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Research and Practice***

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**Jana Cocuřová**  
**Ľuba Tomčíková**  
**Nella Svetozarovová**

## **THE ANALYSIS OF THE DISCREPANCIES IN THE ASSESSMENT OF VARIOUS PERFORMANCE DIMENSIONS OF BUSINESS ENTITIES**

### **ANALÝZA DISKREPANCIE ROZSAHU HODNOTENIA JEDNOTLIVÝCH DIMENZIÍ VÝKONNOSTI V PODNIKATEĽSKEJ PRAXI**

***Abstract:** The paper deals with the issue of performance assessment and its various dimensions of business entities active in the Slovak Republic. Specifically the analysis addresses the existence of statistically significant differences within the scope of the assessment of various performance dimensions between different sized businesses. The analysis tested nine specific dimensions - overall performance, financial performance, the performance of internal processes, customer satisfaction, learning and growth, individual performance, performance of teams, work behavior and management activities. For purposes of data analysis we used methods of descriptive and inductive statistics - correspondence analysis and chi-square test.*

***Key words:** Performance, human resource management, business entities.*

***Kľúčové slová:** Výkonnosť, riadenie ľudských zdrojov, podnikateľské jednotky.*

*This article is one of the partial outputs of the currently solved research grant VEGA no. 1/0513/14 "Research on possibilities to measure and assess the impact of human resource management practices on organizational performance".*

**JEL:** M12, M5

#### **Introduction**

Currently, the focus on questions relating to the issue of performance appraisal in all sorts of companies can be described as necessary and highly relevant, justifying the need for such studies due to the fact that competitive pressure on the quality of personnel in the conditions of a globalized world continuously increases, which ultimately increases the possibility of streamlining processes in this area. Performance appraisal in the context of human resources management requires a systematic approach, and choosing optimal methods "tailor-made" for the needs of companies is often a very complex task, as there are many available options which usually repeat.

## **The concept of Performance appraisal**

Performance appraisal is a vital tool to measure the frameworks set by any organization to its employees. It is utilized to track individual contribution and performance against organizational goals and to identify individual strengths and opportunities for future improvements and assessed whether organizational goals are achieved or serves as basis for the company's future planning and development. Armstrong describe the role of the performance appraisal as a tool for looking forward to what need to be done by people in the organization in order to achieve the purpose of the job to meet new challenges. Performance appraisal system helps an employee discover his strengths and weaknesses and would help him in decision making about his career choices [2].

Performance appraisal is one element of the performance management process which involves different measurements throughout the organizations but it is the element which is important if organization is to take advantage of their most important asset employees and gain human capital advantage. There are other processes within the organizations such as technology and design but it is the human factor which is the most difficult to replicate and therefore the most valuable strategy implementation and delivery of the organizational strategic target is the best accomplished through high performance people and it is the development of these people which performance appraisal seek to advance [5].

Employee performance appraisal has two forms. There are formal (systematic) and informal (non-systematic) appraisal. Informal appraisal means continuous evaluation of an employee by her/his superior during the work process [6]. Formal employee appraisal is a formal organizational process conducted on a systematic basis in order to enable a comparison between the expected individual and real performance [7]. Formal appraisal consists of several phases and selected methods according to appraisal areas [3]. Formal appraisal may be defined as tool or a mode that evaluates the work performance of an employee, as an interview in the course of which an employee's work performance is evaluated and the employee is given feedback, as a system of determining an employee's work, prospects/current work performance/evaluated performance/feedback provided to employees through performance appraisal and the possibilities of its future improvement/determining new goals and expectations for another period and as a part of performance management [8].

According to Akinbowale and Lourens performance appraisal has a positive and negative impact. Employees who receive a good score on his/her appraisal are generally motivated to perform well and maintain his/her performance [1]. Positive feedback on appraisals gives employee a feeling of worth and value, especially when accompanied by salary increases. If a supervisor gives an employee a poor score on his/her appraisal, the employee may feel a loss of motivation in the workplace. Consequently, this can impact on the employee's performance [4]. Performance appraisal is important for employees at all levels throughout the organization. The parameters, the characteristics and the standard for evaluation may be different, but the fundamentals of performance appraisal are the same [9].

Monitoring performance and ensuring conformity to agreed-upon standards are significant elements in the managerial control system of firm. Performance appraisal

is a formal, structured system for measuring, evaluating and influencing an employee's job-related attributes, behaviours and outcomes. Its focus is on discovering how productive the employee is and whether they can perform as effectively or more effectively in the future [10]. The performance of a worker can be evaluated using different criteria [12]. On the one hand, performance may be determined according to objective measures such as the number of pieces produced, the value of sales or the quality of output. These measures are directly observed both by the person who performs the evaluation and the person being evaluated [11]. On the other hand, evaluation may be determined according to subjective performance measures, based on the evaluator's judgements.

### Material and Methods

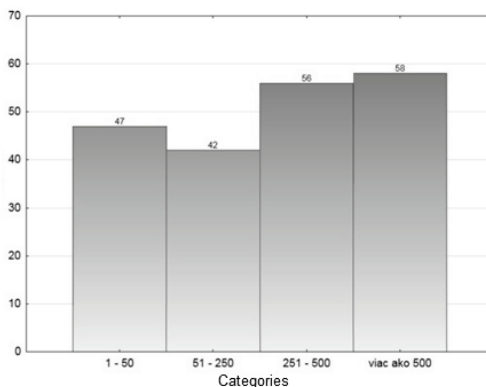
For the purpose of solving the problem and testing the set hypotheses verifying statistically significant differences in the scope of individual performance dimensions assessment we used the above-mentioned mathematical - statistical methods. As for the higher statistical methods we used the correspondence analysis and chi-square test.

The correspondence analysis describes the relationship between two nominal variables in a pivot table and at the same time also the relationship between categories. The result of the analysis is the corresponding map that allows the pivot table to detect the correspondence between the variables' values.

Chi square test is a sum of the squared differences between observed and expected values, divided by the expected amount.

The research sample consisted of 203 business entities operating in the Slovak Republic. Focus was placed on the size of business entities in terms of their employees. With regard to the number of employees employed in the selected business entities we were able to set four categories. Their resulting distribution was, as is already clear from the first glance, relatively proportional.

Fig 1: The composition of the research sample in terms of business entities' size



Source: own processing



The highest number of responses was recorded for the option "more than 500" (28.57%; N = 58). The second most numerous group consisted of business entities employing from 251 up to 500 employees (27.58%; N = 56), followed by the third most numerous group consisting of business entities employing from 1 up to 50 employees (23.15%; N = 47). The smallest group consisted of business entities with 51 up to 250 employees, accounting to one fifth of cases (20,69 %; N = 42).

## Results

To assess the extent of performance assessment in business entities in terms of their size we defined a set of dimensions/ areas, namely overall performance, financial performance, the performance of internal processes, customer satisfaction, learning and growth, individual performance, performance of teams, work behavior and management activities.

In order to verify or falsify the statistical test we formulated the following hypothesis.

*H1: There are statistically significant differences in the assessment of performance dimensions of different-sized businesses.*

The following table shows the values of Chi-square test for the hypothesis of independence of values in the pivot table. At the chosen significance level  $\alpha = 5\%$  for the  $p\text{-value} < 0.05$  we reject the null hypothesis of monitored factors' independence. The examination of the internal structure of the pivot table is therefore justified.

Tab 1: Values of Chi-square test – H1

Variable (performance dimension)	Business entities' size
Overall performance	0,0285*
Financial performance	0,7334
The performance of internal processes	0,2189
Customer satisfaction	0,1118
Learning and growth	0,8722
Individual performance	0,6106
Performance of teams	0,6327
Work behavior	0,5253
Management activities	0,5789

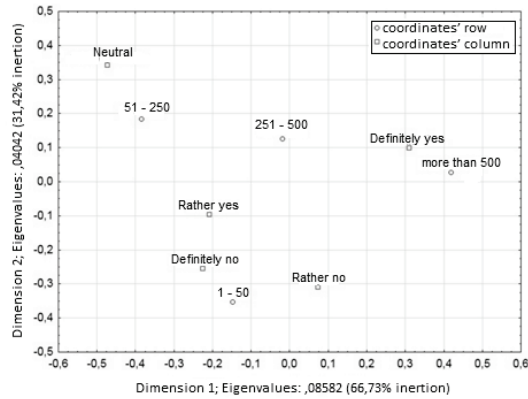
\* - the relationship is significant at the selected level of significance  $\alpha = 0,05$

Source: output of Statistics 12

The above mentioned testing points to the fact that there is a statistically significant difference in the assessment of individual performance dimensions of differently sized business entities, specifically in the category of the overall performance. Furthermore, this differentiation will be shown in the symmetrical correspondent map obtained from the pivot table. The variable line represents the size of business

entities by their employees and the variable column represents the assessment of the overall performance.

Fig 2: The correspondent map - overall performance according to business entities' size



Source: output of Statistics 12

The correspondence maps provide the following interpretations: while small business entities with up to 50 employees do not assess the overall performance (they do not deem it important), medium-sized entities employing from 51 up to 250 show mixed and ambiguous results, since the business entities do not clearly state their answer. On the other hand, business entities employing from 251 up to 500 employees inclined to answers rather yes and definitely yes (the most popular). Similar results were seen in business entities with more than 500 employees, saying they assess the overall performance.

Based on the results of the correspondence analysis and the values of Chi-square test we can accept the alternative hypothesis H1. This means that we have proven that with regard to the business entities' size there exists a statistically significant difference in the assessment of performance dimensions of differently sized business entities.

**Discussion**

Among the nine dimensions of the test a statistically significant discrepancy was confirmed by the chi-square test only in the assessment of the overall performance of different sized business entities. The analysis found that while small businesses do not assess the overall performance, the situation in medium-sized enterprises is rather mixed and their stance towards such assessment is neutral. Large enterprises, however, assess the overall performance on a regular basis. In most cases small and medium business entities have not formalized and implemented the performance management systems and performance assessment systems. Small and medium enterprises do not take into account the overall performance dimension. Among other things, as this is a time and resource consuming dimension for entities to process, some entities do not have necessary capacities. Therefore, the hypothesis

expecting differences in the performance assessment of business entities in terms of their varying size was verified.

## Summary

Determining the extent to which an organization is successful and its processes efficient, unconditionally requires a comprehensive evaluation of the status of its performance. The presented concept constitutes an important input, which is helpful for the development of an organization as a whole, including the development of its employees, i.e. the development in the entire vertical of its management. Main aim of presented paper was to analyse the discrepancies in the assessment of various performance dimensions of business entities. Results of the research confirmed one of the nine tested dimension - the overall performance, which is an important determinant of competitiveness at all.

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## **USING OF OUTPLACEMENT SERVICES IN SLOVAKIA**

### **VYUŽÍVANIE SLUŽBY OUTPLACEMENT V PODMIENKACH SLOVENSKA**

**Abstract:** *The paper deals with the issue of outplacement. The reseach study presented in the paper was based on theoretical research and aims to investigate statistically significant differences between two different subjects, labor offices and personnel-consulting companies which provide outplacement services in Slovakia. The study found that there are statistically significant differences in outplacement services provided by labor offices and personnel-consulting companies, personnel-consulting companies were found to provide a higher level of outplacement services.*  
**Key words:** *Outplacement, personnel-consulting companies, labor offices.*

**Kľúčové slová:** *Outplacement, personálno-poradenské spoločnosti, úrady práce.*

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**JEL:** M12, M5

#### **Theoretical background of outplacement**

Outplacement is an external consulting or training service, which provides assistance with job search and assistance to employees, with whom the employer terminated or ended employment. Outplacement presents technical assistance to the employees which were terminated, allowing them to ensure the process of changing jobs (career transition) is made easier. Through the use of outplacement, firms can reduce the possibility of disputes with the dismissed employees, to prevent business secret loss and last but not least, to avoid negative publicity and thus prevent damage to the company's name in the public eye [5].

Another definition is stated by Meyer and Shadle, the authors characterize outplacement as the consultation and careful process with the assistance of both sides, the employer and the employee [3]. As Pickman states, the advisory process usually consists of a number of key areas, namely [4]:

- emotional state of coached person,
- profiling,
- personal marketing materials of coached person,
- searching for strategies by training,
- enquiring and creation of final offer in accordance with the candidate's profile.

Pickman adds that the aim of outplacement counseling is to help individuals cope with the new situation with a renewed self-confidence, to learn effective ways and techniques for seeking work and to manage the search for a new job and career independently and successfully [4].

According to Kocianová, the process of providing outplacement consists of preparation for finding new employment through training and guidance on resume and cover letter writing, as well as job interviews role-playing. The author also includes other outplacement services such as various educational programs (language, PC skills, etc.), psychological support and counseling, including counseling for family members and seeking new business contacts. The advisor should also employ technology for job search [2].

Gonska lists four reasons why businesses and employers should use outplacement services for the terminated employees [1]:

1. Outplacement can mitigate the negative impact of layoffs on business, but also for the employee. The assistance can be provided at a short notice.
2. Outplacement protects the image of the company. The public can learn very quickly about redundancies, but providing the professional assistance for redundant workers will help mitigate the negative impact on public opinion, clients, but also shareholders.
3. Outplacement strengthens relations with employees, which remain employed by the company. If the employer does not provide support for employees leaving the company, they risk a loss of support and good relations with those who remain in the company.
4. Outplacement protects the company from legal claims. The offer of professional assistance in the case of redundancy reduces the likelihood of the dismissed employee pursuing legal action against the employer.

The technical assistance of the state is essentially very similar to professional outplacement assistance provided by similar private companies. Professional consulting services under this act are aimed at influencing the choices and behavior of job seekers, creating harmony between personal qualities of job seekers and requirements of specific employment, social and working adaptation of jobseeker [6].

The law no. 280/2013 states that education and training for the labor market includes both theoretical and practical preparation of the job seeker or employee who wants to change jobs. Theoretical and practical training of the citizen is based on the skills which are required by labor market needs. Determining the content and extent of education or training for job is based on the present level of professional knowledge, skills and ability of jobseeker [6].

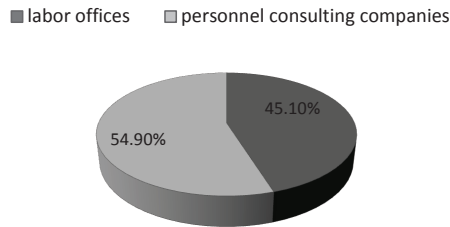
## **Material and Methods**

The aim of the research is to detect statistically significant differences in the outplacement services given by the two different types of providers, the labor offices and personnel consulting companies in the Slovak Republic. The investigation of differences was focused on three selected aspects of outplacement services, namely:

- the frequency of contact with the client,
- the level of cooperation between provider and company,
- the level of providing of psychological assistance.

Research of selected aspects of outplacement services provided by the organizations of the public sector and by the private sector was realized through electronic questionnaires which were distributed to personnel consulting companies offering outplacement services as well as labor offices. The composition of the research sample is shown in Figure 1.

Fig 1: The composition of the research sample



Source: own research

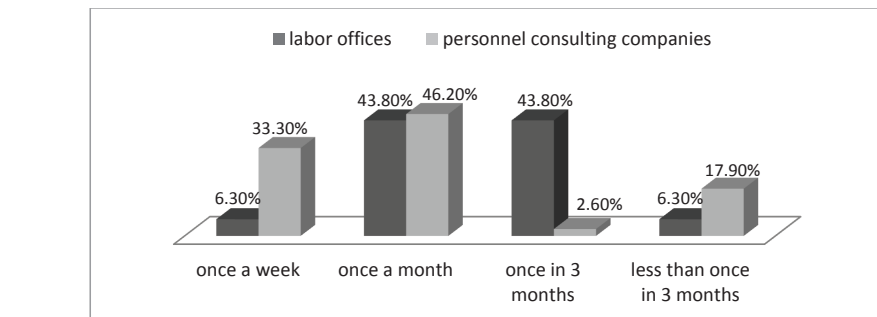
To fulfill the individual partial goals, 3 statistical hypotheses were tested by the T-test and Chi-Square test.

