitates their management at a lower level of unitary support. For this reason, Regulation 1307/2013 provides for the Member States should reduce by at least 5% of the base portion of the payment to be granted to farmers if it exceeds 150 000 EUR [11]. To achieve this objective, has been introduced prohibition of any benefit to the farmers who have artificially created the conditions to avoid its effects. Income derived by reducing payments to large beneficiaries should remain in the

Member State in which it is made and should be made available as EU support for the measures financed by the European Agricultural Fund for Rural Development.

The consequence of adopted restrictions is the need to determine, by legislative acts on the basis of this Regulation of 1307/2013, the net ceiling in order to reduce payments to farmers after the application of the reduction. To take into account the specific characteristics of CAP support granted in accordance with Regulation (EU) No 228/2013 of the European Parliament and of the Council [12] and Regulation (EU) No 229/2013 of the European Parliament and of the Council [13].

3.3. Transfer of funds between the pillars of the CAP

With the modification of the old and the introduction of new support mechanisms, Regulation 1307/2013 introduced the possibility of Member States to transfer financial resources from the ceiling for direct payments for support of the development of rural areas. They also have the ability to transfer funds from the support of the development of rural areas to the ceiling for direct payments.

In order to protect the exercise of the specified powers, the Member States have the option of a one-change decision on the transfer of funds between the two pillars of the CAP indicated. Changing the decision relates will cause effect from the year 2018, calculated as the year of submission, provided that any decision based on such review will not be associated with any reduction in the amounts allocated to rural development.

4. Direct payments and environmental protection 4.1. "Greening"

Regulation 1307/2013 provides for an obligatory element of 'greening' in direct payments, which will be supported throughout the farming practices that in the assumptions to be beneficial for the climate and the environment. In order to achieve the stated objectives, part of the national ceilings for direct payments should be designed to support the identified practices. In addition to the basic payment, the new Regulation provides for the granting of an annual payment, which may include internal unification of the Member State or region, due to the mandatory agricultural practices consistent with the objectives of policy on both the climate and the environment. These practices should rely on simple, generalized, non-contractual and annual actions that go beyond cross-compliance and are linked to agriculture such as crop diversification, maintenance of permanent grassland, including traditional orchards where fruit trees with low density cover an area of grassland, and the establishment of ecological focus areas. Equivalent practice, they were mentioned in Art. 43 of the Regulation 1307/2013 - includes the crop diversification, maintenance of existing agricultural land and maintaining farmland ecological area. This provision also defines the practice equivalent, which cover the range of practices related to farming, which result in equivalent or greater level of benefits for the climate and the environment [14]. Practice equivalent can not be subject to double financing (Article 43 paragraph 4 of Regulation 1307/2013).

In order to better achieve the objectives of "greening" and to enable the effective administration and control, such practices should be applied throughout the eligible area of the farm. The compulsory nature of these practices should also concern farmers whose holdings are wholly or partly situated in areas of the network "Natura 2000" covered by Council Directive 92/43/EEC [15] and Directive of the European Parliament and of the Council 2009/147/EC [16], or in areas covered by the Directive 2000/60/EC of the European Parliament and of the Council [17], provided that such practices are consistent with the objectives of those Directives.

4.1. Diversification of crops

Support under the provided mechanism for shall be granted if the arable land of the farmer covers 10 to 30 acres and are not entirely cultivated with crops under water for a significant part of the year or a significant part of the crop cycle, the land must be at least two different cultivation. Main growing can not occupy more than 75% of the arable land [18]. If the arable land of the farmer covers more than 30 hectares and are not entirely cultivated with crops under water for a significant part of the year or a significant part of the crop cycle, on the grounds of these must be at least three different crops. Main growing can not occupy more than 75% of the arable land, and the two main crops together can not occupy more than 95% of the arable land.

Exceptions to these rules are contained in the following paragraphs of this provision. It rules do not apply to farms, where more than 75% of arable land is used for the production of grasses or other herbaceous forage is left fallow, or a combination of these uses, provided that the arable land not covered by these applications do not exceed 30 hectares (Article 44 paragraph 3 point a). Another exception is the application of these principles is excluded in respect of holdings, of which more than 75% of the eligible area of agricultural land are permanent grassland, is used for the production of grasses or other herbaceous forage or crop growing under water for a significant part of year, or a significant part of the crop cycle, or a combination of these uses, provided that the arable land not covered by these applications do not exceed 30 hectares (Article 44 paragraph 3 point b). The last exception provided for in art. 44 paragraph 3, point c, in accordance with the principles discussed above will not apply to households in which more than 50% of the areas declared under the arable land has been declared by a farmer in his application for assistance for the previous year and, based on the comparison of geospatial applications help, all arable land is cultivated using another crop in comparison with the cultivation of the previous calendar year. It should also be noted that the above provisions will not apply to farms that are located in areas north of 62 parallel or some adjacent areas. If the arable land such farms cover more than 10 hectares of land of these must be at least two different crops, and none of these crops may not exceed 75% of arable land, unless the index is growing grasses or other herbaceous forage or fallow land.

4.2. Permanent grassland

Another instrument provided under this mechanism of greening, is the creation of permanent grassland. For this purpose Member States shall designate areas that are environmentally sensitive areas covered by Directives 92/43/EEC and 2009/147/EC, including peat soils and wetlands in those areas and that require strict protection, to meet the objectives of those Directives [19]. In order to protect environmentally valuable permanent grassland relevant national authorities may decide to designate further areas of environmentally sensitive areas located outside the areas covered by Directives 92/43/EEC and 2009/147/EC, including permanent grassland soils rich in carbon. On permanent grassland is not possible to conduct field work, and it is not possible for them to transformation.

The ratio of permanent grassland areas to the total area of agricultural land by farmers in the submitted declarations may not be less than 95% of the reference rate set by the Member States in 2015.

Ratio of permanent grassland shall be established each year on the basis of the areas declared by the farmers who are subject to obligations in the field of environmental protection. This obligation applies at the level applicable at the national, regional or subregional level appropriate. Member States may decide to apply the obligation to maintain permanent pasture at the farm level in order to ensure that the ratio of permanent pasture is not reduced by more than 5%. Member States shall notify the Commission of any such decision until 1 August 2014.

If the ratio discussed above, decreased by more than 5% at the regional or subregional level, or, where appropriate, at the national level, Member States impose duties on farm level in terms of re-conversion of land in permanent pasture in relation to those farmers who have land at their disposal converted from permanent pasture or permanent pasture in the land of another type of use in the period in the past.

5. Conclusions

Model of rules presented above is related to the use of direct payments constitute the basis for the creation of specific provisions related to this issue. According to the assumptions of the Regulation 1307/2013 will be presented by the end of 2014. Then it will be possible to closer and more detailed assessment of changes made. However right now it can be conduct a preliminary assessment of the solutions. As a step in the right direction should be evaluate the progress of work to moderate the direct payments in all Member States. Equally positive should be evaluated changes for reducing payments to farmers large. The previously existing provisions constitute a large possibility of fraud in the financial aid received. The biggest controversy over the issue "greening" and related consequences. The use of the instruments discussed in the article, may or may not have a positive impact on the environment. However, there is a very high probability that they will affect negatively the competitiveness of EU agriculture on the background of world agriculture. Any changes in this area and the

introduction of new restrictions, should be preceded by detailed analyzes. Prior to the enactment of new regulations, the European Commission should carefully examine the effects of not only ecological but also economic changes.

In summary, the changes are a step towards improving the condition of the cap and at least in part a response to criticism related to the merits and the amount incurred for her expenses. However further analysis of the changeswill be possible only after the adoption of the acts implementing the provisions discussed.

References

- [1] OJ L 347, 20.12.2013, p. 610
- [2] OJ L 347, 20.12.2013, p. 547
- [3] This applies to rules relating to cross-compliance, such as the requirements of the statutory management, standards of good agricultural and environmental monitoring and assessment of appropriate measures, as well as provisions relating to advance payments and the recovery of undue payments
- [4] It acts form the basis for the adoption in the years 2014-2015 the new legislation, relating to the issues presented. In a wider range this issue will be discussed further in the text
- [5] Paragraph 12 of the Preamble to Regulation 1307/2013. This exception also applies to the agricultural sector in the outermost regions and the smaller Aegean islands, to which the Member States must be able to decide whether you should apply any minimum threshold
- [6] Paragraph 10 of the Preamble to Regulation 1307/2013. As the basis of the exception indicated that these farmers make a direct contribution to the vitality of rural areas
- [7] This applies in particular to the development of the economic situation or budget
- [8] Wider P. Czechowski, Agricultural Law, Warsaw 2011, p. 411
- [9] *Ibidem*, p. 411-412
- [10] Paragraph 19 of the Preamble to Regulation 1307/2013. In the case mentioned regulations, will not be applied Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by Member States of the Commission's implementing powers (OJ L 55, 28.02.2011, p. 13)
- [11] In order to avoid disproportionate effects on large farms with high numbers of workers, Member States may decide to include the cost of labor in the application of this mechanism
- [12] Regulation (EU) No 228/2013 of the European Parliament and of the Council of 13 March 2013 laying down specific measures for agriculture in the outermost regions of the European Union and repealing Council Regulation (EC) No 247/2006 (OJ L 78 of 20.3.2013, p 23)
- [13] Regulation (EU) No 229/2013 of the European Parliament and of the Council of 13 March 2013 laying down specific measures for agriculture in the smaller

- Aegean islands and repealing Council Regulation (EC) No 1405/2006 (OJ L 78, 20.3. 2013, p 41)
- [14] A detailed list of practices equivalent is contained in Annex IX to Regulation 1307/2013
- [15] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p 7)
- [16] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ L 20, 26.1.2010, p 7)
- [17] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p.1)
- [18] Article 44 of the Regulation 1307/2013
- [19] Article 45 of the Regulation 1307/2013

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DESIGN OF MOBILE ROBOT BASED ON HOVERCRAFT

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Abstract: The article deals about the issue of the design mobile robot based on the hovercraft. In the introductory part of the article, the advantages and application possibilities of hovercrafts in practice are mentioned. The article contains created designs of the variant solutions of the hovercraft and using the method pairwise comparison was selected the most suitable variant. In the next part the results obtained by simulation of the movement optimal variant in program SolidWorks 2011 were compared with the calculations. The last part describes the methods of testing the maximum thrust of blowers and detailed description of the optimal variant.

Keywords: hovercraft, SolidWorks, simulation, blower, thrust

1. Introduction

Currently, robotics is concentrated of the most part on mobile robots and their full or partial autonomy. To robots are given high requirements to be able to monitor the environment in which they are located and to know in this environment to orientate or overcome obstacles.

On the basis of solutions of hovercrafts which are used in surgery or military industry, as seen in Figure 1, was designed a mobile robot based on a hovercraft to monitoring of an unknown environment, which can be dangerous and inadmissible for people. The main advantage of the mobile robot based on the hovercraft compared with other mobile robots is the ability of the movement on water [1, 2].



Figure 1: Hovercrafts

2. Variant solutions of the hovercraft

In this chapter are discussed chassis variants of the hovercraft, which contain proposed preliminary constructions of the frame hovercraft, the arrangement and the choice of drives. The control electronics needed to control velocity engines and the power supply are the same in each variant, as we can see in Figure 2. Chassis variants of the hovercraft consist of the frame, to which is attached the skirt with holes at the bottom, through which the flowing air creates pressure and thus maintains above the ground. On the frame are placed engines needed for the lift and the movement [1, 2].

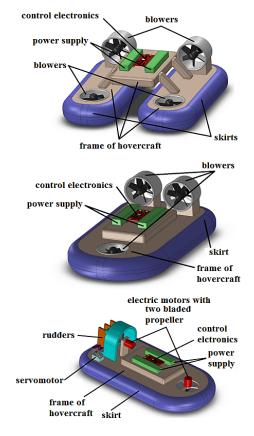


Figure 2: Variants A, B and C in SolidWorks2011 [1]

To select the optimal variant was used the method based on the pairwise comparison of variants. Each of these variants was reviewed on the basis of selected criteria and as the optimal solution was chosen variant A. Selected criteria:

- the complexity of the construction
- the drive needed to the movement forward
- the complexity of the control direction of the movement
- the drive needed to the lift
- the velocity of the movement
- the price

Subsequently the detailed design of the optimal solution was performed, what includes:

- the dimensioning of the frame hovercraft and the choice of the suitable material
- the choice of dimensions and material of the skirt
- the choice of engines
- the choice of the control electronics
- the choice of distance sensors needed to detection of obstacles
- the choice of the power supply
- the control of the hovercraft using RC kits [1, 2]

3. Detailed design of the optimal variant

This section deals about the detailed proposal of the variant A. The frame and position of the gravity center of the hovercraft were optimized using SolidWorks2011 so that the total weight was the lowest and evenly distributed. After defining the material for components of the hovercraft via SolidWorks2011 the total weight was 657, 15 g. Components are deployed in such a way that the gravity center is situated in a plane passing through the axis of the blowers needed to the lift, and thus there do not arise the bending moment, which would cause the tilting forward or backward.

For each part of the frame hovercraft was chosen the material polymethyl methacrylate PMMA (trivial name: plexiglass, acrylic glass) with thickness 3,3 mm.

Parts of the frame hovercraft made from PMMA for blowers and the control electrics are linked each other by metal parts from the metal building kit MAGICAL MODEL.

For the skirt of the hovercraft was chosen the material polyester PES with dimensions 298x182mm. At the bottom of the skirt are created pairs of holes with diameters 6, 8 and 11 mm, shown in Figure 3. Different sizes of hole diameters were chosen due to the fact that the volumetric flow rate of all holes must be the same, as seen in Figure 3 [2, 3].



Figure 3: The skirt of the hovercraft made from material PES [1]

By using of the values obtained by the simulation of the movement hovercraft were chosen suitable drives.

Setting the motion analysis:

- to the axis of blowers were placed forces representing of their thrust, as we can see in Figure 4
- setting the gravity
- setting the contact between skirts and the terrain in the shape of a cuboid with a coefficient of the friction f= 0.4
- setting time of the motion analysis for 2s [3, 4]

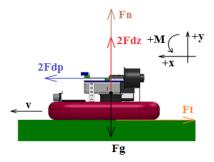


Figure 4: The movement of hovercraft on the horizontal plane [1]

At first, the movement of the hovercraft on the horizontal plane was simulated, where the thrust of the blowers needed to the lift gradually increased the same as the thrust of the blowers needed to the movement forward.

Values obtained by the simulation in SW were verified by the calculation. From Figure 4 was determined the condition of the equilibrium in the x-direction [3, 4]:

$$\sum_{i} F_{ix} = 0: 2.F_{dp} - F_{tt} - m_{v}. a = 0,$$
 (1)

and in the y-direction:

$$\sum F_{iy} = 0: F_n + 2. F_{dz} - F_g = 0, \tag{2}$$

where:

 F_{dp} [N] – is the force of blowers needed to the movement forward

 F_{dz} [N] – the force of blowers needed to the lift

 \boldsymbol{F}_{tt} [N] – calculated the friction force between skirts and the terrain

 $F_n[N]$ – the normal force

 F_g [N] – the gravity force

m_v [kg] - the total weight of the hovercraft

[m.s⁻²] – the acceleration of the hovercraft

Substituting relations for calculating the acceleration and the normal force we will get equations in the form:

$$\sum F_{ix} = 0: 2. F_{dp} - F_{tt} - m_v. \frac{v_t}{t} = 0,$$
 (3)

$$\sum F_{iy} = 0: \frac{F_{tt}}{f} + 2.F_{dz} - F_g = 0.$$
 (4)

After counting of equations (3) and (4) we will get after modification the relation to calculate the velocity of the hovercraft:

$$v_t = \frac{t}{m} \cdot (2.F_{dp} + 2.F_{dz} \cdot f - F_g \cdot f).$$
 (5)

From the equation (3) after editing we will get the relation to calculate the friction force:

$$F_{tt} = 2.F_{dp} - m_v \cdot \frac{v_t}{t}.$$
 (6)

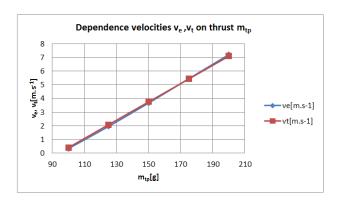


Figure 5: Graph of dependence velocities on thrust [1]

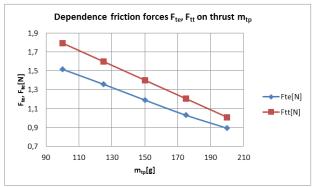


Figure 6: Graph of dependence friction forces on thrust
[1]

After termination of this simulation again the movement was simulated but on inclined plane, where the thrust of all blowers was set to the constant value.

Again like in the previous case, we derived the equations for calculating the velocity and the friction force. The condition of the equilibrium in the x-direction [3]:

$$\sum F_{ix} = 0: 2. F_{dp} - F_{tt} - F_g. sin\alpha - m_v. a = 0, \quad (7)$$

and in the y-direction:

$$\sum_{i} F_{iy} = 0: F_n + 2.F_{dz} - F_g.\cos\alpha = 0.$$
 (8)

After counting of equations (7) and (8) and applying relations for the acceleration and the normal force we will get after editing the relation to calculate the velocity of the hovercraft:

$$v_t = \frac{t}{m} \cdot \left(2.F_{dp} + 2.F_{dz} \cdot f - F_g \cdot \sin\alpha - F_g \cdot \cos\alpha \cdot f \right). \tag{9}$$

From the equation (8) after editing we will obtain relation to calculate the friction force:

$$F_{tt} = 2.F_{dp} - F_g.\sin\alpha - m_v.\frac{v_t}{t}.$$
 (10)

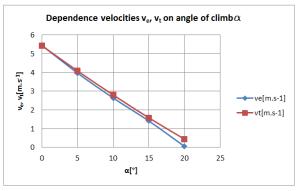


Figure 7: Graph of dependence velocities on angle of climb [1]

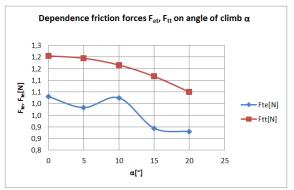


Figure 8: Graph of dependence friction forces on angle of climb [1]

On previous graphs we can see that values of velocities obtained by the simulation are more identical with calculated values compared with frictional forces. The deviation between the measured and calculated friction forces can be caused by, that courses of friction forces had the jerky course and were always taken the mean values. In program SolidWorks2011 is possible to set the dive between materials, the number of calculations per second and the precision contact, where these settings have an impact on the jerkiness of graphs [4, 5].

After the simulation of the hovercraft movement, from the measured and calculated values follow, that drives are chosen with such a thrust that hovercraft was lightened about 50% of the total weight, what is around 329 g on two blowers and the remaining 50% for the blowers needed to the movement forward and also was envisaged with also some reserve.

For the lift and the movement forward of the hovercraft were selected blowers of type GWS 40B 6000KV, which have a built-in three-phase brushless motor with revolutions KV=6000 (6000 revolutions per minute for 1V). DC battery voltage is necessary to transform to three alternating voltage with phase displacement 120° , which will be fed into the blowers. This transformation of the DC voltage to AC voltage allow regulators of brushless engines. For our blowers were selected regulators Xcontroller XC22-L.

These blowers were tested using two methods to verify their maximum thrust which the manufacturer indicates.

The first method of testing consists of the measurement deformation spring of the dynamometer which deforms in dependence on size of the thrust blower and using relation this deformation is recalculated on the thrust, shown in Figure 9 [1, 3].

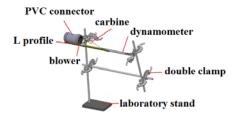


Figure 9: Testing of the maximum thrust via the deformation of the spring in SolidWorks 2011[1]

The advantage of the second method of testing is the possibility to obtain the values of the thrust blowers directly on the digital scale without any calculations as seen in Figure 10.

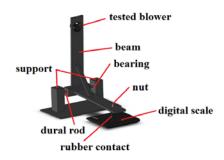


Figure 10: Testing of the maximum thrust via the wood beam in the shape letter L in SolidWorks 2011[1]

At testing by both methods we obtained smaller value of the thrust about 18% compared with value of the thrust in the datasheet of the blower.

Possibility of the manual setting of the lift allows to customize the lift height to given terrain and the lift is set using the logarithmic potentiometers. Position of the runner on logarithmic potentiometer answers the revolutions of blower which controls microcontroller BasicATOM Pro 28-M. These potentiometers are connected from BEC connector from the regulators. Other function of the microcontroller is to turn off these blowers at given distance before the obstacle. The microcontroller obtains information about the distance of obstacle via the ultrasonic distance sensors HC-SR04. The blowers needed to the movement to forward are controlled using 4 channel RC kits REMOTECONTROLLER 35MHz FM with receiver JETI model REX 4 plus, where the receiver is also connected directly from BEC connector.

The microcontroller and ultrasonic distance sensors make use of the electric energy from BEC circuits that contain controllers Xcontroller XC22-L. These circuits from voltage propulsion batteries produce about 5V voltage. The battery was chosen the type of Li-Po Akku XPower 200-3S EC with capacity of 2200 mAh and voltage 11,1 V [1, 3, 5].





Figure 11: Hovercraft in SolidWorks 2011 and real model of hovercraft [1]

6. Conclusions

In this issue in the large extent was used SolidWorks2011 on the creation of three preliminary proposals of the frame of the hovercraft. For the optimal variant was done complete proposal, optimization, motion analysis and the values obtained by simulation were verified by calculation and in the end this variant was implemented.

Acknowledgements

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VALVE EXPLOITING PRINCIPLE OF THE SIDE-CHANNEL TURBINE

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Abstract: Reduction valves are the source of hydraulic losses. The aim is to replace them by a side-channel turbine. With that in mind, hydraulic losses can be replaced by a production of electrical energy at comparable characteristics of the valve and the turbine. The basis for the design is loss characteristics of the valve. The aim of this work is study of the turbine with side-channel turbine. CFD (computational fluid dynamics) simulation is performed and it is compared with the measurement.

Keywords: valve, turbine, side-channel turbine, regenerative turbine, peripheral turbine

1. Introduction

Motivation – at the pumped-storage power plant the water for cooling is taken directly from the penstock (Fig. 1). Water taken for cooling is not used to produce electrical energy. During throttling in the valve, part of the energy goes to a cooling water in a form of heat and warms it up. The water pressure is throttled from 8,5 bars to 4 bars. With this comes the potential of energetic utilization. The flow is 0,145 m³/s. The possibility of regulation of flow to 0,08 m³/s is required. Another utilization can be in the water mains, energetics , chemical processes or in a place where there comes to conversion of energy into heat due to throttling. [2]



Fig. 1: Reduction valve in cooling circuit of power plant

This article describes the study of special low specific speed side-channel turbine. This type of turbine should replace reduction valves, which are the source of losses. The design is based on the resistance characteristics of the valve. This way we could reach up to 50% recuperation of supplied energy. Despite these are only small sources of energy, in future they can be widely utilized for the production of electrical energy in the processes where there comes to conversion of mechanical energy into heat due to throttling.

Other parts deal with discovering of the best hydraulical shape of the impeller for a design and production of the side-channel turbine of closed type. The main problem is coping with the calculation of the turbine proportions, because it is a hydraulic machine where the theoretical part is not yet fully prepared as it is in case of common type of turbines and it could come to happen that the losses reached disproportionately high values. We will create a small-sized prototype of a model of turbine which we will

be able to measure in the laboratory of Victor Kaplan Dept. of Fluid Engineering – BUT FME EI and compare it with CFD simulation.

Side-channel turbines (Fig. 2) fall into category of reaction turbines. They are intended for small discharges and middle heads. Work area is within specific revolutions_ns = $4 \div 40$ 1/min. Turbine can process only a part of the head. The main disadvantage is low efficiency, which is usually within the range from 20 to 50%. These machines find their use because of the fact that reaching specific revolutions n_s < 40 1/min with Francis' turbines at high efficiency is quite problematic. Under these circumstances, counteracting vortex starts to occur in channels between blades of the impeller. This causes the decrease of efficiency so it can even get below 40%. In a situation like this, it might be worth using side-channel turbine, because they have higher efficiency than the low specific speed Francis' turbines. Turbines are useful for regulation because of the flat curve of efficiency in the area of optimum point and linear dependency of flow on revolutions. [1]

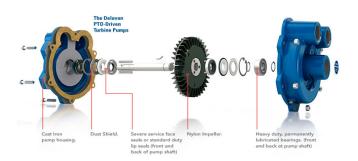


Fig. 2: Side-channel turbine

2. Calculation of the form of turbine impeller 2.1 Steady simulation

Designed forms of the impellers are based on already existing designs of pumps. The aim of the calculation is to find and compare their parameters. There are 4 designs of the impellers calculated (Fig. 3). One of them will be chosen, which will reach the highest value of efficiency. Every impeller has 20 blades. Inlet and outlet in the radial

direction. Angle of the side-channel is 330°. Inlet and outlet branch is placed radially. [3]

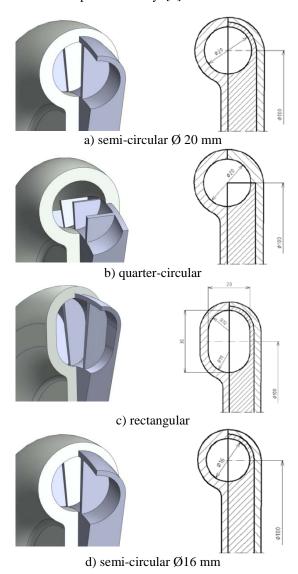


Fig. 3: Meridial cut of turbines

When calculating the points of characteristics, changing input speed was taken into account. The speed was changing in the range from 0 to 10 m/s. Then the points were evaluated and the optimum of the regime were found for the values of revolutions 500, 750, 1500 and 3000 1/min. Steady calculation of flowing in the turbine interior was done in the commercial program ANSYS Fluent with the mesh exported from Gambit. The flowing fluid is water. Model of turbulence k-epsilon realizable with nonequilibrium wall functions. Solver was at first set to 1st order accuracy momentum and turbulent members. After a convergence it was set to 2nd order and then converged again. Before the evaluation, the value of wall y+ was monitored if it is in reasonable measures. The Calculation was done only for one turn of the impeller. In case of sidechannel machines, the vortex is formed during the flowing of the fluid through the impeller. That is why for the basic design, the calculation with only one turn of the impeller is sufficient for the study of vortex. Each design is evaluated and hydraulically best solution is chosen. The design a (Fig. 4) reached the best parameters. Results are carried out in dependency on the nominal speed n_{11} .

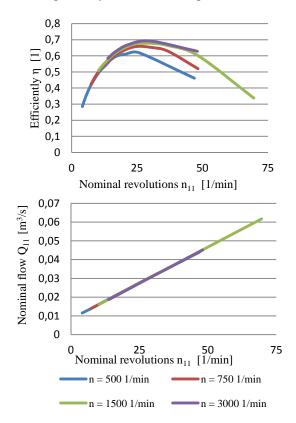


Fig. 4: The graph of efficiency η and nominal flow Q_{11} on nominal revolutions n_{11} at steady simulation (n means revolution of impeller)

Dependency of the nominal flow Q_{11} on the nominal speed n_{11} is linear. Maximal efficiency $\eta=67,79\%$ reached during the nominal speed $n_{11}=30,1$ min⁻¹. The head needed is H=24,84 m. Curve of efficiency has flat running in the zone of optimal value.

2.2 Unsteady simulation with rotating blade cascade

Another possibility is unsteady simulation with the rotating blade cascade. In this type of simulation, the calculated values are dependent on time step. The length of step equals time it takes for the impeller to turn by 1°. After 20 iterations, the calculated values are converted on interface dividing rotating blade cascade and stator. This method of a simulation is often called "sliding mesh". This way we calculate the turn of the impeller approximately by 5 blades. Thanks to this method it is possible to determine even pressure and discharge pulsations and other phenomena dependent on time. For comparing the results, values achieved from the unsteady simulation seem to be the most suitable choice. Width of the lateral joint between impeller and the turbine cache is 0,25 mm. Again, the calculation does not cover mechanical losses caused by the friction in bearings and glands.

The form of computing grid represents real interior of the designed turbine. The turbine is axisymmetric, so we will calculate only one half. Only the inlet and outlet piping is simplified. It does not have circular cross section but quadrangular, because of better shape continuity to the side channel.

Because the turbine is based on a massive vortex inside the work area, it is good to compare achieved results with the unsteady simulation with losses. During the evaluation not only the maximal efficiency will be monitored, but also if there is a vortex forming in the side channel.

On the pathlines (Fig. 5) is apparent that the fluid circulates through the impeller and intensive formation of vortex occurs. The vortex is formed along the whole length of the channel. Molecule of the fluid goes over approximately 3 blades of the impeller during one swirl. The pathline connecting inlet with outlet represents leakage flow. In the representation of the vectors of relative velocity in the half of the length of the channel, we can see vortex near the rotating impeller. In other cross-sections the vortex has similar shape. Velocities to the right from core of the vortex are almost constant. Other possibilities to prove the existence of vortex is tracing of vorticity.

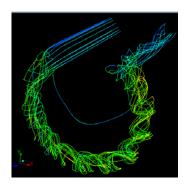


Fig. 5: Pathlines in turbine interior

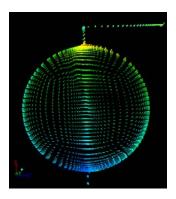


Fig. 6: Vectors of relative velocity

During unsteady simulation, the turbine reached the best parameters of efficiency $\eta=62,3\%$ at nominal revolutions $n_{11}=54,53$ min⁻¹. The efficiency curve is flat around the optima (Fig. 7). Dependency of the nominal flow Q_{11} on nominal revolutions n_{11} is again almost linear. Revolutions of impeller are 1500 1/min.

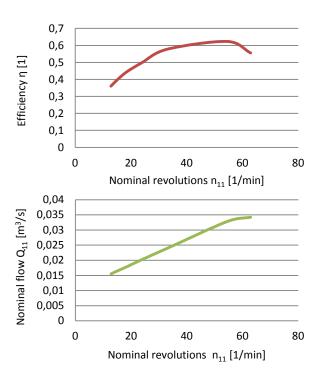


Fig. 7: The graph of efficiency η and nominal flow Q_{11} on nominal revolutions n_{11} at unsteady simulation

3. Design of model side-channel turbine

Here we will use our knowledge achieved in previous calculations and we will design a model of side-channel turbine of hydraulic profile with semicircular channel and a cross-section of impeller (Fig. 8 and 9). Model dimensions will be intentionally small for us to be able to create the model and then perform measurement.



Fig. 8: Model of side-channel turbine

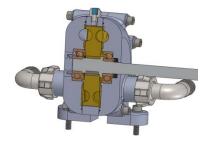


Fig. 9: Cut of turbine

3. Measurement

The unit of the measured model was powered by an electrical motor with an option of speed regulation between $0-1750\ 1/\mathrm{min}$. To prevent a reverse flow in the opposite channel, the discharge piping was split in two separate branches (Fig.11). On the shaft side the channel is marked B, on the left side of the model the channel is marked A (Fig. 10). The flow was measured in each branch separately. The torque was divided in the same ratio as the ratio of respective flows. The efficiency was calculated for each channel separately.



Fig. 10: Torque transducers conected between turbine and motor



Fig. 11: Measurement circuit for turbine with divided suction

Table 1 Value of the optimum operating point of channel B

Quantity	Symbol	Value
nominal revolutions	n ₁₁	24,5 min ⁻¹
head	Н	20 m
nominal flow	Q ₁₁	$0.039 \text{ m}^3/\text{s}$
nominal power	P ₁₁	72,48 W
efficiency	η	18,9 %

The dependence of nominal flow Q_{11} on nominal speed n_{11} is almost linear throughout the measurement. Axial vibrations of the impeller occurred during the measurement and they resulted in pressure and discharge pulsations which affected adversely the resulting values. This phenomenon can be seen in all the graph dependencies. The values of B channel are always higher than those of A channel. They should be the same. The measurement characteristics at H=20 m should have higher values than at H=10 m, but for A channel they have lower values.

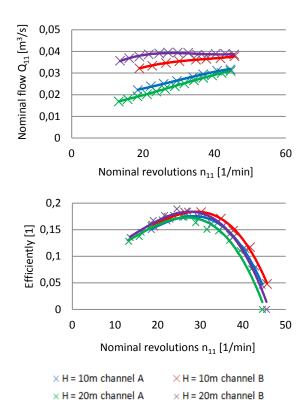


Fig. 12: The graph of efficiency η and nominal flow Q_{11} on nominal revolutions n_{11}

5. Conclusions

The measurement did not prove the previous assumptions obtained by simulations. An unsuitable model of turbulence might have been chosen for simulations. The dependence of nominal flow $Q_{11}\,$ on nominal revolutions $n_{11}\,$ is almost linear throughout the measurement. Maximum efficiency $\eta=18,9\%$ is obtained at nominal revolutions $n_{11}=24,5$ 1/min and head H=20 m. The swirl occurring in the side channel cannot be accounted for impartially without measuring the velocity profile inside the unit. To prevent deformations which affect the properties of the unit, the turbine should be made of metal. Then it would be possible to compare impartially the results of measurement with the values obtained by the calculations.

Acknowledgements

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SIMULATION OF PNEUMATIC MUSCLE ACTUATOR DYNAMICS

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Abstract: Pneumatic muscle actuator consisting of two artificial muscles in antagonistic connection is highly non-linear system due to non-linear muscle characteristics. They have big influence on the actuator dynamics. Three simulation models using different muscle models were designed and they were simulated in two ways: using only different control signals for operation of solenoid valves and using PD controller and PWM signals in closed control loop.

Keywords: pneumatic actuator, muscle model, dynamics simulation

1. Introduction

Pneumatic artificial muscles (PAMs) belong to nonconventional actuators with properties similar to biological muscles. These actuators are characterized by several appealing characteristics such as advantageous power/weight ratio, natural compliance, cleanness and structural simplicity [1,2,3]. They have become a subject of interest for various biorobotic and biomedical applications, where such their characteristics could be of great importance [4,5,6]. But there are also their deficiencies such as nonlinear character, hysteresis, as well as other issues associated with pneumatic systems in general. From the control point of view, PAMs are nonlinear and hysteretic devices due to their specific construction [7,8,9]. They consist of a rubber tube with nonextensible braiding made of various materials (e.g. nylon). In order to design a control system for pneumatic muscle actuator (PMA), the models capturing its salient characteristics should be developed.

2. Pneumatic muscle actuator

PMA as shown in Figure 1 is designed as a pair of two pneumatic artificial muscles in antagonistic configuration in order to generate a retraction force or rotary movement [10,11,12]. Two artificial muscles act against each other with their tensile forces (F_1, F_2) which are transmitted using the chain mechanism. To operate one muscle a pair of ON/OFF solenoid valves (for filling and for discharging) is needed. Compressed air in the form of pressure pulses flows through the inlet solenoid valve and thereby the resulting pressure (p_1, p_2) in the muscle is a manipulated variable. Discharge of the muscle is done using the corresponding outlet solenoid valve and throttle valve, which is used to adjust the actuator dynamics. The resulting position of the actuator is given by an angle of rotation arm (φ) and it is determined by a balance of both tensile forces depending on the air pressure in each artificial muscles and load (m) [13,14].

Based on the geometric description of PAM and theoretical analysis of PMA function the block diagram of PMA has been proposed [15], which is the basis for creating the simulation model in Matlab / Simulink environment.

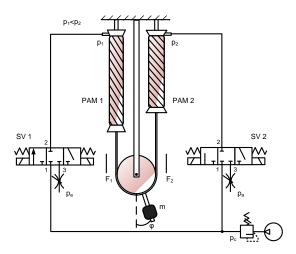


Figure 1: Scheme of PMA

2.1 PMA simulation model using simple geometric muscle model

The simplest model describing the PAM behavior is the simple geometric muscle model [15,16] based on the fact that the expansion of the outer braid muscle is very small, so the muscle volume will depend only on its length, i.e. PAM is modeled as a perfect cylinder. Then for the muscle volume can be written:

$$V = \frac{b^2 \cdot h_0 \cdot (1 - \kappa) - h_0^3 \cdot (1 - \kappa)^3}{4 \cdot \pi \cdot N^3}$$
 (1)

where $\kappa =$ muscle contraction, b, N = muscle geometric constants and $h_0 =$ initial length of the muscle.

The actual pressure in the muscle is determined using Bernoulli equation and Boyle-Mariotte law and it is described by the differential equation:

$$\dot{P} = \frac{P_a \cdot \dot{V}_a - P \cdot \dot{V}}{V} \tag{2}$$

where P_a = ambient pressure, \dot{V}_a = volume flow rate of compressed air into/from the muscle and \dot{V} = time derivative of the muscle volume.

Simulation scheme of PMA based on simple geometric muscle model as shown in Figure 2 was created in Matlab/Simulink environment. Relations for the creation of this model are described in more detail in the author work [16].

2.2 PMA simulation model using advanced geometric muscle model

An advanced geometrical muscles model is a similar model as a simple muscle model, and in addition, assumed that the artificial muscle is elliptical cylinder. Then the muscle volume can be varied depending on the radius and the length of the artificial muscles [16,17]. For the muscle volume can be written:

$$V = \frac{\pi \cdot h \cdot [3d_1^2 + 4d_1d_2(h) + 8d_2^2(h)]}{60}$$
 (3)

where h = actual length of the muscle, $d_1 =$ diameter of the fitting and $d_2 =$ diameter in the middle of the muscle.

The actual pressure in the muscle is determined using Boyle-Gay Lussac's law and it is described by the differential equation:

$$\dot{P} = \frac{R_S \cdot T \cdot \dot{V_a} - P \cdot \left(\frac{\partial V}{\partial h} + \frac{\partial V}{\partial d_2} \frac{\partial d_2}{\partial h}\right) \frac{\partial h}{\partial t}}{V} \tag{4}$$

where R_S = specific gas constant of air and T = absolute temperature.

Simulation scheme of PMA based on advanced geometric muscle model as shown in Figure 3 was also created in Matlab/Simulink environment and bases for its creation are described in more detail in the author works [17].

2.3 PMA simulation model using modified Hill's muscle model

Modified Hill's muscle model is a phenomenological model which consists of a variable damper and a variable spring connected in parallel. This model uses an engineering approach to muscle modeling and it does not include internal structure and function of muscle. Simulation scheme of PMA based on modified Hill's muscle model as shown in Figure 4 was also created in Matlab/Simulink environment and it is described in more detail in the author works [18,19].

The pressure in pneumatic muscle can be defined similarly as in the simple geometric muscle model by (2); therefore it is necessary to express the muscle volume and its time derivative. The artificial muscle is regarded as a cylinder whose volume depends on the geometric parameters of the muscle. Due to the fact that the muscle is terminated with metal endings the resulting relation for muscle volume is relatively complex but it can be approximated with good accuracy using a third degree polynomial in the form:

$$V = a \cdot \kappa^3 + b \cdot \kappa^2 + c \cdot \kappa + d \tag{5}$$

where a, b, c, d = polynomial coefficient.

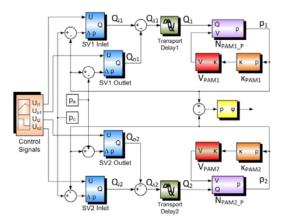


Figure 2: Simulation scheme of PMA based on simple geometric muscle model

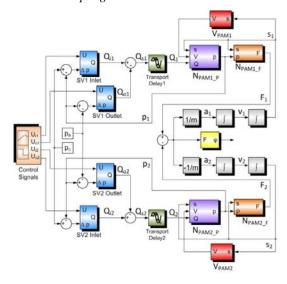


Figure 3: Simulation scheme of PMA based on advanced geometric muscle model

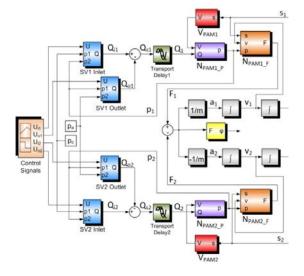


Figure 4: Simulation scheme of PMA based on modified Hill's muscle model

3 Conclusions and results

The designed nonlinear model with different PMA models were simulated in two ways: using only different control signals for operation of solenoid valves and using PD controller and PWM signals in closed control loop.