## Results

### 1. The frequency of contact with the client

The first part of the research is focused on determining the frequency of contact between the client (the employee released) and the provider of outplacement services. As shown in Figure 2, a higher frequency of meetings with the client was found in the case of personnel consulting companies, in the case of labor offices, the frequency of contact is lower.

Fig 2: The frequency of contact with clients



Source: Self elaboration

To verify the assumption of the differences between labor offices and personnel consulting companies, the following hypothesis H1 was formulated.

*H1: There is a statistically significant difference between the labor offices and personnel consulting companies in terms of frequency of contact with their clients.*

Result of statistical testing by Chi-square test shows that the H1 is confirmed. This means that there is a statistically significant difference between providers of outplacement in terms of frequency of contact with their clients. It confirms the stronger frequency of contact with clients by personnel companies. The results are shown in Table 1.

Tab 1: Testing of H1

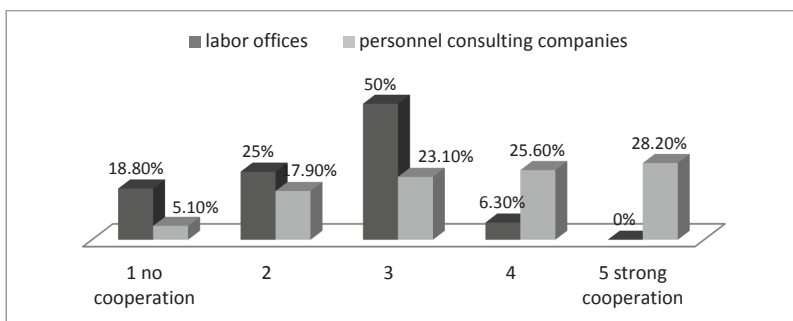
Chi-square	df	p
22,136	3	0,000061

Source: output of Statistics 21

## **2. The level of cooperation between provider and dismissing company**

The second part of the research is aimed at identifying the degree of cooperation of outplacement provider with the dismissing company – the employer. Responses were given on a scale of 1 – no cooperation up to 5 – close cooperation. The Figure 3 shows that the level of cooperation between providers and recruiters or managers of the dismissed company is more intense in the case of personnel consulting companies.

Fig 3: The level of cooperation between provider and company



Source: own research

*H2: There is a statistically significant difference between the labor offices and personnel consulting companies in terms of the level of cooperation between the provider and dismissing company.*



Based on the value of  $p < 0.05$ , it is possible to accept the hypothesis H2. It can therefore be concluded that personnel consulting companies cooperate with dismissed workers more than labor offices. Also in this case, the difference between the labor offices and the personnel consulting companies was confirmed.

Tab 2: Testing of H2

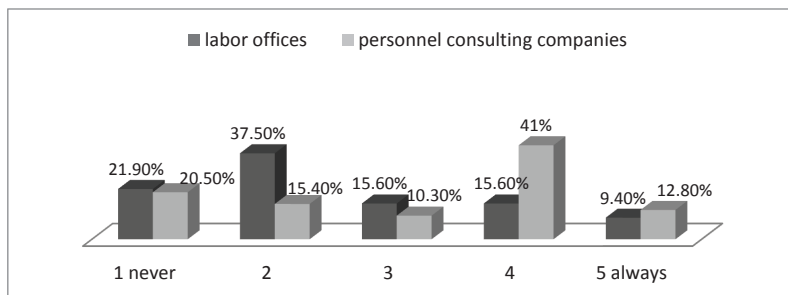
Type of provider	n	Average	SD	t	p
Labor office	32	2.44	0.88	-4.245	0.000
Personnel consulting company	39	3.54	1.23		

Source: output of Statistics 21

### 3. The level of providing psychological assistance

Another part of the research analyzes the use of the services of psychologists in the outplacement process by the providers of outplacement. It is possible to deduce the increased use of psychological professional services by personnel consulting companies, since 41% of respondents from personnel companies marked the value 4, reflecting frequent use of psychologists, and 12.8% of respondents marked the value 5. From Figure 4 it can be find out, that respondents from labour offices indicate little or no utilization rates of psychologists in the outplacement process.

Fig 4: The level of providing of psychological assistance



Source: own research

*H3: There is a statistically significant difference between the labor offices and personnel consulting companies in terms of the level of providing of psychological assistance.*

As shown in Table 3, the value of  $p > 0.05$ , so the hypothesis H3 is rejected. It cannot be confirmed that personnel consulting companies use the psychological assistance in providing of outplacement in higher degree compared to labor offices.

Tab 3: Testing of H3

Type of provider	n	Average	SD	t	p
Labor office	32	2.53	1.27	-1.790	0.078
Personnel consulting company	39	3.10	1.39		

Source: output of Statistics 21

**Discussion**

One of the aspects which confirms the higher quality of outplacement services provided by personnel consulting companies is the frequency of contact with the client. The result of the chi-square test showed the existence of a statistically significant difference between personnel consulting companies and labor office in the frequency of the contact with their clients. It was found there was a stronger frequency of contact with the client in personnel consulting companies as 48% of respondents (workers of personnel companies) had at least one meeting a month with the client. It can be concluded that personnel consulting companies are more actively involved in the process of outplacement compared to labor offices. Given the higher frequency of meetings of the terminated employee with a counselor, the time of finding suitable employment shortens. It is obvious that intense contacts between the client and the advisor improve efficiency of the outplacement process and probability of re-employment of the client.

Another accepted hypothesis concerned the assumption of the existence of a statistically significant difference between personnel consulting agencies and labor offices in the extent of cooperation with the dismissing enterprise. A higher rate of cooperation with consultants and managers of dismissing enterprise was found in the case of personnel consulting companies. By close cooperation with the company, the provider can be better acquainted with the conditions and reasons for the redundancies and with internal information, which can speed up the process, simplified and streamlined for the benefit of redundant employees, employers, as well as the service provider. Through intensive cooperation the provider can be better informed about the situation in the company and by the released employee what leads to reduce the overall efforts made to the outplacement process. Cooperation with workers of labor offices is significantly lower than in personnel companies. The low level of this aspect and also the aspect of the frequency of contact with clients prolongs the outplacement process, reduces its effectiveness and ultimately reduces the quality of service provided. It is recommended to focus on improving of two mentioned aspects in the case of labor offices, given that these two factors can be seen as key determinants in providing a quality service to the clients.

The hypothesis on the existence of statistically significant differences between two types of providers in the provision of professional services of the psychologist to the client, was not confirmed. Using of professional psychological assistance to clients on the one hand reduces the time for awareness of the emerging situation, the adoption of such facts, etc., what ultimately also affects the time demands of the whole process outplacement. It is necessary that the client realized the seriousness of

the situation and that the situation can be solved only by a new occupation. If the client fails to do this himself, the assistance of the psychologist is necessary because he aids with the job search in a professional manner.

### Summary

The paper is focused on the issues of providing outplacement in Slovakia. Given the fact that, there are two different types of subjects providing services to unemployed persons on the Slovak market, the research study was carried out with the aim to analyze the selected aspects of outplacement services on a sample of labor offices and personnel consulting companies. In the research three variables connected with selected aspects of outplacement services were examined. The frequency of contact of the service provider with the clients present the first investigate aspect. The results of the chi-square test confirmed that the personnel consulting companies realized meetings with clients in the provision of outplacement at a higher rate than labor offices. Another studied aspect is the degree of cooperation between outplacement provider and the clients. Also in this case, the hypothesis was accepted, confirming the assumption that labor offices and personnel consulting companies differ in this area, greater cooperation was determined by the personnel consulting companies. Based on the results, it can be concluded that a higher level of outplacement service is provided by the personnel consulting companies. The paper thus describes the current views on the issue of outplacement and point out the differences in the provision of outplacement by two different types of subjects in the Slovak environment.

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## **INTERCULTURAL DIFFERENCES IN MANAGERIAL VALUES**

## **INTERKULTÚRNE ROZDIELY V HODNOTÁCH MANAŽÉROV**

***Abstract:** The main goal of the paper is to evaluate intercultural differences in managerial values in an international environment on a selected sample of HR managers and their employees. The paper is based on extensive theoretical research and on a study of similar previous research. In order to achieve a more detailed analysis, a research has been conducted. The research investigates the relation between managerial values and the origin of the respondents – coming from Slovakia or the Czech Republic and involving also the age of employees, their length of employment and their wage level. According to the results, a statistically significant difference was observed only in the entry of masculinity versus femininity.*

***Key words:** Human resources management, value, intercultural differences*

**JEL:** F2

### **Introduction**

We constantly encounter continuous changes and trends in every sector of management. Nevertheless, trends in human resources are dealt with only in recent years. It can be also explained by the fact that the role of human resources becomes strategic [2]. Globalization allows the recruitment of the staff from around the world. This ensures that the best professionals and talents not only from one country are hired. International organizations are focused on diversification of employees and thus ensure broadening of the perspective and enrichment of the organization with different countries' experience [1]. With the growth of globalization, cultural sensitivity and understanding in dealing with global complexities involved in conducting business in host countries have been expanding [9]. Cultural sensitivity calls for the ability of managers to understand the viewpoint of those living in very different cultures and the readiness to put them self in another peoples' perspectives. Furthermore, international managers can benefit tremendously from understanding the nature, dimension, and variables of a specific culture and how these affect work and organizational processes [5].

Value is defined as an attribute ascribed by an individual to a particular object, situation, event or activity in connection with the satisfaction of his or her needs and interests. Values are created through socialization and belong to social consciousness. Based on their importance, values are organized hierarchically into a value system. The value system determines the most general attitudes, lifestyle and morals of each person.

Research [8] indicated that organization performance is better in the companies where there is congruency between national culture and human resources practice. In the unit business level, where its manager consciously practice human resource policies in accordance with country's value, the performance of business unit i.e. return on assets (ROA), return on sales is better and employee bonus is bigger.

According to Hartl and Hartlová, a comparative research of values of national cultures in intercultural psychology is associated with the name of Geert Hofstede, who in the 1960s and 1970s carried out a research on IBM employees in fifty countries and of sixty-six nationalities. On the basis of the research, he expressed four dimensions of national culture (where cultural differences arise), to which he later added also the fifth one:

1. Power distance
2. Uncertainty avoidance
3. Individualism-collectivism
4. Masculinity-Femininity
5. Long term – short term orientation [7].

We have focused on these five dimensions, even though later, the sixth dimension, Indulgence versus restraint was defined.

Hofstede's dimensions are: individualism versus collectivism. In individualistic culture, the primary focus is on one's own self and one's own family and needs. In this type of culture, individual interests and one's own career dominate. In countries with a culture of collectivism, the emphasis is given on a group, individual interests are subjugated to the interests of the group and decisions are also the result of the collective work. Collectivist nationalities have a closer relationship to traditions. This is also reflected in relation to society.

Uncertainty avoidance: This dimension represents the tendency of people when feeling threatened by uncertain situations. Societies with a higher degree of uncertainty pay attention to security, whether it be financial or social, feel good with given rules and feel a need for consensus. By contrast, countries with a low degree of uncertainty rely less on rules and risk more.

Masculinity versus femininity: This dimension identifies the acceptance of male or female values by society. Masculine society is focused on success, money, personal growth and fulfilment. On the other hand, feminine culture focuses on empathy, care about others and quality of life. In masculine societies, individuals are more aggressive, ambitious and competitive. In feminine societies, the emphasis is put on honesty, moderation, and humility.

Masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender, and concerned with the quality of life [4].

Power distance: Power distance describes the way how society accepts the division of power in organizations. Societies with a high degree of power distance do not incline to discussion between a subordinate and a superior. Individuals in societies with a low degree of power distance on the other hand do not feel to be in a position of subordinate [3].

## Material and methods

The main goal of the paper is to evaluate intercultural differences in managerial values in the international environment on a selected sample of HR managers and their employees. This paper contributes to the aims of the project KEGA No. 032PU-4/2013. The research is based on extensive theoretical research and on a study of similar previous research. The theoretical review utilises various primary and secondary sources. The primary sources include data gained by a questionnaire. The target groups were the largest delivery companies in Slovakia and the Czech Republic according to their economic results for the year 2012. The questionnaire was formed from the viewpoint of the company strategy, profitability, action in the foreign countries and new trends in human resources management and the intercultural differences among the managerial values. The questionnaire was distributed among employees and another one among HR managers. In order to achieve a more detailed analysis, a research was conducted. The research investigated the relation between managerial values and the origin of the respondents – Slovak and Czech ones.

The area of research represents a considerable volume of data and connections. Our paper presents the examination of differences in the perception of managerial values by managers in Slovakia and the Czech Republic with regard to the selected criteria. Based on the research conducted, the following hypothesis was formulated and investigated in the proposed paper: *We assume that there is no statistically significant difference in managerial values in selected companies in Slovakia and the Czech Republic concerning the age of employees, their length of employment and their wage level.*

Due to the fact that the analysed data generally did not show a normal distribution, we used a non-parametric Mann-Whitney U-test for the comparison of the acquired results.

## Results and discussion

At first we examined if there is there is statistically significant difference in managerial values of selected companies in Slovakia and the Czech Republic. We present the results in the following table. We did not detect a statistically significant difference when comparing Slovakia and the Czech Republic in any of the variables (in all cases, the calculated p-value was higher than 0.05)

**Table 1** Mann-Whitney U-test 2 (independent variable – country)

Variable	Total (SR)	Total (ČR)	U	Z	p-value	Z modified	p-value (Z modified)
Individualism/collectivism	499,5	490,5	214,5	0,62	0,53	0,66	0,51
Power distance	414,5	575,5	183,5	-1,35	0,18	-1,48	0,14
Uncertainty avoidance	474	516	240	0,02	0,98	0,03	0,98
Masculinity/Femininity	468,5	521,5	237,5	-0,08	0,93	-0,10	0,92
Long term/Short term orientation	491	499	223	0,42	0,67	0,44	0,66

Source: own processing

We also determined if there is statistically significant difference in managerial values of selected companies according to the age of the employees.

**Table 2** Mann-Whitney U-test 2 (independent variable – age)

Variable	Total (up to 30 years old)	Total (more than 30 years old)	U	Z	p-value	Z modified	p-value (Z modified)
Individualism/collectivism	491,5	498,5	222,5	0,43	0,66	0,46	0,64
Power distance	432,0	558,0	201,0	-0,94	0,35	-1,03	0,30
Uncertainty avoidance	473,0	517,0	241,0	0,00	1,00	0,00	1,00
Masculinity/Femininity	468,5	521,5	237,5	-0,08	0,93	-0,10	0,92
Long term/Short term orientation	410,5	579,5	179,5	-1,45	0,15	-1,52	0,13

Source: own processing

We did not detect a statistically significant difference in any of the variables (in all cases, the calculated p-value was higher than 0.05).

Comparison by the amount of salary (a category up to €800, and from €800 to €1500) in all groups of figures did not show a normal distribution of data, so we used a non-parametric Mann-Whitney U-test. The results are presented in the following table 3.

**Table 3** Mann-Whitney U-test 2 (independent variable – wage level)

Variable	Total (up to € 800 )	Total (€800-€1500)	U	Z	p-value	Z modified	p-value (Z modified)
Individualism/collectivism	207,0	93,0	36,0	-1,17	0,24	-1,24	0,22
Power distance	243,0	57,0	36,0	1,17	0,24	1,27	0,20
Uncertainty avoidance	239,0	61,0	40,0	0,90	0,37	1,02	0,31
Masculinity/Femininity	241,5	58,5	37,5	1,07	0,29	1,28	0,20
Long term/Short term orientation	214,5	85,5	43,5	-0,67	0,50	-0,70	0,49

Source: own processing

We did not detect a statistically significant difference in any of the variables (in all cases, the calculated p-value was higher than 0.05).

Comparison by the length of work for an employer (category under 2 years, and from 2 to 4 years) in most of the groups did not show a normal distribution of data. Due to the nature of data and low number of respondents in given categories, we used a non-parametric Mann-Whitney U-test to assess the data. The results are in the table 4.