The strategy chosen for the simulation of PMA using only control signal for operation of valves assumed the control of a single muscle only in one half of the arm movement range. Therefore solenoid valves are controlled for simulation as shown in Figure 5 where signal 1 is valid for the first muscle inflation, signal 2 is valid for the first muscle deflation, signal 3 is valid for the second muscle inflation and signal 4 is valid for the second muscle deflation. Responses were measured over the period 16 s. The time step of numerical solution was set to a constant 0.003 s.

Dynamic responses of actuator arm position obtained by simulation of the PMA models using different muscle model is shown in Figure 6, where SGMM is simple geometric muscle model, AGMM is advanced geometric muscle model and MHMM is modified Hill's muscle model. There are some differences between obtained simulated responses in transition and also steady state. The biggest difference is for simple geometric muscle model and in steady-state there are slight differences for all models. Despite the number of simplifications in the mechanical and pneumatic part of PMA presented models similarly capture the dynamics of actuator arm.

In the second method for simulation of PMA the closed control loop with discrete PD controller as shown in Figure 7 (integration component was not used due to the integration nature of the plant) with gains set to $K_P = 0.058$ and $K_D = 0.001$ was used [20,21,22]. The total control effort of the PMA is a result of the PD controller (in the form of u_{PD} signal). Time control sequence was set to 60 s.

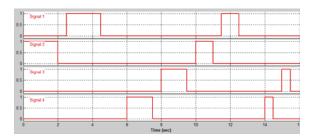


Figure 5: Valve control signal configuration

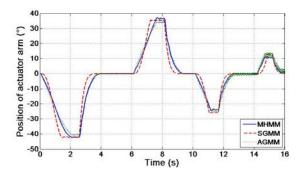


Figure 6: Position of actuator arm - time graphs of models

PWM block converts manipulated variable from PD controller to four PWM signals used for operation of solenoid valves [23]. The frequency of PWM signals was designed according to maximal switching frequency 200 Hz of considered solenoid valves. The time step of simulation was also set to a constant 0.003 s.

A pulse of desired arm angle position used for control closed loop is shown in Figure 8. This signal consisted of several steps in desired value of arm angle with alternating positive and negative values in different decrements to better evaluate the arm movement range.

Dynamic responses of actuator arm position obtained by simulation of the PMA models in closed control loop are shown in Figure 9. It is clear from the figure that the best simulation results were obtained for PMA model using simple geometric muscle model (SGMM). This may be due to the fact that this model is less non-linear (it does not include all muscle nonlinearities). For more non-linear models (MHMM and AGMM) the used PD controller is unable to cope with the actuator non-linearity and asymmetry.

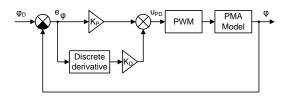


Figure 7: Closed control loop system of PMA with PD controller: K_P - proportional gain, K_D - discrete derivative gain, u_{PD} - PD controller control signal, PWM - pulse width modulation, φ_D - desired arm angle, $e\varphi$ - control error, φ - actual arm angle

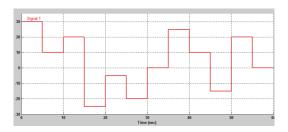


Figure 8: Desired arm angle for closed control loop

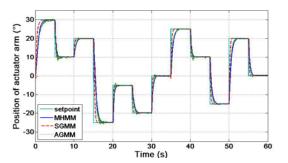


Figure 9: Position of actuator arm for closed control loop **Acknowledgements**

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COMPARISON OF POSSIBILITIES FOR PROCESS CONTROL USING BASIC NEURAL STRUCTURES

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Abstract: The paper deals with the possibilities for control and optimization of the technological process of aluminium anodic oxidation using the Design of Experiments (DoE) to evaluate and monitor the influence of the input factors on the resulting AAO (anodic aluminium oxide) film thickness. It also compares different neural units to define relationship between individual input factors and their mutual interactions on the resulting AAO film thickness at the monitored current density $6.00 \text{ A} \cdot \text{dm}^{-2}$.

Keywords: anodizing, surface treatment, artificial intelligence, neural networks

1. Introduction

Pure aluminium and its alloys are highly regarded from technical, technological and economic standpoint as weight reducing materials [1], [2] in automotive and aerospace industries, where light and sturdy constructions are preferred. Use of these materials for moving parts presents a significant problem due to low wear and tear resistance. To improve these tribological properties [3], the surface of such parts is treated by a process of anodic oxidation, which also increases corrosion Thickness of created AAO layer is among the main indicators of corrosion resistance, and thus life expectancy of profiles on which this treatment was applied. These are the reasons why anodic oxidation of aluminium is the subject of many scientific researches. For example, main principle of AAO layer creation was observed by Mingliang, Yinong, Hong [4], speed at which is layer created was observed by Singh, Golovin, Aranson, Vinokur [5], while structure of the layer was described by Meng, Masatoshi, Himendra [6]. Design of experiment DoE is among the most basic tools which allow to observe an influence of input variable on output [7]. On the other hand, use of artificial intelligence (neural network theory) during the evaluation of experiments results has its merits for its higher accuracy and speed of prediction, as compared to classic statistical evaluation methods [8],[9].

2. Materials and Methods

Alloy sample EN AW 1050A with dimensions 101.00 x 70.00 x 1.00 mm was degreased in 38.00 % solution of NaOH at temperature 55.00-60.00 °C for 2.00 min, stained in 40,00 % solution of NaOH at temperature 45.00-50.00 °C for 0,50 min and etched (4.00 % HNO₃) at temperature 18.00-24.00 °C for 1.00 min. Electrolyte solution for anodic oxidation was made from sulphuric acid p.a., oxalic acid p.a. and aluminium oxide p.a. Experiment used central composite plan for six factors and incorporated operating conditions for anodic oxidation (electrolyte temperature, connected voltage levels, oxidation time). For conversion between natural and coded scale, see Table 1.

Table 1 Conversion table for factor levels – from natural scale to coded

Factor label		Factor level					
Coded scale	Natural scale	-2.37	-1	0	+1	+2,37	
x_1	H_2SO_4 [g.l ⁻¹]	33.51	130.00	200.00	270.00	366.49	
x_2	C_2H2O_4 [g.l ⁻¹]	1.49	7.00	11.00	15.00	20.51	
x_3	Al^{3+} [g.l ⁻¹]	0.18	5.00	8.50	12.00	16.82	
x_4	<i>T</i> [°C]	-1.78	12.00	22.00	32.00	45.78	
<i>x</i> ₅	t [min]	6.22	20.00	30.00	40.00	53.78	
x_6	U [V]	5.24	8.00	10.00	12.00	14.76	

After the completion of oxidation process, the surface of each sample was marked with nine points, on which the layer thickness was measured. Distance of these points from samples lower edge was 5.00 mm, 10.00 mm, 15.00 mm, 20.00 mm, 25.00 mm, 30.00 mm, 35.00 mm, 40.00 mm a 45.00 mm. Distance from left edge was calculated so the current density for each point was 6.00 A·dm⁻².

3. Results and Discussion

Influence of input factors on resulting AAO layer thickness was analysed by four modifications of HONU [10] neural unit, which used gradient descent iterative optimisation algorithm. These four computational models use:

- 1. simple linear combination of input factors,
- linear combination of input factors and their mutual interactions.
- 3. simple linear-quadratic combination of input factors,
- linear-quadratic combination of input factors and their mutual interactions.

Neural units learning process using gradient descent algorithm is described by equations (1, 2, 3 and 7) - linear neural unit (1st Order HONU [10]) was used as an example. It is a process in which calculation of weights (4) for individual input factors is based on difference between the actual (measured) value and the calculated value of output variable (3).

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$$\mathbf{w}_i = \mathbf{w}_i + \Delta \mathbf{w}_i \tag{1}$$

where, w $_i$ = input weight, Δw_i = weight update.

$$\Delta w_i = \mu \cdot e \cdot \frac{\partial y_{vk}}{\partial w_i} \tag{2}$$

where, μ = learning rate, e=error of prediction.

$$e = y_{rk} - y_{vk} \tag{3}$$

where, y_{rk} = measured thickness, y_{vk} = calculated thickness.

$$\mathbf{w} = \begin{bmatrix} w_0 & w_1 & \dots & w_i \end{bmatrix} \tag{4}$$

where, $\mathbf{w} = \text{weight vector}$.

$$\mathbf{X} = \begin{bmatrix} x_{0,1} & x_{1,1} & \dots & x_{i,1} \\ x_{0,2} & x_{1,2} & \dots & x_{i,2} \\ \vdots & \vdots & \vdots & \vdots \\ x_{0,k} & x_{1,k} & \dots & x_{i,k} \end{bmatrix}$$
 (5)

where, \mathbf{X} = input matrix, x_i = input factor or factors mutual combination, k = sample number.

$$\mathbf{y_r} = \begin{bmatrix} y_{r1} \\ y_{r2} \\ \vdots \\ y_{rk} \end{bmatrix}$$
 (6)

where, y_r = measured thickness vector.

$$\mathbf{y}_{\mathbf{v}} = \mathbf{X} \cdot \mathbf{w}^{T} \tag{7}$$

where, $y_v =$ calculated thickness vector.

In case of linear calculation model, the input matrix X (5) contains plan of the experiment (values for factors x_1 - x_6). In case of a more complex calculation model (linear model with interactions, quadratic model and quadratic model with interactions), the input matrix X also contains squares of individual factors or product of these factors, therefore, amount of weights for each calculation model differs. Furthermore, input matrix **X** also contains factor x_0 , which represents the absolute member for the calculation and it is always set to 1. The extent to which this factor manifests during the calculation is represented by weight w_0 .

During the composition of individual computational models, y_r value was set to a value measured on measurement points 10.00 mm, 20.00 mm, 30.00 mm and 40.00 mm from bottom edge of the sample in the area with current density. During the training process the neural unit adapted weights of individual factors so the calculated value converged to average value of AAO layer thickness.

When the learning process has completed, prediction models were created, based on their corresponding input factors: simple linear, linear with mutual interactions, simple quadratic and quadratic with mutual interactions. Calculation principles for neural unit output and weight adaptation are in accord with equations (1-7). However, matrix X and weight vector w contain corresponding polynomial members and weights in vector (1-D) form, same as 2-D matrix of weights [11].

Accuracy of these calculations can be seen on figures Figure 1, Figure 2, Figure 3 and Figure 4, , which show differences between measured and calculated value of AAO layer thickness after the learning process. Resulting residual values are distributed around Gauss curve, which is plotted on the line. It is evident from figures that simple linear model and linear model with interactions is much less accurate as compared to simple quadratic model and quadratic model with interactions. Some of the residual values distributed around the Gauss curve are too far off to be within the tolerance levels of computational model. Most of these extreme residual values are created by simple linear model (Figure 1). Gradual increase in input parameters also causes a decrease in number of such residual values and almost all of them lie in close proximity to the Gauss curve -within tolerance range (Figure 4). This fact is confirmed by table (Table 2.), which shows sum of squares for individual computational model errors during the training process and during the verification process. Verification was conducted separately for thickness values on measure points 5.00 mm, 15.00 mm, 25.00 mm, 35.00 mm a 45.00 mm from the bottom edge of the sample in the area with current density 6.00 A.dm⁻². As shown in Table 2, sum of squared errors was reduced to half with use of quadratic computational model with interactions, compared to sum of error squares using simple linear computational model.

Table 2 Calculation error for individual models

	SSE	SSE (verification)					
Model	(training)	5.00	15.00	25.00	35.00	45.00	
	(training)	[mm]	[mm]	[mm]	[mm]	[mm]	
L	530.05	590.68	561.47	549.48	540.42	492.52	
L+I	449.81	502.87	486.62	468.03	459.58	423.60	
Q	336.53	379.02	373.08	380.37	342.86	316.36	
Q+I	256.97	285.90	293.61	299.36	269.68	254.48	

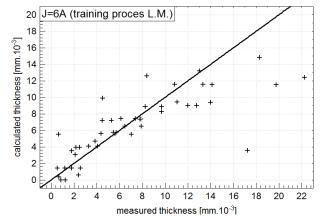


Figure 1: Comparison of measured and calcualted layer thickness using linear model

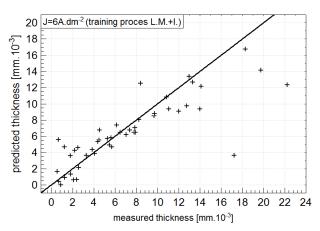


Figure 2: Comparison of measured and calcualted layer thickness using linear model with interactions

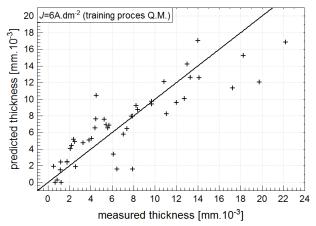


Figure 3: Comparison of measured and calculated layer thickness using quadratic model

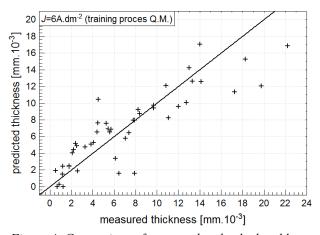


Figure 4: Comparison of measured and calculated layer thickness using quadratic model with interactions

Verification process for individual computational models is shown on Figure 5, Figure 6, Figure 7 and Figure 8. For illustration, values of created AAO layer thickness were used, as measured on points 25.00 mm from bottom edge of the sample with current density 6.00 A·dm⁻². Figures show an obvious calculation error that occurred due to imperfect learning of neural unit. From a total of 46

samples, the calculated value of layer thickness is in $\pm 2.00 \text{ mm } 10^{-3} \text{ tolerance range for 29 samples using}$ simple linear model, 32 samples using linear model with interactions, 29 samples using simple linear-quadratic model and 31 samples using linear-quadratic model with interactions. Therefore, computational models that include interactions between individual factors in their calculations are generally more accurate, because they use larger number of values and thus have greater variability. Also, when comparing linear model with interactions (Figure 6. 6) and linear-quadratic model with linear interactions, there is an evident decrease in maximal absolute error from 13.95 mm·10⁻³ using linear model with interactions to 6.99 mm·10⁻³ using linear-quadratic model with interactions - this represents decrease in maximal calculation error by almost a half. This again shows that linear-quadratic model with linear interactions is the most accurate computational model from those studied. It is however important to take into account the fact, that this computational model does not predict all values from toleration range $\pm 2.00 \text{ mm} \cdot 10^{-3}$, and thus use of this model for control of anodic oxidation could bring the risk of reduced corrosion resistance.

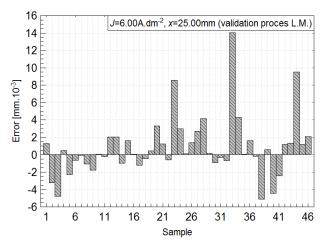


Figure 5: Error of linear model during the verification precess

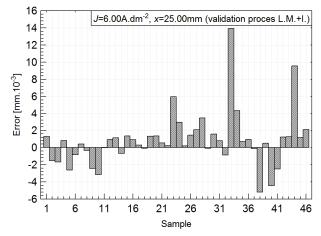


Figure 6: Error of linear model with interactions during the verification process

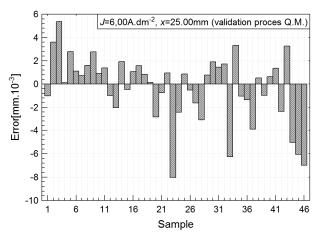


Figure 7: Error of quadratic model during the verification process

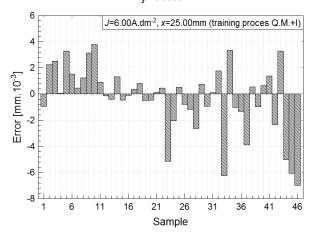


Figure 8: Error of quadratic model with interactions during the verification process

4. Conclusion

As shown in this research, usage of neural units based on gradient descent optimization algorithm gives a large spectrum of options for control of anodic oxidation of aluminium, since it can very quickly and simply describe behaviour of studied system. However, use of this algorithm also brings with it 2 significant problems:

- 1. It is necessary to create a preliminary computational model on which neural unit will base its learning process and subsequently control it.
- 2. Resulting computational model is not necessarily able to sufficiently describe controlled process and thus increases the probability for failed product.

Further research in this field should address increase in computational models prediction accuracy and thus ensure a reliable execution of production process.

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ON THE CROSS-CORRELATION PROPERTIES OF COMPLETE COMPLEMENTARY CODES OF DIFFERENT FAMILIES (N,N,N^2) AND (N,N,N)

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Abstract: Invention of Complete Complementary Codes (CCC) attracted attention of researchers thanks to their ideal correlation properties. Since first mention of those codes in 1949 the theory of CCC was further developed including also generation algorithms which were published recently. Due to ideal auto- and cross-correlation properties of these codes, limitations are given for their construction. In field of telecommunications, namely in proposed MC-CDMA architecture, at least one signature has to be assigned to one user for transmission. Thus, maximal number of concurrently communicating users is limited by maximal number of signatures constructed by given algorithm. To increase this number various approaches were designed. One of those is to use CCC codes constructed by different algorithms concurrently. In this paper the cross-correlation property of two dimensional CCC (2D-CCC) constructed by two different algorithms of the same parameters except of element size is analyzed and discussed.

Keywords: complete complementary code, CCC, mutually orthogonal complementary set, two-dimensional

1. Introduction

Complete complementary codes (CCC) found their application in many different areas of digital technology, among which the broadest application found in telecommunication systems. These codes are attracting the researchers' thanks to their unique ideal auto- and cross-correlation properties.

First mention of these codes was published by Golay [1] where he analyzed complementary codes in relation with optical infrared, multi-slit spectrometry. Later they were further developed into complementary sequences in [2]-[5]. Authors of mentioned papers investigated given sequences regarding autocorrelation properties. First proposal of sequence sets with ideal correlation properties, thus ideal auto- and ideal cross-correlation, were Tseng and Liu [6] which were later called Complete Complementary Codes (CCC) [3]-[5] afterwards. Development of generating algorithms of CCCs represents still a vivid area of research. Among recent publications a framework for a systematic construction of these codes was proposed [7].

Parallel construction of two-dimensional CCCs (2D-CCC) was suggested in [8], [13] and [14]with minimum element order of N^2 and recently generalizing of given construction was published in [9] what enabled acceptance of any of the recent 1D-CCC [7], [10], [11] on input. This led to construction of 2D-CCC with elements of smaller order.

Smaller order enables higher number of concurrently transmitting users what leads to increase of channel efficiency, transmission rate and capacity [9].

In this paper next approach aiming increase in channel efficiency is discussed. This approach consists of using signatures constructed by various generating algorithms concurrently.

The paper is organized as follows: An introduction to CCC is given in section 2. In section 3 the used constructions of analyzed codes are given. In section 4 the cross-correlation

properties of 2D-CCCs of are discussed. In Conclusion 5 the contribution of proposed approach is summarized.

2. CCC Definitions

CCC features ideal aperiodic auto- and cross-correlation properties, thus following equations (1) and (2) are equal to zero except for zero shift of aperiodic autocorrelation:

The *aperiodic autocorrelation* function $\rho_{\mathbf{c}^{(i)}}$ of L long sequence $\mathbf{c}^{(i)}$ is defined as:

$$\rho_{\mathbf{c}^{(i)}}(\tau) = \sum_{l=0}^{L-1} \mathbf{c}^{(i)}(l) \cdot \left[\mathbf{c}^{(i)}(l+\tau) \right]^*; \tag{1}$$

where τ denotes the shift.

The aperiodic cross-correlation function $\rho_{\mathbf{c}^{(i)},\mathbf{c}^{(j)}}(\tau)$ between two different sequences $\mathbf{c}^{(i)} \in C$ and $\mathbf{c}^{(j)} \in C$ where $i \neq i$:

$$\rho_{\mathbf{c}^{(i)},\mathbf{c}^{(j)}}(\tau) = \sum_{l=0}^{L-1} \mathbf{c}^{(i)}(l) \cdot \left[\mathbf{c}^{(j)}(l+\tau)\right]^*;$$
 (2)

Let's denote *i*-th *signature* in a set *C* of *N* signatures as:

$$\mathbf{c}^{(i)} = (\mathbf{c}_1^{(i)} \quad \mathbf{c}_2^{(i)} \quad \dots \quad \mathbf{c}_E^{(i)}); \quad i = 1, 2, \dots N,$$
 (3)

where each sequence:

$$\mathbf{c}_{k}^{(i)} = (c_{k,1}^{(i)} \quad c_{k,2}^{(i)} \quad \dots \quad c_{k,L}^{(i)}); \quad k = 1, 2, \dots E, \quad (4)$$

is a k-th element of it with length L. Each element is a vector in which coordinates are symbols (usually complex numbers with amplitude one). For convenience of the reader coordinates ± 1 are used.

2.1 1D-CCC

A collection of sequences assigned to one user where autocorrelation function computed through all sequences is zero for any nonzero shift is called the signature.

Mutually orthogonal signatures are two signature sets where every two complementary sets in the collections are mates of each other.

CCC signature sequences have to be transmitted via separate channels [13] what allows computing of auto- and cross-correlation on receiving end independently for each channel and then summing up results in order to obtain overall cross- and autocorrelation. This enables achievement of ideal cross- and autocorrelation properties.

2.2 2D-CCC Definitions

Let C be a complex matrix of order P made of complex numbers c_{ii} whose absolute values $|c_{ii}|=1$:

$$\mathbf{C} = \begin{bmatrix} c_{11} & c_{12} & \dots & c_{1P} \\ \dots & & & \\ c_{P1} & c_{P2} & \dots & c_{PP} \end{bmatrix}$$
 (5)

 M_{2D} sets of N_{2D} matrices

$$\left\{ \mathbf{C}_{1}^{(1)}, \mathbf{C}_{2}^{(1)}, ... \mathbf{C}_{N_{2D}}^{(1)} \right\}, ... \left\{ \mathbf{C}_{1}^{(M_{2D})}, \mathbf{C}_{2}^{(M_{2D})}, ... \mathbf{C}_{N_{2D}}^{(M_{2D})} \right\}$$
(6)

compose a 2D-CCC of order M_{2D} when their autocorrelation function is zero except for zero shift computed through all elements of a signature and cross-correlation is zero between two different signatures computed through all elements. The auto- and cross-correlation functions are defined in Appendix A (13) and (14), respectively. A set of N_{2D} matrices { $\mathbf{C}^{(i)}_{1}$, $\mathbf{C}^{(i)}_{2}$,..., $\mathbf{C}^{(i)}_{N2D}$ } is termed i-th signature of 2D-CCC. A matrix $\mathbf{C}^{(i)}_{j}$ is termed the j-th element of i-th signature.

3. Processed construction algorithms

3.1 1D-CCC (M, N, N^2) algorithm [10]

Base for this construction is matrix constructed of three unitary-like matrixes E, F, G as follows:

$$\mathbf{H} = (\mathbf{F} \otimes \mathbf{G}). \, diag(Vec \, \mathbf{E}) \tag{7}$$

where \otimes represents Cronecker product and unitary-like matrix fulfills condition given in (8)

$$\mathbf{U}_{N}\mathbf{U}_{N}^{H} = \mathbf{U}_{N}^{H}\mathbf{U}_{N} = \propto \mathbf{I}_{N} \tag{8}$$

where $\propto > 0$, \mathbf{I}_N denotes $N \times N$ identity matrix, where N is matrix order denoting power of two and \mathbf{U}_N is unitary matrix if $\alpha = 1$.

A set of sequences can be generated out of lines of **H** matrix as follows:

$$S = [\mathbf{Z}^{m}]_{m=0}^{N-1} = [\mathbf{s}_{n}^{m}(i)]_{m=0,n=0}^{N-1,N-1} = \left[\sum_{l=0}^{N^{2}-1} h_{nN+k}^{l} \delta(i-l)\right]_{m=0,n=0}^{N-1,N-1}$$

$$(9)$$

for $0 \le m, n \le N - 1$.

Then a complete complementary set of sequencies with parameters (N, N, N^2) constructed as follows:

$$Vec \mathbf{A} = \begin{bmatrix} \mathbf{a}_0 \\ \mathbf{a}_1 \\ \dots \\ \mathbf{a}_{N-1} \end{bmatrix}$$
 (10)

3.2 1D-CCC (M, N, N²) algorithm [7]

For given unitary-like matrix \mathbf{U}_N a corresponding optimal complete complementary cofe can be generated as follows:

$$C = \{\{\mathbf{c}_n^m\}_{n=0}^{N-1}\}_{m=0}^{N-1} = \{\{\mathbf{u}_N^m \odot \mathbf{u}_N^n\}_{n=0}^{N-1}\}_{m=0}^{N-1}$$
(11)

where \odot denotes hadamard product.

3.3 2D-CCC (N, N, N) algorithm [9]

Let $\mathbf{C}_{n_{2D}}^{(k_{2D})}$ denote the n_{2D} -th element of the k_{2D} -th signature of the new 2D-CCC. It is a matrix with order P. Let $\mathbf{c}_{n_{2D},i}^{(k_{2D})}$ denote its i-th row i=1,2,...,P, P=L where L denotes the length of 1D-CCC.

Each element of 2D-CCC signature is composed of rows obtained using following equation:

$$\mathbf{c}_{n_{2D},i}^{(k_{2D})} = \mathbf{c}_{[n_{2D}-1] \bmod N_{1D}]+1}^{[k_{2D}-1] \bmod N_{1D}]+1} \times C_{v,i}^{(t)}$$
(12)

$$k_{2D}=1,2,...,M_{ID}^{2}$$
 (13)

$$n_{2D}=1,2,...,N_{ID}^{2}$$
 (14)

$$v = \left| \frac{n_{2D} - 1}{N_{1D}} + 1 \right|, \ t = \left| \frac{k_{2D} - 1}{M_{1D}} + 1 \right|$$
 (15)

where $\lfloor x \rfloor$ is the greatest integer, which is equal or smaller than x, M_{ID} and N_{ID} denote number of signatures and elements of inputted 1D-CCC.

4. Cross-Correlation Properties

Aiming possible use of CCCs constructed with various construction algorithm, the cross-correlation properties of given signatures generated by given algorithms were analyzed. With brutal force various combinations of signatures and elements were investigated considering solely mentioned constructions. Computing the cross-correlation function each time through all elements, no ideal properties could be found for combinations of 2D-CCC constructed according to algorithm given in section 3.2 where for input (N,N,N^2) and (N,N,N) where given.

Investigated were various cases. First of all, signatures constructed by Walsh-Hadamard or Golay-Hadamard for 1D-CCC and then 2D-CCC codes were created. Followed by not only the same element order, however also various combinations of elements were processed.

Results of computed cross-correlation were not equal to zero. Also different element orders of elements were analyzed. (32)

However, during cross-correlation computing, also combinations of 1D-CCC and 2D-CCC were analyzed. It is possible to achieve ideal cross-correlation properties if the element order gets reverted. An example is given in following table tab.1.

For combination of 2D-CCC (N,N,NxN) and 1D-CCC (N,N,N^2) as well as for combination 2D-CCC (N,N,N^2xN^2) and 1D-CCC (N,N,N) no matches of ideal cross-correlation could be found. Combinations were analyzed for number of signatures up to 16 users. Due to limitations given for maximal length of this contribution, remaining research results can be delivered on demand.

Concurrent use of 1D- and 2D-CCCs in two dimensional time-frequency domain for MC-CDMA enables higher efficiency of channel usage with MAI free transmission. 2D-CCC codes enable diversity and 1D-CCCs use fewer channels for transmission.

2D CCC	(ALALALAI)		1D-CCC		2D-CCC		1D-CCC
ZD-CCC	2D-CCC (N,N,NxN)		(N,N,N)		(N,N,N^2xN^2)	(N,N,N^2)	
S	Elements	S	Elements	S	Elements	S	Elements
1	2, 1	1	1, 2				
1	4, 3	1	1, 2				
2	1, 2	1	1, 2	2	1, 2	1	1, 2
2	3, 4	1	1, 2	2	3, 4	1	1, 2
3	2, 1	1	1, 2				
3	4, 3	1	1, 2				
4	1, 2	1	1, 2	4	1, 2	1	1, 2
4	3, 4	1	1, 2	4	3, 4	1	1, 2
1	1, 2	2	1, 2	1	1, 2	2	1, 2
1	3, 4	2	1, 2	1	3, 4	2	1, 2
2	2, 1	2	1, 2				
2	4, 3	2	1, 2				
3	1, 2	2	1, 2	3	1, 2	2	1, 2
3	3, 4	2	1, 2	3	3, 4	2	1, 2
4	2, 1	2	1, 2				
4	4, 3	2	1, 2				

Table 1 CCC combinations

5. Conclusion

In this paper results of analyzed cross-correlation properties for selected CCCs are summarized where those were obtained by research done in this field by authors. As authors shoved the cross-correlation property remains also ideal for signatures combining 1D and 2D codes. Use of such combinations enables higher number of concurrently transmitting signatures, thus increase in channel efficiency, higher transmission rate and capacity.

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Appendix A: Two-Dimensional Correlation Functions

$$\rho(\mathbf{C}, o, p) = \begin{cases}
\frac{1}{M.N} \sum_{k=1}^{M-o} \sum_{l=1}^{N-p} \mathbf{c}_{kl} \cdot \mathbf{c}_{(k+o)(l+p)}^* & for o = 0, 1, \dots M-1; p = 0, 1, \dots N-1 \\
\frac{1}{M.N} \sum_{k=1}^{M-o} \sum_{l=1-p}^{N} \mathbf{c}_{kl} \cdot \mathbf{c}_{(k+o)(l+p)}^* & for o = 0, 1, \dots M-1; p = -N+1, \dots -1 \\
\frac{1}{M.N} \sum_{k=1-o}^{M} \sum_{l=1-p}^{N-p} \mathbf{c}_{kl} \cdot \mathbf{c}_{(k+o)(l+p)}^* & for o = -M+1, \dots -1; p = 0, 1, \dots N-1 \\
\frac{1}{M.N} \sum_{k=1-o}^{M} \sum_{l=1-p}^{N} \mathbf{c}_{kl} \cdot \mathbf{c}_{(k+o)(l+p)}^* & for o = -M+1, \dots -1; p = -N+1, \dots -1
\end{cases}$$
(16)

where \mathbf{c}_{ij}^* is the complex conjugate of \mathbf{c}_{ij} .

$$\rho(\mathbf{C}^{(x)}, \mathbf{C}^{(y)}, o, p) = \begin{cases}
\frac{1}{M.N} \sum_{k=1}^{M-o} \sum_{l=1}^{N-p} \mathbf{c}_{kl}^{(x)} \mathbf{c}_{(k+o)(l+p)}^{(y)*} & for \ o = 0, 1, \dots M-1; \ p = 0, 1, \dots N-1 \\
\frac{1}{M.N} \sum_{k=1}^{M-o} \sum_{l=1-p}^{N} \mathbf{c}_{kl}^{(x)} \mathbf{c}_{(k+o)(l+p)}^{(y)*} & for \ o = 0, 1, \dots M-1; \ p = -N+1, \dots -1 \\
\frac{1}{M.N} \sum_{k=1-o}^{M} \sum_{l=1-p}^{N-p} \mathbf{c}_{kl}^{(x)} \mathbf{c}_{(k+o)(l+p)}^{(y)*} & for \ o = -M+1, \dots -1; \ p = 0, 1, \dots N-1 \\
\frac{1}{M.N} \sum_{k=1-o}^{M} \sum_{l=1-p}^{N} \mathbf{c}_{kl}^{(x)} \mathbf{c}_{(k+o)(l+p)}^{(y)*} & for \ o = -M+1, \dots -1; \ p = -N+1, \dots -1
\end{cases}$$
(17)

where \mathbf{c}_{ij}^* is the complex conjugate of \mathbf{c}_{ij} .

Appendix B: Examples of analyzed CCC codes

CCC	Signature	1 st element	2 nd element	3 rd element	4 th element
	1	1 1 1 1	1 -1 1 -1	1 1 -1 -1	1 -1 -1 1
an ccc (MMM,M)	2	1 -1 1 -1	1 1 1 1	1 -1 -1 1	1 1 -1 -1
2D-CCC (N,N,NxN)	3	1 1 -1 -1	1 -1 -1 1	1 1 1 1	1 -1 1 -1
	4	1 -1 1 -1	1 1 1 1	1 -1 -1 1	1 1 -1 -1
1D-CCC (N,N,NxN)	1	1 1	1 -1		
	2	1 -1	1 1		
	1	1 1 1 -1 1 1 1 -1 1 1 1 -1 -1 -1 -1 1	1 -1 1 1 1 -1 1 1 1 -1 1 1 -1 1 -1 -1	1 1 1 -1 -1 -1 -1 1 1 1 1 -1 1 1 1 -1	1 -1 1 1 -1 1 -1 -1 1 -1 1 1 1 -1 1 1
2D-CCC (<i>N</i> , <i>N</i> , <i>N</i> ² <i>xN</i> ²)	2	1 1 -1 1 1 1 -1 1 1 1 -1 1 -1 -1 1 -1	1 -1 -1 -1 1 -1 -1 -1 1 -1 -1 -1 -1 1 1 1	1 1 -1 1 -1 -1 1 -1 1 1 -1 1 1 1 -1 1	1 -1 -1 -1 -1 1 1 1 1 -1 -1 -1 1 -1 -1 -1
2D-CCC (N,N,N XN)	3	1 1 1 -1 1 1 1 -1 -1 -1 -1 1 1 1 1 -1	1 -1 1 1 1 -1 1 1 -1 1 -1 -1 1 -1 1 1	1 1 1 -1 -1 -1 -1 1 -1 -1 -1 1 -1 -1 -1 1	1 -1 1 1 -1 1 -1 -1 -1 1 -1 -1 -1 1 -1 -1
	4	1 1 -1 1 1 1 -1 1 -1 -1 1 -1 1 1 -1 1	1 -1 -1 -1 1 -1 -1 -1 -1 1 1 1 1 -1 -1 -1	1 1 -1 1 -1 -1 1 -1 -1 -1 1 -1 -1 -1 1 -1	1 -1 -1 -1 -1 1 1 1 -1 1 1 1 -1 1 1 1
1D-CCC (N,N,N^2xN^2)	2	1 1 1 -1 1 1 -1 1	1 -1 1 1		

INFLUENCE OF AGITATION ON THE WORKABILITY OF INJECTION PRODUCTS WITH MINERAL-BASED BINDER

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Abstract: Within the frame of cooperation of the department of construction technology and the technological company, the research intent dealing with the influence of agitation of injection products with the mineral-based binder on its workability was created. Agitation of injection products was performed using commercially supplied agitators. The use of forced agitator, high shear disk stirrer and colloid agitator were tested. The test sample was a reference injection product classified according to ČSN EN 1504-5 as U (F1) W (3) (1/2) (5/30) (0). The tests were performed for samples with initial temperatures of +5°C, +15°C and +30°C. The temperature course of the sample and the flow time from test cone defined according to ČSN EN 14117 were monitored. Experimental results proved the dependence between the temperature increase and the flow time on the construction type of the agitator. The highest increase of temperature was for the samples agitated with high-speed colloid agitator. The increase of temperature corresponded to the amount of energy introduced into the agitation system. During the flow time measurement, the samples agitated with the high-speed colloid agitator produced the shortest initial flow times (highest liquidity). In the time of ca. 45 min, a faster flow time increase was observed for the mixtures agitated with colloid agitator when compared to the mixture agitated with dispersive agitator. There were highest flow times at the mixtures agitated using forced agitator during all measurements.

Keywords: mixing, injection, temperature increase, flow

1. Reasoning and description of experiments

The research intent dealing with the influence of agitation on the workability of injection products with mineralbased binder was created within the frame of cooperation of the department of construction technology and the technological company producing injection products. According to theoretical knowledge [1], in the case of agitation of mineral suspensions using low-speed agitators imperfect mixing of material and worse workability occur. Agitating effects of agitators produced in series dispersive shear disk stirrer ZS-0 (manufacturer Desoi), colloid agitator AKM-150D (manufacturer Desoi), manual agitator for forced agitating including stand B6 (manufacturer Beba Mischtechnik) - were compared in experiments. The reference test sample of the mixture was an injection product classified according to ČSN EN 1504-5 as U (F1) W (3) (1/2) (5/30) (0). The injection product consisted of ultra fine ground portland cement, additive and potable water. The ingredients were mixed by weight in the ratio according to the technical regulation of the manufacturer, i.e. 25.0 : 14.5: 0.55 (cement, water, additive).

2. Sample production

The aim of the experiment was to simulate the agitation of the product under conditions at construction sites. The samples were therefore agitated in the plastic cylinder vessel with the volume of $50\,l$ with the outer vessel diameter of 420 mm. The weight of the solid ingredient of the sample was $25\,kg$ which corresponds to normally processed amount of the material (bag). The experiment was performed at initial temperatures of the material of $+5\,^{\circ}\text{C}$, $+15\,^{\circ}\text{C}$ and $+30\,^{\circ}\text{C}$, taking into account different

climatic conditions at the construction site. Prior to agitation, individual ingredients of the sample were temperature-controlled for 24 hours to the required temperature.

During the process of agitation, the temperature course of the test mixture depending upon the agitator type and the time of agitation 60s, 180s, 300s and 600s were monitored. The experiment was performed at different initial temperatures of the mixture of 5°C, 15°C and 30°C. The temperature course of the test mixture was measured using a thermometer in the depth of ca. 50 mm below the surface. Contact thermometer Testo 826-T3 for core measurement was used for the temperature determination.

3. The course of temperature change

During the process of agitation of test samples there was an increase of sample temperature in time. The lowest relative increase of temperature was at the mixtures with the initial temperature of 5° C, and reversely – the highest relative changes were at the samples with the initial temperature of 30° C.

When compared the samples agitated at the same initial temperature, it was found that the lowest relative temperature changes were observed at during the agitation with the forced agitator. When the mixture was agitated using colloid agitator, the relative temperature increase was the highest. The mutual comparison of the temperature increase vs. time of agitation and type of agitator is shown at Fig. 1 – Fig. 3.

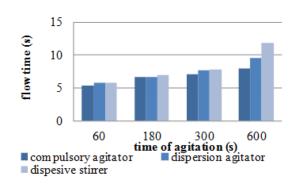


Figure 1: Increase of temperature vs. time of agitation, initial temperature +5°C

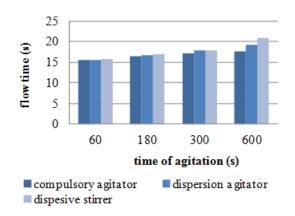


Figure 2: Increase of temperature vs. time of agitation, initial temperature +15°C

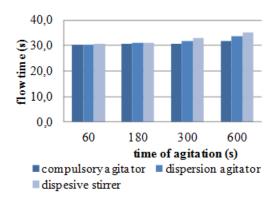


Figure 3: Increase of temperature vs. time of agitation, initial temperature +30°C

4. The course of flow time change

Individual measured values of flow time were mutually compared in the times of 10, 15, 30, 45, 60, 75 and 90 min. Flow times of the mixture from the test cone for individual test samples differed significantly from each other, Fig. 4 – Fig. 6. The highest values of flow time were achieved at test mixtures agitated using forced agitator. Although the mixtures agitated using colloid and dispersion agitators achieved approximately similar values, it was possible to observe the following flow time course there: in the time

of ca. 0-45 min there was a higher flow time at the mixture agitated using dispersive agitator, in the time from ca. 45 min there was, on the contrary, a higher flow time at the mixture agitated using colloid agitator. The initial mixture temperature was another factor influencing individual flow times. At the mixture with a higher initial temperature, at first there was a lower flow time value than at other mixtures. Later, since ca. 60 min, there was a faster flow time increase at mixtures with a higher initial temperature when compared to the mixtures with a lower initial temperature.