**Table 4** Mann-Whitney U-test 2 (independent variable – length of the employment)

Variable	Total (0-2 years)	Total (2-4 years)	U	Z	p-value	Z modified	p-value (Z modified)
Individualism/collectivism	218,0	278,0	113,0	-0,22	0,83	-0,23	0,82
Power distance	252,0	244,0	91,0	1,09	0,28	1,17	0,24
Uncertainty avoidance	211,0	285,0	106,0	-0,50	0,62	-0,60	0,55
Masculinity/Femininity	267,0	229,0	76,0	1,69	0,09	2,11	0,04
Long term/Short term orientation	218,0	278,0	113,0	-0,22	0,83	-0,23	0,82

Source: own processing

A statistically significant difference was observed only in the entry of masculinity versus femininity. The length of work for an employer had statistically significant influence on the opinion of respondents on masculinity versus femininity at workplace.

## Summary

Today, human resources play a significant role in organizations. Trends vary not only according to the situation in the world, but also among organizations. Their monitoring is therefore essential to their advancement and better performance in competition.

According to the results of the questionnaire survey, the employees of the company in Slovakia are slightly more collectivist than employees of the company in the Czech Republic, and are more focused on long term orientation. We see the biggest difference in the index of observance of hierarchy. Employees in Slovakia show less respect for hierarchy than employees in the Czech Republic. The indices of uncertainty avoidance are fairly balanced, in-between the low and high, as well as of masculinity versus femininity, which approximate a little bit more to masculinity.

According to research [6], the comparison of the results in the states of central Europe through the Hofstede's dimensions of culture shows that Slovakia scores in the index of power distance more distinctively than the Czech Republic. In the Czech Republic, the index of individualism prevails while in Slovakia, it is the index of collectivism. Slovakia and the Czech Republic are characterized by low scores of



uncertainty avoidance. In Slovakia, it is femininity and in the Czech Republic, it is masculinity that prevails. Information obtained from the employees is different from Hofstede's results. Only one of the categories, namely orientation, was agreed upon. This deviation we can be explained by the small number of respondents, a unique corporate culture, which may vary from home mentality or by employees of other nationalities, since it is an international company focused on foreign market.

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## **WAYS OF COPING WITH DEMANDING MANAGERIAL WORK SITUATIONS AND TRAITS OF INTERPERSONAL BEHAVIOR**

### **SPÔSOBY ZVLÁDANIA NÁROČNÝCH SITUÁCIÍ V MANAŽÉRSKEJ PRÁCI A ČRTY INTERPERSONÁLNEHO SPRÁVANIA**

***Abstract:** Knowing how to solve demanding situations is an inevitable part of managerial work. In connection with the social context of occurrences of demanding situations in managerial work, the report presents the results of an analysis of correlations between the ways of behaving identified by 5 factors of the SBDMWS (Strategies of Behaving in Demanding Managerial Work Situations) and the personality characteristics of managers specified by the traits of interpersonal behavior. The analysis confirmed the expected correlations between the selected traits of interpersonal behavior with several ways of coping with demanding situations. The presented findings simultaneously highlight the possibilities of prediction of behavior of managers in these situations on the basis of the developed SBDMWS questionnaire.*

***Key words:** Management. Manager. Coping. Demanding situations*

***Kľúčové slová:** Manažment. Manažér. Zvládanie. Náročné situácie.*

**JEL:** M12. D23

#### **Introduction**

Demanding situations are perceived by managers either as problematic, critical, conflicting, difficult, unpleasant, burdening, or they are perceived as a possibility to manifest and reinforce own abilities, as a challenge and a launching pad for their career development (Frankovský, Ištvániková, Štefko, 2009). Difficulty of the situations in managerial work is therefore necessary to interpret in the context of situational characteristics of performing this work and personality traits of a particular manager. Selection of strategies of behaving in these situations may have various consequences. According to the impact of this situation on an individual, it can be self-reinforcing or self-threatening behavior of a person (Fedáková, 2002).

Demanding situations in managerial work are represented not only by significant general social phenomena, interventions of the government in economics (Reinert, 1999), requirements of forming alliances (Kaulio, Uppvall, 2009), but also by decisive milestones in the life of a manager (loss of job, removal from office or appointment to new office) or existence of an organization (corporate bankruptcy, unexpected achievement, dismissal of employees), but also problems and difficulties managers encounter much more often, sometimes on a daily basis (disagreements with colleagues, strained relations with superordinate or subordinate, solving

conflicts among subordinates). It is also crucial to highlight the fact that the difficulties are connected not only to the current perception of the given situation, but also to situations which are actually not too demanding; they are moderately demanding but have a long-term effect, therefore they are not stressful by their intensity, but the length of their activity (Birknerová, 2010).

Independently of subjective assessment of the degree of such difficulty, managers find themselves in demanding situations almost every day and when solving them they often need to mobilize all their strength which sometimes results in great success, other times in small success, and at times they even fail in these situations completely. Effective solutions to demanding managerial work situations and residues of these processes may in substantially influence the quality of life of managers, their mental and physical health and finally also effectiveness of their managerial activities and successfulness of functioning of an organization as a whole, and therefore they also influence other people. Nowadays, more and more attention is paid to the issues of perception, experiencing and effective resolution of demanding situations in management, but the focus is also on the states these situations and their resolution evoke. Searching for the effective ways of coping with demanding managerial work situations is a process which must be based on the given problem from the interdisciplinary point of view (Hrbáčková, 2010; Čekan, 2010; Droppa, 2011; Vávrová, 2012; Alznauer, 2013; Janovská, Orosová, 2013; Tej, et al., 2015; Lelková, Lorincová, 2015).

Forming the essential research questions of coping with demanding managerial work situations, following the specification of the basic research lines of studying coping with demanding situations (Frankovský, 2003), assumes paying attention to seeking answers in at least three basic research contexts (Frankovský, Ištvaníková, 2008):

6. Identification, characterization and classification of situations which may be perceived by managers as problematic, demanding, conflicting, difficult, stressful, unpleasant, etc. This line results primarily in identification of several essential dimensions of situations on the basis of which a certain empirical taxonomy and classification of these situations is subsequently proposed.
7. Analysis of behavior of managers in solving and coping with these situations. Also in this context, by means of inductive taxonomy, the majority of research procedures may be characterized as an effort to create general classification of behavior of managers in solving demanding situations.
8. The third context involves the analyses of correlations between the way of coping with demanding managerial work situations and dispositional characteristics of a manager, or situational conditions of occurrences of particular problems. In this measure the attention is primarily paid to personality traits of managers and conditions for functioning of an organization.

The area of management is one of the typical environments in which the occurrence of demanding situations is not rare. The interest in research of the ways of behaving of managers when coping with demanding situations in their work is conditioned by an effort to explain the general factors which, according to Výrost et al. (1995) are related to:

- a) Understanding the life plans, personal perspective, career development.
- b) Information about the current state of motivational and emotional components of the personality of an individual.
- c) Characterizing the ways and procedures for solving and coping with problems.

From the viewpoint of practical use of the gained knowledge about coping with demanding managerial work situations, these general factors which condition the interest in this problem may, according to Lajčín, Frankovský (2011), be complemented also by the concrete applications in managerial practice connected to:

- The choice of people for managerial positions where they inevitably encounter demanding situations.
- Preparation of managers at these positions for effective coping with demanding situations in the management of an organization (Pitt, Sims, 1998).
- Elaboration of the procedures for solving these situations in an organization and their training at the individual levels of management.

Studying the correlations between personality traits as dispositional characteristics which predict the human behavior transsituationally and coping with situations is one of the typical and it may be added that also classic areas of research of coping. Judge, Thoresen, Pucik (1999) researched in this trend seven personality traits. Callan, Dickson (1993) paid their attention to analysis of correlations between placement of control and ways of coping with demanding situations. Hu, Cheng (2010) investigated coping with demanding situations in the context of the burnout syndrome.

In the presented study the attention was paid to an analysis of correlations between the ways of coping with demanding managerial work situations and personality traits of managers. Following the social context of occurrences of demanding managerial work situations, the correlations between the ways of behaving identified by 5 factors of the SBDMWS methodology (Lajčín, Frankovský, 2011) and personality traits of managers specified by the traits of interpersonal behavior detected by the IAS methodology (Wiggins, 1991) were analyzed.

## **Method**

From the manager's point of view, what gets one into a demanding situation is the crucial moment of choice of the behavior, or a process of solving the demanding situation that it is necessary to implement immediately or in a very short time. The aim of the presented study is to identify correlations between the ways of behaving in demanding managerial work situations and the traits of interpersonal behavior.

The study is based on the results of the research in which the participation was covered by 194 respondents – 95 male and 99 female managers out of which 9 were from the top management, 58 from the middle management, and 127 from the line management.

The research sample from the area of practice in which these managers work was created by 30 managers from the production, 95 managers from services, 32 from

trade, and 36 managers from the area of education.

Managers included in the research had various kinds of education – 103 of them had technical education, 13 of them had scientific education, and 78 of them had social education.

The research sample included 52 single managers, 119 married managers, 20 divorced managers, and 3 widowed managers.

Managers who participated in the research had an average age of 36.6 years (from 21 to 64 years old) with the standard deviation of 8.397 years. They worked in practice for 15.3 years on average (standard deviation 8.393) and in managerial position they worked for 6.8 years (standard deviation 6.070). From these data it is clear that from the viewpoint of the length of practice in managerial position, the research sample included both the starting managers as well as managers with a long-time experience (maximum 38 years).

Data from managers were gained by two questionnaire methods (SBDMWS Questionnaire and IAS Questionnaire) and subsequently they were elaborated and analyzed by the use of mathematical-statistical method of Pearson correlation.

The ways of behaving in managerial work were detected by the SBDMWS questionnaire. This original questionnaire was developed and verified for the purposes of detecting the ways of coping with demanding managerial work situations. The questionnaire in its final form should enable measuring the preference of the individual ways of coping with various demanding situations which managers encounter in their work (Lajčín, Frankovský, 2011).

The SBDMWS questionnaire contains descriptions of 9 model situations which represent various particular situations in managerial work. Each described situation includes the proposal of several possible ways of behavior. The following situations may serve as an example:

*„You find out that false, negative information about you is being spread throughout the company.“ What do you do?*

*“As a company manager, you witness your subordinates slander a colleague who is not present. What do you do?”*

The possibilities of coping are stated after the description of a situations:

<b>Forms of behavior</b>	<b>strongly agree</b>	<b>agree</b>	<b>neither</b>	<b>disagree</b>	<b>strongly disagree</b>
a) Without any hesitation, I discuss it with my co-workers	1	2	3	4	5
b) I highlight that such behavior is unethical	1	2	3	4	5
c) I think about how to solve this situation	1	2	3	4	5

d) I ask for an advice how to proceed	1	2	3	4	5
e) I get angry	1	2	3	4	5
f) Such situation represents an unpleasant situation to me	1	2	3	4	5

The task for the respondents was to assess their possible behavior from the viewpoint of each given alternative on a five-point scale of Likert type (1 – strongly agree, 2 – agree, 3 – neither, 4 – disagree, 5 – strongly disagree).

The questionnaire enables to identify five factors which describe the tendencies of managers to cope with demanding situations in business management in certain way (Lajčín, Frankovský, 2011):

- Emotional factor of coping. This factor is related to the emotional reaction to the given situation. Unlike the following factors, this factor was extracted independently from the context of the situation.
- Cognitive factor of coping I. The content of this factor is not the immediate behavioral reaction but thinking, searching for information about the situation with a significant social context.
- Cognitive factor of coping II. The content of this factor is again not the immediate behavioral reaction but thinking, searching for further information about the situation related to the general problems in managerial practice.
- Behavioral factor of coping I. This factor is related to the immediate behavioral reaction in solving the situations which represent the general problems in managerial practice.
- Behavioral factor of coping II. This factor is related to the immediate behavioral reaction in solving the situations with a significant social context.

Personality traits of managers were detected by the IAS Questionnaire (Wiggins, 1991). This questionnaire was constructed by Wiggins (1991) on the basis of the knowledge gained by the diagnostic tool of interpersonal relations called the Interpersonal Check List - ICL (Leary, 1957).

Construction of the methodology is based on the arrangement of 8 essential characteristics of interpersonal behavior into a so-called interpersonal circumplex. These characteristics which are arranged into a circle in the counterclockwise direction and are represented by 4 bipolar dimensions are defined by Wiggins (1979) as follows:

- ambitious, dominant – lazy, submissive,
- arrogant, calculating – unassuming, ingenuous,
- cold, quarrelsome – warm, agreeable,
- aloof, introverted – gregarious, extraverted.

In the presented research the reduced version of this methodology, which contains a list of 24 adjectives where each dimension is characterized by three couples of

bipolar adjectives, was used. Each trait of interpersonal behavior was assessed by the respondents on an 8-point scale the extreme points of which are 1 – very inaccurate, 8 – very accurate.

Example of 8 adjectives of the IAS methodology with the answer key:

<b>Manipulative</b>	1	2	3	4	5	6	7	8
<b>Calculating</b>	1	2	3	4	5	6	7	8
<b>Arrogant</b>	1	2	3	4	5	6	7	8
<b>Introverted</b>	1	2	3	4	5	6	7	8
<b>Submissive</b>	1	2	3	4	5	6	7	8
<b>Honest</b>	1	2	3	4	5	6	7	8
<b>Able to understand others</b>	1	2	3	4	5	6	7	8
<b>Joyful</b>	1	2	3	4	5	6	7	8

1 – very inaccurate

8 – very accurate

## Results

The results confirmed the expected correlations between the ways of behaving in demanding managerial work situations and the traits of interpersonal behavior of managers (Table 1).

The way of coping characterized by emotional reaction (emotional reaction to the given situation) positively correlated with the traits of interpersonal behavior – lazy, submissive and warm, agreeable. Negative correlation was found between this factor of coping and the trait of interpersonal behavior – arrogant, calculating, and it means that a more significant inclination towards this way of coping is among managers who are more lazy, submissive and warm, agreeable. At the same time, these managers are behaving less arrogantly or calculating.

The way of coping with demanding managerial work situations characterized as cognitions I (thinking, searching for further information about the situation with a significant social context) correlated negatively with traits of interpersonal behavior arrogant, calculating and cold, quarrelsome. The presented correlation represents the fact that this way of coping with demanding situations with a significant social context are not preferred by arrogant, calculating and cold, quarrelsome managers.

Statistically significant positive correlations were detected between assessment of the way of coping specified as behavior II (immediate behavioral reaction in solving the situations with significant social context) and traits of interpersonal behavior – ambitious, dominant and warm, agreeable and gregarious, extraverted.

Negative correlations were found between this factor of coping and traits of interpersonal behavior – aloof, introverted and lazy, submissive. It means that this way of coping with demanding situations with a significant social context are preferred by ambitious, dominant and warm, agreeable and gregarious, extraverted managers and not preferred by introverted and lazy, submissive managers.

Tab 1: Correlations between the ways of behaving in demanding managerial work situations and the traits of interpersonal behavior of managers

	PA	BC	DE	FG	HI	JK	LM	NO
<b>Emotional factor</b>	-.116	-.171*	-.111	.133	.210**	.108	.145*	.127
<b>Cognitive factor I</b>	-.015	-.196**	-.175*	-.010	.107	.068	.113	.033
<b>Cognitive factor II</b>	.022	.035	-.038	-.077	.008	.034	.118	.024
<b>Behavioral factor I</b>	-.064	-.119	-.056	-.097	.086	.051	.030	.033
<b>Behavioral factor II</b>	.160*	-.112	-.096	-.175*	-.201**	.097	.157*	.261**

Key: PA – ambitious, dominant, BC – arrogant, calculating, DE – cold, quarrelsome, FG – aloof, introverted, HI – lazy, submissive, JK – unassuming, ingenuous, LM – warm, agreeable, NO – gregarious, extraverted.