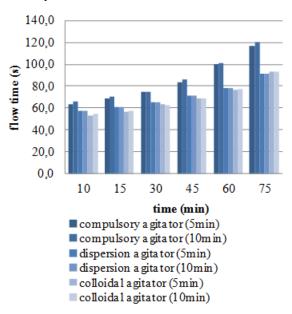


Fig. 4 – The course of flow time increase, initial temperature +5°C

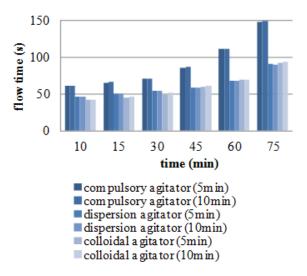


Fig. 5 – The course of flow time increase, initial temperature +15°C

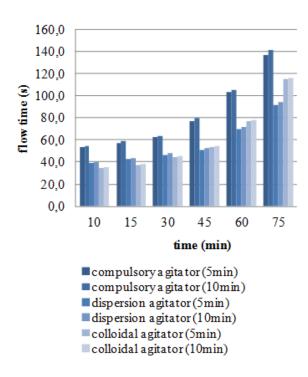


Fig. 6 – The course of flow time increase, initial temperature +30°C

6. Conclusions

6.1 Temperature increase results

During the process of agitation, an increase of sample temperature occurred at test samples. The lowest relative increase of temperature was at the test mixtures with the initial temperature of 5°C, and reversely – the highest relative changes were at the samples with the initial temperature of 30°C. When compared the samples agitated at the same initial temperature, it was found that the lowest relative temperature changes were observed at during the agitation with the forced agitator. When the mixture was agitated using colloid agitator, the relative temperature increase was the highest. The increase of sample temperatures according to the theoretical analysis [1] is caused by introduction of energy during the agitation process.

6.2 Flow time changes

At the mixture samples agitated using forced agitator after agitation there were, in agreement with [2], highest flow times (i.e. lowest liquidity) among all test samples. Reversely, agitation with high-speed colloid agitator produced shortest initial flow times. In the time of ca. 45 min, a faster flow time increase was observed for the mixtures agitated with colloid agitator when compared to the mixture agitated with dispersive agitator. The change in the rate increase can be explained by faster development of hydration process supported with introduction of energy into the system by vigorous agitation.

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Session: Applied Informatics

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DE-ANONYMIZATION OF AN INTERNET USER BASED ON HIS WEB BROWSER

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Abstract: Monitoring of a user of the Internet and analysis of his behaviour is becoming more and more casual. One of the basic techniques of the monitoring is tracking by a Web browser. In this paper we describe theoretical background of the problem, we discuss some basic techniques and we introduce our system for the detection of browsers' fingerprints and browsers' history of visited pages. The aim of the system is to identify the user of Internet as accurately as possible. In the process of creation of the de-anonymizational system, we emphasis the simplicity of implementation solution based on standard web technologies such as PHP, CSS, JavaScript and Flash. For verification of the proposed system, we put it on the website of Comenius University in Bratislava and its Faculties. That allows us to collect sufficient amount of data and ultimately it also helps us to get the important information of traffic and user's behaviour on the particular pages of the University. As the results of our research show, the identification of the user or the detection of his history via his browser can be done by any web page. During the period of 12 month, we were able to undoubtedly identify 67.58% of 999,219 browsers and 9.21% of browsers allow the detection of history.

Keywords: anonymity, information flow, k-anonymity, de-anonymization

1. Introduction

In famous novel Nineteen Eighty-Four [11] written by George Orwell in 1949, he envisioned a world in which everyone was being watched practically every time and everywhere.

Nowadays, we can claim that every user of internet is watched. All information which we put on internet are collected and analysed by someone. When a person finds information about you, we can say, that there was some information flow from your (public or non-public) information to the person. This is only one of many forms of the information flow. We are interested in the information flow from user's web browser. Two main classes of these forms can be wanted and unwanted.

An example of a wanted informational flow is the situation when you send a message to your colleague. An unwanted informational flow would be if you wanted to cover some information (password) and a third person found it out. In some cases it is not easy to determine whether an information flow is wanted or not. For example: Internet search engines can identify users by semantics of his search queries. This identifying of user can bring for him better search result, but he also loses some privacy.

In this paper, we would like to present an application of practical research. We investigate theoretical approach as information flow, information flow quantity, probability, k-anonymity and we use them for browsers' fingerprints and history detection system.

Internet search engines can identify users by semantics of his search queries. However, search engines can be used for another propose e.g. user's identification. Queries which are focused well can be used for finding out a sensitive data such as e-mail address, bad configured or vulnerable servers. Framework SearchAudit [6] can find out these queries. This framework identifies malicious queries from the logs of search engines and it can connect them to the potentials attack.

The other kind of de-anonymized technique is deSEO [7]. System deSEO enables identification SEO attack. deSEO can automatically detect the infected result of search query without examination of the content of web pages.

Project Panopticlick [4] gives very good result of web browser identification. Its result shows that the project has collected 2,428,097 browsers and 94.2% of the browsers can be positively identified.

Another similar project was done by Microsoft [17]. This project reach entropy of 20.29 bits using the user agent string with IP address and it can positively identify 80% browsers.

Nowadays, the popularity of social networks has been growing. This phenomenon is related to de-anonymization. Using the connection of social networks group with browser's history detection of visited web pages, the positive identification of 42% of users [16], [14] can be reached.

This paper is the continuation of our last papers which were presented on ITAT [8] and Technológia Europea [9] conferences. Nowadays, we collected more data from longer period, period of one year. We did more analyses and we compared our last results to our new results and we came to the presented conclusions. Next we used the reidentification of an arbitrary individual, known as the journalist re-identification scenario and we used the theory of information flow for finding out how many information we can know about users' web browsers. Finally, we analysed the correlation between the frequency of visiting University web pages and the references in media.

1.1 k-anonymity

De-anonymized technique is necessarily connected with its inverse technique - anonymized technique. This technique tries to edit sensitive data so that they can be partly released securely and publicly.

The weakness of k-anonymity is that it has problem with the re-identification of a single individual in an anonymized data set. There are two re-identification scenarios for a single individual [15]:

- Re-identify a specific individual (known as the prosecutor re-identification scenario). The intruder (e.g., a prosecutor) would know that a particular individual (e.g., a defendant) exists in an anonymized database and wishes to find out which record belongs to that individual.
- 2) Re-identify an arbitrary individual (known as the journalist re-identification scenario). The intruder does not care which individual is being re-identified, but it is only interested in being able to claim that it can be done. In this case the intruder wishes to re-identify a single individual to discredit the organization disclosing the data.

In our research we are working with re-identification based on journalist re-identification scenario.

The *k*-anonymity theory is based on quasi-identifier. Quasi-identifier is a set of attributes included in a private table, also externally available and therefore exploitable for linking [2], [15]. Own k-anonymity is defined as:

k-anonymity Let $T(A_1, A_2, ..., A_m)$ be a table, and QI is a quasi-identifier associated with T. T is said to satisfy k-anonymity with respect to QI if and only if each sequence values in T[QI] appears at least with k-occurrences in T[QI].

1.2 Information flow quantity

Information-flow technology is an approach for ensuring security by design and construction [13]. This technology helps controlling a flow of information between data from different levels of sensitivity. It is useful in the context of confidentiality, in which secret inputs should not be leaked to public outputs, and in the context of integrity, in which untrusted inputs should not affect trusted outputs [12].

If entropy is higher after observation then before it, **information flow** will arise. Difference between these two entropies, entropy before observation and entropy after it, is **information flow quantity** [1].

In our case, information flow is realized between user's browser and ours detection system. For our purpose it is important to know the quantity of that information flow. That means how much we can know about a user's browser, how unique it is and how precisely we can follow it through internet.

The information flow quantity is non-trivial theory which is too wide for this paper. For the presented research it is enough if we define **information flow quantity** as the number of behaviours of High that are distinguishable from Low's point of view. If there are N such distinguishable behaviours, then High can use the system to encode an arbitrary number in the range $0, \ldots, N-1$ to send it to Low; in other words, $log_2 N$ bits of information are passed [10], [3]. When we uniquely identify browser from N browser in dataset, then we know $log_2 N$ bits about this user's browser. This fact we use in result part of the paper.

2. System of detection

We have completed our presented research about anonymity with developing system for identification pages' visitors. This system collects fingerprints from user's browser. We emphasize the simplicity of the solution of our system. Our functional system can be put on pages in form one <iframe>. System is based on usual web technology such as PHP, JavaScript, MySQL and Flash.

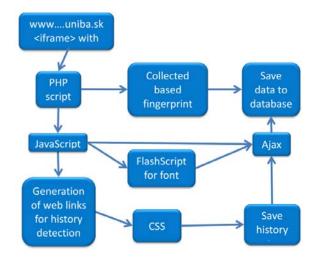


Figure 1: Architecture of detection system

2.1 Fingerprints

Basic fingerprints such as name, version of browser, IP address, URL of visited web page are collecting by PHP. We tried to collect as much fingerprints as possible from PHP under the condition that JavaScript is turned off. JavaScript collects most of the other fingerprints, the most significant among them, for the identification of user's browser, is the collection of browser's plug-ins. Flash script collects the second most important fingerprint - the installed fonts in an operation system.

2.2 History detection

In 2010, a paper Feasibility and real-world implications of web browser history detection was published [5], which described the detection of web browser's history of visited pages. There are two different methods, which are based on cascade style (CSS) and pseudo class visible.

The first way is by JavaScript. Concretely, it is done by JavaScript class style and its method getPropertyValue. Fortunately, in relation to our privacy, this way is blocked in every frequently used web browser. The second way of history detection uses pseudo class visible and its property background, which set background of an element. To this property we can insert URL address which can refer to anywhere. However, also this way was more less successfully blocked in every modern browser such as Firefox, Chrome, IE10+, Safari, Opera 20+, anyway, in some cases even these browsers enable this method. In addition, there are still some frequently used browsers which allow this kind of history detection. These browsers are Opera 18- and IE8.

3. Result

Precision of our detection system is checked by cookies with long expiration. In our final analysis we concatenated all collected fingerprints from one browser to one string. The created string was used as an identification mark for that browser which we used to find out the browser's anonymity.

We used the before mentioned theory about k-anonymity, where our collected fingerprints were used as quasi-identifier. Next we used information flow quantity to discover how many information we have about browser. Precision of our detection system was checked in four periods - first week, first month, eight months and one year. During these periods the system was deployed on all pages of Comenius University in Bratislava except of moja.uniba.sk, because this pages is visited too frequently, which was a problem for our servers.

Data of first third periods (first week, first month an eight month) was used in our last papers. Now we are presenting new data and analyses of these data from 17.12.2012 to 15.12.2013. Plus we compared our last results to our new results. Furthermore we did more analyses and we found new interesting facts.

3.1 First week result

This period was used as test for our system from 13.11.2012 to 19.11.2012. In this period we collected 263,070 views of the university pages with 41,007 different browsers. We could completely identify 84.93% of browsers and we knew about these browsers 15.32bits of information. History detection was successful in 13.21% browsers. From this period we generally found out that the most important fingerprints are web browsers plug-ins and system fonts. These fingerprints have the greatest impact on results of identification.

3.2 First month result

In this period from 17.12.2012 to 24.1.2013 our system collected 225,154 web browsers. Next we were able to successfully identify 75.74% of collected browsers and we knew about these browsers 17.78bits of information.

10.01% browsers had IP addresses belonging to the University. The number of the visited pages was 2,334,351 and 19.22% of these visited pages was visited from IP address belonging to the University. Number of "migrational" browsers was 6,495 - 26.30% from all browsers with university IP (24,693).

23,503 (10.39%) browsers enable history detection at least on one of 18 links. We used only 18 links for history detection, because we would not like to disturb a search engine rating of University pages.

3.3 Eight months results

In this period from 17.12.2012 to 25.8.2013 our system collected fingerprints from 720,324 browsers. The success rate of identification of user's web browsers was 67.63% and we knew about these browsers 19.46bits of information. This success rate is lower than in the previous period of first month, but the difference is only about 8.11

of percentage point. However, we can still uniquely identify more then 2/3 of browsers.

Further, we were capable to detect history of visited pages in 66,888 browsers what is 9.29% from all collected browsers. Among these browsers there were 51.36% IE and 33.67% Opera. This result about history detection is only slightly different in comparison with the previous period. This means that in long-term period we can detect browser's history approximately from one of ten browsers. In our opinion it is high success rate.

Our system collected 14,304,894 of visited pages. We found 10.60% (76,331) users from university IP address. These users visited 25.15% (3,597,824) pages. The perceptual representation of migrating users was 1.79% (12,870), but the perceptual representation of visited pages by migrating users was 13.29% (1,900,886).

3.4 One year results

In the longest period of collecting of fingerprints, our system collected fingerprints from 999,219 browsers. We could completely identify 67.58% of browsers and we knew about these browsers 19.93bits. This result is lower than the previous period of eight months, but only about 0.05 of percentage point. That confirm our last outcome about success rate around 2/3 of browser. This result could be considered to be good and we are satisfied with it.

In one year period was visited 21,517,459 of the University pages. We found 12.83% (128,212) users from the University IP address. These users visited 18.70% (4,022,891) pages. The perceptual representation of migrating users was only 2.31% (21.694), but these browses visited 27.34% (5,882,587) of all visited pages.

A remarkable result is that 2997 (perhaps new students') browsers visited the University pages before September and after September we recognized those browsers on the University network. Our University has usually around 8,000 new students, that can mean around 37.46% of these students come with their mobile devices to school.

Our system can be used also to discover some interesting statistic data, for example which hour has most visited frequency (Monday at 10am - 309 799), which hour has least visited frequency (Sunday at 5am - 4 209), which day has most visited frequency (23.9.2013 - 155 049) etc.

Then we analysed of the correlation between the frequency of visiting University web pages and the references in media like TV, radio, newspaper and internet news portals. Unfortunately, we assess 434 references and we found no impact of these references to the frequency of visiting pages.

4. Conclusions

Results of our research show the high possibility of the identification of user's browser and in some cases it is even possible to find out a browser's history of the visited web pages. Similar result can be reached from any web pages. There are some research [4] and [17] with better success rate than ours. This fact can be caused by deploying system in an academic sphere because there are lot of identical personal computers. Furthermore, these researches were done several years ago and this is another

fact, which has to be considered. Nowadays, the developers of web browsers are trying to update their browsers frequently out of user's control. It can influence our result too.

Success rate of a system such as ours can depend on concrete web pages where it is deployed. There is high probability for very good success rate of the deanonymized system if a web page is interesting mostly for the users of different kind of browsers.

Identifications of browser can be connected with the other information, which users leave behind themselves around internet. For example a connection of browsers with some social network or e-mail account can bring fully spying the user around internet and finding out more complex information about the user, such as personal information or his activity on internet.

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Session: Medical Sciences

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MENSTRUAL CYCLE IRREGULARITIES IN RHYTHMIC GYMNASTS

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Abstract: In aesthetic activities, such as Rhythmic gymnastics, intense training usually starts long before menarche and success is strongly influenced by visual appeal and body aesthetics. As very young girls, rhythmic gymnasts are often required to meet unrealistic weight goals in order to attain or maintain a favorable physique. Besides, intensive physical training in rhythmic gymnastics may lead to detrimental effects on physical health: low energy intake combined with increased energy expenditure can result in reproductive dysfunction. Delayed menarche, menstrual irregularities and low body fat were found to be common in elite rhythmic gymnasts, while those who were premenarcheal had a higher training frequency and duration, as well as a lower body mass index and relative body fat when compared to menarcheal ones. Exercise-related reproductive disorders have been shown to have serious consequences, mainly involving osteoporosis. Thus, preventive measures, prompt evaluation and management of individuals at risk are highly recommended.

Keywords: aesthetic sports, intense training, low body fat, puberty, menarche

1. Introduction

Individual sports exert a unique impact on body composition and development, each depending on the sport-related specific features, technical skills and training methods, and the state of growth and maturation of the athlete at exercise initiation and later on [1]. These influences have been studied in females of all ages engaged in highly competitive sports, including gymnastics (artistic and rhythmic), endurance running, swimming and ballet dancing.

The essentials of Rhythmic gymnastics (RG) are aesthetic and technical perfection together with the beauty of movements. Consequently, RG call attention to attractiveness of the body presentation (i.e. slim and fit body, often excessively lean), harmony of aesthetic movements as well as technical performance. All these foundations for successful career in RG routinely develop in very early age [2], i.e. prior to puberty. Puberty in humans is characterized by large hormonal changes resulting in both physical and sexual maturation. Since intense prepubertal training, together with the potential metabolic effects of dieting, can alter hypothalamicpituitary function, the time at which athletic training is initiated has been implicated as a factor in delayed menarche and sexual maturation in female athletes [3].

The strategies that rhythmic gymnasts (RGs) use to achieve optimum weight and body composition may, however, predisposes them to a variety of medical complications that include menstrual dysfunction, eating disorders, growth retardation, and nutritional deficiencies [4-6]. Above all, RGs are at great risk of developing a variety of menstrual irregularities which profound negative effect on fertility and skeletal development are well documented [6, 7]. That's why it is of great importance to determine the present prevalence of these endocrine abnormalities in the risk group of adolescent female athletes, i.e. rhythmic gymnasts, in order to facilitate

effective treatment and preventive intervention, first by the parents, and then by coach.

2. Menstrual cycle and its irregularities

Menstruation, one of the most typical and important feature of biological maturation of woman, is cyclical uterus bleeding (average cycle lasts 28 days), that occurs as a result of unrealized fertilization of the egg cell. It's a compilation of intertwined interactions hypothalamus, pituitary, ovaries and endometrium [8]. The process of menstruation is under control of following key gonadotrophinhormones: hypothalamus produces releasing hormone (GnRH) to stimulate the pituitary hormones (follicle-stimulating hormone (FSH) and luteinizing hormone (LH)), which results in estrogen and progesterone production by ovaries. The menstrual cycle can be divided into three phases [9]: follicular (first 10 to 14 days), ovulatory (2 to 3 days), and luteal phase (last 12 to 17 days of cycle). Menarche is the very first period and it occurs between 12 and 13 years of age [10], when the amount of body fat increases up to 17% and more, and for the maintenance of regular menses the amount of 22% of body fat is necessary [11].

Because of this complex interaction, menstruation represents a particularly delicate function, and its regularity reflects normal reproductive activity. At the beginning, first two years after menarche, menstrual cycles have a lot of variations, and are often irregular. Namely, the female reproductive system is highly sensitive to changes regarding both intrinsic and extrinsic factors. Physical training (type, intensity and duration of training) with combination of undernutrition, is one of the most powerful environmental factor influencing the release of gonadotropins, activation of the gonadal axis, the timing of puberty, and the onset of menstrual disorders in adolescent athletes [6]. That's why a higher prevalence of menstrual irregularities has been reported for adolescent athletes participating in weight-dependent sports, especially in

aesthetic sports, as compared to that observed in other sports [3].

Female athletic performance has been associated with a broad spectrum of menstrual irregularities, and the most common are: *delayed menarche* (delayed onset of menarche, i.e. a failure to menstruate by the age of 15), *luteal dysfunction* (shortening of luteal phase to less than 10 days), *oligomenorrhea* (three to six cycles per year) and *amenorrhea* (absent menstruation, i.e. fewer than three cycles per year or no cycles for the past six months) [10].

3. Causes of exercise-related menstrual irregularities in $\mathbf{RG}\mathbf{s}$

Low body fat, inadequate energy availability, psychological stress, level of exercise and state of reproductive maturity are being investigated as potential causes of disruption of the normal endocrine processes [10]. All of these factors are in the lives of young RGs from the very beginning [4], long before puberty, and thus these athletes are prone to developing reproductive dysfunction.

3.1 Low body fat

Frisch and McArthur [12] have theorized an association between menstrual regularity and the level of body fat, suggesting that a level of at least 17% body fat is critical for the onset of menstruation and the maintenance of a normal cycle. For RGs to maximize performance, they strive to achieve an optimum sport-specific body size, low body mass and low body fat level [4-6, 13, 14]. Leanness is particularly valued because the gymnast's success is a function of appearance as well as technical performance.

3.2 Inadequate diet

RGs are often required to meet unrealistic weight goals to attain or maintain a favorable physique. Hence, they are at risk of developing poor eating habits ranging from poor nutrition and/or insufficient energy intake to serious eating disorders. Young female rhythmic gymnasts have been identified as a potential risk group for malnutrition because of their attitude of weight reduction and leanness [15]. At a very young age RGs show a keen interest in their body, undergo pressure from coaches, parents, judges and cogymnasts [16]. Namely, many of RGs are on a diet in an attempt to improve performance, either because they believed that their coach found them too fat or because it would get them higher scores from the judges [4].

3.3 Psychological stress

Psychological stress may be a contributory factor in the development of menstrual irregularities in athletes through increased production of stress hormones (catecholamine, endorphins, and cortisol), as this may disrupt finally established connection hypothalamic-pituitary. It has been claimed that menstrual dysfunction is caused by the athlete's psychological preoccupation with weight and thinness which in turn may lead to weight loss [7]. Rhythmic gymnasts, performing under conditions of high intensity during competition and physycal training, are exposed to particularly high levels of psychological and

physical stress, which can contribute to delay in their pubertal development.

3.4 Level of exercise

There appears to be a relationship between menstrual irregularities and the level of exercise performed (it's about the total amount of exercise or the intensity of exercise). Exercise, as a form of stress, activates the link hypothalamic-pituitary-adrenal gland to different levels depending on the intensity and duration of the exercise, and through the actions of hormones whose levels are elevated by exercise (cortisol and the opioid peptides) [17]. In RG, the premenarcheal gymnasts train more often and for longer than the menarcheal gymnasts [6], due to the sport-specific competition demands (competitions start at very young age).

3.5 Immature reproductive system

Certain women, especially those exposed to excessive physical training (like RGs are), have a susceptibility to develop menstrual irregularities, which is possibly associated with immaturity of their reproductive system. The beginning and the maintenance of intensive training regime has an impact on the menstrual cycle regularity of the adolescent athletes in premenarcheal years [18]. That's why abnormal menstrual patterns are very common in RG, the sport which requires early selection of athletes [19, 20], early specialization [21], intensive training in the periods of childhood and adolescence [20, 22], and early termination of the sports career [23].

$\begin{array}{lll} \textbf{4.} & \textbf{Complications} & \textbf{of} & \textbf{exercise-related} & \textbf{menstrual} \\ \textbf{irregularities in RGs} & \\ \end{array}$

RGs are exposed to the risks of excessive physical training from an early age, which may have an impact on growth, reproductive function and bone mineralization [24]. Abnormal menstrual patterns have been shown to have a negative effect on bone mineralization and thus may have serious short and long term consequences. There are two major problems associated with menstrual cycle irregularities: reduced fertility and decreased bone density [25].

When speaking about reduced fertility there is an increased incidence of reduced fertility among intensely exercising females compared with their sedentary counterparts [10]. However, the athlete should not automatically assume that because she has been amenorrheic for some time that she is necessarily infertile. There have been many examples of athletes with long histories of amenorrhea becoming pregnant. If pregnancy is desired, ovulation and a normal menstrual cycle can usually be induced by reducing the level of exercise or increasing the level of body fat. However, there is no evidence of decreased fertility among RGs, which could be due to the fact the researchers are mostly interested in young prepubertal, still active gymnast.

The reduction of the bone mass is found frequently in athletes with amenorrhea. Those athletes are characterized by their incapacity of reaching the top of bone mass, premature loss of this mass and osteoporosis [26].

Although RG is highly demanding competitive sport enriched by jumps which are osteogenic [27], over-trained girls may develop reduced bone mineral density, i.e. osteopenia [28], and this could be one among multiple factors responsible for the fact that the RGs are among the athletes that present larger frequency of bone damage [29-31]

5. Conclusion

Many authors have previously shown that in RG, intensive physical training and negative energy balance, by modulating the hypothalamic pituitary set point at puberty, prolonged the prepubertal stage and delayed pubertal development from Tanner stage II to Tanner stages IV and V, as well as menarche, which followed the retarded bone age rather than the chronological age. That's why RGs are known to be late maturers which advantage them in this sport, but experiencing a numerous menstrual cycle irregularities which should be promptly recognised and treated because of adequately their long-term consequences on bone health, and possible reproductive health. Coaches, in cooperation with physicians, must be aware of such effects, explain to girls and their parents the 'right' sports training and appropriate dietary regimens, and recognize problems due to excessive training as soon as possible. However, these issues should not be a cause of lesser involvement in athletic participation of young girls.

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BODY COMPOSITION OF THE PHYSICAL EDUCATION FEMALE STUDENTS

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Abstract: The Physical Education study (PES) is very complex and requires an adequate set of morphological and psychological characteristics, good level of functional and motor abilities. Efficiency in adopting of the PE Curricula significantly depends of the relevant optimal combination of the above mentioned segments of anthropological status. Morphological characteristics are very important for the success in different sports, as well as for the (PES). They are, except values of other dimensions, in an important way responsible for sport performance. To be more precise, the latent dimensions or factors are primarily relevant for the success. According to the above, the basic aim of this research is the establishing of latent structure of the morphological characteristics of the PE female students, both home and forighn country. Research was carried out on the sample of the examined subjects that are according to their anthropological characteristics the closest to the sample of the athletes. This research involved 57 PE female students. For the establishing of the latent structure of morphological dimensions it was used a set of 26 anthropometric parameters and ANOVA, MANOVA, and factor analysis was applied. It was isolated five factors, defined in a different way, such was in a previous researches established four-dimensional model.

Keywords: PE female students, factor analysis, morphological characteristics, ethnic group difference

1. Introduction

Successful adopting of the tasks in certain sports or events depends on the complexity level of their structural elements, as well as on the activity level of some systems of the organism in performing those activities. Success in sport, as in any other physical activity, depends on the anthropological status of an individual defined by morphological characteristics, motor, functional and cognitive abilities, as well as by personality characteristics and social status.

The Physical Education study is very complex. Except abilities, which are necessary for any kind of studies, such are psychological characteristics (cognitive abilities and personality features) it requires an adequate set of morphological characteristics, good level of general physical capacity, (aerobic and anaerobic), special performance capacity (endurance, speed, strength, coordination), as well as an appropriate level functional/physiological parameters (cardiovascular and respiratory measurements).

In accordance with the study design anthropometrical parameters are observed and used for the interpretation of the "body composition status" of physical education students. A set of variables consisted of 26 measures for the estimation of (a) longitudinal dimensionality of skeleton (b) transversal dimensionality of skeleton (c) volume and body mass (d) adipose tissue:

Parallel analyses of the morphological characteristics of PE female students and structure of morphological dimensions (MD) of adult females were the central problem of this research. The structure of MD morphological dimensions depends on age, male, genetic and social components. Morphological variables selected in the same or similar way, as was employed in this study, have been analyzed in a number of anthropological studies

with application of different methodological approaches. In almost all cases, when determining latent structures, similar results were obtained, despite the fact of different diffrent extraction procedures and the very different criteria for the transformation of the basic segment. Lately even the metrics of analyzed variables varied, so they are treated, in addition to the real, and image variables, also variable rescaled to anti image metrics were used. However, in all of these solutions, the morphological characteristics behave similarly. In some areas, with image variables, the intensity of the relationship has slightly changed but their linear combinations, their qualitative relations refer mainly unchanged. From this we can draw two very reliable conclusions: (a) The current set of anthropometric variables is one of the most suitable as for the structure of the morphological characteristics analysis; (b) Anthropometrical dimensions, isolated up to date, and on several occasions' repeated are the reliable representatives of the morphological segment of the general anthropological status.

The first investigations of the factor structure of anthropometric space began in fourth decade of the XX. Century, and in our country in sixth decade. Among former Yugoslav authors notable contributions were given by Bala [1,2], Dimova et all [3], Kurelić et all [4], Lomen [5], Momirović, [6], Momirović et all [7], Popović [8,9,10,13], Popović and Đurašković [11], Popović et all [12], and others.

Two general groups of hypotheses are formulated. In the first group of hypotheses assume that examined sample's do not differ in significant way in morphological characteristics. In the second group of hypotheses assume the existence of four latent dimensions of morphological space. In investigating morphological structure of examined groups the crossectional method was used.

Set of anthropometrical variables and measures for their assessment were based on the International Biological Program (IBP) according to Weiner and Lourie, 1964 [14]. The measure for estimating of morphological characteristics of physical education female students in this research is chosen according to the model of morphological status structure. This model is defined in previous researches as longitudinal and transversal dimensionally of skeleton, volume and body mass and subcutaneous fat tissue.

The basic aim of this study is cross-cultural comparison of body composition (status of morphological characteristics) and estimation of the structure of the anthropometrical parameters according to previous established model in home (YU) and foreign country (GR) Physical Education female students.

For this purpose there were determined particular goals for the estimation of specific characteristics of some segments of anthropological status of Physical Education female students as follows: Estimation of the Status and Structure of Morphological characteristics; Parallel Analysis and Comparison of the Morphological characteristics in two examined groups of Physical Education female students; Estimation of the Structure Morphological of characteristics; Estimation of the Study efficiency in two examined groups of Physical Education female students; It was formulated general null-hypothesis which assumed no significant differences between specific defined subsamples of participants when considering morphological characteristics of PE female students of different country of origin, as well as in the above mentioned particular goals.

2. Methods

2.1 Sample

This research was carried out with 57 participants divided in two sub-samples and defined as home (n=30) and foreign country PE female students, residing in Greece (n=27) aged up 19 to 23 years old, and studying at University of Nis (in Serbia). The total of examine was limited and depends on number of female students on disposal in limited duration of research project. On the base of samples characteristics the strictly generalization of this study results is possible only for the hypothetic population defined as PE female students of former Yugoslav and foreign citizenship, studying at University of Nis, and in Serbia.

2.2 Instruments

The set of applied tests for the estimation of body composition status consists of 26 anthropometric variables. The collection of these variables was formed in harmony with the structural morphological model, according to Momirović, 1970 [5] as follows:

- (a) *Longitudinal dimensionality of skeleton LDS* [body height (AVIS), sitting height (ASVI), leg length (ADUN), foot length (ADST), arm length (ADUR), hand length (ADSK)1.
- (b) *Transversal dimensionality of skeleton TDS* [biacromial diameter (ABAR), bicrystal diameter (ABIC),

bifemoral diameter (ABIF), wrist diameter (ADZS), elbow diameter (ADZL), knee diameter (ADZK), ankle's diameter (ADSZ)].

- (c) *Volume and body mass VBM* [body mass (ATEZ), chest circumference (ASGK), upper-arm circumference (ANDL), lower-arm circumference (APDL), upper-leg circumference (ANTK), lower-leg circumference (APTK)].
- (d) *Subcutaneous fat tissue SFT* [upper-arm skin fold (AKNN), lower-arm skin fold (AKNP), back skin fold (AKNL), chest skin fold (AKNG), abdomen skin fold (AKNT), upper-leg skin fold (AKNB), lower-leg skin fold (AKPK)].

2.3 Data procession.

The research data were processed by basic descriptive statistics, and t-test, univariate (ANOVA), and multivariate analysis of variance (MANOVA), and factor analysis.

3. Results and Discussion

Multivariate analysis of variance (MANOVA) confirmed that two examined groups do not differ statistically significant in applies set of anthropometric variables.

Table 1. Groups differences

	n	F	p
MANOVA	26	1.12	.376

Within variables for the Longitudinal dimensionality of skeleton estimation ANOVA point out that do not exists statistically significant differences, within examined groups, and variables, except in foot length (ADST) and hand length (ADSK) where is notable difference's with better mean values of home country PE female students. Transversal dimensionality of skeleton was estimated on the bases of wrinkle diameters. It was confirmed that some diameters statistically significant differ among examined groups, with better mean values of home country PE female students in wrist diameter (ADZS), elbow diameter (ADZL), and ankle's diameter (ADZK). Volume and body mass were estimated on the bases of body weight and circular dimensionally of skeleton. It was not confirmed statistically significant differences between two examined sub samples of PE female students. Subcutaneous fat tissue was estimated on the bases of skin fold. Only in one variable was noted statistically significant difference regarding to the lower-leg skin fold (AKNP) with higher mean values of foreign P.E. female

Multivariate analyses of variance (MANOVA) do not confirmed that inspected differences are statistically significant.

Table 2. Mean values and t-test for LDS

No	Variable	Mean-GR-1	Mean-YU-2	t	p
2.	AVIS	1650.500	1667.552	1.004	.320
3.	ASVI	873.250	880.690	.830	.410
4.	ADUN	915.500	931.069	1.298	.200
5.	ADST	231.929	240.414	2.468	.017
6.	ADUR	701.643	711.897	1.203	.234
7.	ADSK	173.714	178.103	2.154	.036

Legend: 2. body height (AVIS), 3. Sitting height (ASVI), 4. Leg length (ADUN), 5. Foot length (ADST), 6. Arm length (ADUR), 7. Hand length (ADSK),

It has been established by the multivariate analysis of variance of obtained results that the examined groups do not statistically differ in a significant way. Longitudinal dimensionality of skeleton does not statistically differ by two examined sub-samples, except at variables for estimation of foot length (ADST) (t=2.47; p=.017), and manual lengths ADSA (t=2.15; p=.036), where is statistically significant difference's with better mean values in Yugoslav PE female students sub-sample.

Table 3. Mean values and t-test for TDS

No	Variable	Mean-GR-1	Mean-YU-2	t	p
8.	ABAR	358.143	367.276	2.181	.033
9.	ABIC	268.714	271.655	.587	.560
10.	ABIF	304.536	309.724	1.192	.238
11.	ADZS	45.464	51.552	3.760	.000
12.	ADZL	57.750	61.897	2.960	.005
13.	ADZK	84.929	86.621	1.062	.293
14.	ADSZ	63.929	68.241	2.614	.012

Legend: 8. biacromial diameter (ABAR), 9. Bicrystal diameter (ABIC), 10. Bifemoral diameter (ABIF), 11. Wrist diameter (ADZS), 12. Elbow diameter (ADZL), 13. Knee diameter (ADZK), 14. Ankle's diameter (ADSZ),

Transversal dimensionally of skeleton was estimated on the bases of wrinkle diameters. It was confirmed that some diameters statistically significant differ by the examined samples with better mean values of Yugoslav female students: biacromial diameter ASRA (t=2.18; p=. 033), wrist diameter ADZS (t=3.76; p=. 000), elbow diameter ADZL (t=2.96; p=. 005), ankle's diameter ADSK (t=2.61; t=. 012).

Table 4. Mean values and t-test for VBM

No	Variable	Mean-GR-1	Mean-YU-2	t	p
1.	ATEZ	582.321	597.586	.941	.351
15.	ASGK	829.536	838.310	.827	.412
16.	ANDL	246.679	247.034	.076	.940
17.	APDL	221.107	225.310	1.359	.180
18.	ANTK	541.036	541.310	.031	.975
19.	APTK	346.964	355.966	1.584	.119

Legend: 1. body mass (ATEZ), 15. Chest circumference (ASGK), 16. Upper-arm circumference (ANDL), 17. Lower-arm circumference (APDL), 18. Upper-leg circumference (ANTK), 19. Lower-leg circumference (APTK)

Volume and body mass were estimated on the bases of body weight and circular dimensionally of skeleton. It was not confirmed statistically significant differences between two examined sub samples of P.E. female students.

Table 5. Mean values and t-test for SFT

No	Variable	Mean-GR-1	Mean-YU-2	t	p
20.	ANNL	14.464	12.621	1.481	.144
21.	ANPL	9.107	8.586	769	.445
22.	ANLE	10.607	10.690	.109	.914

23.	ANGR	9.964	10.586	.670	.506
24.	ANTR	12.393	12.379	.011	.991
25.	ANBU	14.571	13.414	.865	.391
26.	ANPK	17.536	15.172	1.941	.057

Legend: 20. Upper-arm skin fold (AKNN), 21. Lower-arm skin fold (AKNP), 22. Back skin fold (AKNL), 23. Chest skin fold (AKNG), 24. Abdomen skin fold (AKNT), 25.upper-leg skin fold (AKNB), 26. Lower-leg skin fold (AKPK)].

Adipose tissue was estimated on the bases of skin fold. Only in one case was confirmed statistically significant difference regarding to the lower-leg skin fold with higher mean values of foreign P.E. female students, ANPK (t=1.94; p=.057).

Applied set of *criterion variables* was processed with basic and comparative statistics procedures. It was established significant differences in favor of YU-PE female students. In the both analyzed sub-samples the lowest mean values were estimated in set of variables of general educational subjects (UOOB), than the values get higher in the group of general professional subjects (UOST) and average of the total study period efficiency (UUST). The highest values are estimated at the group of specific professional subjects (USRV).

Table 6. Between-groups differences criterion variables

Criterion	Mean-GR-1	Mean-YU-2	t	p
UOOB	6.430	6.842	3.120	.003
UOST	6.664	7.330	4.426	.000
UUST	6.925	7.818	6.353	.000
USRV	6.759	7.493	5.817	.000

Legend:

UOOB-Success of General educational Curriculum;

UOST-Success of General professional Curriculum;

UUST-Success in Total PE study Curriculum;

USRV-Success of Specific professional Curriculum

Morphological structure of a specifically selected sample of adult females (of the above-average motor status) was defined with five latent dimensions that can be interpreted on the following way:

Table 6. The Structure of the Extracted Factors (1-5)

No	Variables	F1	F2	F3	F4	F5
1.	ATEZ	.8394*	0670	4392*	1333	.0804
2.	AVIS	.5692*	.6603*	3241	.1145	2716
3.	ASVI	.5959*	.3937	1777	1477	2605
4.	ADUN	.4496*	.7062*	2326	.2624	1948
5.	ADST	.6995*	.4215*	0795	.0683	.1079
6.	ADUR	.4902*	.6933*	3437	.1908	1067
7.	ADSK	.6576*	.5079*	1299	.0219	0412
8.	ABAR	.6421*	.3940	.1006	.2361	.2146
9.	ABIC	.4300*	.3590	.3334	0306	2964
10.	ABIF	.7537*	.0656	.0960	3209	1430
11.	ADZS	.4310*	.2904	.7463*	0538	.2594
12.	ADZL	.5416*	.1276	.6755*	0334	.2856
13.	ADZK	.6592*	.1099	.4341*	3370	1474
14.	ADSZ	.6687*	.0922	.6231*	1405	.0302
15.	ASGK	.6117*	1015	4072	.1621	.4265*

16. ANDL .6533* 4994* 2989 .1152 .205 17. APDL .7240* 1293 3404 2425 .307 18. ANTK .7438* 4057* 3054 2548 046 19. APTK .6329* 2282 1475 5593* .099 20. AKNN .4343* 6377* .0772 .3967 190
18. ANTK .7438* 4057* 3054 2548 046 19. APTK .6329* 2282 1475 5593* .099 20. AKNN .4343* 6377* .0772 .3967 190
19. APTK
20. AKNN .4343*6377* .0772 .3967190
201 222 21 100 10011 10112 10101
21 ATAID FORAS ACADS 0422 0011 065
21. AKNP .7054* 4640* .0433 .0811 065
22. AKNL .6403 *37670406 .4124 * .092
23. AKNG .6467* 2734 .3105 .3804 .094
24. AKNT .5478* 3295 .3499 .3755267
25. AKNB .3215 6502* 12930025201
26. AKPK .4259*6706* .058216884296

- (1) The first factor is related to the *volume and body mass* and it is define by the following manifest variables: body mass, chest circumference, upper-arm circumference, lower-arm circumference, upper-leg circumference and lower leg circumference.
- (2) The second factor is related to the *longitudinal dimensionality of skeleton* and it is best defined with following manifest variables: leg length, arm length, hand length, sitting high and foot length.
- (3) The thread and fifth factor can be defined like *transversal dimensionality of skeleton* while the thread factor is almost defined with manifest variables for the diameter of wrinkles estimation (hand, elbow and ankles wrist diameter).
- (4) The fourth factor can be defined like *subcutaneous fat tissue* with following manifest variables: abdomen skin fold, upper-arm skin fold, chest skin fold, back skin fold.
- (5) The fifth factor can be defined like *transversal dimensionality of skeleton* while is defined with bicrystal and bifemoral diameter, as well as with knee wrist diameter.

6. Conclusions

- This research was carried out on the two sub-samples of home [former Yugoslav (N=30)], and foreign country- [Greek (N=27)] PE female students at the Department of Physical Education, University of Niš.
- Parallel analysis of obtained result shows that two examined groups do not statistically significant differ in morphological characteristics.
- These research does not confirmed the four dimensional model of morphological structure defined in previous studies in global.
- The structure of latent morphological dimensions at the Physical Education female students is defined with five factors as follows:
- 1. Volume and body mass
- 2. Longitudinal dimensionally of skeleton
- 3. Transversal dimensionally of skeleton (wrist diameters)
- 4. Subcutaneous fat tissue
- 5. Transversal dimensionally of skeleton (wrist distance).