### Discussion and Conclusion

Effectiveness of managerial work is multifactorially conditioned. In the mosaic of these factors involving, for example, education, experience, an important role is played by personality traits of managers which may be simultaneously a significant predictor of successfulness of managerial work.

The presented analyses of correlations between the traits of interpersonal behavior of managers and the ways of coping with demanding managerial work situations confirmed, as it was already stated, the expected correlations between the selected traits of interpersonal behavior and several ways of coping with demanding managerial work situations. Introverted, lazy, submissive managers are more prone to emotional reactions (I get angry, such situations represents an unpleasant experience to me) when coping with the researched situations. On the contrary, ambitious, dominant, gregarious, extraverted, warm, agreeable managers significantly prefer emotional ways of coping with demanding situations less and they prefer direct, immediate solving of the situation more.

It is necessary to add that all these significant correlations were verified in the situations with a significant social context. It corresponds with the used IAS methodology which is aimed at detecting the traits of interpersonal behavior, thus at the personality traits with a significant social context.

Managers, who can be characterized as resourceful, warm, conciliatory, and who do not think about themselves as too important have a significant tendency towards cognitive reactions to the given situation (they contemplate, think, and look for more information about the situation).

Similar results in analyzing the correlations between the traits of interpersonal behavior and the strategies of coping with demanding situations, primarily from the viewpoint of immediate solving of the situation, were presented on the basis of a research of general population by Baumgartner, Frankovský (2000).

The presented findings contribute also to the general methodological problem which is related to resolving the issue of to what extent it is possible to make a prediction of behavior based on the knowledge about stable, dispositional, transsituational characteristics, which influence behavior regardless of the particular situation or, in



other words, how the particular situation and its type (perception) modifies the given behavior (Terry, 1994; Carver et al., 1989; Parkes, 1986; Holahan, Moos, 1987).

Results of the conducted analyses confirmed the existence of significant correlations between the traits of interpersonal behavior of managers and cognitions, or behavior mainly from the perspective of resolving particular social situations.

The acquired findings testify not only the meaningfulness of studying the problem of coping with demanding situations in the context of managerial work, but they also indicate the possibilities of prediction of behavior of managers in such situations on the basis of using the developed SBDMWS (Strategies of Behaving in Demanding Managerial Work Situations).

The presented knowledge also reveals the risky factors which may significantly decrease the quality of work of a manager, therefore they are an important aspect in decision-making not only in the process of selection of people for managerial positions, but also in educating and training managers to, for example, cope with demanding situations in their work.

## Súhrn

Dokázať riešiť náročné situácie je nevyhnutnou súčasťou manažérskej práce. V súvislosti so sociálnym kontextom výskytu náročných situácií v manažérskej práci tento príspevok predkladá výsledky analýzy korelácií medzi spôsobmi správania identifikovanými piatimi faktormi metodiky SSNSMP (Stratégie Správania v Náročných Situáciách Manažérskej Práce) a osobnostnými charakteristikami manažérov špecifikovanými črtami interpersonálneho správania. Analýza potvrdila predpokladané korelácie medzi vybranými črtami interpersonálneho správania a niektorými spôsobmi zvládania náročných situácií. Prezentované zistenia zároveň poukazujú na možnosti predikcie správania manažérov v týchto situáciách na základe vyvíjaného dotazníka SSNSMP.

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## **APPLYING STATISTICAL METHODS IN VERIFICATION OF NON-FINANCIAL INDICATORS AS THE KEY MEASURES OF BUSINESS PERFORMANCE**

## **VYUŽITIE ŠTATISTICKÝCH METÓD PRI VÝBERE NEFINANČNÝCH UKAZOVATEĽOV AKO KLÚČOVÝCH INDIKÁTOROV VÝKONNOSTI PODNIKU**

***Abstract:** Business performance measurement has become an important phenomenon. To evaluate the performance the variety of methods are used. Nowadays conventional performance evaluation of enterprise with the use of financial indicators is not sufficient. This way of performance evaluation has some weaknesses, which can be removed by taking into account also non-financial indicators. The aim of this paper is to determine the influence of selected non-financial indicators on the enterprise performance. These non-financial measures influence value of the EVA indicator indirectly – through the group of selected financial indicators. In meeting the objective and solving mentioned problem, standard research methods, such as comparative analyses and the method of analysis and synthesis are used. To verify the correctness of the selection of non-financial indicators and to analyse relationships between these indicators, the correlation matrix is applied. To confirm the impact of non-financial indicators on the EVA indicator Spearman's rank correlation coefficient is used. Applying the correlation matrix and Spearman's rank correlation coefficient the non-financial indicators, which indicate statistically significant impact on the financial indicators and the EVA indicator, are identified.*

***Key words:** Balanced Scorecard, Economic Value Added, non-financial indicators, performance*

***Kľúčové slová:** Balanced Scorecard, Ekonomická pridaná hodnota, nefinančné ukazovatele, výkonnosť*

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**JEL Classification:** G32, C52, C51

## **Introduction**

Nowadays the conventional performance evaluation of enterprises with the use of financial indicators is inadequate. When evaluating the performance of the company, the need to use new methods, tools and indicators assessing the financial aspects as well as other functional areas of the company, emerges more frequently. The increasing emphasis is given to the non-financial indicators, which contain measures focused on the assessment of the customer base, internal processes evaluation, assessment of the level and quality of personal staff, safety evaluation, supplier-consumer relations and many other indicators.

Despite the criticism of excessive use of the financial indicators in enterprise performance evaluation these indicators continue to be the most important. The values of these indicators reflect the impact of other perspectives and indicators of the Balanced Scorecard method (BSC) (Kaplan, Norton 2000). Financial perspective, as one of the four perspectives of BSC, represents the financial performance of the enterprise. But in this perspective, it is necessary to shift to new indicators and methods of performance evaluation too.

## **Literature review**

Currently the evaluation of the Slovak enterprise performance is applied with the use of three basic methods (Kislingerová 2011)

1. Evaluation using the set of indicators usually from the five areas of evaluation - liquidity, activity, capital structure, profitability and market value. These groups are mutually independent and they constitute a parallel set of indicators. Some of these measures are key performance indicators (ROA – Return on Assets, ROE – Return on Equity, Current liquidity, Interest coverage, Capital turnover, etc.).
2. Evaluation with the use of set of indicators compiled as pyramidal decompositions, on the top of which is key synthetic indicator, as for example ROA - Return on Assets or ROE - Return on Equity. The latest pyramidal decomposition, developed in the Czech Republic is INFA model (Neumaierová, Neumaier 2002).
3. Evaluation with the use of one synthetic indicator which connects partial indicators and other statistical data into a single unit – one of the prediction models (Z – score, Taffler index, Credit score as well as the models of above mentioned authors - Inka Neumaierová and Ivan Neumaier – IN99, 01,05.)

These financial goals and measures represent focus point at which the goals and measures of other areas of business are targeted. Without considering the financial aspects of the business and without long-term profits the company would not exist. It is necessary to define objectives demonstrating the eligibility of future existence of the company, i.e. such capitalization of equity that in the view of other options represents the best solution. For this purpose, it is appropriate to use indicators of profitability and turnover, as well as indicators related to the liquidity of the company (Cash flow, Cash-to-cash, etc.). According to surveys conducted when implementing the system of performance evaluation in practice, among the most important performance measures occurred enterprise value measured by EVA - Economic Value Added, indicator FCF – Free Cash Flow, Return on Assets,

Liquidity, Cost ratio, Capital structure, WACC and other financial goals (Kaplan, Norton 2000; Dominanta 2015).

In the financial perspective it is important to monitor the satisfaction of the owners. In this context, it is necessary to measure the fulfilment of the most important objective – Net Present Value expressed by the EVA indicator. Model of corporate financial management INFA (Neumaierová, Neumaier 2002) is the tool for value management in the financial perspective. It is a frame on which the other perspectives are based. Within the financial perspective the long-term as well as short-term enterprise performance measured by EVA indicator is monitored.

### **Selection of the appropriate financial objectives and indicators**

When choosing financial objectives and indicators into the financial perspective, we have to pay attention to two facts.

The first of them states that when evaluating financial performance only on the basis of indicator of net profit and derived ratios, we get inaccurate data. We can make mistakes in the field of strategic management or remuneration for the following reasons (Petřík 2009):

- uncertainties from the accounting system (the precautionary principle, the accrual accounting system, etc.),
- the choice in the area of accounting procedures (form of depreciation, reserves, etc.),
- giving preference to the creditor's claims over the demand of owners and other distortions.

Therefore much more appropriate measure to evaluate the financial performance is the EVA (Economic Value Added) indicator reflecting the impact of the Cost of equity. It is in fact economic profit which evaluates the benefits for enterprise owners after paying the Rate of equity.

The second issue is related to the selection of financial targets. These targets may change during the life cycle of an enterprise and at every stage of this cycle different financial goal can be important. This fact should be taken into account in constructing the financial perspective of BSC. According to this, the enterprise sets financial goals ranging from aggressive growth to stability, closure and disposal. Simply we can say that there are three basic stages of the business life cycle: growth, expansion and mature (Kaplan, Norton 2000).

### ***Why are financial indicators not sufficient?***

In all the above-mentioned evaluations, the financial indicators are dominant. The majority of these financial indicators are based on the financial accounting, which is established on accounting standards. These indicators are important for the measurement of financial performance, for tax purposes and also for capital markets (Kislingerová 2011).

As the main weaknesses of these indicators are considered:

- most of the indicators are based on the historical data because they come from the financial statements, focusing on these indicators leads to meeting short-term objectives and neglecting of long-term ones, connection to the strategy is

missing, they often leads to thoughtless cost reduction at the expense of future development of the enterprise,

- these indicators do not affect any significant strategic areas, they are not suitable for forecasting the future development of the enterprise and formation of the corporate strategy, because they are considered to be lagging indicators,
- they are used to express objectives, particularly focusing on profitability, while there is a risk of customization of the results by enterprise management,
- some of them do not accept influence of environment, innovation, customer satisfaction, importance of intellectual capital, etc.,
- these indicators are often unreliable.

### ***Non-financial indicators***

Above mentioned weaknesses of financial indicators can be removed by the use of non-financial ones. Application of non-financial indicators ensures incorporation of other areas and aspects of performance, which lead to long-term prosperity, to the measurement and management of performance. These indicators are considered to be leading indicators.

The establishment of non-financial indicators is closely related to the attempts to determine factors of the enterprise success. In the early 80s Peters and Waterman (1982) proposed eight factors leading to the business success, subsequently Chung, Daniel and Rockart designed also the critical factors of enterprise success. In the late 80s the Malcom Baldrige National Award, granted to excellent organizations in accordance with the seven criteria, was established in the USA. The aggregate concept of enterprises evaluation – the Balanced Scorecard method - was introduced by Kaplan and Norton (2000). These authors added into assessment and measurement of performance also non-financial indicators in four perspectives. Resulting from their effort the strategic management map consisting of indicators of financial perspective, customer perspective, internal business processes perspective and perspective of learning and growth was constructed. This strategic management map contains not only the objectives but also their drivers. Another method of enterprise evaluation utilizing non-financial indicators is the method of Harry Pollak (2004). In the early 90s the recommendations for creating excellent organization were formulated and The European Quality Award was also awarded. EFQM - Excellence Model emerged from the BSC concept, which reveals the strengths and weaknesses in order to improve the position of enterprise in the global world and competition.

### ***How to determine non-financial indicators***

The determination of the non-financial indicators has to be based on long-term goals and strategies of the enterprise. Particularly demanding is the measurability of these indicators. Mentioned indicators are classified into tangible indicators, which are measurable as for example increase in the number of customers, increase in market share, reducing the time of customer service and others. The most difficult is the measurement of the second group of indicators, so called intangible indicators, as for example innovation, corporate culture, customer satisfaction, customer loyalty and

others. If we are not able to express some of these indicators in physical units, we have to choose different indicator.

### ***The procedure for the selection of the indicators***

Measurement of the enterprise performance with the use of indicators can be divided into three phases, according to which we proceed in the presented contribution.

1. Identification of the key measurable performance indicators.
2. Indicators measurement.
3. The use of indicators to plan in practice.

Since there are various non-financial indicators, it is necessary to classify them by:

- enterprise market position – brand, market growth, market share, product price, the proportion of new products,
- customers – customer satisfaction, customer loyalty, the speed of orders fulfilment,
- innovation – new products and services, quality of the products and services, technological support and others,
- productivity – new technologies, environment,
- employees – employees satisfaction, fluctuation, training and others.

Ittner and Larcker (2003) introduce the following method of selecting non-financial indicators:

- to propose causation strategy model and set out key areas and indicators,
- to examine enterprise databases and the location of non-financial indicators in these databases,
- to verify the model and the relationships in it,
- to constantly upgrade the model, particularly in relation to the external environment,
- to implement activities based on the results and to use outcomes in decision-making,
- to control the results constantly, mainly on the basis of ex-post analysis.

Implementation of new and progressive package of indicators represents investment into IT systems, which have to be connected to the number of databases.

### **Data processing and methods used**

The sample for the performance calculation and evaluation consists of companies running a business within the energy industry. As a source of information financial statements of these companies published in Financial statements register (RÚZ 2015) as well as web page of “Regulatory Office for Network Industries” (ÚRSO 2015) are used. Whereas these companies require not to publish the data provided, they will be mentioned in this contribution only as ENE1, ENE2 and ENE3.

In this paper we focus on determining the impact of the selected fundamental factors on the enterprise performance. We put emphasis on the selection and application of the non-financial indicators specific for the analysed industry. In the light of above-mentioned, the following scientific problem is formulated: „Can the selection of non-financial indicators influence the final evaluation of enterprises performance”?

The choice of non-financial indicators influencing performance evaluation of the enterprise can be realized with the use of Balanced Scorecard method (Kaplan,



Norton 1996), INFA model (Neumaierová, Neumaier 2002), factor analysis (Grunwald, Holečková 2009) and mathematical and statistical methods. Enterprise performance is measured and calculated with the use of the relative EVA indicator generally considered to be the top indicator of the enterprise performance evaluation (Röttger 1994; Mařík, Maříková 2005; Hostettler 1998). Established objectives and tasks are implemented with the use of mathematical and statistical methods.

For the transformation of the non-financial indicators and EVA indicator to the scores, the method of scoring is used. Each of the given indicators is assigned by corresponding number of points. The maximum score is 8 points. Indicators which fail to reach maximum number of points will be assigned the score with the use of formulas (1) and (2).

We calculate the scores of indicators, development of which should be growing, by putting the highest value of the indicator to the denominator of the equation (1).

$$b_{ij} = \frac{x_{ij}}{x_{imax}} \times 8 \quad (1)$$

We calculate the scores of indicators, development of which should be declining, by putting the lowest value of the indicator to the numerator of the equation (2):

$$b_{ij} = \frac{x_{imin}}{x_{ij}} \times 8 \quad (2)$$

where:

- $x_{ij}$  is the value of the j-th explanatory variable associated with enterprise i
- $x_{jmax}$  is the highest value of the j-th explanatory variable assessed by 8 points, it refers to the indicators, development of which should be growing
- $x_{imin}$  is the lowest value of the j-th explanatory variable assessed by 8 points, it refers to the indicators, development of which should be declining
- $b_{ij}$  is the score of the enterprise i for the j-th explanatory variable

To assess the impact of the selected non-financial indicators on the EVA indicator the correlation matrix and Spearman's rank correlation coefficient are applied. Their results are used to determine key non-financial indicators involved in the financial performance development of the selected companies. Individual correlation matrices are processed with the use of software Statistica. This software in each of correlation matrices marks the correlations, in which P values are less than significance level of 0.05. In these cases we reject the null hypothesis  $H_{01} - H_{03}$  in favour of the alternative hypothesis  $H_{11} - H_{13}$ . Therefore we conclude that the studied linear relationship between given variables is statistically significant.