Acknowledgements

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MATHEMATICAL MODELING OF COUPLED HEAT TRANSPORT AND WATER FLOW IN FREEZING SOILS AND FRACTURED ROCK MASSES

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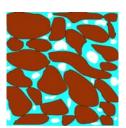
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Abstract: In this contribution the model of heat and water transport in frozen porous media and fractured rock masses in conditions of freezing and thawing is analyzed. We present results concerning the existence of the numerical solution after the time discretization. Numerical scheme is based on semi-implicit discretization in time. The spacial discretization is carried out by the finite element method (FEM) and it is implemented in Matlab. We also present an illustrative numerical example and its comparison to the practical experiment.

Keywords: Richards' Equation, FEM, heat equation, freezing, Darcy's Law

1. Introduction

Phenomena involving partially frozen porous media or fractured rock masses are important in agriculture, civil or transport engineering, ecological and natural systems and much attention is focused on the modeling of their behavior. These models could help us to describe many issues, such as frost-related damages of roads and railroads, frost-related reduction of the infiltration capacity of soils or a description of the migration of pollutants in porous media. According to the main physical processes in porous media under freezing-thawing conditions, some hypotheses are proposed, including that: (i) Darcy's law applies to water movement in both unfrozen and frozen soil, (ii) porous media is undeformable, (iii) the influence of soil water vapor migration on unfrozen water and heat flow transfers is ignored, (iv) all processes are single valued, i.e. hysteresis is not present in the characteristic curves, (v) ice is immovable. The analyzed medium consists of liquid water (ℓ) , skeleton (s) and ice (i).



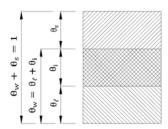


Figure 1: Porous medium components

2. Governing equations

These kinds of models are described by the basic conservation equations for total mass of liquid water and for total energy. Following conservation equations are derived using constitutive equations (e.g. Darcy's law for the liquid water flow and Fourier's law for the heat conduction). Taking into account hypotheses (i)-(iv) the governing equations are as follows:

the conservation equation for total mass of water:

$$\frac{\partial (\rho_{\ell}\theta_{\ell})}{\partial t} + \frac{\partial (\rho_{i}\theta_{i})}{\partial t} = \nabla \cdot \left(\rho_{\ell}\theta_{\ell}K_{h}\nabla(h_{\ell} + z) \right); \tag{1}$$

the energy conservation equation:

$$c_{p} \frac{\partial \vartheta}{\partial t} + L_{f} \frac{\partial (\rho_{i} \theta_{i})}{\partial t} = \nabla \cdot (\lambda \nabla \vartheta) + c_{p}^{\ell} \rho_{\ell} \theta_{\ell} K_{h} \nabla (h_{\ell} + z) \cdot \nabla \vartheta.$$
(2)

In (1)-(2) $h_{\ell} = h_{\ell}(\mathbf{x}, t)$ [m] and $\vartheta = \vartheta(\mathbf{x}, t)$ [K] (single-valued functions of the time t and the spatial position \mathbf{x} in domain Ω) are the pressure head and temperature, $\theta_{\ell} = \theta_{\ell}(h_{\ell})$ [-] is the liquid water content, $\theta_{i} = \theta_{i}(\vartheta, h_{\ell})$ [-] is the ice water content, $K_{h} = K_{h}(h_{\ell})$ [ms⁻¹] represents the hydraulic conductivity, $c_{p} = c_{p}(\vartheta, h_{\ell})$ [J m⁻³ K⁻¹] is the effective heat capacity and $\lambda = \lambda(\vartheta, h_{\ell})$ [W m⁻¹ K⁻¹] is the thermal conductivity. Material constant parameters are the volumetric heat capacity of water c_{p}^{ℓ} [J m⁻³ K⁻¹], the density of liquid water ρ_{ℓ} (approximately 1000.0 kg m⁻³), the density of ice ρ_{i} (918 kg m⁻³) and L_{f} is the latent heat of fusion (3.34 \times 10⁵ J kg⁻¹).

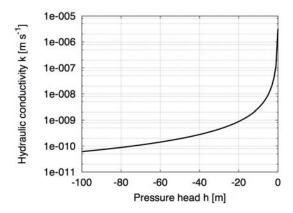


Figure 2: Hydraulic conductivity

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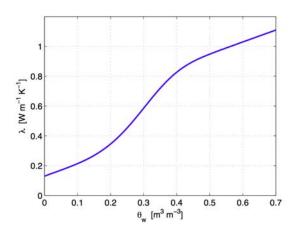


Figure 3: Thermal conductivity

2. Freezing and thawing description

Water in pores does not freeze at 273.15 K but the freezing temperature depends on the water pressure (e.g. matric potential corresponding to the water content in pores), which is described by the Clapeyron's equation [3]:

$$g\frac{\mathrm{d}h_{\ell}}{\mathrm{d}\theta} = \frac{L_{f}}{\theta},\tag{3}$$

where g [m s⁻²] is the acceleration due to gravity, h_{ℓ} [m] is the matric potential corresponding to the liquid water content. The formulation of the liquid water matric potential can be determined from (3) using the Heaviside function as

$$h_{\ell} = h_{w} + \left(\frac{L_{f}}{g} \ln \left| \frac{\vartheta}{\vartheta_{0}} \right| - h_{w}\right) H(\vartheta_{f} - \vartheta), \tag{4}$$

where h_w [m] is the matric potential corresponding to the total water content (liquid and ice), $\vartheta_0 = 273.15 \text{ K}$ and freezing/melting θ_f temperature can be found solving (3) using appropriate initial conditions as

$$\vartheta_f = \vartheta_0 \exp\left(\frac{h_w g}{L_f}\right). \tag{5}$$

To simplify the notation, we will use substitution

$$\left(\frac{L_f}{a}\ln\left|\frac{\vartheta}{\vartheta_0}\right| - h_w\right)H(\vartheta_f - \vartheta) = \psi(h_w, \vartheta),\tag{6}$$

so the final relation for liquid water matric potential is

$$h_{\ell} = h_{w} + \psi(h_{w}, \vartheta). \tag{7}$$

The amount of water present at a certain matric potential of a porous medium is characterized by the water retention curve $\Theta(.)$.

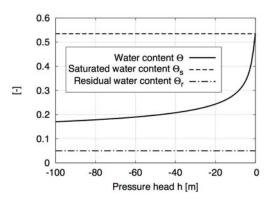


Figure 4: Moisture retention

Here we use the relation proposed by van Genuchten [1] $\Theta(\xi) = \theta_r + (\theta_s - \theta_r)[1 + |\alpha \xi|^n]^{-m}$, where θ_s [-] is the saturated water content, θ_r [-] is the residual water content, α [m⁻¹], m and n are parameters. The ice fraction θ_i [-] can be expressed as $\theta_i = \theta_w - \theta_\ell$ [-]. The total water content θ_M is derived as $\theta_M = \theta_\ell + \frac{\rho_i}{\rho_\ell} \theta_i$.

3. Complete mathematical model

Let T > 0 be fixed value and Ω be the domain in \mathbb{R}^N . N = 1,2,3, with boundary Γ. Denote I = (0,T), $\Omega_T = \Omega \times$ I and $\Gamma_{\rm T} = \Gamma \times I$. The mathematical model consists of the following initial boundary problem:

$$\frac{\partial \theta_M}{\partial t} = \nabla \cdot (K_h \nabla (h_w + z + \psi)) \tag{8}$$

$$c_{a}\frac{\partial \vartheta}{\partial t} + L_{f}\rho_{i}\frac{\partial \theta_{i}}{\partial t} = \nabla \cdot (\lambda \nabla \vartheta) + c_{p}^{\ell}\rho_{\ell}\theta_{\ell}K_{h}\nabla(h_{w} + z + \psi) \cdot \nabla \vartheta$$
(9)

$$-K_h \nabla (h_w + \psi) \cdot \mathbf{n} = q_{\ell} \tag{10}$$

$$-\lambda \nabla \vartheta \cdot \mathbf{n} = \alpha_c (\vartheta - \vartheta_{\infty}) + g_H \tag{11}$$

$$h_w = (h_w)_0$$
 and $\vartheta = \vartheta_0$ (12)

Equations (8) and (9) hold in Ω_T and represent conservation laws for mass and energy, equations (10) and (11) hold in $\Gamma_{\rm T}$ and prescribe the boundary conditions and equations (12) hold in Ω and prescribe the initial conditions. In (8)-(12) h_w and θ are primary unknowns. Further, c_a [J m⁻³ K⁻¹] is the apparent heat capacity and q_{ℓ} , g_H , θ_{∞} , $(h_w)_0$, θ_0 are given smooth functions.

3. Assumptions on physical parameters

Let us present some properties and additional assumptions on physical parameters introduced in the model

- (a) The parameters ρ_{ℓ} , ρ_{i} , θ_{s} , θ_{r} , c_{p}^{ℓ} , L_{f} , α_{c} are real positive constants, $\rho_i < \rho_w$.
- (b) The thermal conductivity λ , apparent thermal capacity c_a and hydraulic conductivity K_h are assumed to be positive continuous functions of their arguments. In addition, $0 < c_a \le c_a^\# < +\infty \ (c_a^\# = {\rm const} < 0).$ (c) $\Theta(\cdot)$ is positive, nondecreasing, continuous and bounded
- function such that $\theta_r \leq \Theta(\xi) \leq \theta_s \ \forall \xi \in \mathbb{R}$.

(d) Consequently, θ_M is a positive continuous function such that

$$0 < \theta_M(\xi, \zeta) = \frac{\rho_i}{\rho_\ell} \theta_w(\xi) + \left(1 - \frac{\rho_i}{\rho_\ell}\right) \theta_\ell(\zeta)$$

$$\leq \theta_\ell \quad \forall \xi, \zeta \in \mathbb{R}.$$

4. The approximate solution

Although the problem (8)-(12) is essentially non-stationary, we shall formulate and analyze a weak form of the stationary problem. It has a significant mathematical interest because the time discretization of the evolution problem leads, in each time step, to a coupled system of stationary equations. Let $0 = t_0 < t_1 < \cdots < t_N = T$ be an equidistant partitioning of time interval [0, T] with step Δt . Set a fixed integer n such that $0 \le n \le N - 1$. In what follows we abbreviate $\phi(z, t_n)$ by $\phi^n (\equiv \phi(z)^n)$ for any function ϕ . The time discretization of the continuous model is accomplished through a semi-implicit difference scheme. Consequently, we have to solve, successively for $n = 0, \dots, N - 1$, the following semilinear system with primary unknowns $[\vartheta^{n+1}, h_w^{n+1}]$

$$\frac{\theta_M^{n+1} - \theta_M^n}{\Delta t} = \nabla \cdot (K_h^n \nabla h_w^{n+1}) + \nabla \cdot (K_h^n \nabla (\psi^n + z)), \quad (13)$$

$$c_{a}^{n} \frac{\vartheta^{n+1} - \vartheta^{n}}{\Delta t} + L_{f} \rho_{i} \frac{\theta_{i}^{n+1} - \theta_{i}^{n}}{\Delta t} = \nabla \cdot (\lambda^{n} \nabla \vartheta^{n+1}) + c_{f}^{\ell} \rho_{\ell} K_{h}^{n} \nabla (h_{w}^{n} + z + \psi^{n}) \cdot \vartheta^{n},$$
(14)

$$-K_h^n \nabla (h_w^{n+1} + \psi^n) \cdot \mathbf{n} = q_\ell^{n+1} \text{ on } \Gamma, \tag{15}$$

$$-\lambda^{n}\nabla\vartheta^{n+1}\cdot\mathbf{n} = \alpha_{c}(\vartheta^{n+1} - \vartheta_{\infty}^{n+1}) + q_{H}^{n+1} \text{ on } \Gamma.$$
 (16)

Here we assume that the functions h_w^n and ϑ^n are known and we put $K_h^n = K_h(h_w^n, \vartheta^n)$, $\lambda^n = \lambda(h_w^n, \vartheta^n)$, $c_a^n = c_a(h_w^n, \vartheta^n)$. In chat follows we mention the problem of the existence of th variational solution ϑ^{n+1} and h_w^{n+1} : to find the couple $[\vartheta^{n+1}, h_w^{n+1}] \in W^{1,r}(\Omega)^2$, r > N, such that

$$\begin{split} \frac{1}{\Delta t} \int_{\Omega} & (\theta_{M}^{n+1} - \theta_{M}^{n}) \phi_{1} + c_{a}^{n} (\vartheta^{n+1} - \vartheta^{n}) \phi_{2} \\ & + L_{f} \rho_{i} (\theta_{i}^{n+1} - \theta_{i}^{n}) \phi_{2} d\Omega + \int_{\Omega} K_{h}^{n} \nabla h_{w}^{n+1} \cdot \nabla \phi_{1} d\Omega \\ & + \int_{\Omega} K_{h}^{n} \nabla \psi^{n} \cdot \nabla \phi_{1} d\Omega + \int_{\Omega} K_{h}^{n} \cdot \mathbf{e}_{z} \phi_{1} d\Omega \\ & + \int_{\Omega} \lambda^{n} \nabla \vartheta^{n+1} \cdot \nabla \phi_{2} d\Omega \\ & - \int_{\Omega} c_{p}^{\ell} \rho_{\ell} K_{h}^{n} \nabla (h_{w}^{n} + z + \psi^{n}) \cdot \vartheta^{n} \phi_{2} d\Omega \\ & + \int_{\Gamma} q_{\ell}^{n+1} \phi_{1} dS \\ & + \int_{\Gamma} \alpha_{c} (\vartheta^{n+1} - \vartheta_{\infty}^{n+1}) \phi_{2} + q_{H}^{n+1} \phi_{2} dS = 0 \end{split}$$

holds for every $[\phi_1,\phi_2]\in W^{1,r'}(\Omega)^2, r'=rac{r}{r-1}$, and

$$\theta^0(\mathbf{x}) = \theta_0(\mathbf{x})$$
 and $h_w^0(\mathbf{x}) = (h_w)_0(\mathbf{x})$ in Ω .

Theorem 1 Assume that $[\vartheta^n, h_w^n] \in W^{1,s}(\Omega)^2$ with some s > N is known and let assumptions (a)-(d) be satisfied. Then there exists the variational solution $[\vartheta^{n+1}, h_w^{n+1}] \in W^{1,r}(\Omega)^2, r > N$ of the problem(13)-(16).

Corollary 1 Fix $n \in \mathbb{N}$. Following Theorem 1, $[\vartheta^n, h_w^n] \in W^{1,r}(\Omega)^2$ with some r > N yields the existence of the couple $[\vartheta^{n+1}, h_w^{n+1}] \in W^{1,s}(\Omega)^2$, s > N. Since we suppose $[\vartheta^0, h_w^1] \in W^{1,r}(\Omega)^2$, r > N, we conclude that $[\vartheta^n, h_w^n] \in W^{1,r}(\Omega)^2$, r > N successively for n = 1, ..., M - 1.

4. Example

By means of the model described above, we briefly present numerical simulation of benchmark experiment in [4] The soil thickness in the numerical simulation for the one-dimensional vertical transport is 0.2 m. The initial uniform temperature is set to 279.85 K and the uniform water content to 0.33. The top of the column is exposed to the temperature 267.15 K hence it is subjected to freezing from top to down. All boundaries are hydraulic insulated. Physical properties of soil are taken from [1, 6] and the basic material constants are summarized in table below.

Table 1: Constant parameters

Constant	Value	Dimension	Description
$ heta_\ell$	1000.0	kg m ⁻³	Density of liquid water
θ_i	918.0	kg m ⁻³	Density of ice
θ_{s}	0.535	m ³ m ⁻³	Saturated water content
θ_r	0.05	m ³ m ⁻³	Residual water content
c_p^ℓ	4.1 x 10 ⁶	J m ⁻³ K ⁻¹	Volumetric heat capacity of liquid water
L_f	3.34×10^{5}	J kg ⁻¹	Latent heat of fusion
$\alpha_{\rm c}$	28.0	W m ⁻² K ⁻²	Convection heat transfer coefficient

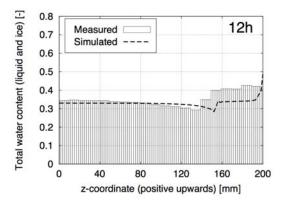


Figure 5: Distribution of total water content at 12 hours

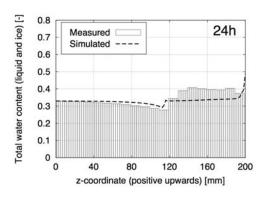


Figure 6: Distribution of total water content at 24 hours

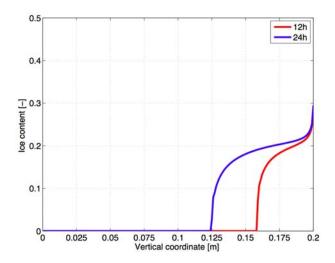


Figure 7: Distribution of ice content at 12 and 24 hours

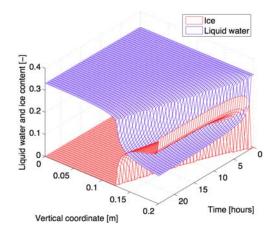


Figure 8: Distribution of ice and liquid water

The spatial discretization of the system (13)-(16) is carried out by means of the FE-method. This resulting system is solved using the well-known Newton method at each time step with Δt =1s. The results demonstrate a trend that water moves toward the freezing front as commonly observed by experimental phenomena (see [4]). The total water content in the frozen region increases and liquid water from lower

region moves upward and increases the contribution of ice at the upper surface.

4. Conclusion

In this contribution we analyzed a model of coupled heat transport and water flow in porous media accounting for conditions of freezing and thawing. The existence of the numerical solution after the time discretization has been proved and the numerical solution has been implemented in Matlab. The obtained results well correspond with the results obtained by the practical experiment.

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Abstract: Opening to "Others" has become an important part of the educational policy of many countries in the world. It can even be said that the interpenetration of cultures is a feature of the twenty-first century. The purpose of this article is to discuss issues related to the wider concept of Otherness on the basis of selected results and conclusions of the study carried out in Spain among the group of participants of the Erasmus program. In particular, the research included the attitude of students towards homosexuals, people of other denominations and people of colour. The main question that has been attempted to be answered relates to multiculturalism: what is the ratio of students to "Others" in the context of contemporary educational practices in culturally diverse academic community? The whole discussion was embedded in a theoretical framework of intercultural education, whose main purpose is learning, understanding and acceptance of different cultures and their creators.

Keywords: otherness, erasmus, multiculturalism, interculturalism

1. Introduction

Observing the changes taking place in Europe, I can notice that year by year Old Continent is becoming more diverse in many areas of human life. Multiculturalism in Europe has become a reality, and thus highlighted the phenomenon of Otherness - the problem that humanity has faced since the dawn of history. There has always been, is and will be, an Other - with different views, different skin colour or a different sexual orientation. In most cases, the Other is rejected by the group. Is the same taking place in education? Hereby, I will try to seek answers to the question: what is the attitude of students to Others in the context of contemporary educational practices in culturally diverse academic community?

Information on similar studies has been provided by Eurobarometer - an international project of regular public opinion surveys of the European Union countries. A report *Discrimination in the EU in 2012* speaks of the perception and attitudes of Europeans towards discrimination, based on different areas (gender, ethnic origin, religion or belief, age, disability, sexual orientation and gender identity) [1].

The purpose of this article is to present selected findings and conclusions of the study, which I realized when on an Erasmus scholarship in Spain.

2. Intercultural Education in the European context

The shape of the European reality is influenced by various global processes, including globalization, whose one of the positive effects is reflected in global education. In the current socio-economic conditions, global education gained importance since it opens people's eyes and minds to the world and realizes the need to take action to strive for greater justice, equality and guarantee of human rights for all [2]. Thus, "global consciousness" is a key objective of global education that can be achieved, inter alia, by shaping the belief that people around the world share a

common biological 'status', history, psychological needs and existential problems [3].

Global education includes intercultural education, whose main purpose is learning, understanding and acceptance of different cultures and their creators. It teaches cooperation and mutual use of the achievements of people of different races, nationalities, religions and cultures [4]. Such an understanding of intercultural education refers to the principle of dialogue between cultures, which also implies strengthening the identity and distinctiveness of the different cultures and develop, mutually enriching, exchange processes between these cultures [5]. The benefits of cultural differences have been noticed by Stanislaw Kawula: Education should take advantage of the opportunity and enrichment brought by cultural diversity and its availability in the modern world [6]. It can be concluded that different cultures should be regarded as equivalent, that there is neither superior nor inferior culture. Ryszard Kapuscinski considered noticing the multithreading development of mankind and the equality of cultures to be one of the most important discoveries of the twentieth century [7]. Intercultural communication is expressed in crossing the borders of our own culture and approaching the edges, the cultural borderline [8]. This type of experience enriches our personality and allows us to look at the world around from a different perspective, often unknown until now.

In the literature there can be found three basic theories of intercultural education: assimilation, the "melting pot" and pluralism.

The assimilation strategy assumes that in a situation of dependence of a number of cultural groups on one dominant ethnic, national, racial or religious group, this dominant group imposes on the others the status of cultural minority. It is also trying to keep the total hegemony of language, politics, usually race and religion [9].

The theory of "melting pot" was established in the United States and assumes "melting", in the great social pot of ethnic groups that compose the social mosaic in the U.S., in a homogeneous whole, which is to be the American society [10]. The idea of this strategy refers to the ability of education of each group within their own culture as well as fusion with the dominant culture while maintaining the "diversity". Moreover, the concept of "melting pot" assumes that each ethnic group has some positive qualities, their culture mixed in the pot will give rise to a new, higher culture [11]. In the fiery melting pot all nationalities are equal, take on other shapes and become something new [12]. Such a connection would be the source of their strength.

The theory of pluralism can successfully implemented in intercultural education, because it accepts the cultural differences without valuing any of them. It also creates the conditions for the implementation of regional education. In this model, all the political, social or economic institutions are not entitled to control intercultural education. Developing important cultural activities should not encounter any obstacles. The cooperation with "significant others" is understood and socially supported [13].

The European Union has decided to implement the concept of pluralism, the strategy most conducive to the development of intercultural education, and recommends the Member States to adopt the concept - but not in an arbitrary manner.

For many European countries Otherness has become an educational challenge, because in diversity there have been noticed an opportunity for development. Educational projects have recently had the increasingly dominating content connected with relations between civilizations and cultures, religions and faiths, countries and people, solutions to the problems of mankind in the dimension of global educational proposals for global programs to promote scientific exchange values and traditions, as well as perspectives related to this agreement, cooperation, and the like [14]. Such assumptions are reflected in the demands of social policy represented by some members of the European Union. Going beyond the boundaries - both geographic and psychological - is enabled by student exchange programs - Erasmus, as one of them. It was formed in 1987 and despite the fact that over the years its scope and objectives have broadened, the main idea still remains the same - to develop international co-operation between universities and students.

3. Methodology

The aim of my research was primarily to diagnose the current state of students' attitudes towards cultural differences, to know the opinions and attitudes of students (Erasmus students) to Otherness - mostly equated with such areas as gender, religion, age, disability, sexual orientation and race.

In order to explore the knowledge of the perception of Otherness by students I conducted surveys. The questionnaire consisted of 29 closed questions and was drawn up in English. The respondents were people who declared to have been participants in the Erasmus program

in the academic year 2012/2013. The study involved 72 students (49 women and 23 men) aged 20-30 years from 16 countries (Austria, Croatia, the Czech Republic, Gabon, Greece, the Netherlands, Lithuania, Latvia, Germany, Poland, Romania, Slovakia, Slovenia, Sweden, Turkey, Italy). The research was conducted in January 2013 in the south-western Spain at the Universidad de Huelva. It should also be noted that in the time of the survey respondents had lived from about four to five months in Spain, not in their own country.

4. Others in the eyes of the respondents

As previously mentioned, the study was conducted within a group of students from sixteen countries. Therefore, for clarity of analysis, I made the categorization of countries due to their tradition of intercultural education. I defined the following four groups of countries: 1 The countries with strong traditions of intercultural education (Austria, the Netherlands, Germany, Sweden), 2 The continental European countries (Greece, Italy), 3 The countries with communist traditions (Croatia, the Czech Republic, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia), 4 The countries where education on tolerance, openness is underdeveloped (Gabon, Turkey).

The issue of relationship towards Others in social studies frequently checks to which areas of our lives and to which proximity of contacts we are willing to allow the Other, in terms of efficiency or sexual orientation, in our vicinity. This degree of understanding and intimacy in personal and social contact is called social distance. As the first to introduce this concept to the sociology was Robert Ezra Park, whereas his concept was first applied in practice by Emory Bogardus. He built a seven-stage scale, starting from questions about the possibility of marriage with the Other, and ending up asking for permission to stay in the country under consideration. The Bogardus scale went through countless modifications and adaptations to various cultural and social conditions. Adapting The Bogardus scale to the needs of my research project, I decided to extract two components: 1 Micro-social distance in the public sphere. 2 Distance in the private sphere. Distance measuring variables in the individual areas are: 1 Admission of the Other to the role of the person managing the higher education institution (at local level). 2 Admission of the Other to the role of a roommate agreement to sitting at the table together with the Other, consent to shake hands with the Other. Each variable was measured on a four-level scale estimated from the vast acceptance to strongly oppose the proposed situation. I did not ask respondents about an experience of direct contact with the Other, though, I asked to comment on hypothetical situations.

The results showed that the ratio of students, the participants in the Erasmus program, towards homosexuals, people of other denominations and people of another skin colour is, in general, positive. The majority of respondents definitely accepted hypothetical situations concerning relations with Others. However, for these three groups, the distance towards homosexuals went beyond average results. These differences have become apparent

both in contact in the private sphere and public microsocial. The greatest resistance to the Erasmus students has constituted a situation of sharing a room with a homosexual. Only 43.06% of respondents were determined to be a roommate with a homosexual person. Within this group, men constituted 21.74%, and women 53.06%. Absolute antagonists to the concept of a common room with a homosexual was more among males (13.04%) than among women (6.12%). The results showed, therefore, that women in the private sphere are much more tolerant than men. It should be also mentioned that all the people who have a negative attitude on this issue came from the countries of post-communist traditions, and those in which education on tolerance, openness is underdeveloped.

In the research, I also tried to learn students' opinions on the phenomenon of discrimination. In one of the questions contained in the questionnaire, respondents were given the task to select one group, among several, potentially most exposed to discrimination.

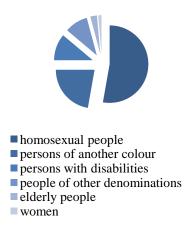


Figure 1: Groups most vulnerable to discrimination

According to students, most vulnerable to discrimination is a group of homosexual people (52.78%). This group has chosen an almost identical number of women (53.06%) and men (52.17%). Hence the conclusion that gender does not determine the choice of this response. Respondents who indicated homosexual people as most vulnerable to discrimination were students from as many as 13 out of the 16 countries surveyed, representing all four defined groups of countries. Then, the Erasmus students pointed to the persons of another colour (22.22%). As in the case of homosexuals, the number of answers by women (22.45%) and men (21.74%) was very similar and represented by students from all four groups of the defined countries. Subsequently, respondents ranked persons with disabilities (11.11%). In this case, however, there was the difference between the answers of men and women. Women (12.24%) to a greater extent than men (8.70%) claimed that people with disabilities can be vulnerable to discrimination. The students who pointed out this group represented such countries as the Czech Republic, Latvia, Germany, Poland, Romania and Turkey. People of other denominations (9.72%) were the next in the hierarchy

created based on research results. Men (13.04%) more frequently than women (8.16%) indicated that this group of people may be exposed to discrimination. Students responding to this question represented all four groups of countries. In the opinion of the students least likely to discrimination are the elderly (2.78%) and women (1.39%). Elderly people were indicated by about half of the more male students (4.35%) than female students (2.04%). Men came from Polish cities, while women of Italian cities. In relation to women, as a group vulnerable to discrimination, such a choice was only made by women who came from the Turkish cities. Since I was a participant in this exchange program, I could participate in completing questionnaires by respondents. Thanks to the completion of the study as a result of relaxed, casual conversations with some of the respondents, I received feedback on my research issues. Not without significance is the fact that none of those conversations were recorded in any way. They were mere discussions in relation to the study. An example of this type of discussion was the conversation that I conducted, among others, with a few female students from Turkey. They have referred to the situation of women in their homeland that are discriminated against. My interlocutors mentioned that thanks to the participation in the Erasmus program they could leave the country, though not without obstacles in obtaining a visa. Leaving for college, they usually decided on the maximum period of stay outside home, which is a period of approximately one academic year. During this time, some of them planned to travel to several European capitals. They claimed that being outside of Turkey now they want to visit as many places as possible, since in the future they fear they will lack the opportunities to go abroad again. They repeatedly stressed that the Erasmus program has enabled them to see another world that is very different from the one they knew so far. Living in another culture even allowed some of them to pursue their small dreams that the Muslim world is difficult, or even impossible, as for example, having a dog in the house. One of the students even bought a dog and decided to see during her stay in Spain what it is like to have a pet at home, a pet she had never had.

From the above analysis, we can therefore conclude that the students most at risk of discrimination are homosexual people (52.78%). The number of indications for this very group was significantly higher than the other variants of answers. The results of my research in the field of discrimination were similar to the results of similar studies carried out by Eurobarometer. The report entitled *Discrimination in the EU in 2012* shows that respondents from 27 countries of the European Union found that the most discriminated against people in society are, among others, due to their sexual orientation (46.00% of responses) [15]. In both studies, the percentage of indications for homosexual people was close to 50%. It can therefore be concluded that the group under analysis reflected the views of Europeans on sexual orientation.

5. Conclusions

The perspective that I saw through the eyes of the Erasmus students showed me that widely understood education is able to prepare conscious and responsible generation to live in the dialogue of cultures and openness towards Otherness. The research has proven optimistic vision of the future in the context of the still emerging multicultural society uniting Europe. Thanks to the study, I learned the image of the Other inscribed in the culture of the country from which the students came. These images differ from each other depending on the separate fates of particular areas of Europe, the World, in terms of diversity of emancipation and cultural differences of identity. The attitude of the Erasmus students to Otherness, and the approach to the study and the researcher, gave me the image of themselves. They appeared to me as an open community, distinguished by its mobility and creativity. Through their attitude, the students showed that education means partnership and cooperation. Hence, all kinds of differences fade into the background. I also think that by working together, students have the opportunity to better understand their own reactions and attitudes towards Otherness. The processes of globalization mean that the world is constantly changing and the pace of these changes is becoming more and more momentum. The conditions of life are changing, so our concerns are becoming commonplace. Nowadays, we are increasingly experiencing encounters with Others. For some of us it is not easy to manage in this new reality. However, it is worth remembering that Others are among us - they live, love, go to work and they wish to coexist and interact peacefully.

In my opinion, the Erasmus experience not only did show the importance of education in shaping tolerance for cultural diversity, but also proved that the interpenetration of cultures is positive and useful.

However, for me as the researcher sharing everyday life with people from another culture this is the most valuable experience I acquired during my stay in Spain.

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THE IMPORTANCE OF FAMILY IN CHRISTIAN AND ISLAMIC RELIGION

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Abstract: Each religious tradition has its own specifics and differences in the perception of the same state, institution and value. These specifics of a particular religion can also be found in the perception of marriage, family and the upbringing of children. Islam and Christianity with their forefather Abraham, worshiping one God, pay major attention to family. Both religions are aware of its value and importance in today's society. For a society, in which family is experiencing a profound crisis. Particular similarities and differences in the perception of family in Islamic and Christian religion are included in the following article.

Keywords: family, marriage, Islam, Christianity

1. Introduction

The existence of the family, the basis of every country in the world, is threatened by many factors at this time. Relationships are caught up in infidelity, jealousy, even in hatred. Children, a gift from God, are often the subject of disputes, hassles and divorce hearings. Affected by such situations, they are incapable of starting their own fully functional families later on. And so, young people, when perceiving this trend, worried and afraid, do not tend to get married and start their families. They live together without being married, without a sacrament, without a shared name, which is a joint, according to which we belong to a particular family. As an educator, I listen to the stories of children on a daily basis, and one week, the main role is played by a mommy in an apartment with her "new friend" and a weekend with daddy in a house with "two new aunts". I could go on: "Daddy lives far away, I visit him sometimes. The aunt that lives there with him is expecting a baby and I do not know what it will be to me. Mommy also has a tummy, and the uncle is pretty good to me... Many children tell me they have two dads, others do not have any... We make such society ourselves. The question is how world religions perceive family and how they could defend against this situation. To compare the institution of marriage and family in different religions, I chose two world religions based on the same tradition: Christianity and Islam.

2 Family in Christianity

According to the Catechism of the Catholic Church (hereinafter referred to as "CCC", 1999, p. 538, 2202), "Family is a basic unit of a social life. It is a natural community in which husband and wife are called to dedicate one another in love and to deliver a life. Authority, stability and lifelong relations within a family are forming the basis of freedom, security and brotherhood within society. Family is a community in which it is possible to acquire moral values from an early childhood; to begin worshipping God and to properly rejoice in freedom. Family life is an introduction to a life of society." Hardly can we build a house without foundations, or with poor fundaments. The house can withstand the first winds or frost and will be demolished because it does not have its

strength and resistance. The same principle can be applied to a society without a good foundation – without family, which is solid and holds together, it cannot withstand the onslaught of bad influences and its entire core will be permanently impaired, it will lead to extinction. Inside the family, children should be taught moral values and educated in the right use of their reason and freedom – we can already see, it does not work that way. Parents are constantly overwhelmed by work and lack of time, so they pass the duties and responsibility of raising children on educators, teachers and the media. According to Christian religion, parents should be the first teachers of life and faith

In a functional marriage and family unit children can learn moral values necessary for a healthy attitude towards life and society. For functional relationships within the family, friendships, later in the workplace and therefore the whole society.

The basic verse of the Bible defining marriage, which shows its importance, is a verse from the Old Testament, from Genesis: "Therefore a man shall leave his father and his mother and hold fast to his wife, and they shall become one flesh" (Genesis 2:24). A man should be emotionally stronger and mature; he should leave his safe home environment and live with a woman. For a woman – as a daughter, this decision is more difficult, since she is bound to her mother and to help her parents and the household in which she grew up.

Christian religion based on the Bible is expressing a negative attitude towards divorce. In the New Testament, in The Gospel According to Matthew, we find the first mention about it: "And Pharisees came up to him and tested him by asking, "Is it lawful to divorce one's wife for any cause?" He answered, "Have you not read that he who created them from the beginning made them male and female, and said, 'Therefore a man shall leave his father and his mother and hold fast to his wife, and the two shall become one flesh'? So they are no longer two but one flesh. What therefore God has joined together let not man separate." They said to him, "Why then did Moses command one to give a certificate of divorce and to send her away?" He said to them, "Because of your hardness of

heart Moses allowed you to divorce your wives, but from the beginning it was not so. And I say to you: whoever divorces his wife, except for sexual immorality, and marries another, commits adultery" (Matthew 19:1-9).

Therefore, no man or a judge or notary is allowed, according to Christianity, to separate - divorce marriage. Divorce is against God's plan, it is unacceptable. It is a social plague, as accurately found in the Catechism of the Catholic Church: "Divorce is a grave offense against the natural law. It claims to break the contract, to which the spouses freely consented, to live with each other till death. Divorce does injury to the covenant of salvation, of which sacramental marriage is the sign. Contracting a new union, even if it is recognized by civil law, adds to the gravity of the rupture: the remarried spouse is then in a situation of public and permanent adultery" (CCC 2384). "Divorce is immoral also because it introduces disorder into the family and into society. This disorder brings grave harm to the deserted spouse, to children traumatized by the separation of their parents and often torn between them, and because of its contagious effect which makes it truly a plague on society" (CCC 2385). Therefore, it affects not only the spouses, but also children, families of both sides, relatives, friends, and thus society as a whole. It affects children of all ages; it interferes their emotional condition and an idea of a perfect family, and thus reflects the fear of starting their own one in the future. An exception to being separated or divorced and being able to receive the sacraments is applied for innocent victims of divorce, abused women, deceived partner. Such exceptions are being granted by bishops in particular dioceses. Although these victims of divorce can access to the sacraments, she cannot live with a new partner; it is still considered adultery. We can find the mentioned fact in the Catechism, in the textbook of Christianity: "It can happen that one of the spouses is the innocent victim of a divorce decreed by civil law; this spouse therefore has not contravened the moral law. There is a considerable difference between a spouse who has sincerely tried to be faithful to the sacrament of marriage and is unjustly abandoned and one who through his own grave fault destroys a canonically valid marriage" (CCC 2386). Widows may get married for a second time, but only in a church, therefore receiving the sacrament of matrimony; she cannot live with another man without ecclesiastical marriage.

The status of women in Christian marriage is similar to the Islamic religion. In Islam, it is still somewhat lower, despite the fact that at the time of Muhammad, this area was experiencing a great progress. Therefore, a woman is subordinate to a man even in Christianity, because a man has to provide for the family, and should be responsible for its functioning. However, the Bible points out that it does not give him the right to humiliate or even torture his wife; a man should appreciate his wife as he appreciates his own body, and thus should not hurt her, as he would not hurt himself. He should honor her, as we read in the New Testament, in The Epistle to the Ephesians: "Husbands, love your wives, as Christ loved the church and gave himself up for her, that he might sanctify her, having cleansed her by the washing of water with the word, so that he might present the church to himself in

splendor, without spot or wrinkle or any such thing, that she might be holy and without blemish. In the same way husbands should love their wives as their own bodies. He who loves his wife loves himself. For no one ever hated his own flesh, but nourishes and cherishes it, just as Christ does the church, because we are members of his body. "Therefore a man shall leave his father and mother and hold fast to his wife, and the two shall become one flesh." This mystery is profound, and I am saying that it refers to Christ and the church. However, let each one of you love his wife as himself, and let the wife see that she respects her husband" (Ephesians 5:25-33).

Most discussed polygamy in Islamic religion is unacceptable by Christianity, as we can find in the Catechism: "However, polygamy is not in accord with the moral law. Conjugal communion is radically contradicted by polygamy; this, in fact, directly negates the plan of God which was revealed from the beginning, because it is contrary to the equal personal dignity of men and women who in matrimony give themselves with a love that is total and therefore unique and exclusive" (CCC 2387).

I think young people do not conclude marriages in a church from fear; fear of failure, divorce and the subsequent difficulties. They are overwhelmed with the information about an increasing divorce rate and stories of famous people about another sinking marriage. Engaged couples lack mutual trust, respect and security. They face the fear of infidelity, lies or even abuse. They know that by divorce they would lose the opportunity to continue to receive the sacraments and thus strive for Heaven. Everywhere we here a familiar phrase "we do not need a piece of paper". However, God wants to bless the relationship of two young people in love, he wants to give them strength everyday and give them the greatest gift of all – children.

On the first steps of a new journey which is a married life, engaged couples are accompanied by the words of the Bible in a church during the ceremony, specifically the New Testament, in a First Letter to the Corinthians – The Way of Love, which I will close this chapter with. Love described in this hymn should serve them as a model for their whole life, which they should cherish. Only this way they will handle everyday worries of a marital and family life; and this true, selfless love should be passed on to their children and the next generations; so the society which we live in, could be better:

"The Way of Love - If I speak in the tongues of men and of angels, but have not love, I am a noisy gong or a clanging cymbal. And if I have prophetic powers, and understand all mysteries and all knowledge, and if I have all faith, so as to remove mountains, but have not love, I am nothing. If I give away all I have, and if I deliver up my body to be burned, but have not love, I gain nothing. Love is patient and kind; love does not envy or boast; it is not arrogant or rude. It does not insist on its own way; it is not irritable or resentful; it does not rejoice at wrongdoing, but rejoices with the truth. Love bears all things, believes all things, hopes all things, endures all things. Love never ends. As for prophecies, they will pass away; as for tongues, they will cease; as for knowledge, it will pass away. For we know in part and we prophesy in

part, but when the perfect comes, the partial will pass away. When I was a child, I spoke like a child, I thought like a child, I reasoned like a child. When I became a man, I gave up childish ways. For now we see in a mirror dimly, but then face to face. Now I know in part; then I shall know fully, even as I have been fully known. So now faith, hope, and love abide, these three; but the greatest of these is love" (Corinthians 13:1-13).

3 Family in Islam

As I mentioned in the introduction, for both religions family is equally important. According to Patridge: "Family is a key element of Muslim life and society, one of the cornerstones of social stability and security within municipality (umna). Quran and Hadith abound regulations, restrictions and warnings concerning the organization and behavior of Muslim families and family ties are the strongest of all social relations. Loyalty and devotion to family are superior to any other social loyalty. Muslim family is created by marriage, and any extramarital relations between men and women are being disputed by Islam. The act of procreation remains exclusively within the family unit; fornication and adultery (ziná) are sins, which are rigorously punished by Islamic law. Such distortions are considered a source of chaos (fitna). Privacy and modesty are essential for the procreation and proper upbringing of children. A parent has the first responsibility for the proper care of children as well as their upbringing, and there is a hadith confirming proverb "Love begins at home". Family care is even more important than religious charity. Despite western opinions, Muslim parents treat boys and girls equally. Children are considered a gift from Allah and there are special commands in the Quran against child abuse, particularly those relating to the pre-Islamic custom of burying little girls alive under the sand" (Partridge, 2006, p. 387).

Highlighted proverb above can be the basis for any family – Christian, Muslim, Hindu or Atheist. Only a person, who can feel love and is experiencing love himself, can give it further

A prophet once said: "The best of my people is the one, who proves his family the perfect kindness and goodness." Muslims in rural areas or in larger cities lived mostly in multigenerational extended families, which often included several cousins, aunts and uncles. These large families overcame the isolation that affects a modern family. The formula for obligations and social responsibility in a large family was based on Islamic norms, customs and values.

Muslim family norms represent the respect for elders, love and attention to children; to a larger extent than the competition, self-control and cooperation. In relationships within a family and between families has enhanced the timeless, revitalizing qualities such as selflessness, patience and being caring" (Haeri, 2000, p. 173).

"In Islam, marriage is not considered a sacrament, rather a social and civil partnership" (Callaghan, 2012, p. 69).

Here we can see another difference, which is in the perception of an institution of marriage; since in Christianity, marriage is one of the seven sacraments –

along with Baptism, Confirmation, Eucharist, Holy Orders, Anointing of the Sick and Reconciliation. It is administered in a church, in the presence of a priest and the witnesses from both sides.

We are approaching the most discussed difference between Islamic and Christian religion, which is polygamy. It is written by Huston Smith in one of the best publications about religion: "It is true that the Quran allows a man to have up to four wives at the same time, but there is an opinion that a careful interpretation of these rules are moving towards monogamy as the ideal. This view is also supported by the Quran that says: "But if you fear that you will not be just, then [marry only] one or those your right hand possesses" (Surah 4:3). Some lawyers conclude that the Quran actually preaches monogamy, as it is almost impossible to divide your love and attention evenly.

Despite what has been said, the fact is that the Quran permits polygyny; after the death of Khadija, Muhammad had more women. Muslims consider both facts as examples of adaptability of Islam to different circumstances. They say that there may be circumstances where it is more moral to choose polygyny. One of the examples is the extermination of the male population in the war that confronts the choice between polygyny and the fact that majority of women would be deprived of the possibility of motherhood and starting their own households, which would lead to prostitution. Muslims also emphasize that polygamy is at least as common as in the West, except that there are occurring consecutive marriages. Is the serial polygyny morally significantly higher than the current polygyny, while Muslim women have the right to leave the marriage through divorce, if they wish so" (Smith, 1994, p. 166 n).

I met with the term "serial polygyny" for the first time. The West has nothing to blame a Christian religion for; many of us are already married for a second or third time. They were not able to behave respectfully towards their first two wives, they cannot even talk after divorce, they are starting new families and it affects the children the most. In Islam, a husband is supposed to treat all his wives equally, he has to be righteous. In this regard, Western men still have a lot to learn. However, it does not have any connection to Christian religion; because it is, and should be conducted only one – by God and with one partner for a lifetime.

We can approach to the status of women, which is contradictory in both religions. "Islam is usually blamed for the degradation of women, mainly because it allows polygamy. In historical perspective, when comparing the status of an Arab woman before and after Muhammad, we find that this is apparently a false accuse. Under conditions where the birth of a girl itself was considered a disaster, the Quranic reforms significantly improved the status of women. They forbade the killing of children. They demanded that the inheritance should include daughters obviously, not equally as sons, considering that daughters are not financially responsible for their household as the sons are. In terms of civil rights; the right to education, the right to vote and the right to pursue a profession; the Quran leaves open room for the full equality of women and men, which is gradually being approached by Muslim

nations with the modernization of their customs. The most important contribution of Islam for women was definitely a new marriage adjustment. The Quran also demanded that the woman should express a free consent before marriage; and it also significantly strengthened marital relationship. The Quran does not forbid divorce, but tolerates it only as the last option. During marriage, a husband should give to his wife a financial amount, on which they both agreed, that a woman obtains if it comes to a divorce. Wives, as well as husbands, can initiate divorce if necessary" (Smith, 1994, p. 166 n).

The Quran also includes various commands related to the status of men and women, and these commands "clearly indicate that there is a fundamental principle of equality and reciprocity" (Surah2:187 and 228), which Muhammad emphasized in his valedictorian speech on the top of Mount Arafat. Duties of husband and wife are not equal. The husband is the breadwinner of his wife and children, thus giving them necessary food and clothing, while the wife is obliged to maintain domestic order and directly raise children. Equality reflects a theological equality between men and women, which many verses of the Quran emphasize (e.g. Surah 4:1) (Partridge, 2006, p. 389).

Thus we can see the difference between individual religions in the status of women. In Christianity and Islam a woman is subordinate to man, with the condition to respect a man; in Islam we observe the difference based on the Quran that a woman's testimony is worth half that of a man. Many argue that Muslim women are humiliated by veiling, however, this fact explains Smith in more detail (Smith, 1994, p. 166 n): "Regarding the veiling of women and their separation, the Quranic commands are concise. Is only says: "Say to thy wives and daughters and the believing women, that they draw their veils close to them" (Surah 35:39). Extreme applications of this command are the matters of local customs and are not religiously binding."

4 Conclusion

The importance of family in Islamic and Christian religion is the same in many ways. Both religions put emphasis on the upbringing of children; on their lead to virtues – wisdom, justice, love, the right use of their freedom with full responsibility, so they can grow into people with the potential to change this society for the better.

Both of these world religions consider the establishment of marriage as an institution to be a result of human nature, which has a natural tendency to adultery and promiscuity. To avoid these tendencies, sexual intercourse is allowed only within marriage.

In the Islamic world, two families are joining by marriage – economically, by wisdom and experience. In Eastern countries, we observe a trend of small families with one child that tend to be separated from their original families.

Regarding the equality of men and women: in both religions, we are all equal in front of God; however, there is a certain superiority of men over women in Christianity and Islam, for simple reasons – a man has an obligation to provide for his family, while a woman fulfills her role as a mother. When considering superiority, there is an obligation based on the Bible and the Quran, to have respect for the wives. The veiling of Muslim women is a matter of traditions and customs in particular areas.

A Christian man can only have one wife for a lifetime, a Muslim man can have up to four wives if he treats them with equal respect and affection.

The greatest match remains the fact, that in the institution of marriage, both religions want to reach the good: the good of an individual, both partners, the good of children and the good of the whole society. Society that needs a functional family inevitably.

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THE BROAD AUTISM PHENOTYPE THEORY

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Abstract: From a modern perspective, autism may be seen as a dimension ranging from a disorder with severe symptoms which are a cause of further disability and little chances for independent living to a condition impeding social life of individuals but in the same time enhancing their career success in some environments also. The Broad Autism Theory states that autistic traits may be seen in general population with their highest levels in relatives of individuals with this disorder. There were many studies done on cognitive, social and emotional functioning of parents and siblings of children with autism. Most interesting was to find out if there were any differences in information processing, executive functions, theory of mind, central coherence, as well as social interactions and communication. The results of those studies show that parents of children with autism (especially fathers) in comparison to parents of children without any developmental disorders and parents of children with other than autistic disabilities may have some autistic-like traits and may experience similar difficulties as their children do. Thus, it seems that child-centered approach in therapy of individuals with autism is not sufficient. Nonetheless, the Broad Autism Phenotype characteristic is still not clear and evident as particular autistic-like traits may be seen in many different conditions i.e. schizoid personality, eating disorders (anorexia nervosa) or psychosis. In order to offer families with children with autism relevant support, more research is needed.

Keywords: autism spectrum disorders, parents, autistic traits

1. Introduction

Increasing interest in autism spectrum disorders, especially in its genetic determinants [1,2,3,4,5] or genetic susceptibility [6] motivated researchers to focus on cognitive, social and emotional functioning of relatives of individuals with this more and more common developmental disorder. One of the theories explaining links between autistic symptoms and similar traits in general population, which is getting much attention from scientists, is the Broad Autism Phenotype theory (BAP).

2. Autistic traits in general population

The term 'phenotype' in BAP theory is understood as a genetically-based set of traits of individual with its environmentally determined expression. In BAP autism is treated not as a disability or a consequence of deterioration of particular brain structures, but as a tendency to process information in a specific way (a cognitive style) [7,8,9,10]. The BAP theory was developed as an answer to the question of why autism spectrum disorders – although obvious negative consequences – is still present, even getting more prevalent in general population. It seems, as the BAP theory states, that the mild level of autistic traits may be beneficial in some areas of everyday life.

Baron-Cohen with colleagues [8] was one of the first to compare levels of autistic traits in women and men in general population. He proved that 2% of control group (n=174) had similar level of autistic traits – difficulties in social interactions, shifting attention, preference for concentrating on details, lower level of communication and imagination skills – as the experimental group of people with ASD. What is important, those 2% were men only. Moreover, two times more men than women in this research had moderate level of autistic traits. There were

no sex differences in the clinical group. There were no connections between the level of autistic traits and IQ or SES. However it occurred that higher level of autism was more common in scientists, especially those who work in the area of exact science. On those basis, Baron-Cohen with colleagues stated that under some circumstances, autistic traits may become preferable and promote career success.

Since then there were many attempts to specify the concept of Broad Autism Phenotype. Different diagnostic tools were created. Most popular of them are briefly described in Table 1.

Table 1 Autistic traits in general population – diagnostic tools

NAME	AUTHOR AND YEAR	METHOD	CATEGORY
The Broad Autism Phenotype Questionnaire (BAPQ)	Hurley et al. (2007)	Self- assessment questionnaire	Social isolation, rigidity, pragmatic language disorders.
The Broader Phenotype Autism Symptom Scale (BPASS)	Dawson et al. (2007)	Interview, observation	Social motivation, emotional expression, conversation skills, flexibility/ range of interests.
The Social Responsiveness Scale (SRS)	Constantino et al. (2000)	Parent- or partner- assessment questionnaire	Quality of social interaction, communication.

Source: based on [11]

The next step in Broad Autism Phenotype research was to describe particular levels of autistic traits (broaden, moderate, narrow), as well as indicate scores for the most popular measuring tool of BAP - The Autism Quotient (AQ) [12] and its shorten version AQ-Short [13]. In one of Baron-Cohen's researches using AQ in a big group of parents of children with ASD and parents of children without diagnosis as participants (571 fathers and 1429 mothers of children with autism, 349 fathers and 658 mothers of children without any diagnosis) it was proved that both, fathers and mothers of children with ASD got significantly lower scores in communication, social skills, attention switching and imagination than parents of children without diagnosis. This tendency seems to be universal, not culture-dependent [11,14,15], or control group-dependent (in comparison to parents of children with other than autism disorders) [16]). The only scale in which there were no differences was 'concentration on details' [12].

3. Social and emotional functioning of parents of children with autism spectrum disorders

There are many researches indicating the existence of mild symptoms of autism in relatives of children with this disorder [17]. The risk of autism occurrence in this group is significantly higher than in general population and is about 2,8-7% [18]. Bolton and colleagues [19] showed that almost 10-20% brothers and sisters of children with autism have evident symptoms of this disorder. Similar level of interest in researchers evokes the existence of autistic traits in parents of those children. It seems that both current genetic researches and clinical experiences as early as from the very beginning of autism history (i.e. L. Kanner and H. Asperger observations on fathers and mothers of their patients) are the main reasons for such a curiosity in parents' functioning [20]. However, it is important to evaluate the presence of potential patterns of socioemotional functioning in first-line relatives not only for scientific purposes. With evidence for Broad Autism Phenotype existence it may be crucial to offer the families of children with autism not only child-centered methods of therapy, isolating the child and treating him/ her as a "disordered" individual, but rather a systemic approach focusing on how the family works as a whole.

The first attempts to create a clear view on parents' of children with ASD social and emotional functioning was made by Folstein and Rutter in the 70's [21]. More detailed and precise is a paper by Wolff and colleagues [22] who showed that parents of children with autism preferred to be alone, were rather hypersensitive to new experiences, had specific interests, not typical ways of communication, lower levels of empathy, lower levels of emotional responsiveness, even some traits similar to those in individuals with schizoid personality. More subtle description [23] gives such traits as: rigidity (low interest or difficulties in adaptation to changes), preferences to be alone (low interests or no pleasure in being with others), hypersensitivity to critique, high levels of anxiety, small number of friends and language difficulties (especially in pragmatics). The accuracy of this descriptions was proved

in other researches [20,24,25]. They state, that the intensity of autistic traits is higher in fathers (or in male relatives in broader perspective) then mothers (female relatives) [26], what seems to be accordant to the general tendency for autism prevalence in boys and may function as a proof for theories indicating testosterone as a main risk factor for autistic disorder [27].

4. Cognitive functioning of parents of children with autism spectrum disorders

As well as researches on personality traits of parents of children with autism, there were many attempts to describe their cognitive functioning. An interesting study was made by Adolphs and colleagues [28] who focused on cognitive processing of emotional expression of those fathers and mothers of children with autism who scored low on social interaction scales of Broad Autism Phenotype questionnaires. It occurred - likewise children with autism do – that when the parents analyze mimic signals, they focus on mouth and avoid eye regions (by contrast to parents of children without autism spectrum disorders). Mosconi and colleagues [29] showed also that parents of autistic children have similar neurological changes in the brain structures responsible for facial expression processing.

Researches on theory of mind and executive functions of parents of children with ASD were also made. Many authors have proved the primal assumptions of deficits in those two [23,30,31,32,33,34], however there were researches showing no differences too [35,36] or presenting even above average scores in particular skills [37,38]. Studies on central coherence shown that parents of children with autism spectrum disorders find hidden figures faster than parents from the control group and there was an evident preference for local processing in fathers of those children [37,38]. A review of research on cognitive functioning is presented in Table 2.

Table 2 Cognitive functioning of parents of children with autism spectrum disorders (ASD) – a review

AUTHORS AND A YEAR OF PUBLICATION	FUNCTION (method)	RESULTS
Smalley, Asarnow (1990)	Face recognition, emotion recognition	Parents of children with ASD < control group
Szatmari et al. (1993)	Face recognition	Parents of children with ASD = Parents of children with Down Syndrome and parents of children with low birth weight
Baron-Cohen, Hammer (1997)	Eye region based emotion recognition Central coherence (hidden figures test)	Parents of children with ASD < control group
Hughes et al. (1997)	Executive Functions (planning, attention switching, working memory)	Parents of children with ASD (especially fathers) < parents of children with learning difficulties and control group
Fombonne et al. (1997)	Verbal intelligence (Wechsler Intelligence Scale)	Parents of children with ASD > parents of children with Down Syndrome

Piven, Palmer (1997)	Verbal intelligence (Wechsler Intelligence Scale)	Parents of children with ASD < parents of children with Down Syndrome
	Executive Functions – planning, working memory (Tower of Hanoi)	Parents of children with ASD < parents of children with Down Syndrome
Happé et al. (2001)	Central coherence (hidden figures test)	Parents of children with ASD > control group
Briskman et al. (2001)	Central coherence (hidden figures test)	Parents of children with ASD > control group
(2001)	Facial expression recognition	Parents of children with ASD < control group
Bölte, Poustka (2006)	Central coherence (hidden figures test)	Parents of children with ASD > control group
	Executive Functions (Tower of Hanoi)	Parents of children with ASD > parents of children with schizophrenia
Palermo et al. (2006)	Facial expression recognition	Parents of children with ASD < control group Fathers of children with ASD < mothers of children with ASD
Losh, Piven (2007)	Eye region based emotion recognition	Parents of children with ASD < parents of children with Down Syndrome and control group
Losh et al. (2009)	Neuropsychological profile: social cognition, executive functions, local/global processing	Parents of children with ASD < control group (with the biggest differences in social cognition)

Source: based on [39]

It seems that mothers and fathers of children with autism differ not only in the levels of particular traits but also in their profiles. Almeida and colleagues [40] stated that even though higher levels of autistic symptoms were shown both in mothers and fathers of children with autism, women were seen as more rigid, when men were more socially isolated. Similar results were made by Dawson [41] who showed that as many as 16% of fathers from 210 families participating in the study got lower scores on social expressiveness with only 2% of mothers. Moreover, the same study proved that 13,5% of fathers had communications difficulties and only 5,5% of mothers got comparable scores. The differences between fathers' and mothers' functioning can be seen even in comparison to fathers of children with dyslexia and other disorders [38]. Twice as many fathers and grandfathers of children with autism as fathers and grandfathers of neurotypical children are engineers [36]. The closest relatives of those children more often work as mathematicians or physicist (or study those subjects) [42].

5. Summary

Although there were many researches on the Broad Autism Phenotype done, there are still some questions without answers. The results of different studies are sometimes contradictory and not repetitious. The concept of Broad Autism Phenotype is still not clear and traits which are thought to be its core symptoms are frequently seen in

other disorders [43]. Nevertheless, exploring the cognitive, social and emotional functioning of parents of children with autism spectrum disorders is crucial not only for scientific reasons (knowing the nature of this disorder) but for therapeutic (preparing tailored support programs for the family as a whole) above all.

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AWARENESS ABOUT SIGN LANGUAGE AND LANGUAGE IN DEAF AWARENESS FOR STUDENTS II. GRADE PRIMARY SCHOOL FOR THE DEAF IN CZECH REPUBLIC AS PART OF THE DEAF CULTURE

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Abstract: Sign language for deaf people is a natural means of communication that allows them to explore the world around them. The Deaf minority share sign language, culture, education, a rich history, beliefs, values and customs. This paper is based on the thesis that pays attention to the teaching of Czech sign language in primary schools for the deaf in the Czech Republic, which has recently been introduced to the school curriculum. The paper presents the results of one of the subresearch theses, which is language awareness of pupils II. primary schools for the hearing impaired. The research focused on user perception of sign language for pupils, their level of knowledge regarding the theory of sign language and its position in society (Deaf culture).

Keywords: deaf, sign language, identity, language identification, deaf community

1 Introduction

Individuals with hearing disabilities can be viewed in two ways. The first is the medical approach in which it is possible to perceive these individuals as people who have hearing impairments, and who need help with the majority of the hearing. The second is a linguistic-cultural approach that considers the differences between deaf individuals and people with good hearing. Deaf people have their own customs and rules of conduct, a different history and different needs - they have their own culture. Cultural approach is based on respect for otherness. Preferring the language which the deaf can themselves choose as most appropriate to them [1].

The natural and full deaf language code is officially recognized as sign language. Specificity of the family and school environment where deaf children are mostly surrounded by adults hearing them at an early age gives some form also of recognized spoken language, "the language of the deaf". They become children of two worlds, two languages. In the current literature, this is explained using the concepts of biculturalism and bilingualism. Assuming bilingual access to the deaf, the two languages are equal communication codes and each perform a different function. Sign language for deaf people is a natural means of communication that allows them to explore the world around them and be able to communicate. Spoken language (in its written form) then allows deaf individuals to fully function in the hearing world.

The grasping of both languages is becoming an essential part of an individual's personality. Language Deaf Awareness has a great influence on the development and shaping of its identity. To achieve the final shape of the deaf as a conscientious, valuable corporate citizen who knows his place in the world and can live a full and happy life, is an essential prerequisite for an integrated personality with a mature sense of ones own identity, language and culture.

Deaf people as a linguistic and cultural minority share not only sign language and culture, but also education, a rich history, beliefs, values, and habits [2].

Sign language has recently been added to the elementary school curriculum. Its content contributes to the overall development of language awareness of deaf students, sign language users. Language awareness of pupils of schools for the hearing impaired is gained by the user perception of sign language for pupils, their level of knowledge regarding the theory of sign language and its position in society (Deaf culture).

2 The main research objective

The main objective was to determine the level of perception of sign language users themselves, pupils of schools for the hearing impaired. The aim of the research was to determine the level of communication skills of students in the language or sign language assessment of the level of parents, teachers and the users themselves. This was the finding of subjective perception of sign language in family and school environment, language awareness of pupils in primary schools.

As part of the research were carried objectives:

- Determine the level of language awareness of pupils in primary schools for the hearing impaired,
- Find out what is the attitude of pupils with hearing impairment to sign language (whether they like it) depending on communication in family and school environment,
- Find out the popularity of Sign Language Courses for pupils of schools for the hearing impaired.

2.1 Research thesis

Theses 1: The pupil with a hearing impairment ie. sign language users, awareness of its communication value and applies the right to its use.

Theses 2: The pupils of schools for hearing impaired children have a basic knowledge of sign language, history and culture of the deaf.

Theses 3: The pupil with a hearing impairment prefers the communication code, which dominates family communication.

Theses 4: The pupil with a hearing impairment prefers the communication code, which dominates communication in the school environment.

Theses 5: Sign language is one of the favorite subjects for children who are sign language users.

2.2 Methodology and research sample

The survey was conducted as a qualitative research. The research techniques used were structured questionnaires with open questions, methods of analysis, group discussion, group interview.

Approached were elementary schools for the deaf in the Czech Republic, which are used in the teaching or bilingual philosophy of total communication, therefore teachers can use at least the basics of sign language in the classroom (not addressed by the school using the oral approach). In the Czech Republic, 13 primary schools for the deaf and only 5 regular schools taught the subject of sign language. The research was conducted in the months of October, November and December 2013 and January 2014.

Respondents were pupils of elementary schools for the hearing impaired. The research was attended by 45 students - 29 boys (64 %) and 16 girls (36 %), aged 13 to 16 years. Nine respondents were children of deaf parents with sign language as their mother tongue. Other respondents (36) are children of deaf parents. 21 hearing parents can do the basics of sign language. Of the 45 students, 31 students preferred as the primary communication code, sign language and two students with cochlear implants indicated that they use both linguistic communication codes without preference.

3 Interpretation of the results of the research

Theses 1: The pupil with a hearing impairment that is a sign language user, awareness of its communication value and applies the right to its use.

Of the 45 students, 14 students (31 %) prefer communication in spoken Czech language, 31 students (69 %) use sign language to communicate. Of these 31 sign language users, 7 indicated that they use both sign language and Czech language (or did not specify preference for one of them), and 14 of them said they prefer sign language and that they use it in school, and at home (with parents, teachers, and friends), which implies that they regard it as their primary communication code.

All 45 students (100 %) are aware of the right to use sign language in school, take advantage of this right and use sign language at school (with teachers and friends). 34 students also said that they want to know sign language. Surprising to me was the fact that 20 students (44 %) also want to know the Czech language and 14 (31 %) the English language. Pupils therefore recognize the value of sign language communication and the right to its use, and most of them want to communicate and fully control it. But they also recognize the need to control the Czech language and most of them also want to learn.

Theses 2: The pupils of schools for hearing impaired children have a basic knowledge of sign language, history and culture of the Deaf.

The statement that indicates sign language as a natural and fulfilling communication code, equivalent to the Czech language, is upheld by 37 students (82 %) of the total 45 That sign language has its own grammar, is upheld by 18 pupils (40 %). Yet 12 pupils (27 %) claimed that sign language is the same as pantomime and the same number of students confirmed that its an international language. That sign language in schools in the past was prohibited, 22 (49 %) were aware.

The concept of deaf culture was understood by 34 pupils (76 %) of the total 45.

Surprising was the almost unequivocal answer to the argument concerning the identification of a group of deaf and hard of hearing. 33 students (73 %) did not know the difference between these concepts, 3 (7 %) were identified with a group of deaf and only 9 pupils (20 %) with a group of deaf people. For students at this age it's just two terms, which they do not distinguish between, can not determine which approach to hearing impairment they dominated (medical and linguistic-cultural). So we can not talk about a conscious approach to their own hearing impairment and perception of sign language as part of Deaf culture.

Theses 3: The pupil with a hearing impairment prefer communicating the communication code, which dominates the family communication environment.

From a total of 45 students, 38 students (84 %) were users of sign language, of which 9 students used sign language and Czech with no preference and 29 of them prefer only sign language. 9 students had deaf parents. All of these students prefer sign language as their primary means of communication. Of the 36 hearing parents, 17 mastered the basics of sign language. Children of these parents also reported a communication preference to sign language. All students who communicate using sign language in the home said sign language was the preferred means of communication. 3 students indicated a preference over other sign language communication codes, although in a family environment with sign language used.

Theses 4: The pupil with a hearing impairment prefers communicating the communication code, which dominates communication in the school environment.

In the school environment 38 students (84 %) used sign language to communicate with the teacher, 43 students (96 %) in communication with friends (classmates). In the school environment, therefore the majority of pupils in communication with classmates used sign language.

It is interesting how students perceive learning sign language. 43 students (96 %) confirmed that sign language was taught in school, only 17 (38 %) had confirmed they were taught sign language at home and 9 (20 %) in a boarding house. Probably this fact can be explained by the fact that school children learn sign language targeted. They see sign language as a functional means for obtaining information which also developes their character inventory. When communicating with parents at home or with friends in a boarding house, sign language is used to

communicate naturally and most students do not realize that this is actually also teaching them sign language.

Theses 5: Subject Sign language is one of the favorite subjects for children who are sign language users.

As mentioned above, the total number of 45 students, 38 students are sign language users. Only 3 students (7%) stated that the object of Sign language does not belong to their favorites, 42 (93%) pupils confirmed that the subject of Sign Language is among their favorite subjects. Sign language is popular with all students who are considered to be sign language users and is among the favorite subjects of those who prefer to communicate primarily in a communication code.

3.1 Concluding remarks

All pupils are aware of the right to use sign language in school. This data indicates a relatively high level of awareness of the value of sign language communication. The disparity of these findings, is the level of theoretical knowledge concerning the issue of sign language and deaf culture. Surprising was the ignorance of the difference in terms deaf/Deaf. These findings thus indicate that students perceive sign language as a communication tool and their primary language naturally used in communication, but their language awareness in terms of understanding the language as part of the deaf culture and their own identity is not supported by sufficient theoretical information about the language itself.

Research shows that even though home sign language communication does not dominate, it can be used as a natural and full communication tool with which to learn in the school environment.

The conducted research shows the disparity between the perception of sign language as a communication tool and understanding its function culturally and linguistically. Language awareness is an essential part of the identity of the individual and his self-image. Related to the development of individual personality. The concept of linguistic conception of individuals with services in both the family and the school environment plays an important role in early intervention and care of the whole family of a child with hearing disabilities. The research will focus on recommendations for the school environment, thus special - education practice.

4 Proposals for special - education practice

School institutions should be a place where a child with hearing impairment acquaints with the culture and language of the deaf. Especially for children of deaf parents, school may be the place where we first identify deaf adults. The aim of the educational process should be an individual capable of full-fledged participation in the hearing society, while maintaining their own identity, language and culture, knowing thier rights and options. School institutions create an environment that prepares individuals with hearing impairments for life.

The personality of the teacher plays an important role in the development of language awareness in pupils both with and without hearing impairment. With a deaf teacher there is an adult child identification pattern. He is the carrier of culture and language to the deaf. A hearing teacher acquaints students with the hearing world, the language of the majority of society, learning the mutual respect between the hearing and the deaf. I consider very important in this respect the professional preparation of future teachers of children with hearing disabilities, which should include knowledge of the culture and language of the deaf, with a respect for the cultural minority.

Content of the subject Sign Language I think at present for the current task, especially teaching experience, should respond flexibly to the newly established curricula and changing trends in the perception of individuals with hearing impairment in a hearing society. It is in this course students should be familiar with the concept of language and cultural awareness of the deaf community. Individuals with hearing disabilities should be familiarized with the hearing world and also the world of the deaf to build on their own experiences. Thier attitudes and values can decide with which group they identify.

Based on the results of the research I suggest the focus in this course should be on how to develop character inventory and acquisition of the grammar of sign language, as well as familiarizing students with the world of the deaf - their history, culture and current events.

It is necessary to create appropriate learning materials for teaching the subject and content of the course design, which respects the development of personality and identity of the individual. The subject should be taught in the pure sign language for deaf teacher or through a teaching team - hearing and deaf educators together.

I believe that a proper approach to the subject Sign Language can contribute greatly to the development of language awareness among pupils of schools for the hearing impaired.

5 Conclusion

Language Awareness of pupils of schools for the hearing impaired is an important part of their personality and identity. In the younger and older school age, their identity and self-esteem only body [3]. This development process plays an important role in the communication profile of family and school environments. The environment in which deaf children grow up, does not always provide ideal conditions for the healthy development of their personality. Of all deaf children, 95 % are born to hearing parents, for which the adoption sign language is very important. In the school environment with a bilingual approach to teaching sign language as a communication tool applied, but often performed by deaf teachers who are not native speakers of the language. The educational system of students with hearing impairment is specific in that it is always looking for new, better and more effective methods and techniques that prepare the deaf for a full and equal life in society while maintaining their own individuality and identity. The promotion of language awareness among pupils of schools for the deaf leads precisely to this end.

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KNOWLEDGE ACQUISITION FROM THE PERSPECTIVE OF COGNITIVE SCIENCE

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Abstract: The paper shows how the linguistic theory contributes to the theory of knowledge acquisition. Two controversial approaches are analyzed. The first one is the conception of how language (either through its semantics or syntax) can lead to the acquisition of some non-linguistic concepts (color, number, time etc.) by effecting the cognition. The second approach is from the perspective of cognitive science, which is based on rationalist paradigm presupposing the existence of innate ideas. It is shown, how the theory explains the acquisition of both language & non-linguistic knowledge from innate mental resources (Universal Grammar, "language of thought" etc.). Differences from the mainstream approach in Cognitive Linguistics and is very briefly given in the conclusion.

Keywords: philosophy of mind, philosophy of language, cognitive psychology

1. Introduction

There is at least three major sources of the theory of knowledge acquisition (the German equivalent "Erkenntnistheorie"). The current dominating mainstream theory is empiricism. Cognitive linguistics contributed to the theory by the theory of language acquisition. In this view language is learned by inductive procedure based entirely on the experience of the child. The only innate mechanism involved is the general cognitive capacity for learning, The second source is rationalism based on the innate ideas hypothesis. The basic idea is that the acquisition of language is based not only on general cognitive capacities for learning, but primarily on "innate" knowledge of language prior to learning it. This innate knowledge is referred to as Universal Grammar (UG), which is recognized as part or a separate module of the mind/brain. For the existence of innate concepts, which are independent of any experience, and are available at birth without being learned, advocates the rationalist school of cognitive science - in the linguistics the Generative Grammar, in the philosophy of mind the folk psychology (Jerry Fodor, Zenon Pylyshyn, LePore), in the cognitive psychology Ray Jackendoff and Steven Pinker, in the analytic philosophy e.g. Philip Peterson and others.

2. Acquisition of knowledge through language

2.1. The effect of language faculty on arithmetic faculty

Noam Chomsky admits the possibility that the faculty of numbering is parasitic on language faculty. The generative grammar is evolving and so is the concept of Universal Grammar. The current model of innate language faculty tends to reduce the innate language faculty from the previous system of grammatical rules down to a simple syntactical operation "unbounded Merge", which Chomsky defines as follows: "An elementary fact about the language faculty is that it is a system of discrete infinity. In the simplest case, such a system is based on a primitive operation that takes objects already constructed, and constructs from them a new object. Call that operation

Merge. A Merge-based system is the most elementary, so we assume it to be true of language unless empirical facts force greater UG complexity. If computation is efficient, then when X and Y are merged, neither will change, so that the outcome can be taken to be simply the set $\{X,Y\}[1]$. "A possible solution is that the number system is derivative from language. If the lexicon is reduced to a single element, then unbounded Merge will easily yield arithmetic [2]."

2.2. The influence of syntax on thought

On of the current controversial proposals in terms of the influence of language upon thought is the hypothesis of Wolfram Hinzen, according to which there is no conceptual system in the mind, but only syntax, which generates ontology. WH arrives at his hypothesis by a strong rejection of the current common idea excepted by cognitive scientists that language reflects thought/mind, particularly that syntactic categories correspond to categories of thought/mind. The acquisition of ontological concepts proceeds primarily through the syntax of language itself, not through experience with the world. To put it another way round: to acquire knowledge of categories in the world requires the acquisition of syntactic categories. He advocates for an autonomous syntax of thought, free from lexical/semantic concepts: "There is thus syntax and there is discourse (and of course pronunciation etc.), and that is all there is. Beyond the possible forms that the computational system of language (syntax) provides, there are no thoughts you can think [3]."

2.3 The effect of semantics on the acquisition of color concepts

In the current empirical vision research there has been a long tradition of research in the relationship between color cognition and color names. There has been two kinds of conclusions that language determines the perception of color. Terry Regier "the habitual use of a particular language permanently changes one's perceptual apparatus:

that the languages distinctions get "burned in" to one's perceptual machinery, so to speak, and it is by these permanent changes, that language affects perception" [4]. They are based on the findings of previous vision research on the perception of linguistic material: the connection between the left hemisphere (where words are stored) and the right visual field (RVF; through which colours are perceived). Based on psychological experiments, they concluded that language affects the perception: "In sum, it appears that effects of language on perception may be lateralized to the RVF. When we ask whether language affects perception, then, the answer appears to be neither a simple yes, nor a simple no – yes in the RVF, and perhaps less so in the left visual field [5]. Terry Regier suggests that the influence of semantics on cognition is not limited only to the color concept, but probably can be extended to other domains as well. This research suggests that the acquisition of color concept is dependent on language, and not primarily on visual experience with colored objects.

2.4. The effect of semantics on the acquisition of temporal concepts, numbers & culture specific concepts

In the approach named "Conceptual Semantics" - the linguistic school founded by Ray Jackendoff - the lexical concepts are recognized to establish the acquisition of temporal concepts and numbers: "there are domains of human concepts which are probably unlearnable without language. For example, the notion of a "week" depends on counting time periods that cannot all be perceived at once; we doubt that such a concept could be developed or learned without the mediation of language. More striking is the possibility that numbers themselves (beyond those that can be subitized) are parasitic on language—that they depend on learning the sequence of number words, the syntax of number phrases, or both....[6]". Other concepts that can be acquired only with the help of language are: "the supernatural and sacred, the specifics of folk and formal science, human-specific kinship systems (such as the distinction between cross- and parallel cousins), and formal social roles (such as "justice of the peace" and "treasurer") [7]".

3. The Acquisition of non-linguistic knowledge from the perspective of rationalist oriented cognitive science.3.1. The Acquisition of the categories EVENT, PROPOSITION & FACT

The rationalist oriented stream of analytic philosophy claims the innateness of basic human categories EVENT (E), PROPOSITION (P) & FACT (F): "those semantic categories (underived basic concepts) are universals. I myself offer them as at least a good candidates for basic "concepts", thus very similar to traditional innate ideas like the allegedly innate idea of God or the allegedly innate knowledge of non-contra-diction, innate or build-in knowledge the meanings of F, P & E are not learned, but are already possessed as part of the innate categorical portion of universal semantics [7]." The evidence of those innate concepts is provided by the empirical analysis of semantic structures of sentences. Those three categories are proposed to be the most basic cognitive categories,

which are not only universal in the human conceptual system, but at the same time innate, i.e. they are not acquired by experience or learning/explanation. Those categories are innate ideas or innate knowledge of differences between what is caused (EVENT), what is proposed (PROPOSITION), and what is factive statement (FACT). This basic innate cognitive structure is believed to be mirrored by semantic structure of all human languages: all languages across the world have verbs which express either causality of events (e.g.). The innate availability of those concepts is proposed to be the basic of language acquisition. This view of acquisition of concepts is opposed to the generally accepted empiricist position elaborated by the psychologist Eleanor Rosch and others, which became the theoretical basis of Cognitive Linguistics. Categorization is thought to be a universal cognitive mechanism of all individuals, but categories or concepts are viewed as relative to cultures & individuals, and have to be learned, i.e. they are acquired by experience with the environment.

3.2. The Acquisition of the whole conceptual system

In the framework of the language acquisition theory based on the "poverty of stimulus argument" hypothesis, Noam Chomsky argues in his book "Language and Problems of Knowledge" [11] for the innateness of the whole human conceptual system, which constitutes the meanings of all words. He provides the following evidence: "At peak periods of language acquisition, children are "learning" many words a day, meaning that they are in effect learning words on a single exposure. This can only mean that the concepts are already available with all or much of their intricacy and structure predetermined, and the child's task is to assign labels to concepts [12]."

Thus acquired are only words with their formal properties (their pronunciation etc.), but not their meanings concepts. Chomsky explicitly argues that all concepts are innate ideas, even: "such words as carburetor, bureaucrat,the same is true of technical terms of science and mathematics, and it is quite surely the case of the terms of the ordinary discourse [13]." Acquisition of concepts is thus intuitive understanding without any prior empirical evidence available to the child. He acknowledges the findings of cognitive linguistics about complex conceptual lexical structure of words as the evidence for his claim; e.g. verb "persuade" has as its constituents several concepts - it involves event of persuading, intention to persuade someone, causation to decide or intend etc. Chomsky claims that if the child - while acquiring the label word - understands the concept "persuade", then he must understand the whole bundle of those constituent concepts (i.e. causation, intention, making decision, event etc.), and because he obviously cannot have experience with such concepts at early stage of life (i.e. he has no evidence for such concepts), the child must clearly have this knowledge already available at birth, i.e. innately.

In the same paradigm, Jerry Fodor concludes that basic primitive concepts are innate (i.e. they are not acquired empirically by experience or learning) from the paradox of the making & confirmation hypothesis based on the

empiricist assumption that concepts are acquired by learning through induction: "Consider a concept like RED. How would a hypothesis testing account imagine that RED is learned? Well, presumably learning RED would involve confirming some hypothesis about which concept RED is; as, e.g., that it's the concept that expresses the property of being red. But, clearly, that can't be right; for any hypothesis of the form X is the concept that expresses the property of being redipso facto contains the concept RED among its constituents. A fortiori, it's not a hypothesis that could be formulated by someone who lacked that concept. A fortiori it's not a hypothesis that could be (dis)confirmed by anyone who lacked that concept. Since the same reasoning goes through, mutatis mutandis, for any concept that is supposed to be primitive, it follows that primitive concepts can't be learned [9]." Fodor explains the acquisition through his world to mind causal theory: there is a causal relation between the mind & the world, so that mental representations (thoughts, concepts) correspond accurately to the content of the objective world; thus concepts have no meanings or content but only extensions (correlates) in the world. Innate concepts enter into causal world-to-mind relation by having disposition to be triggered/activated by the world: "what makes a mental representation a token of the protoconcept type CAT is its disposition to be triggered by cats....[10]". Fodor suggests a model of knowledge acquisition based on pregiven (innate) conceptual system, which reflects the objective world, and is activated by the contact with the world (e.g. by information) resulting in (causing) true beliefs as mental representations of the world, which then cause human behavior.