Results of the correlation matrix for non-financial indicators are confirmed applying Spearman's rank correlation coefficient processed with the use of software

Statistica. In Spearman's rank correlation coefficient the correlations, in which P values are less than significance level of 0.05, are highlighted. In these cases we reject the null hypothesis  $H_{04}$  in favour of the alternative hypothesis  $H_{14}$ .

In meeting the target and solving the problem, other standard methods of research are used, such as comparative analysis, logic and the methods of analysis and synthesis.

In accordance with the stated objective and mentioned methods of solution, eight scientific hypotheses were set up. These hypotheses were tested with the use of correlation matrix and Spearman's rank correlation coefficient.

**A) Hypothesis for non-financial indicators:**

$H_{01}$ : There is no statistically significant linear relationship between selected non-financial indicators.

$H_{11}$ : There is statistically significant linear relationship between selected non-financial indicators.

**B) Hypothesis for non-financial indicators and the EVA indicator:**

$H_{02}$ : There is no statistically significant linear relationship between selected non-financial indicators and the EVA indicator.

$H_{12}$ : There is statistically significant linear relationship between selected non-financial indicators and the EVA indicator.

**C) Hypothesis for financial and non-financial indicators:**

$H_{03}$ : There is no statistically significant linear relationship between selected financial and non-financial indicators.

$H_{13}$ : There is statistically significant linear relationship between selected financial and non-financial indicators.

**D) Hypothesis for the confirmation of the selection of key non-financial indicators:**

$H_{04}$ : We assume that the application of Spearman's rank correlation coefficient does not confirm the selection of key non-financial performance indicators.

$H_{14}$ : We assume that the application of Spearman's rank correlation coefficient confirms the selection of key non-financial performance indicators.

## **Results and discussion**

The first step in our research was the identification of the key non-financial performance indicators in terms of the selection procedure of non-financial measures. Since companies active in the field of electricity distribution represented our research sample, we chose selected sectoral characteristics of those companies for the non-financial indicators. The correctness of the selection of these indicators was verified using the correlation matrix (Table 4). When selecting indicators we have complied with the measures classification in accordance with the theory of Kaplan and Norton (2000). Selected set of indicators is given in Table 1.

Tab 1: Selection of non-financial indicators for performance assessment

Evaluated area	INDICATORS	Unit of measure	Rationale for the selection
Financial perspective	<i>Cost consumption (CC)</i>	€/ Point of supply	Key performance indicator in terms of the financial perspective
Financial perspective	<i>Return on investment (ROI)</i>	Ratio	Key performance indicator in terms of the financial perspective
Customer perspective	<i>Point of supply profitability (PSP)</i>	%	Key performance indicator in terms of the customer perspective
Customer perspective	<i>Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv (TED)</i>	€/MWh	Key performance indicator in terms of the customer perspective
Internal perspective of BSC	<i>Energy efficiency of electricity distribution (EE)</i>	%	Key performance indicator in terms of the internal perspective of BSC
Internal perspective of BSC	<i>Share of losses in the electricity distribution (SL)</i>	%	Key performance indicator in terms of the internal perspective of BSC
Internal perspective of BSC	<i>Average interruption duration of electricity distribution to point of supply – Voltage level Mv (AID)</i>	Minutes/ Point of supply	Key performance indicator in terms of the internal perspective of BSC
Perspective of BSC potentials	<i>Number of failure to comply with standard of quality events to recorded events (NFRE)</i>	%	Key performance indicator in terms of the perspective of BSC potentials
Perspective of BSC potentials	<i>Number of failure to comply with standard of quality events to employee (NFE)</i>	Number/ Employee	Key performance indicator in terms of the perspective of BSC potentials
Perspective of BSC potentials	<i>Employee labour productivity (ELP)</i>	€/Employee	Key performance indicator in terms of the perspective of BSC potentials

Source: Authors

These indicators met the condition of measurability (Table 2) as well as condition of ensuring mutual relations between indicators (Table 4). This file consists of indicators reporting significant relationships of dependence.

Tab 2: Values of the selected non-financial indicators

INDICATORS	ENE1		ENE2		ENE3	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
<i>Cost consumption</i>	0.42	0.56	0.29	0.36	0.13	0.16
<i>Return on investment</i>	0.05	0.09	0.06	0.08	0.09	0.10
<i>Point of supply profitability</i>	5.80	10.24	15.18	17.89	30.77	33.71
<i>Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv</i>	13.38	13.35	17.00	16.91	9.49	9.31
<i>Energy efficiency of electricity distribution</i>	93.33	94.13	90.48	92.08	91.55	91.87
<i>Share of losses in the electricity distribution</i>	6.54	5.74	9.30	7.70	8.33	7.99
<i>Average interruption duration of electricity distribution to point of supply – Voltage level Mv</i>	419.57	206.57	526.71	484.57	251.98	42.21
<i>Number of failure to comply with standard of quality events to recorded events</i>	2.05	4.06	2.52	1.59	1.14	0.44
<i>Number of failure to comply with standard of quality events to employee</i>	598.00	522.00	483.00	251.00	650.00	148.00
<i>Employee labour productivity</i>	1 003.83	1 129.10	850.52	980.88	3 457.7	3 048.71

Source: Authors

Values of selected indicators were transformed to the scores (see Table 3). The total scores of the enterprises demonstrate that the best performance, assessed with the use of non-financial indicators, achieved enterprise ENE3. This enterprise in each of the selected indicators achieved nearly 8 points. Worst evaluated indicator for this company is indicator *Share of losses in the electricity distribution*. The lowest score of 35 points was achieved by enterprise ENE2.

Tab 3: The scores of selected non-financial indicators

INDICATORS	ENE1		ENE2		ENE3	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
<i>Cost consumption</i>	3	2	4	3	8	7
<i>Return on investment</i>	4	7	4	6	7	8
<i>Point of supply profitability</i>	1	2	4	4	7	8
<i>Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv</i>	6	6	4	4	8	8
<i>Energy efficiency of electricity distribution</i>	8	8	8	8	8	8
<i>Share of losses in the electricity distribution</i>	7	8	5	6	6	6
<i>Average interruption duration of electricity distribution to point of supply – Voltage level Mv</i>	1	2	1	1	1	8
<i>Number of failure to comply with standard of quality events to recorded events</i>	2	1	1	2	3	8
<i>Number of failure to comply with standard of quality events to employee</i>	2	2	2	5	2	8
<i>Employee labour productivity</i>	2	3	2	2	8	7
<b>Score</b>	36	41	35	41	58	76

Source: Authors

We applied correlation matrix to analyse relationships between indicators (see Table 4). Correlation matrix pointed out the significant dependencies between the indicators. Statistically significant relationship is between the indicators *Cost consumption* and *Point of supply profitability*, *Cost consumption* and *Number of failure to comply with standard of quality events to recorded events*. Between the indicators *Point of supply profitability* and *Employee labour productivity* is the same relationship, while *Employee labour productivity* shows also dependence with *Tariff for electricity distribution without losses*. Statistically significant linear relationship is between the indicators *Energy efficiency of electricity distribution* and *Share of losses in the electricity distribution* - it stands to reason because the losses in the electricity distribution negatively influence energy efficiency. Selected indicators do not show statistically significant linear relationship with EVA indicator.

Tab 4: The correlation matrix for non-financial indicators

Correlation (non-financial indicators)											
Marked correlations are significant at the level $p < ,05000$ N=6											
	CC	ROI	PSP	TED	EE	SL	AID	NFRE	NFE	ELP	EVA
<b>CC</b>	1.0000	-.2924	-.8774	.5158	.7553	-.7715	.2671	.8655	.2068	-.7940	.6889
	p= ---	p=.574	p=.022	p=.295	p=.082	p=.072	p=.609	p=.026	p=.694	p=.059	p=.130
<b>ROI</b>	-.2924	1.0000	-.1365	.0052	-.3720	.3788	.2917	-.2949	.2180	-.0600	.1372
	p=.574	p= ---	p=.796	p=.992	p=.468	p=.459	p=.575	p=.570	p=.678	p=.910	p=.375
<b>PSP</b>	-.8774	-.1365	1.0000	-.6536	-.5175	.5334	-.5935	-.7632	-.4123	.8945	-.6318
	p=.022	p=.796	p= ---	p=.159	p=.293	p=.276	p=.214	p=.077	p=.417	p=.016	p=.178
<b>TED</b>	.5158	.0052	-.6536	1.0000	-.1272	.0989	.8647	.4740	-.0418	-.8977	.3512
	p=.295	p=.992	p=.159	p= ---	p=.810	p=.852	p=.026	p=.342	p=.937	p=.015	p=.495
<b>EE</b>	.7553	-.3720	-.5175	-.1272	1.0000	-.9995	-.2845	.5227	.1885	-.2525	.6126
	p=.082	p=.468	p=.293	p=.810	p= ---	p=.000	p=.585	p=.287	p=.721	p=.629	p=.196
<b>SL</b>	-.7715	.3788	.5334	.0989	-.9995	1.0000	.2642	-.5342	-.1777	.2779	-.6220
	p=.072	p=.459	p=.276	p=.852	p=.000	p= ---	p=.613	p=.275	p=.736	p=.594	p=.187
<b>AID</b>	.2671	.2917	-.5935	.8647	-.2845	.2642	1.0000	.2595	.2742	-.7208	.3860
	p=.609	p=.575	p=.214	p=.026	p=.585	p=.613	p= ---	p=.620	p=.599	p=.106	p=.450
<b>NFRE</b>	.8655	-.2949	-.7632	.4740	.5227	-.5342	.2595	1.0000	.4421	-.6723	.5952
	p=.026	p=.570	p=.077	p=.342	p=.287	p=.275	p=.620	p= ---	p=.380	p=.144	p=.213
<b>NFE</b>	.2068	.2180	-.4123	-.0418	.1885	-.1777	.2742	.4421	1.0000	-.0704	.5137
	p=.694	p=.678	p=.417	p=.937	p=.721	p=.736	p=.599	p=.380	p= ---	p=.895	p=.297
<b>ELP</b>	-.7940	-.0600	.8945	-.8977	-.2525	.2779	-.7208	-.6723	-.0704	1.0000	-.4598
	p=.059	p=.910	p=.016	p=.015	p=.629	p=.594	p=.106	p=.144	p=.895	p= ---	p=.359
<b>EVA</b>	.6889	.1372	-.6318	.3512	.6126	-.6220	.3860	.5952	.5137	-.4598	1.0000
	p=.130	p=.375	p=.178	p=.495	p=.196	p=.187	p=.450	p=.213	p=.297	p=.359	p= ---

Source: Authors

To confirm the results obtained with the use of correlation matrix we applied Spearman`s rank correlation coefficient (see Table 5).

Tab 5: Spearman’s rank correlation coefficient for non-financial indicators

Correlation (Spearman’s rank correlation coefficient)											
Marked correlations are significant at the level $p < .05000$ N=6											
	CC	ROI	PSP	TED	EE	SL	AID	NFRE	NFE	ELP	EVA
<b>CC</b>	1.0000	-.1841	.9040	.7365	--	-.4783	.4404	.6707	.3444	.9259	.1722
	p= ---	p=.727	p=.013	p=.095	p= ---	p=.337	p=.382	p=.145	p=.504	p=.008	p=.744
<b>ROI</b>	-.1841	1.0000	.0818	0.0000	--	.4330	.0797	0.0000	.2673	.0811	.5345
	p=.727	p= ---	p=.878	p=1.00	p= ---	p=.391	p=.881	p=1.00	p=.609	p=.879	p=.275
<b>PSP</b>	.9040	.0818	1.0000	.5728	--	-.5433	.6089	.7580	.6124	.8496	.0656
	p=.013	p=.878	p= ---	p=.235	p= ---	p=.265	p=.200	p=.081	p=.196	p=.032	p=.902
<b>TED</b>	.7365	0.0000	.5728	1.0000	--	.2165	.5581	.6777	.2673	.8922	.3341
	p=.095	p=1.00	p=.235	p= ---	p= ---	p=.680	p=.250	p=.139	p=.609	p=.017	p=.518
<b>EE</b>	--	--	--	--	1.0000	--	--	--	--	--	--
	p= ---	p= ---	p= ---	p= ---	p= ---	p= ---	p= ---	p= ---	p= ---	p= ---	p= ---
<b>SL</b>	-.4783	.4330	-.5433	.2165	--	1.0000	-.0460	-.1956	-.2315	-.1405	.4050
	p=.337	p=.391	p=.265	p=.680	p= ---	p= ---	p=.931	p=.710	p=.659	p=.791	p=.426
<b>AID</b>	.4404	.0797	.6089	.5581	--	-.0460	1.0000	.9276	.8523	.5173	-.3835
	p=.382	p=.881	p=.200	p=.250	p= ---	p=.931	p= ---	p=.008	p=.031	p=.293	p=.453
<b>NFRE</b>	.6707	0.0000	.7580	.6777	--	-.1956	.9276	1.0000	.8604	.6871	-.2943
	p=.145	p=1.00	p=.081	p=.139	p= ---	p=.710	p=.008	p= ---	p=.028	p=.132	p=.571
<b>NFE</b>	.3444	.2673	.6124	.2673	--	-.2315	.8523	.8604	1.0000	.3468	-.4286
	p=.504	p=.609	p=.196	p=.609	p= ---	p=.659	p=.031	p=.028	p= ---	p=.501	p=.397
<b>ELP</b>	.9259	.0811	.8496	.8922	--	-.1405	.5173	.6871	.3468	1.0000	.3902
	p=.008	p=.879	p=.032	p=.017	p= ---	p=.791	p=.293	p=.132	p=.501	p= ---	p=.444
<b>EVA</b>	.1722	.5345	.0656	.3341	--	.4050	-.3835	-.2943	-.4286	.3902	1.0000
	p=.744	p=.275	p=.902	p=.518	p= ---	p=.426	p=.453	p=.571	p=.397	p=.444	p= ---

Source: Authors

Correlation matrix confirmed statistically significant linear relationships between following indicators:

1. *Cost consumption (CC) and Point of supply profitability (PSP)*
2. *Cost consumption (CC) and Number of failure to comply with standard of quality events to recorded events (NFRE)*
3. *Employee labour productivity (ELP) and Point of supply profitability (PSP)*
4. *Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv (TED) and Average interruption duration of electricity distribution to point of supply – Voltage level Mv (AID)*
5. *Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv (TED) and Employee labour productivity (ELP)*
6. *Energy efficiency of electricity distribution (EE) and Share of losses in the electricity distribution (SL)*

The strongest statistically significant directly proportional relationship is between the indicators *Energy efficiency of electricity distribution (EE)* and *Share of losses in the electricity distribution (SL)*.

Spearman's rank correlation coefficient confirmed some dependencies and did not confirm another ones. According to this correlation coefficient, statistically significant relationships are between following indicators:

1. *Cost consumption (CC)* and *Point of supply profitability (PSP)*
2. *Cost consumption (CC)* and *Employee labour productivity (ELP)*
3. *Average interruption duration of electricity distribution to point of supply – Voltage level Mv (AID)* and *Number of failure to comply with standard of quality events to recorded events (NFRE)*
4. *Average interruption duration of electricity distribution to point of supply – Voltage level Mv (AID)* and *Number of failure to comply with standard of quality events to employee (NFE)*
5. *Employee labour productivity (ELP)* and *Point of supply profitability (PSP)*
6. *Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv (TED)* and *Employee labour productivity (ELP)*

According to Spearman's rank correlation coefficient the strongest statistically significant directly proportional relationship is between the indicators *Average interruption duration of electricity distribution to point of supply – Voltage level Mv (AID)* and *Number of failure to comply with standard of quality events to recorded events (NFRE)*

The strongest relationship pursuant to the correlation matrix is the relationship between indicators *Energy efficiency of electricity distribution (EE)* and *Share of losses in the electricity distribution (SL)*. The Spearman's rank correlation coefficient failed to confirm above mentioned relationship because the indicator *Energy efficiency of electricity distribution (EE)* achieved in each company for each year 8 points. This indicator has minimal room for improvement and therefore its improvement will influence enterprise performance only slightly.

Both methods confirmed following statistically significant relationships:

1. *Cost consumption (CC)* and *Point of supply profitability (PSP)*
2. *Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv (TED)* and *Employee labour productivity (ELP)*
3. *Employee labour productivity (ELP)* and *Point of supply profitability (PSP)*

Based on above mentioned we can conclude that non-financial indicators *Cost consumption (CC)*, *Point of supply profitability (PSP)*, *Tariff for electricity distribution without losses including electricity transmission - Voltage level Mv (TED)* and *Employee labour productivity (ELP)* belong to key performance indicators, therefore their improvement will influence the performance of the given industry.



Tab 6: Scope for the performance improvement

<b>INDICATOR</b>	<b>Achieved scores</b>	<b>Scores for the performance improvement</b>
<i>Cost consumption (CC)</i>	4.5	8
<i>Point of supply profitability (PSP)</i>	4.3	8
<i>Tariff for electricity distribution without losses including electricity transmission – Voltage level Mv (TED)</i>	6	8
<i>Employee labour productivity (ELP)</i>	4	8
<i>Average interruption duration of electricity distribution to point of supply – Voltage level Mv (AID)</i>	2.3	8

Source: Authors

It can be assumed that the improvement in the values of the selected group of indicators (see Table 6) will enhance the performance of the selected enterprises. Neither correlation matrix nor Spearman’s rank correlation coefficient confirmed statistically significant linear relationship between selected non-financial indicators and EVA indicator. These non-financial measures influence value of the EVA indicator indirectly – through the group of selected financial indicators. In accordance with the above mentioned assumption of the BSC method, stating that the impact on non-financial indicators and perspectives is reflected in the enterprise performance indirectly through financial measures and perspectives is confirmed.

In the next part of this paper we apply correlation matrix to confirm relationships between financial and non-financial indicators. To construct the correlation matrix we select the group of the financial indicators, significantly influencing the enterprise performance. These indicators are chosen on the basis of the factor analysis. The choice of indicators is provided in Table 7.

Tab 7: The values of the financial indicators

INDICATORS	ENE1		ENE2		ENE3	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
<i>Current Ratio (CR)</i>	1.23	1.61	0.75	1.2	1.56	0.67
<i>Cash - to - Cash (CTC)</i>	-28.81	-26.02	-23.57	-16.44	-19.03	-15.28
<i>Assets Turnover (AT)</i>	0.37	0.50	0.38	0.46	0.46	0.55
<i>Turn around receivables (TAR)</i>	29.70	19.59	44.17	32.73	24.41	30.48
<i>Return on Assets (ROA)</i>	3.81	6.60	4.45	6.25	6.52	7.23
<i>Profit Margin (PM)</i>	12.85	15.98	14.48	16.81	18.06	16.38
<i>Weighted Average Capital Cost (WACC)</i>	4.06	5.21	13.93	5.34	9.06	20.21
<i>Equity Ratio (ER)</i>	0.78	0.77	0.79	0.79	0.81	0.79
<i>Return on Equity (ROE)</i>	4.71	8.35	5.62	7.89	8.00	9.15
<i>Interest Coverage (IC)</i>	24.95	49.33	136.62	431.12	4 888.59	3 786.78

Source: Authors

Scores of the financial indicators are given in Table 8. It is obvious that the best score achieves indicator „*Interest Coverage (IC)*“ and then indicator „*Equity Ratio (ER)*“.

Tab 8: The scores of the financial indicators

INDICATORS	ENE1		ENE2		ENE3	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
<i>Current Ratio (CR)</i>	8	8	0	8	8	0
<i>Cash - to - Cash (CTC)</i>	0	0	0	0	0	0
<i>Assets Turnover (AT)</i>	5	7	6	7	7	8
<i>Turn around receivables (TAR)</i>	5	8	4	5	6	5
<i>Return on Assets (ROA)</i>	4	7	5	7	7	8
<i>Profit Margin (PM)</i>	5	7	6	7	7	7
<i>Weighted Average Capital Cost (WACC)</i>	8	6	2	6	4	2
<i>Equity Ratio (ER)</i>	8	8	8	8	7	7
<i>Return on Equity (ROE)</i>	6	8	7	8	8	8
<i>Interest Coverage (IC)</i>	8	8	8	8	8	8
<i>Score</i>	59	67	39	64	54	45

Source: Authors

Based on the correlation matrix it can be stated that statistically most significant relationship is between indicators *Assets Turnover (AT)* and *Point of supply*

profitability (PSP) (see Table 9). It confirms the fact that the indicator *Point of supply profitability (PSP)* is key non-financial indicator, which influences performance through the indicator *Assets Turnover (AT)*.

Tab 9: Correlation matrix for financial indicators and non-financial indicators

Correlation (financial indicators. non-financial indicators)										
Marked correlations are significant at the level $p < .05000$ N=6										
	CC	ROI	PSP	TED	EE	SL	AID	NFRE	NFE	ELP
CR	.4104	-.5374	-.0709	-.1233	.6024	-.5969	-.0365	.4859	.6359	.0230
	p=.419	p=.272	p=.894	p=.816	p=.206	p=.211	p=.945	p=.329	p=.175	p=.966
CTC	-.6816	-.3445	.7618	-.2748	-.4977	.4987	-.3352	-.7321	-.7122	.5768
	p=.136	p=.504	p=.078	p=.598	p=.315	p=.314	p=.516	p=.098	p=.112	p=.231
AT	-.2030	-.6439	.8220	-.5583	.1885	-.1807	-.8508	-.2922	-.5886	.5665
	p=.700	p=.168	p=.045	p=.250	p=.721	p=.732	p=.032	p=.574	p=.219	p=.241
TAR	-.2745	.5867	-.2944	.5603	-.7669	.7531	.6129	-.2020	-.2555	-.3473
	p=.599	p=.221	p=.571	p=.247	p=.075	p=.084	p=.196	p=.701	p=.625	p=.500
ROA	-.2854	-.7494	.8779	-.5136	.0703	-.0629	-.7428	-.2898	-.4874	.6188
	p=.583	p=.086	p=.021	p=.297	p=.895	p=.906	p=.091	p=.577	p=.327	p=.190
PM	-.4646	-.6993	.8288	-.3971	-.2074	.2147	-.4279	-.3203	-.2145	.6558
	p=.353	p=.122	p=.041	p=.436	p=.693	p=.683	p=.397	p=.536	p=.683	p=.157
WACC	-.6828	.2661	.6302	-.3851	-.6027	.6120	-.4695	-.5848	-.5487	.5128
	p=.135	p=.610	p=.180	p=.451	p=.205	p=.197	p=.347	p=.223	p=.260	p=.298
ER	-.8897	.1374	.5235	-.3659	-.7214	.7346	-.0055	-.6759	.0755	.6892
	p=.018	p=.795	p=.287	p=.476	p=.106	p=.096	p=.992	p=.141	p=.887	p=.130
ROE	-.2584	-.7549	.8639	-.4824	.0761	-.0700	-.7376	-.2729	-.5233	.5836
	p=.621	p=.083	p=.027	p=.333	p=.886	p=.895	p=.094	p=.601	p=.287	p=.224
IC	-.8479	-.0458	.8602	-.8480	-.3477	.3718	-.6389	-.7193	-.0757	.9925
	p=.033	p=.931	p=.028	p=.033	p=.499	p=.468	p=.172	p=.107	p=.887	p=.000

Source: Authors

## Conclusion

Core research of this contribution consisted of eight scientific hypothesis, which were tested with the use of several scientific methods and the methods of statistical analysis. Results of the correlation matrices and Spearman's rank correlation coefficient, verified at the significance level of 0.05, can be summarized as follows: Within the hypothesis for non-financial indicators and the EVA indicator the following findings were obtained:

- In the case of marked correlation dependencies in correlation matrix for non-financial indicators (see Table 4) we conclude that there is statistically significant direct, resp. indirect linear relationship between indicators. Therefore we reject null hypothesis  $H_{01}$  stating there is no statistically significant linear relationship between these measures in favour of the alternative hypothesis  $H_{11}$

- There is also significant dependency between majority of the individual measures and EVA indicator (see Table 4), but it is not statistically significant linear relationship. Therefore we fail to reject the null hypothesis  $H_{02}$ .

As regards the hypothesis set out for financial and non-financial indicators, the results are as follows:

- In the case of marked correlation dependencies in correlation matrix for financial indicators and non-financial indicators (see Table 9) we reject null hypothesis  $H_{03}$  stating there is no statistically significant linear relationship between these measures in favour of the alternative hypothesis  $H_{13}$ .
- Regarding the other correlation dependencies not marked by software Statistica, we fail to reject the null hypothesis  $H_{03}$ .

Results of hypothesis related to the selection of key non-financial indicators can be summarized as follows:

- In the case of *Cost consumption and Point of supply profitability, Employee labour productivity and Point of supply profitability, Tariff for electricity distribution without losses including electricity transmission and Employee labour productivity* (see Table 5) we reject null hypothesis  $H_{04}$  stating the application of Spearman's rank correlation coefficient does not confirm the selection of key non-financial performance indicators in favour of the alternative hypothesis  $H_{14}$ .
- Regarding the other correlation dependencies marked in correlation matrix for non-financial indicators (see Table 4), these were not confirmed by Spearman's rank correlation coefficient (see Table 5). Therefore we fail to reject the null hypothesis  $H_{04}$ .

## Summary

Based on the research carried out and processing of the results obtained we were able to identify key performance indicators of the given industry and fulfil the stated objective. We can conclude that the choice of financial and non-financial indicators influences the final evaluation of enterprises performance and this selection changes the view of the business performance. The research carried out also confirmed significant dependence between financial indicators and the EVA indicator, but did not confirmed significant dependence between non-financial indicators and the EVA indicator. However, based on the correlation matrix for financial and non-financial indicators, which confirmed significant dependence between these indicators, we can conclude that non-financial indicators influence value of the EVA indicator indirectly – through the group of selected financial indicators. To confirm these findings, it is necessary to carry out more detailed research and selection of non-financial indicators, which will be the subject of further studies.

## Súhrn

Na základe výsledkov realizovaného výskumu sme identifikovali kľúčové indikátory výkonnosti analyzovaného priemyslu a tým sme naplnili stanovený cieľ. Dospeli

sme k zisteniu, že výber finančných a nefinančných ukazovateľov ovplyvňuje konečné hodnotenie výkonnosti podnikov, a tak dochádza aj k zmenám vo vnímaní ich výkonnosti. Realizovaný výskum takisto potvrdil, že medzi finančnými ukazovateľmi a ukazovateľom EVA existujú významné závislosti. Medzi nefinančnými ukazovateľmi a ukazovateľom EVA neboli potvrdené významné závislosti. Avšak na základe korelačnej matice závislostí medzi finančnými a nefinančnými ukazovateľmi, ktorá potvrdila významné závislosti medzi týmito ukazovateľmi, môžeme konštatovať, že nefinančné ukazovatele ovplyvňujú ukazovateľ EVA nepriamo, a to prostredníctvom finančných ukazovateľov. Pre potvrdenie týchto zistení je potrebné realizovať podrobnejší prieskum a výber nefinančných ukazovateľov, čo bude predmetom ďalších štúdií.

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**Michaela Sirková**

## **ANALYSIS CREATIVITY IN THE FINANCIAL SERVICES ORGANISATIONS**

### **ANALÝZA KREATIVITY V ORGANIZÁCIÁCH POSKYTUJÚCICH FINANČNÉ SLUŽBY**

***Abstract:** Currently, when the world is still incomplete economic and financial crisis, financial services organizations are aware that they are losing valuable customers, and decided that it should be innovative ways of doing business to ensure future sustainability. One of these innovative ways is the creativity. The aim of this article is to analysis of the creativity and use creative techniques of employees at financial services organizations. Primary data collection was conducted through questionnaire survey among employees working in financial services organizations. The research was conducted on a sample of 118 respondents from Prešov district in Slovakia. To evaluate the data and hypotheses was used statistical program SPSS STATISTIC using the T-test.*

***Key words:** creativity, creative techniques, management, financial services organizations*

***Kľúčové slová:** kreativita, kreatívne techniky, manažment, organizácie poskytujúce finančné služby*

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**JEL: M12, O15**

#### **Introduction**

Creativity is considered the preliminary stage of innovation; it is a process of generating ideas, solutions to problems and new projects, without the implementation phase. Creativity is triggered by the subject, i.e. an individual employee or a team of people co-operating with one another. One of the conditions for an individual's or a team's creativity is expertise and experience in a given field [7]. The development of creative and innovative thinking and problem-solving skills is crucial for the survival of organisations in the twenty-first century [4].

#### **Creativity in management**

Creativity is the first step in innovation which is essential for long-term organizational success [3], is a type of thinking that enables people to generate ideas, invent new ideas, improve old ideas, and recombine existing ideas in a novel fashion [8]. Creativity is crucial factor of innovative capacity, competitiveness and increasing performance of businesses and organizations. The importance of

creativity lies primarily in its close link to innovation as well as the fact that it is perceived as a determinant of socio-economic development of enterprises, cities, regions and countries [2].

Rosa et. al identified four management principles that can engender creativity and innovation in organizations regardless of size, industry, and access to financial resources:

- to manage organizations so that their knowledge base is more diverse than what would occur naturally,
- to encourage employees to embrace a collaborative and non-complacent attitude towards work and the organization,
- to make it possible for organization members to engage in the quick testing of ideas and solutions as they emerge,
- to reward employee and supervisor behaviours that support these principles and punish resistance to their implementation.

If organizations (regardless size and resource support) will apply these principles, creativity and innovation can be harnessed [12].

Xu and Rickards define creative management as “the study and practice of management, drawing on the theories of creative processes and their application at individual, group, organizational and cultural levels”. Authors perceive creative management’ in two senses:

- *in a formal sense* - as a fifth stage in the practice of management, emerging from the historical theories and practices of management from earlier stages
- *in a less formal sense* which refers to a management style which will become associated with the emerging fifth stage of management [14].

To determine creativity it is necessary to meet certain requirements, which should satisfy the creative work. Hospodářová defines following criteria of creativity [6]:

- Originality - unique work, idea, thought, way of addressing that creates something new by combining advanced or modify something that exists. This criterion refers to the novelty.
- Correctness - work, the idea, the idea of a way to resolve meet the conditions and requirements that have been submitted. Correctness criterion points to meet the parameters.
- Applicability - work, idea, idea and method of solution should be feasible, this means that should give real use. The applicability is therefore a practical sense of the work.
- The value and benefit - work, idea, thought and way of dealing with should be a positive result of the creative process.

In order to determine whether something is creative or not, the criteria must also provide for a more creative capabilities that characterize the individual creativity.



Franková characterizes these factors of creativity [5]:

- Fluence - free flow of ideas, readiness and resourcefulness. Fluency is the ability to readily, quickly and easily create as many ideas on the subject in a limited time.
- Flexibility - flexibility of thought. It is the ability to create and apply different solutions to one topic.
- Originality - novelty of the ideas. Originality is the ability to create a solution that is unusual, funny, intelligent, and especially the new ones, respectively a solution that is not generally applicable and therefore considered to be unusual.
- Elaboration - the ability to develop solutions in detail, to complete it, adjust and complete.
- Redefining - changes of the functions or change some part of the problem or situation. This includes adding new features to object or its parts.
- Sensitivity to problems - ability to recognize and formulate practical problems and consequences of a given situation or phenomenon.

### **Creative techniques**

Creativity techniques are methods that encourage creative actions, whether in the arts or sciences. They focus on a variety of aspects of creativity, including techniques for idea generation and divergent thinking, methods of re-framing problems, changes in the affective environment and so on. They can be used as part of problem solving, artistic expression, or therapy. To develop creativity and generate new ideas there are many of techniques which can stimulate creative thinking and reaching out to the thoughts and ideas that individuals in other circumstances not mentioned. The most commonly used techniques are [1], [9], [11], [13]: Bank of ideas, Creative Problem Solving Process, Crawford slip, Lateral thinking process, Delphi method, Six Thinking Hats, Brainstorming and Brainwriting, Think outside the box, SWOT analysis, Fishbone, Method Philips 66, Method Walt Disney, Mind Maps, Syntectics, Scamper.