3.3. The Acquisition through "language of thought"

The rationalist school of cognitive science proposes a theory explaining how are innate concepts are organized and represented in the mind. Jerry Fodor & Steven Pinker propose the hypothesis of language of thought, the language-like medium called Mentalese. Mentalese is not a natural language like e.g. English, but an innate "language", through which are natural languages acquired. Mentalese has the same semantics and syntax as natural languages, so it also has a vocabulary - a list of fixed concepts with their meanings. Predetermined concepts are organized and couched by this innate language of thought, where the concepts have no linguistic labels like natural language, but are couched by formulas, which are during the process of acquisition of language matched with their linguistic labels (words): "Knowing a language is to know how to translate Mentalese into string of words and vice versa. People without a language would still have Mentalese. If babies didn't have a Mentalese to translate to and from English, it is not clear how learning English could take place, or even what learning English would mean [15]."

3.4. Acquisition of social (cultural) concepts

The recognized cognitive scientist & linguist Ray Jackendoff, who also embraces the idea of Universal Grammar, finds the acquisition of social cultural concepts

comparable with the acquisition of language. He doesn't propose – unlike Chomsky & Fodor – the innateness of the whole repertoire of concepts, but his theory of social cognition implies that some of the concepts, which are shared by cultural communities, are innate ideas: "In the case of social interaction there's probably more teaching than in the case of language; rules and manners and maybe religious rituals are overtly taught, but I suspect that there is a large amount that we never even think about which nobody has to teach kids, and which again remains to be discovered [14]."

Besides the innate disposition of acquiring of social concepts, which is broadly accepted in the cognitive science, and referred to as human cognitive ability, he proposes the controversial rationalist hypothesis of the acquisition of some of social concepts by innate ideas.

4. Conclusions

The most popular approach to the problem of language & mind is currently the Cognitive Linguistics, which helds that semantic/syntactic structure is shaped by thought. The first section of the paper was meant to demonstrate, that such a premise is not the only one in the field, and that there is an alternative: the premise, that semantic or syntactic structure shapes the thought.

The mainstream in the cognitive science is currently dominated by pragmatism & empiricism, paradigms, which explain the knowledge on the basis of the embodied mind (concepts are acquired by experience of the organism with the environment through communication relative to particular culture & community, based on general cognitive mechanisms (e.g. categorizing) for learning, where experience is extended to the whole experience of the body (e.g. visual experience).

The second part is intented to show that the opposite – rationalist – approach is in the point of view of the empiricist/embodied mind tradition – controversial, but that is at the same time not marginal at all, and that it still plays a role in the current scientific discourse.

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CONFLICTS IN THE WORKPLACE REGARDING EMPLOYEES WITH HEARING DISABILITIES

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Abstract: The contribution deals with the issue of conflicts in the workplace regarding employees with hearing disability and is an output of a research. Sixteen respondents with hearing disability in the employment relationship in the area of the Czech Republic and Slovak Republic took part in the research. The research method of a questionnaire was used for the research. A part of the contribution deals with the notion of people with hearing disability and the notion of a conflict. The analysis of chosen results of the research follows together with conclusion.

Keywords: person with hearing disability, conflict, workplace, employee

1. Introduction

The aim of this contribution is to study the issue of employees with hearing disabilities within possible conflicts. The conducted research deals with the issue whether the employees with hearing disabilities have some conflicts in the workplace at all, where do these possible conflicts come from, possibly what is the source of conflicts in the workplace.

1.1 Hearing Disability

Hearing disability is the most common type of somatic functional disability. There are various criteria for division of hearing impairments and also various classifications. One of the most frequent divisions of hearing impairments is the division according to the localisation of the hearing impairment origin; as to the peripheral and central impairment and deafness. The peripheral hearing impairment or deafness is then divided into the conductive hearing impairment when the hearing cells are all right but there is a barrier in the conduct of sound and therefore they are not stimulated by the sound. The other type of the peripheral hearing impairment is the sensorineural hearing impairment when there is damage to the inner ear, acoustic cells or acoustic nerve. The last division of the peripheral hearing impairments is the combined hearing impairment, which is a combination of the above-mentioned impairments. The central hearing impairment or deafness is caused by defects in the cortical and sub cortical system when the sound signal is processed abnormally [1].

It is suitable to mention also the division according to the period of occurrence of the hearing impairment; as to the inborn and acquired hearing impairments. Genetically conditioned and congenitally acquired hearing impairments belong to the inborn hearing impairments. The congenitally acquired hearing impairments can be divided into the prenatal hearing impairments, when the foetus of the mother is negatively influenced and the perinatal hearing impairments where the causes are connected to the birth [2]. The acquired hearing impairments are divided into the impairments acquired before the fixation of speech – called prelingual impairments – which the person acquires

approximately at the age of six and into the impairments acquired after the fixation of speech – called postlingual impairments – as they are acquired after the completion of the speech development [3].

The World Health Organization (WHO) states the following range of hearing impairments grades:

Table 1 Grades

Grade of impairment	Corresponding audiometric ISO value	Performance	Recommendations
0 - No impairment	25 dB or better (better ear)	No or very slight hearing problems. Able to hear whispers.	-
1 - Slight impairment	26-40 dB (better ear)	Able to hear and repeat words spoken in normal voice at 1 metre.	Counselling. Hearing aids may be needed.
2 - Moderate impairment	41-60 dB (better ear)	Able to hear and repeat words spoken in raised voice at 1 metre.	Hearing aids usually recommended.
3 - Severe impairment	61-80 dB (better ear)	Able to hear some words when shouted into better ear.	Hearing aids needed. If no hearing aids available, lip- reading and signing should be taught.
4 - Profound impairment including deafness	81 dB or greater (better ear)	Unable to hear and understand even a shouted voice.	Hearing aids may help understanding words. Additional rehabilitation needed. Lip- reading and sometimes signing essential.

Grades 2, 3 and 4 are classified as disabling hearing impairment [4].

1.2 Conflict

People are unique especially in the way that there are certain differences among them. Each individual is aware of these differences in the course of his life. These differences are a typical feature of mankind; they enable progress and support the dynamic development of the world. Simultaneously, it is necessary to note that these are the differences causing conflicts. Each individual has his own needs, which determine his opinions and values. If these needs happen to be suppressed or are not satisfied in some way, the individual gets into a conflict [5].

It is necessary to differentiate between a conflict and a problem. A problem has a rational base and can be solved. Supposing that the conflict is at the interpersonal level, it is not possible to solve it satisfactorily for all the parties. It follows that if the cause of the conflict was a problem, it could be eliminated. In many cases these are problems not real conflicts. Each conflict does not have to be a significant problem for a company because there is a hidden creative potential in a conflict. The most common cause of a conflict in the workplace is the character features of people. Conflicts could be divided into external and internal ones. External conflicts occur among teams or groups. Internal conflicts are mostly caused by character features and concrete situations and they occur among individual people [6].

2. Methodology

The main aim of the investigation was to establish the conflicts or problems at work and especially their cause. Employees with hearing disabilities of various employers regardless their major were addressed. The research focused especially on their hearing impairment and possible conflicts at work. The choice of respondents was not limited by gender, achieved education, nationality or age. The only criterion for answering the questionnaire was hearing impairment and employment relationship. People with hearing impairment in the employment relationship were addressed via social networking service and electronic mail. A total number of sixteen employees with hearing impairment at the average age of 37, mainly with university education, were addressed. The base was a quantitative research. The research method of questionnaire was used from the empirical methods for this contribution.

3. Analysis of Chosen Results of the Research

1. Hearing Impairment Type



Figure 1: The most frequent type of the hearing impairment is the sensorineural hearing impairment which

was stated by 50% (8) of the respondents, followingly the combined type of impairment 25% (4) of the respondents. 18.75% (3) of the respondents did not know which type of the hearing impairment they have; only 6.25% (1) of the respondents answered that they have the conductive hearing impairment.

2. Hearing Impairment Grade

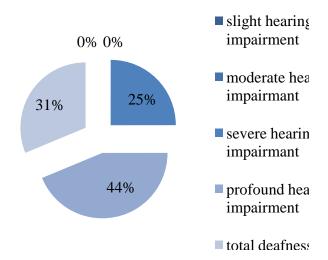


Figure 2: The most frequent grade of the hearing impairment is profound deafness, which was stated by 43.75% (7) of the respondents. 31.25% (5) of the respondents stated total deafness and 25% (4) of the respondents severe hearing impairment.

3. How do you communicate?

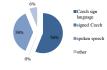


Figure 3: 56.25% (9) of the respondents use Czech sign language to communicate and 37.50% (6) of the respondents use speech. 6.25% (1) of the respondents stated other form of communication.

4. What is the team work in your team like?

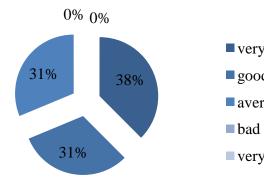


Figure 4: 37.50% (6) of the respondents answered that the team work is very good and 31.25% (5) marked it as average and 31.25% (5) as good.

5. Do you have conflicts in your team?

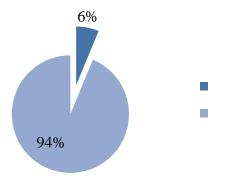


Figure 5: 93.75 % (15) of the respondents stated that they have no conflicts in the team and only 6.25% (1) of the respondents stated the answer yes.

6. Do you have a conflict with your colleague?

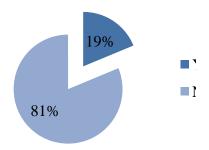


Figure 6: 81.25% (13) of the respondents answered negatively to the question whether they have a conflict with their colleague. A conflict was stated by 18.75% (3) of the respondents.

If you answered yes, I do have a conflict with my colleague, state the reason for the conflict:

The respondents stated a few times misunderstanding, a conflict regarding study material for people with hearing

disability, lack of respect, non-acceptance of Czech sign language as communication system, insufficient awareness of Czech sign language of the intact and the right to communicate in it and misunderstanding from other reason than communication code as the reason for the conflict.

5. Conclusion

In conclusion, employees with hearing disability do not have conflicts at work. If there are some conflicts, they correspond with the average of intact employees. It follows from the above stated research that the principal problem, which could be a consequence of the conflict, is the different communication or the view of different communication by both the employees with hearing disabilities as well as the intact employees. This problem may be solved individually by each employee and employer and is based on the tolerance, willingness and individual attitude of both parties.

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RESULTS OF TESTS OF NON-VERBAL CREATIVITY AMONG TECHNICAL EDUCATION STUDENTS

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Abstract: Ideas about creativity are neither unknown nor new. Creativity understood as self-realization belongs to one of the basic human needs as other physiological needs such as the need to be loved, the need of belonging and being appreciated. Creativity is therefore a significant marker of each human being. However, it comes in various forms, areas and levels. We intend to introduce the reader to the research of levels of nonverbal creativity in students of pedagogy, attending the study programme of technical education at the College of Education, University of West Bohemia in Pilsen (Czech Republic). Urban's test – TSD-Z and a questionnaire were used as the research methods. The research was carried out under the support and terms of the project SGS-2013-057 Motivation to Creativity in Technical Education at Universities.

Keywords: creativity testing, Urban's Figural Test of Creative Thinking, pedagogy students, technical education

1. Introduction

Creativity is one of the most important aspects at elementary schools. Creativity is a significant trait of each individual elementary school pupil. However, creativity may appear in various forms, areas and levels. The estimation of the level of creativity has been one of the discussed issues among pedagogues. Bibliographic and personal questionnaires and non-test methods, interviews, projective techniques, the assessment of the creative activities and products, questionnaires the creative climate, test sets concerning multidimensional projects, experimental and research methods related to specific topics or various identification tools (e.g. tests of productive thinking, tests of scientific thinking, test for creative types etc.) are used during the evaluation of creativity skills.

Constancy, consistency and reliability of the test results also are influenced by the fact that displays of creativity are contingent on other factors, e.g. emotional, physical condition, atmosphere in group, motivation and other frequently random influences.

There are many opinions about the adequacy of measuring through the pencil – paper method [5]. The critics have dealt with the fact that such tests measure only one part of creativity, for they are not motivating enough for respondents, and time limits may represent a serious obstacle for the respondents by encompassing low information value about creativity within the meaningful activities of their daily lives. Apart from the negative aspects of the aforementioned test, there are in contrast many studies confirming the validity of these tests.

2. Students of technical education and creative activity

In the process of education, colleges of education do not expect that they will only bring up smart inventors. However, it is important to motivate the students to employ invention and enthusiasm as much as possible in their work. Enthusiasm of the teacher is easily contagious to his/her students and, as Immanuel Kant wrote: "Nothing big would be finished without enthusiasm" [8]. Technical

creativity may be perceived as a specific type encompassing certain particular requirements. These requirements are specific and should be respected by the creator. What requirements are those? E.g. general and special professional knowledge as well as other fields related to ecology, economy, esthetics and safety must be enlisted among the most important ones. A requirement of cooperation and team work is very important as well because the majority of products is made through a team effort. Long-term experiments and observation of behavior of the product are necessary since even the smallest mistakes may result in negative consequences in the form of a limited function of the product or even in form of risk to human health. Each creator should be familiar with the latest discoveries in his/her field which may influence his/her work. The creator should have an ability to overcome various obstacles in his/her work as e.g. shortage of materials or information. Each newly-made product should serve to the benefit and not to destruction of humanity. Each creator is under time pressure because the projects usually have only a limited time for completion and there also is the danger that his/her work will not attain the necessary level and might be surpassed by another creator just before the final touches are made.

2.1 Urban's Figural Test of Creative Thinking – TSD-Z

Figural test of creative thinking – TSD-Z is a screening tool which visualizes the creative potential of an individual. It is used as a means of identifying well-developed creative skills on one hand or below-average developed skills on the other. There are several advantages to this test, e.g. simple administration and evaluation and a wide range and low expenditures. The test may be used for various age groups which is an advantage as well. The test consists of one sheet for A type and one sheet for B type. There are figural fragments on the test sheet (a semicircle, dot, wave line, right angle, dashed line, lying "u" off the frame) which have to be sketched by the respondent. The result is evaluated on the basis of 14 criteria. In contrary to

other test, the qualitative features of the creative effort are taken into account using Urban's Test.

It is objective, valid and is able to withstand the reliability criteria [7].

The test may be employed in many situations, e.g. to make an opinion about creative skills of the respondents, to compare performances of the pupils to performances of their peers, to identify the effectiveness of the programs developing creativity, in spheres of psychological and pedagogical counseling, in the sphere of special education to estimate an unknown potential in children with behavior and learning disabilities, in search for exceptionally gifted individuals, as a supplemental method in the sphere of professional counseling, during a selection procedure for professions requiring creative skills and as a research tool of developmental psychology, clinical, work and pedagogical psychology [7].

The TSD-Z test fulfills all the requirements of the modern methods of research of creativity which are not focused only on divergent thinking. Basically, the test is focused on qualitative, contentual and elaborative aspects of creativity.

3. Level of creativity among students of College of Education

What is the level of creative skills in today's students of technical education? Such was the primary question for research of the creative skills among the students of pedagogy. Two basic hypotheses have been formed:

H1 – students of technical education reach above-average level of creative skills.

H2 – evaluation of the teacher is directly proportional to the results of the test.

4. Research methodology

The research was carried out in terms of the SGS (Student Grant Competition) project at the College of Education, University of West Bohemia in Pilsen in the summer semester. Forty students in their second year of study of technical education for elementary school teachers were enlisted in this project. Thus, these students constituted some of the future teachers of technical education. The Urban's Figural Test of Creative Thinking – TSD-Z was chosen as the research tool. A questionnaire was used as well because various authors mention that the techniques of comparison of results of measuring through test and real creative performances in real life (school practice in our case) are most efficient in researching technical creativity. The advantage of this procedure is that the discrepancies stemming in heterogeneity of the theory in questions of definition of creativity are eliminated. The products are evaluated by independent observers – experts, the teachers in our case.

The students completed the figural test and the teachers completed a questionnaire independently on the work of the students. The results of the questionnaires showed which one of the students had been considered creative, less creative but manually skilled and which one of them appeared to be neither creative nor manually skilled. The graph below visualizes evaluation of the students by their teachers.

5. Research results

It was shown that the majority of students achieved belowaverage and average results.

Hypothesis H1 was not confirmed.

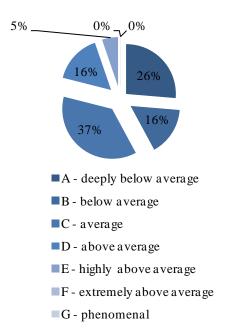


Figure 1: Results of testing

The results obtained through the questionnaires used by the teachers to evaluate the students were also of interest.

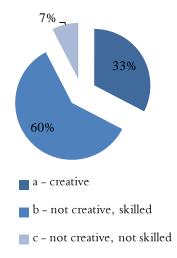


Figure 2: Evaluation of the students by the teacher

It is observable that majority of the students was not found to be creative, but skilled. If we return to the original statement that the college of education prepares future teachers, we can state that manual skills are very important for a teacher. However, each teacher should also be creative- it will be a teacher who chooses topics for the pupils plan and choose materials. It is the teacher who will inspire the pupils through his/her behavior and enthusiasm

to encourage a positive approach to technology and creative products.

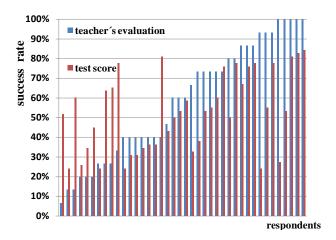


Figure 3: Comparison of the teacher's evaluation and the test score – extremes and trends

Graph visualizes a comparison of the evaluation carried out by the teacher and the test result. The values are recomputed in order to reach an objective comparison. The maximal possible values that could be reached are equal to 100%. Graph is characterized by three significant areas. The central part represents the most respondents (2/4) while the evaluation and score values show a minimal divergence as well as a linear increasing trend.

The most significant differences between the measured values are visible in the first part of the graph. This part represents 1/4 of all the students who achieved the worst evaluation. The score achieved in the test surpasses the evaluation of the teacher for the majority of the members of this group by more than 100%. This is the most underestimated group. A mistake in communication between the teacher and student or a need of individual or any other specific approach to this group may have been the reason for these extremely diverging values.

The last part of the graph (on the right) displays the last quarter of the students who obtained the highest evaluation by their teacher. There is no significant difference in the majority of the respondents of this group hence the teacher's evaluation is in almost full accordance with the test results.

The evaluation of the teacher is directly proportional to the results achieved in the test only in half of the respondents in the middle part of the graph. Both increasing trends for results of evaluation and the test results are clearly visible here. The relation is unconfirmed or insignificant (right part of the graph) in lateral areas characterized by a high difference between the score and the evaluation. Therefore, hypothesis H2 cannot be confirmed in its entirety.

Hypothesis H2 has not been confirmed.

5.1 Discussion

The results of the tests were compared to the results of similar research conducted in Germany [6] and in Slovakia (Gyebnár and Kárpáti in 1994). No significant differences

have been found in the particular groups of respondents. At the same time, results in particular age groups and sex differences were compared as well. No significant differences have been identified.

The aforementioned research inspired us to think about the development of creativity in the future teachers.

Teachers at the College of Education, University of West Bohemia in Pilsen are constantly trying to motivate their students to work as creatively as possible. In terms of teaching technical subjects or practice education, students encounter plenty of technological processes which they are to master, too. Outcomes necessary for passing the subjects successfully, outcomes validating correct mastering of knowledge and practice skills are designed only partially. Therefore, students are free to perform their own activities and express their own creative work. The students are introduced to these requirements and are encouraged to present their own suggestions and concepts. The teacher leads the students in search for problems and to decipher them and make suggestions for solutions. The originality of the outcome is emphasized and a unique or non-traditional solution is preferred. The students should be able to adjust the already known phenomena and use them differently.

The students of technical education are motivated to such activities in many various ways:

Enthusiasm of the teacher. This way of motivating is a keystone of every successful activity of students. The students must see an interest on the part of the lecturer in the discussion, analysis of the solution as well as the individualized work with the students.

Possibility to choose their own or similar topic. One of the students of the master's degree program played Warhammer board games in his free time. He was encountering difficulties related to the specificity of commercially-produced game plans. Therefore, he decided to make a prototype of a universal game plan for board games.

Practical use of a fully functional product. All activities should aim at concrete goals. We search for problems and design solutions. The students are influenced negatively when their production activities have no goal and only purposeless seminar papers (products, texts etc.) emerge. The students may think that the only purpose of the teacher's requirements is to keep him/her from completing the subject quickly.

Presentation of someone's work and result of this work. It is a very strong factor related to the use of the product. The students are aware of the need to distinguish themselves from the other graduates and offer something more for the market and win preference of a future employer. The student who presented a solution at a student conference (scientific and vocational activities etc.) puts on display his or her ability to do something creative. The high-quality products of the students of technical education have been patented or showed publicly as exhibits at the Techmania Science Center.

Financial prize or reimbursement of expenditures. The students are enlisted in various projects which may serve as a means of reimbursement for their possible contribution.

Completion of the subject. This factor is important as well. However, it should not be the only one engaging the student's motivation.

6 Conclusion

Study of technical education may be considered very important for further development of mankind in the present time. It is important to inspire students to a positive approach to technology and technical education, especially through motivation and a positive evaluation. In terms of the SGS project mentioned above, we would like to focus not only on the students and their motivation to technical education but also on the teachers to help them find the evaluation tools through which they may most optimally support the students and trust them more. It should be mentioned at the end that each participant of technical education - the teacher and student - should realize that not all creative effort leads to a technical invention and that social response or mere satisfaction of the creator may be the likely criterion of creativity. It is much more difficult to be a teacher of technical education than just a technician.

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DEVELOPING BRIEF SCALES FOR EDUCATIONAL RESEARCH: RELIABILITY OF SINGLE-ITEM SELF-REPORT MEASURES OF LEARNING ENGAGEMENT AND EXAM STRESS

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Abstract: Educational research often requires large scale studies, frequently with repeated measurements, and commonly researchers are interested in measurement of multitude of important variables. Therefore, educational research requires reliable, valid and easily applied measures. Self-report questionnaires usually used in educational settings are a cost-effective assessment option. Furthermore, they are often lengthy and cause significant burden to study participants, as well as a threat to the validity of measurement due to fatigue effects. To overcome these difficulties a single-item, self-report measures of learning engagement and exam stress were developed. Reliability of the scales was assessed in a study conducted on 87 university students. Learning engagement and exam stress were measured on two occasions with one month interval between them. Intraclass correlation coefficients for test-retest reliability were high, .77 for learning engagement and .78 for exam stress. The study provides evidence for the reliability of single-item measures of learning engagement and exam stress. These scales are low-cost, quick to fill in and can be easily applied in educational settings, especially for large scale research when many other variables are measured and researchers are more interested in relationships between the studied variables than precise evaluation of learning engagement and exam stress levels for particular individuals. Future studies should determine validity of these scales.

Keywords: learning engagement, exam stress, single-item scale, reliability, educational measurement

1. Introduction

Dynamically developing knowledge based economy requires effectively learning individuals, and therefore increasingly more emphasis is put on education [7, 9, 10, 24]. Engagement in learning process within educational system, which in literature is variously called - learning engagement, academic engagement or engagement -, is an important concept in educational research [3, 18]. Studies show that learning engagement is one of the predictors of learning and personal development. Unfortunately, studies also indicate that recently in western countries we can observe decreasing involvement in learning among university students [7, 9, 11]. This process poses questions about reasons of declining time devoted to learning and causes of possible diminishing of academic engagement, thus, establishing learning engagement as one of the crucial concepts in contemporary educational research.

On the other hand, highly demanding requirements of current labor markets contribute to exceedingly stressful working environment and development of attitudes and behaviors related to over-involvement in work. This may lead to increased risk of work addiction [5, 6]. Similar processes may take place within education system among students, leading to excessive involvement in learning and exaggerated learning related stress. This type of stress is strictly related with evaluation situation such as exam.

Taking into account both processes related with under- and over-involvement we might hypothesize that specific polarization develops in education. On average students devote less time to learning, and many students disengage from learning, but some students might develop unhealthy attitudes and behaviors indicating over-involvement in

learning. From this perspective both learning engagement and exam stress are important study variables, which require adequate measures.

2. Learning engagement

Traditionally engagement is conceptualized as a multidimensional concept including cognitive and affective components, and is measured with multi-item questionnaires. For example [26] define it in terms of three components: vigor, dedication and absorption. These components are measured with the 17-item UWES. The National Survey of Student Engagement (NSSE) survey instrument, the College Student Report, consists of approximately 70 items that assess the extent to which students devote time and energy to educationally purposeful activities [17, 18]. Similarly engagement measurement in PISA survey includes many components. The proposal of new scale for PISA, Student Engagement in School Scale, is also a multi-item scale [30]. Student Engagement Instrument consists of 36 items and 6 subscales measuring cognitive and affective engagement [3].

Learning engagement, however, is not sole, nor perhaps best predictor of learning and academic success. Many other factors should be included in the research concerning effective learning. Socioeconomic variables are related with learning performance not only in children but also among university students [1, 8, 13, 22, 25]. Dimensions of personality were found to be predictors of academic achievement [24]. Complexities of the relationships between socioeconomic, psychological and institutional factors which may contribute to learning and academic success require studies which take into account multitude

of variables. Furthermore, any potential adequate causal inferences in educational research require large scale studies with repeated measurements. Therefore. educational research requires reliable, valid and easily applied measures. Self-report questionnaires usually used in educational settings are a cost-effective assessment option. In addition, they are often lengthy and cause significant burden to study participants as well as a threat to the validity of measurement due to fatigue effects. Multidimensional long scales measuring engagement can be non-optimal choice in this context. For example, in the case of large scale study such as National Longitudinal Study of Adolescent Health only three items were used to measure engagement in school [16].

3. Exam stress

Relationship between stress and learning is becoming an important research problem, as high levels of experienced stress seem to be negatively related to academic performance [29]. Thus far, relationships between socioeconomic factors and stress, and personality and stress have been vastly studied. Analysis of the determinants of optimal learning and academic success, and mechanisms explaining relationships between them should include the role of stress. Psychological factors such as learning-related dysfunctional perfectionism can be potentially negatively related to academic performance in highly engaged students, acting as a personality trait predisposing to experiencing exaggerated stress in learning-related situations such as exams [4, 8]. To the knowledge of the author there is no scale measuring levels of stress usually experienced by an individual during exams.

4. Single-item scales

The necessity of controlling multitude of different variables in large scale studies, often including repeated measurements, contributes to the fact that more and more single-item measures are used in social and behavioral sciences. It seems that more often than not they prove to be reliable and valid. Specific recommendations and guidelines indicating when and how to develop and/or use single-item scales start to appear in the literature [14]. In recent years use of ultra-brief measures becomes more common practice in health research in which even depression symptom severity, psychosocial functioning, quality of life, distress or specific physical symptoms of patients are adequately measured with single-item scales [19, 20, 31]. Similarly in marketing research single-item measures are advocated by some researchers as valid tools [2]. However, it has to be noted that not always single-item measures are appropriate [14]. In some contexts they perform significantly worse to multi-item questionnaires, e.g. in studies on sexual satisfaction and behaviors [27]. Therefore, it is advised to cautiously consider advantages and disadvantages of use of single-item measures in specific research context, following current knowledge on the subject.

Simulation studies show that the analysis of Likert response format data at the item level is statistically robust [12, 15]. This makes single-item measures useful tools which can be used in statistical testing of complex theoretical models involving many variables. However, in cases in which single-item scales are used it is recommended to use more stringent alpha level in order to make cautious statistical decisions.

To overcome discussed drawbacks of long scales of learning engagement and to provide ultra-brief measure of exam stress, single-item self-report measures of learning engagement and exam stress were developed.

5. Methods

Participants. A total of 87 students from the University of Gdańsk in Poland took part in the study, 13 men (15%) and 74 women (85%): 14 second year, full-time Psychology students (1 man and 13 women), 22 second year, part-time Psychology students (2 men and 20 women), and 51 first year, part-time Criminology students (10 men and 41 women). No monetary or other rewards were offered to the participants.

Measures. Two single-item, self-report measures were developed for use in educational research. Learning engagement was measured by question: "How much engaged in learning are you?" with 7-point response scale, from 1 - "I am not at all engaged" to 7 – "I am completely engaged". Exam stress was measured by question: "How much stressed are you usually during exams which you take as a part of your studies?" with 7-point response scale, from 1 - "I am not at all stressed" to 7 – "I am completely stressed".

Procedure. Learning engagement and exam stress were measured on two occasions with one month interval between them. Anonymous way of coding participants was applied in order to match responses from both measurement occasions.

Statistical analyses. Intraclass correlation coefficient (ICC) using a two factor mixed effects model and type consistency along with the 95% confidence interval (CI) was used as a measure of test-retest reliability [21, 28]. Statistical analyses were conducted in IBM SPSS.21.

6. Results

On the first occasion M=4.71~(SD=1.07) for Learning Engagement and M=5.20~(SD=1.41) for Exam Stress. On the second occasion M=5.96~(SD=1.23) for Learning Engagement and M=5.02~(SD=1.30) for Exam Stress. An intraclass correlation coefficient (ICC) of .77 (95% CI = .65-.85, p < .001) was obtained for Learning Engagement and .78 (95% CI = .67-.86, p < .001) for Exam Stress.

7. Conclusions

The study provides evidence for the reliability of singleitem measures of learning engagement and exam stress. Test-retest reliability suggested adequate temporal stability of Learning Engagement and Exam Stress scales. These scales are low-cost, quick to fill in and can be easily applied in educational settings, especially for large scale research when many other variables are measured and researchers are more interested in the relationships between the studied variables than precise evaluation of learning engagement and exam stress levels for particular individuals. Future studies should determine validity of these scales.

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ANALYSIS OF DOUBLE-ENTRY DIARY: ITS STRENGTHS AND ABILITY TO RAISE THE AWARENESS OF READING LITERACY

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Abstract: This article is a presentation on the issue of implementation of the Double-Entry Diary in the support of reading literacy in Czech schools of fourth-grade learners. Its goal is to familiarize the reader with the reasons for effective education using the Double-Entry Diary method, which originated in the Reading and Writing for Critical Thinking International Consortium. This article focuses on the issue of theoretical analysis of previous research and literature. It presents specific educational practices and deals with the consequences that lead to practical usage of this method.

Keywords: Double-Entry Diary, reading literacy, interpretation, integration, evaluation, text

1. Introduction

There is something wrong with reading literacy in the Czech Republic. International assessment of reading literacy shows that the results of Czech children are poor as compared with other countries (IEA¹ - PISA², PIRLS³, NCES⁴, IES⁵, OECD⁶) [1] [2] [3]. The reason lies particularly in the field of interpretation and critical evaluation of texts. In my study I am trying to find ways to solve the problem presented by international research through analyzing previous research and literature which is met in the Double-Entry Diary method, and prepare it as a starting point of future research. The aim of this paper is to offer a sound policy as an encouragement to use the Double-Entry Diary, analyze international research in order to find its strengths which help to raise reading literacy awareness and make the results a starting point for other researchers. Many scientists believe that reading literacy is a key skill to many disciplines which lead to effective learning and successful life in society [4] [5] [6]. Reading comprehension is indeed essential for people's social, personal and professional life and has a sound impact on quality of their standards of living. Reading is a process in which it is important not only to understand the direct meaning of a text, but also understand its implied ideas. Because the purpose of reading is to use the texts as efficiently as possible, teachers should use methods which allow a variety of active strategies. What we need is a sustained coordinated effort. In my study I focus on fourthgrade primary schools learners who have mastered the technique of reading and are ready to improve their understanding of the text and get an idea of what is hidden beyond the text.

2. Study procedures

In this study, I analyze current studies to discover the common Double-Entry Diary points which result in reading literacy development and find the essential data which support this theory. Although reading literacy is a well-recognized feature of academic writing, little research has been undertaken as to its models. I have chosen this method because of its main characteristics. The PIRLS 2001 interviewed fourth-grade learners and their parents and school staff, asking them questions about reading literacy and assessing progress in reading literacy. The outcomes revealed many typical factors connected with better achievements of learners. One of them was the discovery that those countries whose learners practiced silent reading at school more than reading aloud were the more successful [3]. The Czech Republic was one of those countries where teachers made learners read mainly aloud. The questionnaire for teachers shows that only 43% of Czech children practiced silent reading, while 77% practiced reading aloud. Those learners who claimed that they read aloud rarely were more successful in the PIRLS 2001 assessment. Besides, to read aloud takes too much time that might be used more efficiently for education in reading literacy. The Double-Entry Diary employs free choice. Learners can choose which book they are going to read during the lesson, and teachers might give them some suggestions. The PIRLS 2001 has revealed that those children who read books of their own choice every day at school are more successful than learners who read books of their choice just once in a month. According to the PIRLS 2001, Czech learners failed in the field of interpretation and critical evaluation of texts. This occurred because Czech children were not well trained to use reading strategies such as questioning, comparing (with other texts or their own experience), arguing, agreeing, disagreeing, predicting, generalizing, concluding, evaluating, connecting, describing the structure or the form and modeling of a text [3]. The Double-Entry Diary utilizes these strategies. Here are some examples from exercise books of fourth-grade learners from public schools in Prague, where the Double-Entry Diary is being tested.

¹ The International Association for the Evaluation of Educational Achievement

² Programme for International Student Assessment

Progress in Reading Literacy Study

⁴ National Center for Educational Statistics

⁵ Institute of Education Sciences

⁶ Organisation for Economic Co-operation and Development

Table 1 Examples from exercise books

Learner's profile	Text from the chosen book	Learner's	Strategy used
A girl, fourth grade, 9 years old	"It will be easier when you take a shower, said mom. Without saying another word she left to the bathroom and opened the tap. She had been taking shower all day long and spent two soaps."	"I think she can't be taking a shower all day, at least I couldn't."	She compares the information from her book with her own experience, trying to evaluate whether it is possible or not.
A boy, fourth grade, 9 years old	"Now Kox was angrily jumping up and down on the bed. Then he opened his wings, flew up and landed on the window parapet. His beak knocked on the window glass".	"What did Jupiter want to tell the raven?"	He questions. He tries to predict what might happen next.
A boy, fourth grade, 10 years old	"And Honzula had guests very often. Many times a day someone came to visit him from the Haloun forest. Even a ranger kept coming, usually for some advice, help or request. "	"I like it when someone helps the others, so that they can rely on him and he always gives them advice or help".	He agrees with the behaviour and the nature of the main character.
A girl, fourth- grade, 10 years old	"All that remained of his old car was a chassis".	"Strange, strange, strange, what destroyer did this"?	She questions, evaluates and disagrees with the main character.
A boy, fourth- grade, 9 years old	"Bong! Sounded the bell announcing the end of the afternoon break. Angus lifted Wiglaf and Erika to the court of the castle. The afternoon lessons just begun".	"It reminds me of our school bell to start the break. I like breaks. It is the time to eat and relax".	He compares the information from the text with his own life.

Using more extensive books and books focused on children is essential for learners to be more successful in reading literacy [3]. Those learners who read at schools more extensive books and books focused on children daily or almost daily are more successful in international assessments than learners who read once in a month or less.

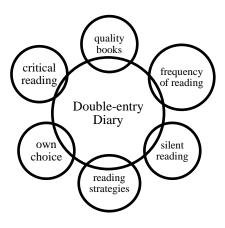


Figure 1: Double-entry Diary

International researchers emphasize the importance of instruction in reading strategies for reading literacy awareness, especially modelling, predicting, inferring, concluding, summarizing, connecting and questioning [7]. Furthermore, it is obvious that to train and master reading strategies help comprehension of a text [8]. Presley [9] suggests that teachers who model and instruct their learners how to use reading strategies actively will help them understand and remember the text better. They will be able to monitor the process of reading and actively evaluate it.

3. Results

Through my study called Analysis of the Double-Entry Diary: Its Strengths and Ability to Raise Awareness of Reading Literacy I found that the Double-Entry Diary possesses strong qualities that help to improve reading literacy of young learners. I have found that silent reading, individual choice of books to read, offering appropriate books and strategies such as questioning, summing up, comparing (with other texts or childrens' experience), explaining, arguing, agreeing, disagreeing, predicting, generalizing, concluding, evaluating, connecting and modelling are some of the possible factors which lead to a deeper understanding [7] and are all present in the Double-Entry Diary outcomes. It has been found that the Double-Entry Diary has the potential to offer such a variety. The research analysis indicates much strength in this teaching method. This method proves to be highly efficient, and we can definitely recommend its use in schools.

4. Discussion

My study results lead me to suggest that teachers engage in fostering and teaching reading comprehension in the following steps:

- 1. build discipline and world knowledge,
- 2. expose learners to a variety of texts,
- 3. provide motivating texts and contexts for reading,
- 4. instruct in comprehension strategies,
- 5. instruct in text structures,
- 6. engage students in discussion,
- 7. build vocabulary and language knowledge,
- 8. integrate reading and writing,
- 9. observe and assess, and
- 10. differentiate instruction.

I recommend to concentrate the Double-Entry Diary on that type of instruction which is based on successful strategies of teaching such as questioning, summing up, comparing (with other texts or childrens' experience), explaining, arguing, agreeing, disagreeing, predicting, generalizing, concluding, inferring, evaluating, connecting, modelling and using them in a wide variety. I encourage teachers to use more extensive books appropriate for the age of their learners, rather than simple reading of short texts from textbooks or just their parts. Reading literacy is a complex competence which requires active thinking while reading. Without that, it is bound to remain inefficient.

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THE OPTIMISATION OF THE LEGAL EDUCATION AT THE FACULTIES OF LAW IN SLOVAKIA: WHAT DOES AN IDEAL SEMINAR NEED?

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Abstract: The paper presents the results of statistical survey research which was conducted on the Faculty of Law of Comenius University in Bratislava. The students of the faculty have answered the paper survey about their educational preferences and their idea of an optimal seminar. The presented results of the research should help the teachers (especially in the area of law, but also in other humanities) improve their management of their seminars and provides them the basic information about the student expectations of the learning and teaching process.

Keywords: legal education, optimal seminar, statistical paper survey, methods of education, role of teacher

1. Introduction

The legal education in the Slovak republic is constantly struggling with the problem of the optimization of the pedagogical process. The actual output of the legal faculties is widely criticized by the society. The law faculties seem to be caught between the public opinion and the attitude of the professional legal community. In generally, common people require a lawyer whose character combines the high moral and ethical standards [1] with the most excellent professional skills. The demands of the professionals are identical – employers in the legal area require a graduate who is complexly prepared for the work [2].

Unfortunately the effort of the faculties of law to comply with the requirements of the society does not always achieve a success. In order to improve the quality of the graduates, the faculties are constantly trying to implement various innovations and modernizations into their curriculum [3].

During this process the faculties mostly bypass the interest of the students. Countless school reforms are based on the ambition to create a "better product" but do not consider the opinion of the "product" itself. The faculties should not ignore the needs of the students and therefore they should include them into the process of the evaluation as an essential part of a successful and effective school reform.

The presented paper is a statistical analysis which describes the student's preferences and priorities in the educational process. The main objective of this paper is the examination of the student's reflection of an ideal seminar or course.

2. Current form of the legal education in Slovakia

The methodology of the teaching process at the faculties of law in Slovakia is basically divided into two main forms – *lectures* a *seminars*.

Lecture is normally an exposition of a given specific scholar subject delivered before bigger audience. At the Faculty of Law of the Comenius University in Bratislava the lecture is usually 40 or 80 minutes long formal speech presented by the educator to all the students of the relevant year of study. In fact that means that the lecture is delivered to more than 350 students.

On the other hand the seminars are sessions of a small group of students (approximately 20 people) under the guidance of a teacher who meet each other on regular basis every week. Duration of the seminars is either 40 minutes or 80 minutes.

The seminar should be thematically related to the lecture which is usually delivered prior to the seminar session. This succession generates the basic assumption of a well-prepared student who obtained the basic information about the subject matter which should allow him to actively contribute to the course.

The seminar is ideally an interactive session of a group of people discussing theories and exchanging opinions and information. But in reality the seminar is frequently just another lecture for a smaller group. This distortion is possibly not just the effect of the student's carelessness or their lack of attention and curiosity, but it could be the result of the educator's incompetence.

In order to help the teacher avoid the basic failures in the managing of a seminar, this paper tries to find the fundamental and most important element of the seminar. For this purpose we have executed a research which was focused on the student's preferences and expectations.