### **Material and methods**

Primary data collection was conducted through questionnaire survey among employees working in financial services organizations. The research was conducted on a sample of 118 respondents from Prešov district in Slovakia. To evaluate the data and hypotheses was used statistical program SPSS STATISTIC using the T-test. Respondents reported their answers to each question on a five-point Likert scale (1 - yes, 2- rather yes, 3 - neutral (neither agree nor disagree), 4 - rather no, 5 - no). We were interested in using creativity and creative techniques of employees working in financial sector. We examined whether there is a correlation (relationship) between selected demographic characteristics of respondents and their use of creativity in the work. The following hypotheses were formulated:

*H1: There is a statistically significant difference in the use of creative techniques between employees in terms of their length of employment.*

*H2: There is a statistically significant difference in the use of creative techniques between employees in terms of their gender.*

**H1: There is a statistically significant difference in the use of creative techniques between employees in terms of their length of employment.**

T-test was used to test the hypothesis.

Tab 1 The length of employment and the use of creative techniques (T-test)

		Equality of variance test		T-test		
		F	Sig.	t	df	Sig. (2- tailed)
	<b>The assumption of the equality of variance</b>	6,728	,011	2,033	116	,044
	<b>The assumption of the inequality of variance</b>			2,014	107,754	,046

Source: Own processing

The significance value of variance test is 0.011, based on which we can determine the significance value of averages test which is 0.046. It can be concluded that employees who are employed in the organization longer, use creative techniques to a greater extent.

**H2: There is a statistically significant difference in the use of creative techniques between employees in terms of their gender.**

Tab 2 Gender and creative techniques

	<b>Gender</b>	<b>N</b>	<b>Average</b>
	Men	45	3,93
	Women	73	3,53

Source: Own processing

Tab 3 The gender and the use of creative techniques (T-test)

		Equality of variance test		T-test		
		F	Sig.	t	df	Sig. (2- tailed)
	<b>The assumption of the equality of variance</b>	,250	,618	1,526	116	,130
	<b>The assumption of the inequality of variance</b>			1,529	94,004	,130

Source: Own processing

The results showed that significance of the equality of variance test of 0.618 is greater than the significance level of 0.05. Significance of the averages equality of 0.13 means that the difference in the use of creative techniques based on gender may be due to chance of 13%, that is not statistically significant and the hypothesis can be rejected.

**Results and discussion**

The research sample consists of 118 employees working in financial services organizations, while 54% of them working there for five years and less, and 46% of them working there in more than five years. The respondents were primarily between 37 and 46 years of age, namely 32% respondents and at least the respondents were between 57 and 66 years of age (8%). In terms of gender the greater part of the sample are women (62%), in terms of educational attainment the majority of respondents were employees with completed secondary education and second-degree university study (30%).

*Findings*

The research also shows that 60% of respondents (when working with clients) do not use creative techniques and concurrently only 33% respondents answered affirmatively to the question, which is related to this topic. It was also investigated whether the use of creative techniques leads to better performance and results. The results showed that 58% of respondents improve their performance which resulted in an increased number of clients contacting (compared with the previous month) and this subsequently brought improvements, for example 47% of respondents received more recommendations from clients. Increased use of creative techniques also caused, that:

- nearly 23% of respondents received training on addressing clients,
- 20% used the new procedures,
- nearly 6% took part in brainstorming.

Part of the research was to identify which of the techniques are used or not by the respondents (respondents could choose multiple answers). Four of the techniques -

Crawford slip, the Delphi method, 66 Philips and methods Walt Disney was selected (marked) by no respondents. Method SCAMPER was marked by less than 1% of respondents, Synectics by less than 2%, Fishbone by less than 3% and Brainwriting by more than 3%. The most commonly used method is the Mind Map, which was selected by 29% of respondents, followed by Brainstorming marked by 27% of respondents. 19% of respondents use the Bank of Ideas and 17% of them use the SWOT analysis and random input. Given the above, we can conclude that respondents use a little creative techniques and those identified, uses a small number of respondents.

## Conclusion

Research results indicated that few employees at financial services organizations considered themselves to be creative and consider creativity important in pursuing their profession.

On the basis of the research and analysis we attained to some following conclusions:

- employees who are employed in the organization longer, use creative techniques to a greater extent.
- that is not statistically significant in the use of creative techniques based on gender.

## Súhrn

V súčasnej dobe, kedy vo svete stále pretrváva hospodárska a finančná kríza, si organizácie, a zvlášť organizácie poskytujúce finančné služby, uvedomujú, že strácajú svojich cenných zákazníkov. Pre zabezpečenie a udržanie dlhodobého rozvoja sú práve v tomto období dôležité inovatívne prvky. Jedným z týchto inovatívnych spôsobov je aj kreativita. Mnoho spoločnosti v dnešnej dobe vyhľadáva kreatívnych jedincov, ktorí môžu ponúknuť okrem vedomosti a znalosti aj prínos niečoho nového. Cieľom tohto článku je analýza kreativity a využívania kreatívnych techník zamestnancov v organizáciách poskytujúce finančné služby. Zber primárnych dát prebiehal formou dotazníkového prieskumu medzi zamestnancami, ktorí pracujú vo finančnom sektore a na vyhodnotenie dát a hypotéz bol použitý štatistický program SPSS STATISTIC pomocou T-testu. Výsledky prieskumu ukázali, že zamestnanci, ktorí začali používať kreatívne techniky boli výkonnejší, efektívnejší a dosahovali vyššie obraty. Na druhej strane, využívanie kreatívnych techník nezávisí, podľa našich zistení, od rodu, ale skôr od skúseností a odpracovaných rokov jednotlivých zamestnancov.

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Elena Širá  
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## ECONOMIC MATURITY OF THE SLOVAK REPUBLIC IN THE CONTEXT OF INSURANCE MARKET'S DEVELOPMENT

### EKONOMICKÁ VYSPELOŠŤ SR V KONTEXTE VÝVOJA POISTNÉHO TRHU

***Abstract:** This article deals with the analysis of the economic maturity and its correlation with the growth of insurance market. We have analysed the Slovak economy and our insurance market. Economy has been described through GDP and insurance market via various indicators related to written premiums. We have analysed the period of 10 years to reach better results.*

***Key words:** GDP. Insurance market. Written premiums.*

***Kľúčové slová:** HDP, poistný trh, predpísané poistné.*

*The article is related to KEGA project No. 032PU-4/2013.*

**JEL: G22**

#### **Introduction**

The economy performance of the country can be measured e. g. by the amount of GDP. GDP is defined as an aggregate measure of production equal to the sum of the gross values added of all resident, institutional units engaged in production. [2]

Insurance industry is one of the most important components of all economies. [4] Insurance industry as a sector of the national economy offers their goods (financial services) in the insurance market. The insurance market is a place in which supply and demand for the insurance protection meet. It includes all the relations between the "seller" and "buyer" who use as the subject of their exchanges insurance. [3]

Insurance services are considered to be specific goods which execution takes place in the insurance market. Insurance helps to address the underlying problems that may arise in connection with an emergency of unexpected events. [7]

Insurance cover as the need arises in every society on the basis of the various risks. It represents a system of various market instruments and regulatory measures that ensure the flow of funds and insurance services among the insurance market on the principle of conditional return and non-equivalence. [6]

Insurance market as one of the segments of the financial market is characterized by certain specific peculiarities, namely:

- The insurance market is long dominated by offering insurance products over demand. The insurance market is a buyer's market, which is generally a prerequisite for increased competition through prices and offers.

- The insurance market is increasingly regulated by national regulations than other markets. Stringent legislative definition of the functioning of the insurance market on the one hand and state supervision on the other hand, to some extent limits the competitive environment of the insurance market. This is reflected in the relative similarity and comparability of insurance products in the insurance market offered by different insurance companies. The insurance market is not strictly located at the place with the sale of insurance products, only in limited time. On the supply side it is more about a network of workers and insurance agents who personally search and visit potential clients. [1]

### **Aims and methodology**

The aim of the article is to identify the correlation between economic development of the country and insurance market's development.

We have analysed the economic development through GDP. To identify the insurance market development, we choose these indicators:

- written premiums, especially in life insurance,
- written premiums per capita,
- written premiums to GDP.

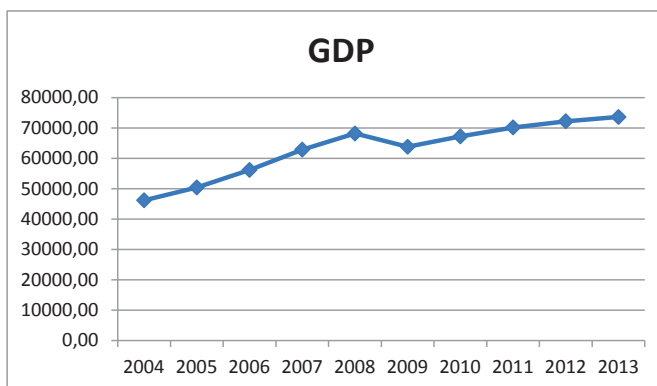
We have analysed the period of years 2004 to 2013. The information was taken from Statistical Office of the SR, the Slovak Insurance Association (SLASPO) and from articles and books dedicated to insurance.

### **Discussion and results**

Slovak economy was described by GDP and its development during 10 years period. The Slovak insurance market was analyzed through selected indicators.

Figure 1 provides data on the GDP development in Slovakia in the period 2004 - 2013. It can be seen that the value of GDP in Slovakia has had an increasing tendency.

Graph 1 Development of HDP in mil. €

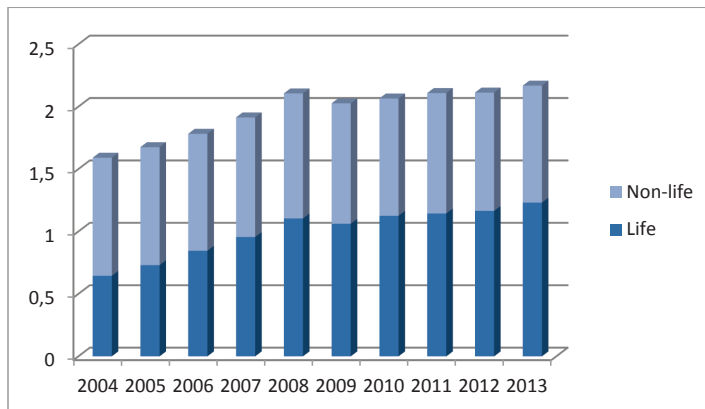


Source: own processing according to data from Statistical Office of the SR



Chart 2 shows the development of total written premiums with the specific division on the area of life and non-life insurance. In the analysed period can be seen an upward trend in total written premiums. Since 2008 the written premiums in the life insurance are higher than in the non-life insurance.

Graph 2 Development of written premiums in € bn



Source: own processing according to data from Statistical Office of the SR and SLASPO

Table 1 shows the evolution of premiums written per capita. In Slovakia, its total increase in 2013 compared to 2004 reached the amount of 35.52%. This indicator also proved a growing trend.

Tab 1 Written premiums per capita in €

	<b>Written premiums per capita</b>
<b>2004</b>	295.62
<b>2005</b>	311.17
<b>2006</b>	330.84
<b>2007</b>	354.56
<b>2008</b>	389.40
<b>2009</b>	373.67
<b>2010</b>	380.31
<b>2011</b>	390.43
<b>2012</b>	390.76
<b>2013</b>	400.61

Source: own processing according to data from Statistical Office of the SR

The share of written premiums to GDP in Slovakia is fluctuating around 3% each year. The fact that insurance in a certain period of the year decreased does not necessarily mean a decrease of written premiums, but that GDP growth was stronger than the growth in written premiums.

Tab 2 Development of written Premium to GDP in %

	<b>Written premiums to GDP</b>
<b>2004</b>	3.45
<b>2005</b>	3.33
<b>2006</b>	3.18
<b>2007</b>	3.05
<b>2008</b>	3.09
<b>2009</b>	3.18
<b>2010</b>	3.08
<b>2011</b>	3.01
<b>2012</b>	2.93
<b>2013</b>	2.95

Source: own processing according to data from Statistical Office of the SR

The following section deals with the identification of the relationship between the development of the insurance market and the economic development of the country. Economic maturity of the country is measured by the annual gross domestic product and the development of the insurance market is determined by the annual written premiums in the area of life insurance. All figures are measured and expressed in millions Euros for the period of 2004 - 2013.

The relationship of the above mentioned variables is identified on the basis of the performance correlation analysis quantifying the value of the correlation coefficient, which indicates how strong the relationship is between the examined variables, in our case GDP and annual written premiums in life insurance.

Hypothesis: We assume that the relationship between economic development of the country, determined by GDP growth and the development of the insurance market determined by annual premiums written in life insurance will be demonstrated by positive linear relationship in the Slovak Republic.

$$\alpha = 0,05$$

$$H_0 : r = 0$$

$$H_1 : r \neq 0$$

Tab 3 Correlation analysis

X: GDP Y: Written Premium in Life insurance	Correlation analysis				
	p < ,05000				
	Average	deviation	r (X,Y)	r2	T
GDP	64475,50	8682,915			
Written Premium in Life insurance	1031,69	185,711	0,988830	0,977786	17,55308

X: GDP Y: Written Premium in Life insurance	Correlation analysis $p < ,05000$					
	p	N	Constant dependence: Y	Competent dependence: Y	Constant dependence: X	Competent dependence: X
GDP						
Written Premium in Life insurance	0,000000	9	-331,916	0,021149	16777,66	46,23272

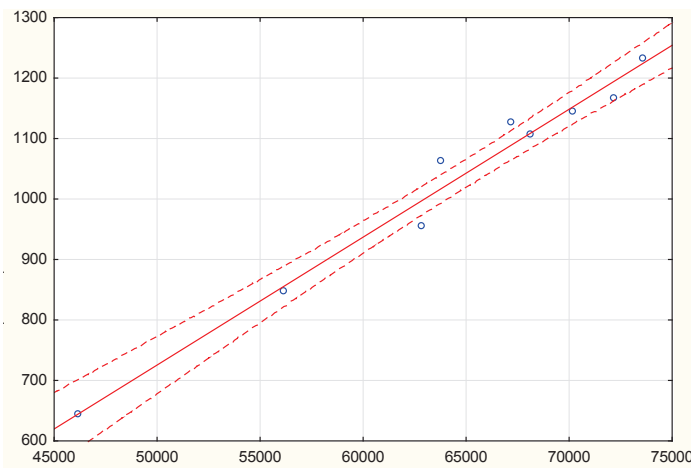
Source: own processing

This table shows that the average annual GDP in Slovakia for the period of 2004 - 2013 is € 64, 475.50 m. and the average annual written premiums in life insurance in the same period reached €1, 031.69 m. Correlation analysis was performed on the test level of 0.05.

On the basis of the analysis we can conclude that the studied variables i.e. annual GDP in Slovakia and annual written premiums in life insurance in Slovakia strongly influence each other. As the correlation coefficient  $r$  amounted to 0.988830, which represents a very strong positive linear relationship, we can confidently assert that the GDP growth in Slovakia means also growing written premiums in life insurance. Test of the significance of the correlation coefficient unequivocally proved that the result of the correlation analysis is statistically significant and therefore we reject the hypothesis  $H_0$  and accept  $H_1$  hypothesis.

The results are shown in the scatter graph in which is clearly demonstrated how the examined variables correlate together positively. It shows us the direction and slope of the regression line.

Graph 3 Scatter graph of relationship of GDP and written premiums in life insurance



Source: own processing

## Conclusion

Based on the analyses carried out to assess the level of the insurance market and the Slovak economy for the period of 10 years and results arising from the processed correlation analysis it can be argued that there is a strong positive linear relationship between the economic development of the country and development of its insurance market.