3. Methodology of research

The basic method of the paper's descriptive research [4] was a survey which was conducted to determine the general opinion of the students about the optimal seminar. We conducted the survey on the Faculty of Law of Comenius University in Bratislava. Cumulatively we have surveyed 257 students and the number of participants included pro rata first year students, second year students and fourth year students. This range of students has allowed us not just the observation of the general trends (descriptive research) but also to detect the potential

difference between freshmen's and seniors' opinions (analytical research). [5]

Data were collected by questionnaires with 10 questions. The particular questions have different quantity of options (range between two and five-point answer scale) and they were divided to three sections based on the common subject.

4. Essential features of an optimal seminar

First set of questions have dealt with most important characteristic of the ideal seminar.

The very first question was about the main objective of the seminar.

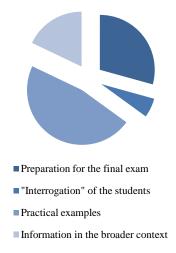


Figure 1: The main purpose of the seminar

Almost half of the respondents (47,1%) have answered that the main service of the seminar should be the application of the theory to practice. On the second position (29,3%) was the role of the seminar in the process of the preparation for the final exam. On the third position (17,9%) was the possibility to explain the information of the given topic in the broader interdisciplinary context and the least important content (5,7%) of the seminar should be the interrogation (examination in any possible ways) of the students

The results of this question evidently indicate a very pragmatic approach of the law students to the benefits of the seminar. According to the results, the student's priority is to apply the information received on the lecture into the practice.

The next question has discussed the optimal content of the seminar in relation to the information presented on the lecture. The most favorable option for the students was the fluent continuation and extension of the information presented on the lecture (56%), in opposition to the two other extremes – to the simple repetition of the lecture (23,6%) and to the discussing of a completely new facts and theories (20,4%).

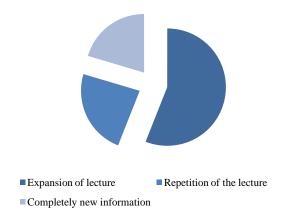


Figure 2: The content of the seminar

In the third question were the respondents asked to indicate the most effective educational method which should be applied during the seminars. The ranking from the most popular to the least one was: discussion (47,8%), case study (26,8%), text analysis (13,4%), presentation of the teacher (10,2%) and the least favorable was the testing of the students (1,8%).

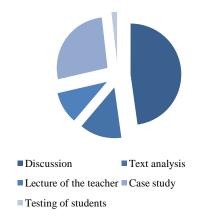


Figure 3: Methods of the seminar

The student was also asked to specifically identify which method of work with the text (answering a *working paper*) is most suitable for them. The most interesting observation at this point was the fact that the younger students refuse to work alone but this attitude was gradually declining in the senior years.

Academic year	Individual work	Work in couple	Work in group
1 st year	16%	33%	51%
2 nd year	25%	52,5%	22,5%
4 th year	38,7%	29,4%	31,9%

Table 1 Methods of work with texts

Although the students have completely refused the examination and the testing during the seminars, the next question was dealing with problem of the unnecessary reviewing of the students' knowledge and their quality of

preparation for the seminars. The respondents could select from four different types of methods and types of examinations: *standardized test* (e.g. multiple choice), essay, individual oral exam and colloquium exam.

In this question, once again, the differences between the students of different academic year were notable:

Academic year	Test	Essay	Oral exam	Colloquium
1 st year	12%	14%	2%	72%
2 nd year	2,5%	11%	9%	77,5%
4 th year	11,8%	1,3%	1,6%	85,3%

Table 2 Preferred types of examinations

The first thematic section was concluded with a two-point answer scale question about the mode of the solving the case studies. In this issue have found the students more important a discussion about various solutions of the case with and open end (65,6%) rather than the resolving the problem with one definitive solution (34,4%).

5. Role of the teacher

The respondents were also asked to answer a few questions about the role of the teacher at the seminar.

The students were firstly asked to select the best position of the teacher in the discussion during the seminar. The selection consisted of two options - passive or active role of the teacher. Based on the cumulative results, the Slovak students of law prefer a more active teacher (72%) who is a dynamic participant of the debate, rather than a passive teacher (28%) who only moderates the discussion respectively just asks questions.

The second question's purpose was to determine the most preferable methodical approach to the teacher's presentation in the situation when the seminar requires it.

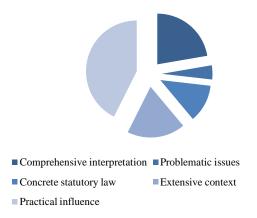


Figure 4: The content of the teacher's presentation

The results have shown that the students once again preferred the pragmatic and practical choice – the most imported role (42,6%) of the teacher is the presentation and the description of the real practical influence and the social impact ("law in action" - application on the cases and real situations). The respondents have repeatedly

selected (22,3%) that the educator should present a comprehensive interpretation of the subject matter on the seminar. Less attractive (18,5%) is the extensive context of the topic (e.g. sociological or philosophical interpretation) or the explanation of the relationship between the abstract theory and concrete statutory law, i.e. the application of the law (12,1%). As the least significant option was marked the solely interpretation of most problematic issues (4,5%).

Consequently to the answered question of the preferred content of the teacher's presentation at the seminar were the respondents requested to determine the optimal form of the presentation.

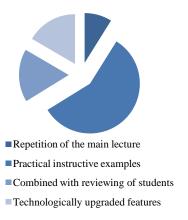


Figure 5: The form of the teacher's presentation

The most effective form (57,3%) is mostly uninterrupted teachers speech focusing on concrete details of the subject (illustrative examples) which is substantively different than the main lecture. The speech should be combined with reviewing of the students (17,2%) or supported by technologically upgraded features (16,6%), e. g video, PowerPoint presentation, etc. The teacher should avoid the repetition of the content of the main lecture (8,9%).

6. Preferences in the clinical education

The third thematic section was just an additional complementary research question about the students' preferences in the area of clinical education.

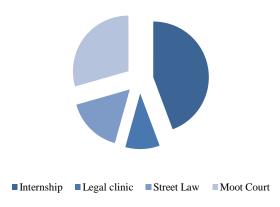


Figure 6: Clinical forms of education

7. Conclusions

The results of the research indicate a few noteworthy tendencies and inclinations of the students which could be a solid ground for further methodological and pedagogical efforts in the reformation of the legal education in Slovakia.

The essential information is the fact that the students of law considerably prefer the practical methods at the seminar. They are eager to learn how to apply the law in the real every-day situations and they require an active dynamic teacher who can provide an effective educational course.

The role of the teacher should be the elimination of all the negative factors indicated in the research and consequently the formation of an optimal seminar which is designed for purposes outlined in the results of the research.

One of the many possible correct approaches is the implementation of a clinical subject to the faculties' curriculum. The last question in the paper survey indicates the interest of the students in this form of education. Based on the results, the most attractive and popular clinical subject are various types of *internships* (45,2%), followed by *moot courts* (30%), *street law projects* (16,6%) and finally the traditional legal clinics (10,2%).

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MY FIRST WEEK IN DARKNESS - CHAMBER REST EXPERIENCE

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Abstract: The dark therapy, which uses principles of the Restricted Environmental Stimulation (REST) in the form of the Chamber REST, provides people a unique, intense and personal growth experience within a week or even a longer stay. It has a profound impact on all levels of the bio-psycho-socio-spiritual integrity of the person. The authors of this article are going to share their first-hand experiences with this form the dark therapy. They belong to the first psychologists and they are the first academic researchers in the Czech Republic who in 2007, 2011 and 2012 decided to be exposed to the powerful factors of total darkness, silence and solitude in the research institute of the Beskydy Rehabilitation Centre in Čeladná. They spent a three-day, a seven-day and a fortnight stay under these specific conditions of restricted environmental stimulation, which resulted in coming up with a new hypothesis on a potential therapeutic effect of this method.

Keywords: restricted environmental stimulation technique, chamber REST, dark therapy, solitude, mindfulness

1. Introduction to restricted environmental stimulation

The restricted environmental stimulation (REST) is a modern type of prior sensory deprivation. The chamber REST variant – darkness, silence and solitude – is known as the dark therapy among the public. This term was in the Czech Republic established by Dr. Urbiš (2012), who works as a therapist in the Beskydy Rehabilitation Centre (BRC) in Čeladná. The equivalent chamber REST is mostly used in English academic literature. This method originated in the second half of the seventies in 20th century due to experiments on sensory deprivation (Suedfeld, 1980; Zubek, 1969). The term such as the dark therapy (Phelps, 2008) or Dunkeltherapie (Kalweit, 2004) are also used in literature. REST has three basic forms – the chamber REST, the flotation REST and the immersion REST (Suedfeld, 1980, 1999). We will focus on chamber REST.

A person stays in a small bare room equipped with a bed and an armchair. There is also a lavatory in the room. The person is in the darkness and silence. Food and drinks are served according to client's needs. The person usually stays here for 24 hours or more. The same above mentioned conditions are provided in the dark therapy in the BRC in Čeladná. The research of the REST is mainly carried out in the USA, Canada, Sweden and currently in the Czech Republic. It turns out that there is no need to worry about a possible psychic damage not even in cases when individuals stayed in the experimental isolation for many days. In fact, voluntary REST might be beneficial to health in terms of resting from a long-term burden and it may play a key role in stress management, addictive behaviour, reducing weight, hypertension and maximum blood flow; it helps to relieve a chronic pain and supports creativity (Bood, Kjellgren, Norlander, 2009; Granqvist, Larsson, 2006; Suedfeld, 1980, 1983, 1999).

2. Research experience

2.1 Context of research experience

The standard time allotment for the dark therapy in the Czech Republic is one week (and then usually its multiples up to seven weeks). Authors experienced one-week stay in 2007, a three-day stay in 2010 and a two-week stay in 2011 (Malůš), one-week stay in 2011 (Kupka) and a three-day stay in 2012 (Kavková). Since 2011 Malůš has worked as an occasional "guardian" - a guide-therapist in the dark therapy. The authors have similar experience and Martin Kupka's experience is dealt with in this article; *Kupka's self-reports will be written in italics*.

At first Dr. Kupka will explain his motivation to participate in the experiment as well as his worries before coming to the BRC. Based on his previous experience he was sure that voluntary exposing to solitude could be beneficial and it has a self-experience and personal-growth potential. The same view can also be found at Yalom (1980). He talks about a positive effect of loneliness which might bring an important material to the therapy that would not be revealed in the dialogue with the therapist. In voluntary solitude the client might also find a creative insight or inspiration for dealing with his problems which relates to his life. Indigenous people of some ethnics also spend a certain time in wilderness voluntarily to take part in various initiation and transition rituals (Soukup, 2004). The main motivation was to explore the environment which we have been currently investigating. We presume that having a first-hand experience with darkness, silence and solitude will help us understand the clients better. As for the worries and fear, they were not big and, in fact, they were accompanied with joy and expectations from oncoming exposure to darkness and silence.

A guide-therapist usually visits the client daily (the client pays for this service). In this case Marek Malůš was a guide of Martin Kupka and they agreed on the first visit on Sunday (the chamber REST had already started on Thursday and the last day was following Thursday).

2.2 The first hours

The first hours in darkness and silence brought a fight with drowsiness and tiredness ... I realized that it would be absolutely essential to give the structure and order to the

following time ... In the first hours I also experienced a pleasant feeling of relaxation and excitement of the current situation. After lunch I sat down in the armchair comfortably. I felt safe surrounded by something kind and I was struggling with falling asleep.

It is a very often reaction that a person under chamber REST spends major part of the first day by sleeping.

2.3 Visual illusions

Very soon various visual illusions and images appeared. There was a silver glow, silvery luminescence, subtle white glimmers of light, which was very pleasant. They made the current environment friendlier ... The minutes and even an hour without them were gloomier and more frightening. The specific illusions, colours and shapes are different. But hardly anybody doesn't experience these manifestations.

2.4 The first "night"

The first night as well as the following nights was full of dreams. The good thing was that their contents did not disappear as quickly as in everyday life. In the morning you wake up, you are not in a hurry; suddenly you have no duties which usually cover the contents of your dreams. I found some dreams so important that I wrote them down to my therapeutic diary which I use in the therapeutic training during self-encounter weekends.

It is very common that a person experiences a change in his dream life of both quantity and quality.

2.5 The first "morning" and the following "day"

I woke up and knew instinctively that it can't have been the night; I felt very well, physically and mentally relaxed. I enjoyed the fact that I did not have to go anywhere, I did not have to be in a hurry and that nobody was waiting for me. The morning hygiene and breakfast followed. I was fully attentive and enjoyed every detail of the activity. Then I lay down in bed and let my mind go where it wanted. It took me back to the dreams from the previous night very often. After that I got up and stretched my body with some relaxing exercise and with a set of body-building exercise. Then relaxation and meditation followed. I practised Metta meditation and Zen meditation which flew into free contemplation and spontaneous imagination of various lengths until there was a bell signalling a daily food delivery. After lunch I was sitting relaxing in the armchair. After that I came back to meditation and between individual sessions I was strolling or sitting in the armchair waiting for the contents which would appear on my mind. After a gentle bell from the nearby chapel I had dinner, summarized the day and slowly fell asleep.

The author stuck to the above mentioned structure during the whole week. In the following part of the text we would like to focus on specifications of his experience, his insights and events which we consider to be curative and self-experienced – for personal growth.

2.6 Sleep and dreaming

I consider two dreams of my stay in the darkness and silence essential. They both concerned my current life and

my relationship to my family. Both dreams deepened my self-experience within the therapeutic training.

Humans have dreams and sometimes we are able to remember their contents. We consider dreams to be very important in our lives. We have a valuable experience when dreams showed us life from a different perspective pointing out situations which are important for us. The same happened in darkness and silence. We had more dreams than in everyday life and we were able to remember them. There were many of them and they did not disappear immediately after waking up.

2.7 Active imagination

In breaks between individual meditation sessions the process of active imagination started. It was mostly a spontaneous process which was related to key events in my life. From the point of time perspective it dealt with the past. The images of situations and events were vivid and in full detail. It was an authentic "inner film". What was absolutely essential for me was meeting my dead relatives and close people; their understanding, forgiveness and acceptance. Those images were emotionally and behaviourally very strong, with a huge potential for personal and therapeutic growth.

A parallel with the effects of psychomanteum technique could be seen there (Moody, 1992).

2.8 Recapitulation of relationships

Surprisingly, I was able to remember faces and names of my former classmates from primary school, stories with my first friends from the childhood. I remembered family events and stories. They were unpleasant, sometimes embarrassing, anxious, tragic and desperate, and also lovely, funny and inspirational. The years of my life had passed and I realized how rich the life was and what was hidden in it. It came to mind Jung's simile on an iceberg (1994) that we could see only a very small part of a person, that every person is more than he knows about himself and what he can say about himself.

Almost all imagination material has an interpersonal component. It is the interpersonal recapitulation that we consider to be therapeutically beneficial. Yalom (1980) states that a great majority of therapeutic requests primarily concerns relationships – past, present and future ones. The secondary connections are intrapsychic conflicts which are reflected in relationships. Regarding staying in the darkness, silence and solitude we find it logical it is the solitude that evokes the need to fill the empty space with people. In our opinion, this fact could be used in therapy.

2.9 Body perception

During my imaginations I realized and experienced again how my body reacted to the work stress currently. I have perceived two body markers which are warning signals when I am overworked telling me it is time I slowed down. It deals with strain in cervical spine and in the heart. I have not noticed those subtle manifestations by then. Since my stay in the BRC – and also thank my guardian and the technique of focusing (Gendlin, 1996) – these signals have

been a clear indicator of a potential danger and of the approaching overburden.

We find it much easier to perceive the body, its signals and markers. Then it is easier to understand it and to deal with it. Also the technique of focusing has proved there.

2.10 Mindfulness

Our experience is that REST (especially darkness) leads to a higher vigilance, attention and presence of mind in entirely practical activities. A person staying in the total darkness must be fully concentrated on the activity he is doing; he must be fully present. His attention is not distracted by external stimuli. It is either focused on practical things or it is concentrated on current mental contents which concern both thinking and feeling. It is quite logical - if you do not pay attention in darkness or if you are not fully concentrated you easily hurt, bump into something or you forget where your tea or sweater is. Being attentive is very practical; your concentration on outer things might move to concentration on inner things – on mental contents. Therefore, we presume that time can fly quite quickly and boredom does not have to be experienced. It is the boredom that many people who have not experienced the stay in darkness ask about.

I also understood and perceived it was very pleasant to do only one thing. My attention was not fragmented and it moved from outside to inside – to thoughts and emotions. I understood I had a freedom not to develop my thoughts when I did not want to. As for the emotional impulses I experienced I did not have to react to them, which was a liberating piece of knowledge. Moreover, it is impossible to react immediately to an emotional impulse in this environment - the everyday world isn't currently available. There is a parallel on a gardener who takes care about his garden and lets some plants grow and weeds out the others. He cultivates his garden so that the weed could not pollute it. It is similar with thinking if a person is attentive. At present we are modifying our research towards mindfulness. We believe that chamber REST increases, at least temporarily, mindfulness. Mindfulness is a specific way of attention characterized by intentional and vigilant realization of current events which you accept without evaluation (Kabat-Zinn, 2011). It deals with the increased attention to the present moment, which is characterized by clarity, alertness and vivacity (Brown et al., 2003).

2.11 Anxiety and unpleasant experiences

It mostly concerned various irrational ideas of threat when particular sounds were interpreted mistakenly and then experienced as being associated with a potential threat. I perceived oppressively the states without those silvery glimmering illusions I have mentioned above, when there was only a black hole of surrounding darkness around me. Also, a night and a twilight, which I perceived instinctively due to my time orientation, were experienced more oppressively than a day. Nevertheless, I always knew it dealt with something that was mine which I could work with and which I could control. Not once did I think I would end my stay sooner.

Anxious experiencing is often present to a certain acceptable amount. Mostly it does not require a therapeutic intervention. Anxiety is usually controllable.

2.12 Spiritual experience

During the week there did not occur any complicated transpersonal visions. Altered states of consciousness also had a subtle character. As a spiritual experience I consider the deep sense of peace, gratitude, reconciliation, simple being in vacuum without any volition and desire. These feelings might be associated with the imagination material. But there were also feelings and experiences which did not relate to imagination. Time to time I perceived the surrounding darkness as something feminine, maternal, safe and protective. Like mother, like the uterus through which I would be born to this world; the world I was looking forward to coming into and to which I would come with openness and a healthy curiosity.

Most people experience these or similar states of gently altered consciousness, but some have significant spiritual experiences. To associate darkness with a woman, the mother, the mother principle, the uterus – is frequent.

2.13 Leaving the chamber REST

Last night I slept badly and I was looking forward to coming back to the outer world; in the morning my colleague Malůš accompanied me. My immediate feelings concerned the beauty of the outer world - trees, sky, birds, houses and people. The surrounding common sounds and nice smells made me happy. In the beginning I was staggering which I put down to the fact that my vision tried to get used to perceiving the space again. After breakfast I set on to my journey back home by train. Too many impulses which started to bombard me were unpleasant automobile exhausts, noise, repeated announcements at the railway station as well as a quick movement of a means of transport. I felt a bit sick ... However, I managed the situation and after two hours those unpleasant feelings stopped and they did not come back. What persisted was the fascination and awe of the fact that something existed, that there was the world as it was. What was very pleasant was the state that I did not need to fill the present moment with any activity - with a book, music or thinking. I was happy I managed the stay and that it would be interesting to do the research in that field. I came back to social, work and intimate relationships without any problems.

People after chamber REST often experience some unpleasant feelings associated with adaptation to sudden stimuli overload. These inconveniences usually disappear during first several minutes or hours.

2.14 What outlasts

For at least ten another days, I sensed strongly the influence of this experience, mainly my bond with presence and my ability to concentrate. I was able to deepen my meditation practice which is a source of joy and peace for me. I brought an interesting material to the therapeutic training which I use in self-experience sessions. I understood there are identical moments and situations in my life regardless of age, which relate to establishing

contacts. I think I integrated my parents better and I understood them more. I gained a better sensitivity to my own body and to body signals I am given when my body starts being overburdened.

These, similar or other profits are reported also by other people after chamber REST stays in BRC.

3. Conclusions

We have come to a conclusion that chamber REST (the dark therapy in BRC) is an effective method to maintain health of a person. We do not consider it to be a substitution for traditional psychotherapeutic methods; we believe the stay in darkness, silence and solitude is compatible with many therapeutic schools and attitudes. We think that this environment can deepen and accelerate therapeutic effort. The above described environment encourages imagination, it allows preservation and recalling of the dream material in a more integral form and it also supports recapitulation of relationships. As the person in this situation has no external stimuli it is easier for him to draw on internal resources and consequently find the way to the previously repressed experiences. In other words, he brings a new material to the therapeutic process (Kupka, Malůš, Kavková, 2012).

We believe that thanks to the experience with the REST, even with a single one, a person can find the way to himself. If we accept confrontation with solitude it might change our lives for the better. It mainly concerns the ability to establish more authentic interpersonal relationships and to reduce addictive behaviour. These findings are compatible with the work of Yalom (1980).

This method can improve the ability to learn. Like the short-term fasting leads to a greater enjoyment of food and a better appetite, the informational, social and sensory fasting activates the "hunger" for information, willingness to learn and will to live. We also think that staying under REST and social isolation temporarily increases the ability of mindfulness. This assumption is currently being examined in more detail in a larger sample of persons and preliminary results look very promising.

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EMOTIONAL EDUCATION AT SCHOOLS IN THE CZECH REPUBLIC

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Abstract: This study deals with the emotional education in schools. It characterizes current social situation in the Czech Republic and focuses mainly on changes in family in past and in the present. It also focuses on the crisis and emotional numbness. We consider the development of emotions and emotional education as one of the solutions to this issue. The article describes the emotional upbringing in a family and the opportunities of emotional education in schools.

Keywords: emotions, emotional education, emotional upbringing, Czech society

1. Introduction

From everywhere we hear threats of disintegration of ethical norms of society. Increasingly we see the so-called emotional numbness and ruthlessness of people against each other. Behind all this is emotional weakness and progressive failure of emotional life. The despair and hopelessness is constantly growing, children are increasingly being left unattended at home, only accompanied by television. The talks about emotional crisis are on the rise. This paper attempts to identify a solution that would fix this issue. One of the ways to overcome this almost alarming situation is to pay attention to the development of feelings and emotions. Childhood and puberty are key period in creating emotional habits that later determine our destiny. Today, when times become more and more hectic, the emotional education of children is often left on a chance. A lot of people don't perceive the responsibility for their own emotions and don't realize that their childhood affects their behavior, overall expression, or success in life. Every man is a product of the school, the upbringing and the people that surround him. It is essential to spread awareness about the importance of parents and teachers emotions at all school levels. If adults understand, how big the role that emotions play in our lives is, they will be able to pass on such knowledge to the younger generation. Hence, this study attempts to emphasize the role of emotional education in determining social and societal values. It is the education that shapes and reflects those values. Most people agree that Western society is selfish and full of self-sufficient individuals and very little if not at all, does not fulfill the idea of empathetic and emotionally mature society. Most people today usually prefer only their own interests ahead of the interests of other people. The society is dependent on education, both at home and at school. This means that society needs such people who are able to take care of others with love and care. In general, most agree that the way to restore emotional balance is to return to the traditional family. Apart from the importance of a family life it is important to find new ways to create proper emotional development. One of them is to bring emotional education to schools. In the world, emotional education is being taught nearly 20 years. For instance, it is offered by

schools in Singapore, Hong Kong, Japan, Korea, Australia, New Zealand or Great Britain. Emotional education in the Czech Republic was considered since the 1960's but i tis still a theoretical plan which must to be put into the practice.

1.2 The current state of the Czech society

From all sides we hear criticism of today's society. Experts, however, are unite in the opinion, that today's society is less and less social and is becoming more individualized. Czech history, however, are a complex tangle of events that helped to create the present image of Czech society. In the Czech history Czech Koruna countries, there have been a huge number of different regimes. Most of these regimes were repressive regimes, thus suppressing or coercive. As a result of the Hussite Wars, Bohemia's position in European culture and politics changed from major to relatively small and Bohemia became relatively isolated. A recatholisation that followed meant a decimation of the protestant part of Czech aristocracy. German (Nazi) occupation, which resulted in closing universities and repression of Czech intelligence, communist coup in February, the Stalinist terror, ideological destruction of the free development of culture, science, education, religion, business and other areas of social life for forty years, the August occupation, destruction of reformist forces in the Communist Party and "normalization" of had unforeseen period consequences, which include the departure of thousands of educated people to emigration, prison, manual jobs etc. Even the last decade has not been easy for the Czech society. It was accompanied by many changes of which the biggest was entering the Europe after forty years of isolation. This process was accompanied by a naive belief that we always belonged to Europe and only a few years will be enough to assimilate with Western European countries. We are now in the new millennium and these naive ideas are gradually disappearing. The image of idealized West is becoming more realistic. People are starting to realize the importance of the historical roots and increasingly feel the need to identify their own culture. These changes had the effect of breaking the barriers associated with geographic permeability, with the communication and connection with the surrounding

world, international cooperation and other changes [5]. Nowadays, we can see that the word crisis is more and more connected with the term Society. The question is whether the use of this word is really adequate for characterizing today's society, or it would be more appropriate to use such words as change or development. P.A. Sorokin [8], who carried out the research survey in 1941, found that the whole Western culture and society are afflicted by the crisis. In those times they had occasionally felt the crisis in art, science, philosophy, religion, law and morality, the crisis in all organizations, in the family and also in marriage. He explained those findings by the disintegration of the basic forms of Western culture that prevailed in the last centuries. The crisis of the society begins to appear even in the Czech Republic. Especially in the concept of family. The topic of family change is covered in the next chapter.

2. Emotional education in a family

The family has undergone significant changes in recent decades. Contemporary society is not favorable to the family, and therefore the stable status of a family is changing. Some authors even talk about the crisis of the family. Despite that, the family still plays an important role in shaping the child's personality. In the past, the view of the family differed in many ways. Together with changing of the nature of the society nature of the family also changed. In the past, the multi-generational families were typical, with a strong position of a father. One of the main characteristics of those families was larger number of children. Later this type of family was replaced by the partnership and democratic type of family. However, this type of family has, apart from the obvious positives, also considerable amount of negatives. Father loses his privileged status and mother gain new rights and obligations. One of the significant factors that deny the privilege of shaping a child's personality and socialization to the family is a lack of time mainly due to the parent's efforts to economically secure the family. Therefore other institutions support the education of a child, especially schools. Children are therefore often influenced by their classmates, peers and friends, or various mediums. Parents in most cases prefer passive form of relaxation, hence cases of families that spend good quality time together is on decrease. The authority of the parents transforms to a friendship and this freedom results in a number of negative phenomena. Infidelity jeopardize many marriages and often leads to a divorce. This often leads to increase of problematic behavior of children affected. S. Gerhardtová [1] says that parents adapted to today's culture also by using modern technologies (iPad, tablet, mobile phone, etc.), in order to develop new ways of regulating emotions. By offering children things instead of relationships, they lose the opportunity to recognize the needs and feelings of others. Jean Piaget [6] studied the cognitive processes of development from birth to adulthood and found that it develops at four basic levels. And it is the emotional life that he considered to be the driving force of development of these cognitive functions. Respect for parents was the basis of parent-child relationship. Nowadays, it is clear

that this basis should be especially love. Speaking of esteem, or respect, it should be mutual. We cannot expect that child will weight a parent who treats him badly or ignores him. Gerhardtová S. [1] examines the importance of early childhood for the foundation of emotional wellbeing of an individual, their mental health and good character in their study *How emotional relationship shapes* a child's brain. She found that there are links between the quality of early care and later depression, personality disorders, or antisocial behavior. She emphasizes the importance of awareness of the meaning of early child care and sees in it the opportunity to prevent the suffering of unsatisfactory individuals and their emotional development. In moments of repeated communication between parent and child the foundation of emotional life is developed. It is important for the parents to show to their children that empathic acceptance pays of in later stages of life. D. Stern [9] believes that these moments of understanding or misunderstanding between parents and children make later emotional attitudes and ideas, which children carry into their relationships later in adulthood. D. Stern found that through "tuning" mother gives the child know that they know how they feel. This alignment then gives the child the feeling that he is emotionally connected to his mother. Lack of attention and understanding between parents and children affects the children emotionally very much. "When a parent is not able to express empathy for the child's emotion, the child begins to avoid expressions and perhaps avoiding the feeling of this overlooked emotion [2]." That is why there is so often impoverishment of emotional spectrum in intimate relationships. In this period there is also increase of favoring so-called negative emotions. Children raised by depressed mothers often express more anger and sadness and less spontaneous curiosity and interest. The absence of reconciliation in childhood results in a variety of behavioral disorders, etc. The studies of crime show that people who are among the most violent criminals did not have enough emotional attention and opportunities to reconcile in their childhood. Interpersonal relationships may be a substitute to correct the imbalance of emotional education in early childhood. In puberty there are increases of the quality of self-awareness and the need of acknowledgement of our own value. In a relation to peers and friends it mainly about acknowledgment of social prestige. In the family, on the contrary, it is about equalization own position. A significant role plays an emotional engagement, communication and atmosphere in the family. If teenagers can freely present their ideas and feelings their parents listen to them, then the arising conflicts can lead to self-assertion and selfaffirmation [4]. The emotional bond is defined as "a hypothetical construct expressing a lasting emotional bond between two persons" [4]. Peer relationships are able to provide more functions of emotional attachment in puberty. Transferring this attachment to peers is a prerequisite for building autonomy and independence from the parents.

3. Emotional education in the school

Process of brain development in an early stage of life is very fast. Neurology of the brain is affected mainly by the

experience and quality of care and attention that is mediated to children from an early age. However, it is proven that genes play a role in complex interactions with the environment. Therefore, we can say that apart from our parent's upbringing methods our psychological development is affected by the society and culture in which we live. In the childhood and puberty this culture is represented mainly by the school and therefore quality and responsible approach to the emotional education is important. Also emotions of pupils in the education process should not be ignored. The current Czech practice focuses mainly on education of reason, thought and memory, and neglects the development of other components of personality [7]. As Fisherman [7] mentions "The school should direct students to holistic learning in connection with the emotional experience." At present, a lot of talks are made about personal and social education as part of the Framework Educational Program for Primary Education in the Czech Republic. Personal and social education is particularly concerned with three issues: the area of personal skills, the area of social competences and the area of moral competencies, values and morals [10]. All of these areas are linked together and to emotional education but do not include it entirely. The program includes not only competencies such as self-knowledge and self-regulation, getting to know people, creating interpersonal relationships, communication, etc. but doesn't represent skills such as empathy, self-motivation, assertiveness training, sensitivity to social issues and many others that can be found in our table (Table 1). To eliminate the emergence of emotional problems helps us not only to strengthen emotional competencies, but also build the overall resilience of children, strengthen their psychosomatic condition. This should be supported by new educational programs for primary schools that would support the emotional development of students. These programs have, among other things, a goal leading their students to experiencing and expressing their own feelings, to understanding feelings of others, to being able to regulate their own emotional experience and reactions, to being able to create a good atmosphere in the classroom, to being able to perceive the environment and last, but not least to being able to accept uniqueness of individual children and their behavior. There is a lot of programs that focus on emotional education in the world, but most of them define the basic emotional competencies that pupils should learn at school. We show them in the following table:

Table 1: Basic emotional competencies of students (source: Hay Group, 2005)

Basic emotional competencies, which a pupil should gain at	
school	
Self-awareness	
Recognizing and naming emotions and feelings	
Understanding the reasons for these feelings	
Self-regulation	
Verbally express (verbalize) and cope with anxiety, anger and	
depression.	
Impulse control, aggression and self-destructive or antisocial	
behavior.	

Identifying strengths and mobilization of positive emotions and
feelings about themselves, school and family.
Self-monitoring and speech abilities
Entering the short and long term goals.
Modification of behavior based on the feedback.
Mobilization of positive motivation.
Activation of hope and optimism.
Improving the optimal speech.
Empathy and perspective of acceptance
Ability to be a good listener.
Develop empathy and sensitivity to feelings of others.
Understanding of views and feelings of others.
Social skills
Managing of emotions in relationships, harmonization of
different feelings.
Effective expression of feelings.
Practicing assertiveness, leadership and persuading.
Ability to working in a team/group.
Sensitivity to social issues.
Practicing social decision making and solving social issues.
Constructive solving of interpersonal obstacles.

4. Conclusion

Our study shows that nowadays it is very important to pay attention to emotional education and all emotional competencies. Thanks to the lack of time and heavy work load, the family don't have so much time for the children upbringing as it had in the past. Hence this role is being overtaken by school. The summary of emotional competencies presented in this study is a lead of how to bring up emotional competency and literacy in pupils so they will become respected members of today's society. If the society consists of empathic people with moral values and people, who understand their emotions and emotions of others, we can change current, very often criticized, state of society. It all should begin in very early stage of child's life within the primary education. We hope that our article will increase awareness of disadvantages and current ignorance of emotional education in Czech schools, which focus mainly on the knowledge and ignore emotions. This article was created thanks to the CZ.1.07/2.3.00/30.0015 Rozvoj působení postoktorandů na Univerzitě Hradec Králové project.

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ONTOLOGY OF SINHALA BUDDHIST NATIONALISM: TOWARDS A HEGELO-LACANIAN STUDY

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Abstract: In the post-war period there have been different discussions on Sinhala Buddhism and its role in the escalation of ethnic violence in Sri Lanka. In addition to that, in recent years there have been considerable and impressive sociological, anthropological and post-colonial studies on Sinhala Buddhist ideology by foreign and local scholars. But the real subjective reasons for the grip of Buddhist ideology have still not been researched. The purpose of this study is not carrying out another empirical field research on Sinhala Buddhist nationalism in Sri Lanka and its involvements in ethnic violence, but rather an investigation into the underlying ontological dynamic of Sinhala Buddhist nationalism. The study will reveal the subjective and libidinal reasons, which keep Sinhala Buddhists bound within ideological formations. For this purpose it will be employed Hegelo-Lacanian categories, which are still novel to the academic field in Sri Lanka, but it appears to be a highly significant contribution to the understanding of racist ideological functions. The base of nationalism is not a rational factor at all but rather an irrational residue. This irrational component ties subjects into an ideological formation. Sinhala Buddhists tend to respond rather to an irrational injunction than a rational project. This irrationality is the ontological horizon for subjects to embrace ideological formations. As an ontological factor libidinal organization of enjoyment appears to be the underlying driving force of contemporary nationalism. Its agenda is to establish an 'ethnically pure' island by the cleansing of Tamils who are perceived as a threat to Sinhalese 'enjoyment'.

Keywords: nationalism, ideology, psychoanalysis, overdetermination, enjoyment

1. Introduction

Though Buddhism preached non-violence, and its universalism was originally recognized and practiced, in Sri Lanka, why did it relate to a particular nation, and why did Sinhala Buddhism justify structural violence against another nation? Why did it justify discriminations against Tamils? Why did Buddhism seek to identify with military, and why did Buddhism avoid its emancipative qualities? When ruling groups win the consent of those they governed and when they resort to Buddhist ideology as a source of legitimacy of policies, why did Buddhism not make any positive criticism against the violation of Buddhist fundamentals? Why and how did Sinhala Buddhist ideology grip the society as a whole? Contemporary critics who have worked extensively on Sinhala Buddhist ideology commonly raised these questions.

This study is not the carrying out of another empirical field research on Sinhala Buddhist nationalism to answer the above-mentioned questions, but rather an investigation into the underlying ontological and subjective dynamic of Sinhala Buddhist nationalism. To elaborate the arguments above, I will employ the Hegelo-Lacanian method, which was fully developed by Slavoj Zizek. Accordingly, Hegelian philosophical concepts and Lacanian will be psychoanalytic tools combined methodological approach. I believe that the core of Buddhist ideology can be reached by the category of 'enjoyment' within human subjectivity. Therefore I will apply the Hegelo-Lacanian ideology critique developed by Zizek to our particular conditions in Sri Lanka.

2. The Grip of Sinhala Buddhist Ideology

Though both local and foreign critics who immensely wrote on Sinhala Buddhist nationalism and national

consciousness, they were unable to theorize correctly the subject-object relationship of ethnic consciousness. In other words, real ontological and subjective factors, which are embedded in ethnic ideology, are still foreign to these critics. As described in the beginning of this article, there is an unbridgeable gap between Buddhist teachings and Sinhala Buddhist ideology. Some people who subjectively involved in Buddhism are either keeping silence before Sinhala Buddhist nationalism and racist attitude against other nations or silently or openly approving this false consciousness. The fundamental problems like the unavoidable ontological truth behind Sinhala Buddhist nationalism and the ontological course for people to engage in ideology are still remained unsolved. The aim of this article is to discuss whether ideology grips the person or person grips the ideology.

The common aim of given ideology critiques was to empower people with knowledge to emancipate themselves from the grip of Sinhala Buddhist ideology. But these critiques have not been able to free the people from the ideological trap nor have the people themselves embraced this ideological domination. Whilst Marxist critiques aimed to uncover the objective roots and causes for nationalism and ethnic violence, anthropological critiques tried to expose the changes, deviations, falsifications, mystifications, transformations and betrayals of 'original Buddhism'. So far, however, neither of them has been able to theorize the inner mechanism of Sinhala Buddhist ideology itself. National thinking theoreticians have been able to convince people that nationalist ideology was not

As these criticisms usually seek objective facts behind nationalism, they neglect the subjective and unconscious libidinal reasons to why people attach nation and religion. So far Sri Lankan scholars have carried out researches on nation, religion and identity based either on empirical or phenomenological basis, but these ideological critiques consciously or unconsciously accepted the doctrinal Buddhism as an ideological free sphere. Their aim was to expose Sinhala Buddhist false consciousness but not to challenge the Buddhism as a whole.

Both Marxist and anthropological critiques have repeatedly emphasized the directly visible subjective violence against Tamils, which was performed by clearly identifiable agents. Tambiah's 'Buddhism Betrayed: Religion, Politics and Violence in Sri Lanka' and Mahida Deegalla's edited work, 'Buddhism, Conflict and Violence in Modern Sri Lanka' (2000) have given substantial evidence of subjective violence but they have not exposed other modes of structural violence perpetrated by Sinhala Buddhists.

3. Enjoyment and the 'Nation Thing'

It is modernism, which constructed the characters of national identity. Accordingly, nation is a modern social and political construction. Postmodern turn tend to focus on the historicity and contingency of national identities. The most of contemporary critiques of nationalism has been influenced by postmodern critiques. They promote the view that hegemonic construction of national identities and decentralization of nation and fluidity and liquidity of national identities. However, The common problem of the defenders and critics of nationalism, including postmodern critics, is their failure of explaining the persistence of nations and national identifications. Not only Marxist but also structuralist, post structuralist, postmodern and post Marxist critiques of nationalism has been challenge by the views of Slavoj Zizek's arguments in Tarrying with Negative (1993), specially in final chapter, 'Enjoy Your Nation as Yourself'. As he theorizes, 'A nation exists only as long as its specific enjoyment continuous to be materialized in a set of social practices and translated through national myths or fantasies that secure their practices'. To emphasize in a "deconstructionist" mode that Nation is not a biological or trans historical fact but a contingent discursive construction, an overdetermined result of textual practices, is thus misleading: such an emphasis overlooks the remainder of some real, nondiscursive kernel of enjoyment which must be present of the Nation qua discursive entity-effect to achieve its ontological consistency' (Zizek, 1993:202). The notion of non-discursive "enjoyment" which is closely related with Lacanian psychoanalysis has opened a radical path to understand the contemporary nationalism. It can uncover the ideologies of existing approaches to nationalism, including Sinhala Buddhist nationalism and its critiques. Nationalism in generally and nationalist politics in Sri Lanka in particularly have become more and more influenced by the enjoyment (jouissance) factor. Enjoyment is a psychoanalytical paradoxical category defined as excess, which exists beyond any measurable rational core, which cannot be directly signified. Enjoyment is an unavoidable component of any ideological formation. The base of both, nationalism or

racism, is not a rational factor but rather an irrational residue. This irrational component ties subjects into an ideological formation. Sinhala Buddhists tend to respond rather to an irrational injunction than a rational one. This irrationality functions as an ontological horizon for subjects to embrace ideological formation. Libidinal organization of enjoyment appears to be the underlying driving force of contemporary nationalism. The bond between people and nation is not a rational link but psychic investment which cannot be rationally established. The identity formation is achieved through by ontologically demarcating person's 'inside' from 'out side' or self from other or 'us' from 'them'. A collective identity like nation is something of the order of affective libidinal bond. Sigmund Freud formulates the libidinal aspect of collective identities in *Group Psychology*. Every collective formation simultaneously forms hostility; in other words, identity and difference are two sides of same coin. Difference becomes an antagonistic and hatred force, which threatens the 'purity' and 'stability' of our identity. The two sides of the antagonistic forces are paradoxically related each other. The agenda of Sinhala Buddhist nationalist project is to establish an 'ethnically pure' island by the cleansing of Tamils who are perceived as a threat to Sinhalese 'enjoyment'. It can be described how Sinhala Buddhist myths explain the ways their enjoyment is threatened by Tamils, and can be argued that the Sinhala Buddhist ideological formation is not something that can be rationally or empirically justified, but that it is always placed in the irrational sphere outside its epistemological meaning. This unassailable kernel of 'enjoyment' tends to attach itself to an ideological formation, thus by-passing any identifiable reason or cause.

The role of nationalism is giving an imaginary promise of recapturing lost impossible enjoyment, which provides fantasy support for identity formation (Stavrakakis, 2007:196). Sinhala Buddhist nationalism reproduces the fantasmatic promise of recapturing lost enjoyment, which we had in 'ancient golden era', but which we really never had. Every national ideological formation in Sri Lanka has always complained about a lost golden enjoyable era, which used to exist before the threat of outsiders entering the country. The theft and threat of enjoyment is the basis of any nationalism and racist violence. Romantic type of nationalist theoreticians such as the leaders of National Thinking Movement put foreword a 'golden era' before the threat of the Tamil other. During this imaginary period the nation was 'prosperous' and 'happy'. But Tamil 'enemy' destroyed this 'original state'. The mechanism of nationalism is to demonize a particular social group who stole our enjoyment. What a nationalism promise is to get it back from the enemy who has stolen from us. As Stavrakakis insists, 'If my identification prove incapable of recapturing my lost/impossible enjoyment, the only way they can sustain is by attributing this lack to the "theft of my enjoyment" by an external actor' (ibid: 198). In Sri Lanka, Tamil community has to play the role of the 'external enemy' of Sinhalese. That is why Sinhala Buddhist anti Tamil trends always complain about Tamils by emphasizing that 'Tamils steal our job, our

opportunities, our business and our land', and 'they are the people who want to enslave our proved nation'.

Every identification, according to Zizek, is bound to produce its obscene other (Zizek.1993: 206). This other is hated and fantasized as stealing our lost enjoyment. Moreover, 'national enemy' is fantasized as enjoying more than us having stolen what is belonged to us. The demonized other, in Sri Lanka the Tamil, is usually accused for his excessive enjoyment. As he formulates, 'National identification is by definition sustained by a relationship toward the Nation qua Thing. This Nation-Thing is determined by a series of contradictory properties. It appears to us as "our Thing" (perhaps we could say cosa nostra), as something accessible only to us, as something "they", the others cannot grasp; nonetheless it is something constantly menaced by them' (ibid:201). This thing is not other than our particular way of life, and it organizes our enjoyment. The national Thing exists as long as members of the community believe in it; it is literally an effect of this belief in itself (ibid: 202). Sinhala Buddhist nationalism relies on the idea of national Thing, which makes our place in the society. The most radical point of Zizekian truth about nationalism is identifying the 'enemy of the nation' not as an 'external threat' but as our own innermost split. According to his own words, 'The hatred of the Other is the hatred of our own excess of enjoyment' (ibid: 206). Enjoyment not only binds us into the ideological formation but also it supports global capital. As Jodi Dean elaborates, 'Nationalism is a kind of shock absorber against the structural imbalance of capitalism, against its inevitable excess, expansion and openness (Dean, 2006:113).

4. Conclusion

National identification cannot be explained by merely symbolic or imaginary way. For the better understanding of the ideological function of Sinhala Buddhism, it requires the psychoanalytical concept, enjoyment, which uncovers the fantasy and subjective mechanism in given ideology. Sinhala Buddhists are not entrapped in the grip of anti –Tamil consciousness. Therefore, there is no 'grip of Sinhala Buddhist ideology', but Sinhala Buddhist *ideologisation of grip*. Sinhala Buddhist subjectivity needs a grip. Otherwise, subjectivity confronts his own emptiness, which can traumatize him. Sinhala Buddhists ontologically demand Tamil other, the 'external enemy' to displace his own subjective voidness. Sinhala Buddhists enjoy their nation as themselves!

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MEMEX AS THE FOUNDATIONAL STONE OF THE HYPERTEXT THEORY

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Abstract: In this paper I present the results from the first chapter of my dissertation, called Hypertext as a Metaphor for the Scientific Mind. The chapter is about a Memex (refer to a "memory extension"): the never functional, but for hypertext theory and practice very inspirational medium of scientific work with information, modelled by Bush (1945). I present it from the point of view of the theory of science from three angles of view: As the model developing the metaphor of .e.g. scientific mind, as the major inspiration for the creators of the functional digital hypertext (digital text with hyperlinks) and as the base of hypertext theory (understood as scientific area of interest with quite short history). The evolving of the hypertext from the metaphor I present on a practical example using (according to Lawler) an analysis of metaphorical themes abstracted from Bush's texts about the Memex. I focus on the interaction between two metaphorical elements in the metaphorical theme "the Memex is the scientist's associative memory" referring to an interactive view of metaphor developed by Black. This paper outlines the beginning of the hypertext theory interpretation. I try to figure out in this paper how the metaphorical themes developed by Bush influence the forming of the hypertext theory.

Keywords: memex, hypertext, metaphor, metaphorical theme, model

1. Introduction

In the introduction I present the broader context of my research and the main tasks of this paper.

My Ph.D. research focuses on changes related to the transformation of the form of scientific communication which has become hypertextual since the turn of 20th century - I intend to prove this in my dissertation. I assume that the form of hypertext (that means a digital text with a new dimension given by the electronic links containing references to other pieces of information) has been influencing the form of scientific articles as the pragmatic factor of communication. I suppose that the scientific way of working with help to create the specific type of scientific hypertext. I suppose that it develops the promising potential of the theoretical concept of hypertext (its openness, networking and non-linearity). This hypothesis will be further discussed in my dissertation. Using the method of an analysis of pragmatic factors of scientific communication I aim to explain how hypertext affects the nature of academic communication, how it forms a structure of scientific papers and vice-versa: how the concept of the "scientific mind" influences the form and functions of hypertext.

The aim of this paper is to interpret the process of inventing the Memex as the theoretical "ancestor" of the hypertextual way of archiving and connecting information contemporary scientific research the communication. I argue that in the concrete case of a scientific discovery of the Memex this inventing had started with a metaphor which Vannevar Bush (1945) [1] transformed into a model of the scientific mind. That model was developed by Douglas Engelbart (1962) [2], Ted Nelson (1970) [3] and others in the functional medium of communication. According to Nelson we call this medium "hypertext". Links make hypertext (in opposite to text) nonlinear, non sequential, open, dispersal,

nonhierarchical as shown by the Nelson in a description of this new and digital form of textuality.

The "scientific mind" is mentioned as the primary inspiration in all of the three fundamental texts of hypertext theory [1] [2] [3]. It is important to stress the fact that the scientific mind is defined here in a reductionist way as a conglomerate of cognitive functions and operations of the mind by which scientists recognize the world and themselves. The mind includes perception, attention, imagination, memory, thought and speech. For the purpose of our analysis the concept was reduced only to the functions of associative memory involved in the process of scientific information work with data and information. Bush didn't define the concept of the scientific mind in his texts about the Memex thoroughly. He referred in As We May Think to his own scientific experience with scientific research. He stressed that the scientific mind is complex, inspirable, but hardly definable and examinable phenomenon.

"Metaphor" (from Greek "meta forein", it means "transfer to another place"), is defined as a cognitive tool of understanding of complex and difficult to explicable phenomena which are easier to comprehend when explained on the basis of analogy with something more familiar, as I show in detail, developing the connection between metaphors and models, using the method of an analysis of metaphorical themes.

In this paper I try to answer the following questions: Which are the main metaphorical themes involved in the process of inventing the Memex? How were these themes developed into a model of the scientific mind? Which were the functions of the Memex in the hypertext theory (understood as scientific area of interest with quite short history)? In which way were they transformed during the development of the hypertext theory?

In this introduction I also shortly present the historical context of the Memex. In the beginning of this phase of hypertext theory development (1940') was a practical problem with information overcrowding (this problem actually reappears in present). There was a scientist and an engineer, who wanted to solve this issue. His idea of such a solution started with the metaphor of the scientific mind (represented in this paper only by associative memory), which should be transferred into the mechanic machine. This idea started with the metaphorical theme "associative memory involved in the scientific research is the machine".

It was the summer of 1945. An editorial board in the scientific journal Atlantic Monthly was preparing for publication the article As We May Think, which the members of the board found groundbreaking. The author of the text was an engineer successful in the development of analog computers, director of the U.S. Office of Scientific Research and Development, Vannevar Bush. He criticized in his text outdated way of work with scientific information and the form of scientific communication, giving examples of how they hindered scientific development. He referred to the story of Johann Gregor Mendel, whose theory of heredity had lain fallow thirty years before it got to those who discovered it for the world. In his article Bush developed an idea of the mechanical machine, called the Memex. He modelled it in his mind as a working desk, keynote and some other equipment. The model was imagined as the machine consisting of the most modern technologies, which Bush knew in his time and of technologies which Bush anticipated. The Memex would archive all data that scientist had copied with a camera mounted on his head in a form of a microfilm. It would link this information with other associated data by means of a metadata indexing. It would also display related bulk of information in one place, in a short time.

Bush knew that it was not technically possible to run the Memex in 1945. In his article he described such a model of the assumed machine. He supposed that a technology, which enables it to run, appears in the future. His assumption was proven to be right, so he is called "the visionary of hypertext". Nevertheless, it was in short all for the introduction of the Memex.

2. Methods

In this paper I intend to introduce one practical example of the method used in my dissertation, based on an analysis of metaphorical themes and interaction of the meaning here according to Lawler [8] and Black [5] [6] of whose terminology I use in this paper. Lakoff and Johnson in [7] call the "metaphorical theme" the "conceptual metaphor". (I intend to show this cognitive view on metaphor in a broader metaphorological context in my dissertation.) Media theory is trying to map media practices with the help of metaphors and models. The Mc Luhanian metaphor serves to us as an inspiration, in which the medium is seen as an extension of human senses [4]. This is paper it is understood in a broader sense: I see the Memex as an extension of the human mind and especially as the extension of the scientific mind.

Now let me present the link between the Memex, metaphors and models. I consider metaphors and models in science according to [5] [6] [7] [8] as the means of understanding of complex and hardly explorable or even unexaminable phenomena, which are easier to understand when they are explained on the basis of analogy with something more familiar. For Black models in science are very similar to metaphors, they require transfer of meaning by analogy with revealing new relations between the two areas of interest too, but they require a greater degree of structural identity or isomorphism of these areas than metaphors.

Metaphors and models are products of abstraction, thus they are emphasizing certain features of the subject of abstraction and suppressing other characteristics. This thesis corresponds with the interactive understanding of metaphors according to Black [6]. He argues that the metaphor (and the model too, in my opinion) in the process of abstraction selects, organizes and highlights the properties of metaphorical entity A, "associative memory of scientist" (for purposes of this paper). Considering the entity B, the Memex machine, we begin to see it as the scientist's associative memory. What does it mean to think about the A (associative memory of scientist) as the B (the machine) and vice versa? According to Black this means to see both things in a new light, to create a so far non existing connection between them. It means to assume, that what we say about the machine can provide very interesting perspective on an associative memory and vice versa. Metaphors link two areas of our experience, which allow us to use what we know about the A to the B, as shown by Lakoff and Johnson in the definition of "conceptual metaphor" [7]. According to Lawler [8] I call this phenomenon the metaphorical theme. In this paper I present the analysis of the theme: "associative memory is the machine".

Metaphors, in approach of researchers mentioned above, became the primary concepts in which people understand the world. They are cognitive tools that cannot be realistically examined itself. To find out how they operate we have to focus on several more specific situations where a phrase (e. g. "run the track"), expecting as the subject the living being, is used in the context of an entirely different kind of things. In the case of our research it is "the idea running in track", mentioned in Bush's article [1]. In the Lawler 's terminology, used here, it is the example of the "metaphor instantiation". The set of consisting instantiations makes a rule (the metaphorical theme).

To use the metaphoric theme means to use words defined in the relation to one conceptual framework in reporting on terms defined with respect to another frame. Lawler [8] described a method of working with metaphorical themes in these steps:

- Choose a theme of your interest.
- Collect examples of words and phrases here used (the metaphorical instantiations).
- Follow these words and phrases and explore their literal meaning, i.e., discover the framework where they are defined. Derive from instantiations the

metaphorical themes and try to interpret what function they perform in the context of your interest.

In this chapter I outline the base of analysis of two metaphorical themes: "the association is the track of thought" and "associative memory is the machine", that are important for understanding the function of the Memex as the foundational stone of hypertext theory. I abstracted these themes from Bush's article and connected them with the similar themes occurred in scholarly communication about the extension of a human memory, which had started long time before Bush, as shown in detail by Yeates [9]. Contemporary psychology defines the association in a broad sense as a connection of thoughts. How did scholars before Bush explain the association with a help of metaphorical themes? Hobbes [10] described the association as a union between one idea and another one, as the connection (link), which is formed on the basis that

on the notion of association as "traces of thoughts", which excavated in the porous material of a brain and here were subsequently reused. These phrases are examples of particular instantiations of the metaphorical theme called in this paper "association is trace of thought". These "tracks of thoughts" Bush saw in the new conceptual framework as an opportunity for the machine beneficial to the scientific work with information.

these ideas have something in common. Descartes

(according to Sutton [11]) built his trace theory of memory

Considering that, I interpret the metaphorical theme "associative memory is the machine". We can argue that, in his theory of Memex, Bush tried to see associative memory as the machine and the machine as associative memory. For the discovery of the Memex as the model of the scientist's associative memory this is the essential metaphorical theme, which involves the abstraction emphasizing that some functions of associative memory are convertible into the machine:

"Whenever logical processes of thought are employed – that is, whenever thought for a time runs along an accepted groove – there is an opportunity for the machine." [12]

"Selection by association, rather than indexing, may yet be mechanized." [13]

The metaphorical theme: "associative memory is the machine" Bush developed into the model Memex that was based on that metaphor, but it is characterized (as shown in [5]) with a higher degree of structural unity: Associative memory and the Memex can be seen as two objects with similar structure connected by more than one link.

3. Results

In this paper I can only outline, that for associative memory and the Memex associative indexing of information is the organizing principles, they both make links between pieces of information on the base of association. However, they both work according to some algorithm involving routines and logical consideration.

Two main metaphorical themes involved in the process of inventing the Memex were:

- "the association is the track of thought",
- "associative memory is the machine".

These themes were developed into a model of the scientific mind in this way:

- Associative memory (as a function of the mind) was the inspiration for Bush's Memex.
- Bush recognized the new and inspirational similarities connecting associative memory and the machine.
- Bush discovered the principle of a hypertextual organization of information which is really transferable to machine, as his followers prove.
- Seen from the point of view of the philosophy of science, the hypertext theory and practice was being formed through the development of metaphorical theme analysis in communication of scientists, for which the scientific mind was the primary inspiration for the wanted medium of scientific dealing with information.

I have found that the Memex is the major inspiration for the creators of the functional hypertext based on the digital technology; it is also the foundational stone of the hypertext theory and practice.

4. Discussion

In this paper I argue that the Memex as the model of associative function of the scientific mind was intended as the comprehensive plan for future practical implementation in the form of the machine (today we can say the medium) of (scientific) research and communication. The medium working on the principle of associative connecting of information was really invented twenty years after publication of the Bush's text *As We May Think*, referring to it as to the primary inspiration.

Douglas Engelbart, inspired by Bush's article, presented a functional digital hypertextual system in 1962 and defined it in his text *Augmentation of Human Intellect* [2], in which I search for instantiations of dealing with metaphorical "hypertext is the scientific mind".

Theodor Nelson, who gave hypertext its name and who defined its properties in 1965 [3], also built on the Bush's model of associative linking of information. Here I show the development of metaphorical themes into the hypertext theory. Nelson did not present the mind as the machine but as textuality, as the structure of the connection between information ("the mind is the textuality" theme of metaphor). Nelson assumed that there were more functions of the mind that we could transfer to the hypertext medium. In the case of my Ph.D. research it is further instantiation of the metaphorical theme "hypertext is the scientific mind". I am going to interpret the other texts of hypertext theorists and practitioners such as Tim Berners-Lee, George Landow or Mark Bernstein, to analyze cases of dealing with other themes of metaphor and to discuss their function in the hypertext theory constitution.

5. Conclusion

Bush's vital metaphorical dealing with the concept of scientific mind extensions was interpreted in this paper as the base for the hypertext theory and practice. In Bush's article I found these links between associative memory and the Memex:

• They both operate by association.

 Selection on the basis of associations can be transferred into the machine.

It is obvious that such a "transfer" of something as hardly examinable as associations into the maschine, was neither easy to discover in scientific theory, nor to realize in practice. In the beginning it was a metaphorical theme, pointing to the new connections between the machine and associative memory involved in the process of scientific research. Bush developed this metaphor to the feature of the model, which articulates in detail the principle of association as something transferable to the machine (that is the most important) and disregard from the concrete technology which allows "to run the Memex". This technology was founded, as Bush anticipated.

The technology is not mechanical, but digital, programmable one. It operates "in the speed of thought", as Bush imagined. Hypertext, the organization principle, as the functional "descendant" of the theoretical concept of Memex has been influencing the form and functions of scientific communication since 1990′.

Researchers (for example [14]) show that scientists read more texts, as the existence of digital hypertext allows more efficient and faster research of appropriate information. Data sources are accessible through the Internet, the process of text editing and data sending is easier and faster, etc. However, there are many negative unexpected consequences, as for the changes in scientific communication. In my dissertation I intend to look also into this problematic further, discovering how the concept of the "scientific mind" influences the form and functions of hypertext.

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DO COMMERCIALS HAVE A PLACE IN A MUSEUM?

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Abstract: For the last few decades, there has been an apparent change in the field of commercials and advertising. These two spheres have always been somewhat connected with art. The advertising industry has used ideas invented by artists and on the other hand, artists (of the Avant-garde, Cubism or Futurism) have imported widely known corporate identities into their art pieces. This article analyses the works of graphic designers, whose aim was to sell a product, but their attitude was more artistic than commercial (Anton Stankowski, Studio Kessels Kramer, Richard Avedon). All of the used examples worked with traditional crafts, but used a breath of innovation and arrived at the art-or-commerce boundary.

Keywords: commercial, advertising, photography, aesthetics, history of art

1. Advertising as art

1.1 Judging art criteria

Welsch claims that [6] "we live at the times of aestheticisation - starting from our consumer behaviour and crossing through our whole lively world". Our everyday life has become more aesthetic. The thesis by Welsch, which describes mass aestheticisation leading to anaesthetisation, can be applied to today's world of commercials, which has the ambition to use procedures invented by the sphere of conceptual art. Welsch also talks about the world of massmedia, which "contains the strong potential for anaesthetisation". Terms like redesign, styling, layout, urban planning became a part of a current designer's work. Art theorists do not all agree that advertising and commercials should or should not be considered art. We can look at some definitions of art from the theorists of the 20th century, and then make a conclusion, if commercials truly should be a part of a gallery collection.

1.2 What is art?

Let's try to use a definition of an art work, according to Mukařovský, [5] the function of an art work is accomplished by its creation. This opinion is widely used in society. This theory discusses the relationship between the creation and the activity preceding it. Each type of art is different therefore due to this relationship. Respecting history, an advertisement is most closely related to the visual arts, thus the creation presents a never-ending result. However, Mukařovský sees the difference between an art work and other human creations due to their functionality. Extra-aesthetic activities and their creations should have a definite functional focus [5] "act and item being made by it, are the most effective, are the best adapted to the goal they serve". We can also differentiate commercials from art by another claim of Mukařovský on art work [5] "prevalence of aesthetical function prevents it in order of any other function could really dominate". Based on this fact we should exclude an advertisement, that didn't aim to be aesthetical, but sell the product, from the art. Welsch

describes the state (if we accept that the advertisement falls under anesthetics) [6] "in which the capacity to feel is cancelled (elementary condition of aesthetics is cancelled)".

As an example, that negotiates this saying, we can use the art work by Anton Stankowski, designer of post-war modernism working in Switzerland in 1930s. His graphics had their own language, he reprobated metaphores, decor and puerility. Instead of that, he used simple [3] "rational presentation of an advertised product in the clearest way". Stankowski felt free to use modern art elements in his graphic designs. According to Gablik [2] "individualism and freedom are undoubtedly the greatest advantage of modern culture".

1.3 Are commercials creative?

A commercial represents the form of activity applied in mass communication instruments, though carries wide potential of instruments and art language utilization in itself at the same time. The visual identity of commercials is one key feature of their structure. Photography, postproduction and graphics completed by text belong to elementary practices of promotional material production of the present time (print set up, or proper preparation of final design for inclusion on a webpage). However, the problem with contemporary advertisements lies in the absence of ideas and creativity, while the sponsor presumes only the modest consumer generally. It could be stated that commercials unlike art, need a recipient, not percipient in order to fulfill its aim. A commercial wants and needs to tempt, to be perceived and understood to let the consumer know what the product (service, promotion) is all about. Welsch talks about [6] "the effect of social desensitization". Our consumerist world is in a state of apathy. Massification leads to perception numbness, so we cannot talk about receiving. Art elements are absent in mass commercials, while just their utilization could help to repeatedly establish the relationship with the viewer.



Figure 1: The newspaper advertising designed by Anton Stankowski from 1930

Source: Z. Kolesár: Kapitoly z dejín grafického dizajnu, Bratislava: Slovenské centrum dizajnu, 2006, page 164

2. Commercials as an art piece

2.1 Examples from history

Let's set the question whether a commercial could not be art. Could it slip to the sphere of art and keep its primary function at the same time, i.e. to sell and to promote? The commercial should use and consist of contemporary elements, language signs that characterizes the age and the society of the time of its creation. It's about the result of reciprocity: artists influence the commercial and the commercial influences their works and production considering its wide range of use. There are further examples from history as art entered commercials (influence of Dadaists or Futurists), but let's bring the example that we already mentioned: the promotional poster of Anton Stankowski. He worked for the construction, electrotechnical and machinery industries and used asymmetry, geometry and minimal color for his graphics that denotes modern style principles intersection into the sphere of commercials. On the other hand, this sphere entered the art sphere: let's also mention the painting of Picasso Country with Posters (Paysage aux affiches), where he set the bouillon Maggi, Absinthe bottle Pernod Fils and hat manufacturer logo Léon.

2.2 Graphic design trends after the year 2000

However, art language has been enriched by new forms, terms and statements during the 20th century. They were hardly accepted by the public (we talk about skepticism they adopted performance, happening or abstraction with). We could state that these art language types are mostly ignored by the world of commercials until today, even though advertising agencies have art directors who are proven as conceptual artists among their own employees. It's questionable to what extent do these artists miss the possibility of free production, to what extent does the

market research, target group or other psychologists' and sociologists' analysis influence their ideas. Then the result is not "the work", but some patchwork for the average receiver that means regression at the time of Welsch anesthetization. Such a commercial fulfils the requirements of the sponsor and addresses the consumer in a certain way, but is not the work and the result of art. The question should not be whether a commercial could be art, but what commercials could become. Can we classify it into high and low? Can we talk about "Ad Art" (artistic advertisement)? Or about "conceptualized advertisement"? The term graphic design has been used until recently, however, that has been replaced by the term visual communication involving web design, art production, photography, video or illustration with accompanying graphics.

Let me accept the key thesis about art from another theorist and philosopher Igor Hrusovsky. He claims that there is a relationship between art and reality (society). So he assumes a double impulse for creation: on one hand it is the inner feeling of an artist himself and on the other hand it can be a reaction to the outer world, or situation in the society. Subjective versus objective perception. One of Hrusovsky's sayings can be interpreted as such, that art does not reflect the reality. On the contrary, art [1] "cocreates the spiritual space". This argument helps us to assign some graphic designs and campaigns to art. We are surrounded by it, it really is a part of our everyday life. Posters and banners "decorate" buildings, roads, streets or even web pages that we use.



Figure 2: Poster campaign It can't get any worse by Kessels Kramer

Source: http://www.kesselskramer.com/communication/projects/hans-brinker

An example of a "conceptual advertisement" could be represented by the Dutch design studio; *Kessels Kramer* disposing mainly with humor in its production and the results of their productions presume a thinking viewer. *Kessels Kramer* negates standard methods and practices. There is a campaign promoting a cheap hostel in Amsterdam in their portfolio, where they promote the negatives of the hostel as requested features (they warn of the possibility to see the absence of toilet paper or a dog's

excretions at the doorstep on their posters or just one bath serving 354 rooms and so on). Another humorous poster uses reversed psychology: there is a picture of a luxury room with the view of a downtown. The picture is disrupted by minor signs – stars marking particular items of the room. There is an explanation at the bottom of the picture: items marked by a star are not a part of the room. We can state that Kessels Kramer created art because of many reasons (they cross the conventions, mention problems, use a form that provokes thought by the recipient, do not use too much a sophisticated result, on the contrary their production is spontaneous). There are relatively few advertising agencies that would allow this type of freedom of production which then leads to original and innovative solutions in this way such as Kessels Kramer. Instead, metaphorically said, mass media are full of scream, but we can hear nobody.

3. The art of commercial photography

Photographer Richard Avedon has two photographs of Twiggy (one describes the whole body, second one just the face of model with her windblown hair) in his MoMA collection. Avedon worked in the sphere of fashion photography during his career, for instance, even for Harper's Bazaar magazine. He was a self-employed artistic photographer. The "Two Twiggies" are examples of how to make an advertisement be so much more exceptional and approach the status of art. On the other hand, we can state that Twiggy does not represent the world of fashion and print, but is just the one of many other portraits of the personalities that Avedon created. Let's try to use the voluntaristic theory of DeWitt H. Parker being analyzed by Morris Weitz, in order to define whether Twiggy is or is not art. The theory claims that real art consists of [4] "satisfaction through the imagination, socially shared meaning and harmony". We can use this definition because photography is considered to be the bound of art, advertisement, reportage and function from the time of its origin, thus if we look at Twiggy as an artistic picture, it evokes emotions concurrent with that of an art work. Does it consist of harmony and generally known heritage in itself?



Figure 3: Picture of Twiggy taken by Richard Avedon

Source: http://perfectionofperplexion.wordpress.com/ 2011/01/01/nyun-130/ If aesthetics represent our individual feelings and Welsch's anaesthetics on the other hand means insensitivity of perception, let me divide the commercials according to this key. Imagine an advert that does not bring any emotions to the consumer. It just sells, informs the customer (which is the original function of the advert). By this, we can say, advertising can never be art, as art always evokes emotions. But how do we treat commercials or advertisements that truly do evoke emotions, ignoring the factual information about the product? How do we handle the advertisements that tell stories, make us smile and cry or even gain a group of fans - but not as a product seller but as an art piece? On the other hand, there are objects (maybe considered as art) that do not evoke emotions by individuals. Welsch talks about feelings like [6] "physical apathy" or "spiritual blindness". To this category we can assign roadside billboards (there are so many of them that we stop looking and perceiving the content) as well as a painting of autumn leaves that was made for a chain store. In conclusion, commercials and advertising have a huge potential to become a platform for artists.

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ORIGIN DEPENDENT BIFURCATION OF MIGRANT LABOUR IN THE EU MARKET

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Abstract: The risk of deskilling is real for a large majority of migrant works in the Central and Eastern European region. Pushed by high unemployment in regions of origin a number of migrants seek out employment opportunities wherever they may be irrespective of the fact that it may lead to deskilling. Among educated migrants residing in the Czech Republic we find that deskilling is relatively uncommon, although employment in complementary sectors or where skill transferability is possible does occur often. Findings presented here indicate that European degree holders benefit from the transferability of skills whereas holders of degrees from outside of the EU are far more likely to be employed in sectors related to their specific skill set. The relevance of theories of human capital formation, segmentation of labour markets and economic rationalizations for migration are questioned as a result of findings in relation to educated migrants employed in the Czech Republic.

Keywords: migration, skilled labour, deskilling, Central Europe

1. Introduction

Deskilling, brain drain and a loss of agency are commonly discussed themes in relation to skilled migration. Here we present results of a survey targeting highly educated migrants (International Standard Classification of Education level 4 or above) residing in the Czech Republic which are somewhat at variance with commonly utilized theoretical arguments. It had been anticipated that skilled migrants would be willing to undertake employment outside of their area of specialization given past research which demonstrated a willingness among young migrants to deskill during periods abroad.[1] We find that migrants educated outside of the European Union (EU) tend to be employed within the sector for which they are educated whereas graduates of EU institutions are highly likely to be employed in occupations which do not correlate to that which they are educated for. Such a discrepancy casts a shadow on traditional explanations which utilize economic rationalizations in explaining migration.

This work will briefly present several relevant theoretical viewpoints which relate to skilled mobility. Their relevance will be discussed in direct relation to survey results. Essential data from the survey will be presented before the work concludes with a summary of findings and suggestions for potential areas for further study.

2. Theoretical Conceptualizations

Generally speaking theoretical arguments which seek to clarify migratory rationalizations tend to lean heavily on economic rationales. Irrespective of the level of analysis much work puts stress on economics as a significant driving force in migration. [2] If local conditions are inadequate or favourable offers exist in regions of destination individuals will move in search of higher wages. Deskilling may occur in the case where employment prospects are bleak at home, wages are higher in destination countries or when an individual's qualifications are not recognized in regions of destination. [3]

Human capital approaches stress the benefits of skill enhancement and the potential for wage increases in the long term as a rationale for migration yet evidence indicates that migration may not always occur if there is a risk of deskilling. Some evidence indicates that in certain circumstances international migration may reduce investment in education whereas in contrast internal migration may enhance the value of higher education. In other cases the export of educated workers is sponsored by governments who seek to support development via the creation of remittances. [4]

Bifurcation may occur in the labour market of receiving countries, according to the theory of segmented labour markets, as highly skilled (local) workers are drawn into skilled professions while immigrants are shunted to low skilled industries. If this argumentation is correct we can assume that migrants will be more likely to accept employment outside of their intended occupation, due to structural constraints which limit their ability to choose employment.

Recognizing that bifurcation exists in the Czech labour market due to high demand for unskilled or semi-skilled labour and therefore conforms to the segmented labour market theory of Sassen and Piore [5] [6] this work demonstrates that not all immigrants find themselves pushed into the secondary labour market. Although evidence indicates widespread participation of (primarily) Ukrainian nationals [7] in the secondary labour market our findings indicates that the majority of migrants are not, in fact, deskilling but may be employed in sectors or professions which are complementary to their skill set within the primary labour market.

3. Results

The work of Baláž and Williams has demonstrated that young educated migrants from Central and Eastern Europe are willing to deskill during short stints abroad as they focus not on employment so much as on general skill development (language acquisition) and network building. [1] Our research has demonstrated that amongst educated

migrants residing in the Czech Republic deskilling is a non-issue. Much in line with the findings of Baláž and Williams individuals indicate that they are willing to undertake employment outside of their area of expertise, or even to deskill during what might be called non-permanent migration cycles. More specifically individuals indicate a willingness to take on casual work or work outside of their skill area in the case that the migration experience is short lived or non-permanent in nature. Willingness to deskill does not, however, equate to the actual experience of migrants who are employed in the Czech Republic.

4. Data

Utilizing a subset of data collected during a project conducted in 2012 and 2013 we present data based on responses of 92 individuals originating from various countries. (both EU nationals and third country nationals) Analysis reveals a complex situation where educational attainment plays a significant role in employability. Data indicates that individuals who graduate from EU based institutions are more likely to branch out and be employed outside of their intended occupation than those who studied at non-EU institutions. Being employed outside of one's professional area occurs more often among graduates of EU institutions than among others.

The two charts below demonstrate the mean similarity and mean difference between the profession individuals studied for and their current occupation according to sector. Responses were coded according to general sectors which conformed to the majority of cases present and also match with educational attainment indicated by respondents. Responses which did not conform or which are non-standard were coded as 'other'. The mean of responses was plotted via an output of SPSS and are utilized here to visually demonstrate variation between groups.

While not a perfect fit in all cases the scatter plot of 'intended occupation' and 'current occupation' indicates that, for the most part, a majority of individuals are employed in similar professional areas to that which they studied for. (Figure 1) An ideal fit between an individual's current employment and the ideal profession matching that educational attainment would sit along the midline between the x and y axis. Any clustering along the midline indicates that individuals are employed in the sector that they are educated for. Those which do not 'fit' to the midline are employed in professions which do not conform to their education. We find that the bulk of respondents have jobs largely commensurate with their level of education even if they are not within the same sector. As an example an individual who studied economics may work in management or vice versa.

Figure 1 and 2 indicate that there is significant variation between respondents who graduated from non-EU institutions and those who graduated within the EU. Respondents falling along the midline are those employed in a sector or occupation similar to that which they studied for. Outliers are employed outside for their area of expertise. It is clear from figure 1 that individuals with a

degree from a non-EU institution are likely to be employed in professions for which they are qualified.

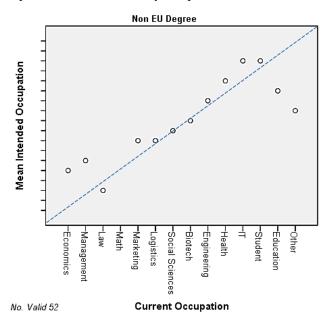


Figure 1: Variance between sector employed in and sector studied- Non EU Degree Holders

In distinct contrast figure 2 demonstrates how flexible graduates from EU institutions are in their employability. Wide divergence from the expected midline indicates either sector hopping or skill transferability not seen among non-EU degree holders.

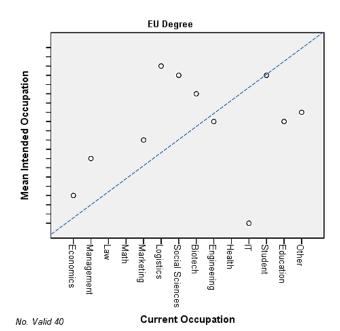


Figure 2: Variance between sector employed in and sector studied - EU Degree Holders

5. Discussion

We find that when data is aggregated those who obtained a degree from within the EU are less likely to work in the occupation for which they studied; in stark contrast to those with a degree from a non-EU institution who are

predominantly employed in their expected profession. The fact that non-EU degree holders were more likely to be employed in an occupation in conformity with their qualifications is in line with indications that a significant portion of third country nationals require firm job offers before moving, or are inclined to remain in occupations where their skills are easily transferable in the event of return migration. It is also possible that migrations from the east fill gaps in the labour market which demand specialized skill sets.

This case is somewhat counter intuitive in relation to expectations and theories which stress either the economic rationale for migration or a segmentation of the labour market. The prevalence of sector jumping among highly skilled migrants (with EU degrees) is unusual given the expectation that sector specific skill development would push individuals to remain employed in their target profession; at least according to theories of human capital development which stress the importance of skill building. From responses which indicate migrants remain willing to deskill we hypothesize that either mobility of EU nationals is intended or believed to be short term, and therefore not relevant for sector specific specialization which can be developed 'at home', or the youthful cohort of the sample results in high levels of flexibility among migrant job seekers.

Variance with traditional explanations which stress the impact structural factors have in pushing migrants to deskill is surprising, yet may result from the purposive nature of the sample and the high number of highly educated individuals who are capable of avoiding traditional pressures which lead migrants to deskill.

The highly educated character of the migrants included in the study perhaps limits their vulnerability as they have skills, knowledge, perhaps support and drive; all characteristics which reduce the likelihood of them 'falling into' jobs in the secondary labour market. In addition the typology of migrants included in the study is far different than what could be called the average migrant. The large number of young educated professionals included in the study who are willing to move on short notice leads us to label a large portion of respondents as lifestyle migrants. Those coming from other EU countries or North America for example are unlikely to be economic migrants in the strictest sense as their motivation for mobility decision making is based not on economic rationalizations but on choice; for reasons of adventure or discovery. This group is liable to be more flexible than other groups and is willing to take up employment outside of their area of expertise as they do not see employment as means to an end as their mobility is intended to be short lived.

In addition the findings may reflect the unique characteristics of the respondents included within the sample who, due to self-selection, are likely to be so called successful migrants and therefore more likely to participate in the primary labour market and be employed full time.

From anecdotal information we understand that those who migrate into the Czech Republic from non-EU states after completing their first degree as highly skilled migrants are likely to search out employment in their sector or have employment offers before entering the country. In contrast those with an EU degree may be more willing to take risks and take up employment outside of their intended occupation. Our data indicates that a large number of EU graduates are employed in the primary labour market, yet not in the specific sector they studied for. We take this as indicative of the transferability of their skill set although further work would be needed to clarify this.

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Non-EU graduates are more focused in their specific area of expertise due to visa restrictions, demand in the local market or, as one observer astutely put it 'they come here because local specialists moved to Germany' and are thus filling gaps in the economy abandoned by locals who move in search of better wages in other EU states. In essence migrants with non-EU degrees are filling the void left by locals who have migrated in search of higher wages in the west. A ripple effect has been created as locals move west and others have come to replace them.

We hypothesize that those migrants who are focused on building a career are less willing to deviate from their profession of choice while those who are not planning to remain (short term migrants) are more willing to take on employment outside of their area of expertise. Thus we find a link between the segmented labour market theory and human capital models for some of the groups under study. Those who have invested in gathering human capital via education and networking are more likely to have a vested interest in staying in positions in the primary market where their sector specific skills can be best utilized. Deskilling is a distinct possibility for some migrants, however, we have not seen true deskilling within this sample only underemployment or employment outside of an individuals intended profession. It is also possible that EU migrants are more likely to have transferable skills as an outcome of their education than those holding degrees from third countries.

Comparing variation across groups and even within groups we find significant variation in human capital development and intention to change profession. It is possible that the specific human or social capital utilised in daily life is not lost during short term migratory experiences but, on the contrary, may be enhanced. Thus some individuals may be willing to take the risk of de-skilling in the case that their migratory trajectory had a limited time horizon. The same individual would not, however, be willing to sector hop if they were intending to 'stay' for any given period of time. Thus we postulate that individuals who make short term, experiential, migratory moves are willing to work outside of their specialization as a result of the fact that work experience is not their key objective. Those who make such moves are focused on enhancing language skills, networking, traveling and the like. Factors confirmed by work undertaken by Baláž & Williams [1] in their study of Slovak student migration from Bratislava who clearly indicated a preference for language skill development and networking to work experience. Of course this applies predominantly to those who do not 'intend' to stay for the long term. The case of 'settled' migrants it is the opposite,

with their intention to stay precluding deskilling whenever possible.

6. Conclusions

The variation seen among respondents in relation to willingness to undertake employment outside of their area of expertise is unusual and goes against traditional understandings of migrant behaviour which presupposes an economic rationalization for mobility or a human capital formation strategy. This work indicates that among highly skilled migrants a fair amount of sector hopping or transferability of skills occurs as individuals are employed in alternative occupations. In light of the flexibility of EU educated workers European efforts to ensure the development of a dynamic knowledge based economy appear to be on track, at least in relation to workers skill development.

Findings which run counter to traditional theoretical explanations demand greater study. Analysis of micro factors leading to decision making is required as general theories based on aggregate flows are likely to miss out on the intricacies of particular flows, such as those seen here in relation to highly educated migrants. In addition, findings indicate that third country nationals or those with degrees from third countries are relatively limited in the level of choice allowed them. Future work is necessary which would clarify how well third country nationals are integrating into the workforce. If individuals are overly constrained by bureaucratic limitations economic productivity which benefits from work force flexibility may be harmed, although this is only a supposition at this time.

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