## Súhrn

Článok sa zaoberá analýzou ekonomickej vyspelosti a jej korelácie s rastom poisťného trhu. Analýze sme podrobili ekonomiku a poisťný trh Slovenskej republiky. Ekonomika krajiny bola charakterizovaná cez HDP a poisťný trh cez viacero ukazovateľov vychádzajúcich z predpísaného poisťného. Pre lepšie porovnanie sme si pre analýzu vybrali obdobie 10 rokov.

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## **APPLICATION OF CAPM AND BUILD UP MODEL ON RISK AND COST OF EQUITY VALUATION IN THE SLOVAK FOOD INDUSTRY**

### **APLIKÁCIA MODELOV CAPM A BUILD UP MODEL PRI OCENENÍ RIZÍK A VLASTNÉHO KAPITÁLU PRE POTRAVINÁRSKY PRIEMYSEL NA SLOVENSKU**

***Abstract:** The economic environment and internal situation of individual companies keep developing and changing. Business decisions are often made with incomplete information under conditions of uncertainty. It is important for the effective process of corporate governance to define the degree of uncertainty, to identify possible risks and by using modern methods and models to quantify and eliminate them. The aim of this paper is to analyse the impact of risks on the enterprise performance in the period of 2004 - 2014 by creating the novel Enterprise Risk Model. The method of this paper is based on the methodology of Capital Asset Pricing Model in comparison with the Build-up Model used for the valuation of the Cost of Equity and its application to Slovak food conditions. For the realization of risk analysis, we used and compared the secondary data from food sectors. We were confirmed by testing the hypotheses that the influence on the enterprise performance of purely systematic risks is lower than the influence of business and financial risks and consequently the impact on the Cost of Equity evaluated with application of business and financial risks was higher than the Cost evaluated only with the application of systematic risks. We conclude that the financial risk to worsen the position of analysed enterprises is the risk which is derived from the indicator of Debt Service Coverage Ratio. Finally, we constructed a new 3 - dimensional Enterprise Risk Models according to suitable for Slovak food conditions.*

**Key words:** risks, CAPM, Build Up Model, Enterprise Risk Model

**Kľúčové slová:** riziká, CAPM, Build Up Model, Enterprise Risk Model

**JEL:** C51; C52; C53; G32; D81

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## **Introduction**

Every activity which is realized in the company, is a particular risk for the company's survival in the market. The risk category affects business performance. Companies constantly undergo some risks in the financial, business or personal sphere.

There are differing views on the definition of risk from historical but also current perspective. Domestic and foreign professional literature provides various definitions. There is no universally accepted definition of risk and the next part of the article deals with is focused on some of them.

Risk represents uncertainty in which we are able, using different methods (especially statistics), to quantify the probability of diversion of actual conditions, processes or results from the expected values. In theory, risk is understood as the possibility of positive or negative diversion. In practice, we understand risk only as a negative possibility. In different spheres of economic life there are different objects risk. (Vlachynský, et al., 2012, p. 381).

The term risk comes from Arabic, in which it expresses an unexpected event. According to Cunderlík (in Majtan, 2007) „risk” is an expression of uncertainty in various forms and articulations. Risk is understood as the state of imperfect knowledge, when the decision-making subject is aware of different possible outcomes of his or her decision and can assess the level of probability that one or another outcome will happen (Buganova et al. 2012). Enterprises continually take certain risks, either financial, business, information or personal. As Fetisovova, Vlachynsky and Sirotko (2004) state, it is necessary while making any financial decision to consider not only its profit but also a risk. One of the most important limits, which marks a manoeuvring room of financial decision-making is a risk (Marinic 2008). It is especially important when making long-term financial decisions. Risk is a chance to reach above - average return on investment (Klucka 2006). Risk is the higher, the more possible it is that an actual outcome may divert from the expected, in both, positive or negative direction (Marik 2011).

Risk is a category that affects enterprise existence and performance worldwide (Koscielniak, 2014). No economic subject or enterprise can predict the results of financial, investment or other decisions in entrepreneurship because every activity is risky on global markets. In the classification of enterprise risks in global market conditions, it is necessary to pay attention to the risks that come into capital pricing models and calculating costs of equity and subsequently in the calculation of models of enterprise performance. For calculation of discount rate for the valuation of the enterprise and its performance, it is necessary to define the main risks of business activities. In this paper, we focus on empirical risk analysis in enterprise activities and especially risks, that come into the valuation of the Cost of Equity in models and consequently into the calculation of the enterprise's performance.

Risks will be divided as follows (Marik et al, 2011):

- business and financial risks, that are necessary to be known in the case, when we summarize the input for the valuation of the Cost of Equity with the application of the particular partial risks,
- systematic and unsystematic risks on the market, which are necessary to be

known in relation to the purpose, that the valuation is being made for and to the model, that is used for assessment. Systematic risks were represented as beta coefficient, which has been modified in this paper. The second group of risks represented risks arising from the internal enterprise environment as unsystematic risks. These risks were investigated in many empirical studies by Neumaier and Neumaierova (2002); Klucka (2006); Olibe et al. (2008); Lopez-Espinosa et al. (2013); Vicente et al.(2015).

Business risk consists of Marik et al. (2011); Oscatka (2013):

- sector risk – dynamics of the sector, sector dependence on the business cycle, innovation potential of the sector, determining trends in the sector,
- risk of the market on which the business operates - market capacity, risk of achieving lower sales, the risk of market penetration,
- risk of competition – competition and competitiveness of the products, prices, quality, research and development, advertising and promotion, distribution and service,
- management risk – vision, strategy, key employees, organizational structure,
- risk of the production process – evaluation in terms of production risk, technological opportunities of production, labour force, suppliers,
- other business risk factors – level of fixed costs, position of the business towards customers and suppliers, entry barriers into the sector.

Financial risk (Marik et al. 2011) is evaluated through known indicators: Indebtedness, Interest Coverage, Debt Service Coverage Ratio, Enterprise safety indicator, Current ratio or Quick ratio, Average Collection Period, Inventory Turnover.

CAPM and Build - Up Models are, in current practice, among the most frequently applied models to calculate the Cost of Equity. The basis of both models and approaches is the same that is an attempt to detect the impact of external and internal risks on enterprise's productivity in the most exact way.

Modern academic finance is built on the proposition that markets are fundamentally rational. The foundational model of market rationality is the Capital Assets Pricing Model. In capturing the idea that markets are inherently rational, the CAPM has made finance an appropriate subject for econometric studies. Industry has come to rely on the CAPM form determining the discount rate for valuing investments, for valuing the firm itself, and for setting sales prices in the regulation of utilities, as well as for such purposes as benchmarking fund managers and setting executive bonuses linked to adding economic value (Dempsey, M. 2013). Mehrling (2007) recounts the first major step in the development of modern finance theory as the "efficient market hypothesis", followed by the second step, which as the CAPM. Capital Asset Pricing Model is nowadays, despite all the problems which it incorporates, the basic model for estimating the Cost of Equity (Marik 2011).The Cost of Equity is an appropriate input for market valuation of business. Calculating the Cost of Equity, CAPM is not used in its original format as it was processed by Treynor (1961, 1962), Sharpe (1964) and Lintner (1965).



The premise of the World CAPM method is that the cost of equity capital is dependent on an investment's impact on the volatility of a well-diversified portfolio. The formula for the World CAPM model is as follows:

$$\text{Cost of Equity} = \text{Risk Free Rate of Return} + \beta \cdot \text{World Risk Premium} \quad (1)$$

Mehring (2007), Fama and French (2004), Black (1972) presents the model formally, as:

$$E(r_i) = r_f + \beta \cdot [E(r_m) - r_f] \quad (2)$$

where:

$E(r_i)$  – Expected Return on the Capital Assets,

$E(r_m)$  – Expected Return of the Market,

$[E(r_m) - r_f]$  – ERP (Equity Risk Premium),

$r_f$  – Risk free Rate of Return,

$\beta$  – measures the asset's individual exposure to market risk, is the sensitivity of the expected excess asset returns to the expected excess market returns.

Modifications of CAPM for the Slovak market are presented in Table 1.

Tab 1 Modification of CAPM

<i>Model</i>	<i>Calculation</i>	<i>Description</i>
CAPM Historical	$E(r_i) = r_f + \beta \cdot [E(r_m) - r_f]$ <i>E(r<sub>i</sub>) – Expected Return on the Capital Assets</i>	Jack Treynor (1961, 1962), William Sharpe (1964), John Lintner (1965a, 1965b) and Jan Mossin (1966) published articles about CAPM. These articles were based on the theory of Harry Markowitz, which dealt with the diversification of risk.
CAPM <sub>CRP</sub>	$r_e = r_f + \beta \cdot ERP_{US} + CRP$ <i>r<sub>e</sub> – rate of Equity</i> <i>ERP<sub>US</sub> – US Equity Risk Premium</i> <i>CRP – Country Risk Premium</i>	Model for national markets according to Prof. Damodaran modified by CRP – Country Risk Premium.
CAPM <sub>βλ</sub>	$r_e = r_f + \beta \cdot (ERP_{US}) + \lambda \cdot CRP$ <i>λ – coefficient, which captures different exposures to Country Risk</i> <i>(λ = % of revenues domestically<sub>firm</sub> / % of revenues domestically<sub>avgfirm</sub>)</i>	Model of Prof. Damodaran based on incorporation of CRP into valuation of the Cost of Equity provided that some enterprises have different risk factors in case of country risk's valuation. It is especially true when income of the valued enterprise comes from other than domestic markets.
CAPM <sub>R</sub>	$r_e = r_f + \beta \cdot (ERP_{US}) + CRP + R_2 + R_3 + R_4 + R_5$ <i>R<sub>2</sub> – risk premium for market capitalization</i> <i>R<sub>3</sub> – risk premium for limited stock liquidity on the market</i> <i>R<sub>4</sub> – risk premium for enterprises with uncertain future</i> <i>R<sub>5</sub> – risk premium for specific risks</i>	Acceptance of only systematic risks is a main deficiency of CAPM, and that is why it is possible to add aggregate risk premiums concerning small enterprises of lower stocks liquidity and other risk premiums to Damodaran's model. (Marik 2011, Petrik 2009)

Source: Authors' processing based on Damodaran (2014a), Damodaran (2014b), Marik (2011), Petrik (2009)

In cases when it is not possible to apply CAPM, it is suitable to apply Build - Up method. Those are the cases, when we have problems with the calculation of the coefficient  $\beta$ . Build - Up method is an empirical method of estimation of the expected rates of return on equity. It is a typical German approach to the Cost of Equity valuation. Main differences of these two approaches are the following: Build - Up method does not involve coefficient  $\beta$ , it is based on subjective not market risk assessment, it covers higher number of risks, and that is why it is more complex (Vochozka and Mulac, 2012). Calculated interest rate provided by the Build-Up method, similarly to the CAPM (Capital Asset Pricing Model) method, involves risk free interest rate (mostly the rate of return of the government bonds) and specific risk premiums.

The Build - Up method can be algebraically expressed as follows:

$$E(r_i) = r_f + RP \quad (3)$$

where:

- $E(r_i)$  – expected return on the capital asset,
- $r_f$  – risk free rate of return,
- $RP$  – risk premium consisting of various factors, which can be divided into factors of business risk (factors of risks of the market where the subject performs, factors connected with the size of an enterprise and other specific factors) and factors of financial risks (risk of cash-flow fluctuation).

In practice, several variations of the Build - Up method exist. Neumaierova and Neumaier (2002) proposed Build - Up I model and Marik et al. (2011) Build - Up II model as the modifications of the valuation of the Cost of Equity, which can better correspond with market conditions in the Czech Republic and the Slovak Republic.

In Table 2, we present three most used Build - Up models for calculating the Cost of Equity.

Tab 2 Modification of Build - Up model

<i>Model</i>	<i>Description</i>
<b><i>Build – Up of Garnett and Hill</i></b>	Garnett and Hill’s complex Build-Up method (linear model) is the first version of the Build-Up model. This model recognizes 36 risk factors, which are divided into 4 groups of business risks and 1 group of financial risk factors, that is: market risks (12 factors), production risks (6 factors), sector risks (4 factors), management risks (6 factors), and financial risks (8 factors).
<b><i>Build - Up I (BUI)</i></b>	$r_e = r_f + r_o + r_{fi}$ <p><i>r<sub>e</sub></i> – rate of Equity, <i>r<sub>f</sub></i> - Risk free rate of return, <i>r<sub>o</sub></i>- Business risk, <i>r<sub>fi</sub></i>- Financial risk</p> <p>Marik et al. (2011) proposed the Build-Up model, which evaluates 32 risk factors. These risk factors are divided in two categories: business and financial risks. Business risks introduce six areas of assessment: factors of risk at the level of the industry branch, the level of market factors, competition level, risk management level, production level, as well as other factors related to the production margins. Financial risk is evaluated by application of 7 risk factors - Interest Coverage, Indebtedness, Debt Service Coverage Ratio, enterprise safety indicator, current ratio, average collection period, inventory turnover. This model accepts systematic and unsystematic risks.</p>

<p><b>Build - Up II (BU2)</b></p>	$r_e = r_f + r_{business} + r_{finstr} + r_{finstab} + r_{LA}$ <p><i>r<sub>f</sub></i> - Risk free rate of return, <i>r<sub>business</sub></i> - Risk premium for business risk,  <i>r<sub>finstab</sub></i> - Financial risk premium, <i>r<sub>finstr</sub></i> - Risk premium for the capital structure  <i>r<sub>LA</sub></i> - Risk premium for lower stocks liquidity</p> <p>Gradual Counting Risk Premium Model of Neumaierova and Neumaier (2002) do not take into consideration external, macroeconomic risks. The model accepts internally unsystematic risks of the enterprise, which are set using fundamental factors. Risks which are accepted: financial, business, capital structure and lower stocks liquidity on the market. Likewise, it accepts the risk free rate of return of 10-year government bonds of the Slovak Republic. This model accepts only unsystematic risks.</p>
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Source: Authors' processing based on Marik (2011); Petrik (2009)

### **Methodology, methods and data used**

In this empirical study, we examine by the application of two models – CAPM and the Build-Up Method – whether systematic risks have higher influence on the Cost of Equity than unsystematic risks and whether these risks influence the performance of selected food enterprises, which is done with the application of ERM – Enterprise Risk Model.

The objective of this study is to analyse risks using two approaches based on the methodology of Capital asset pricing model (CAPM) in comparison with Build – Up Model (Marik et al, 2011) and its application on Slovak food conditions. And subsequently, to create risk models which solve the impact of risks on the enterprise financial performance and can reduce, diversify and predict risks. We investigate the difference how systematic and unsystematic risks affect enterprise performance. Part of the objective was to analyse selected systematic and unsystematic risks in the selected sector in the Slovak Republic (food sector).

The first partial goal was the valuation of Cost of Equity with application of selected risks and the comparison of the reached results with the goal to emphasize the impact of the risks on the selected sector of industry (food industry). The second partial goal was the creation of 3-dimensional Enterprise Risk Model (ERM1 and ERM2) for an enterprise in the food industry based on Slovak conditions.

In the line with the main goal the research hypotheses in this study are as follow:

#### **Hypothesis 1 (H<sub>1</sub>):**

*We suppose that the systematic risks which are applied to calculation of the Cost of Equity in CAPM, will have less impact on the enterprise performance than business and financial risks in the Build Up model by Marik.*

#### **Hypothesis 2 (H<sub>2</sub>):**

*We suppose that the valuation of the Cost of Equity with application of systematic risks using the methodology based on CAPM Damodaran modification will be lower*

than the valuation with the application of business and financial risks using the methodology based on Build Up Model by Marik.

For the creation of Enterprise Risk Model (ERM), secondary data from the financial statements of selected enterprises in the food industry (POTRAV, 2015) from the years 2004 – 2014 were used.

**3-dimensional ERM1** consists of selected indicators:

- *financial indicators* (Current Ratio, Average Collection Period, Turn around Liabilities, Cash – to – cash, Debt Equity Ratio, Return of Assets, Return of Equity, Stability),
- *systematic risks* (Levered  $\beta$ , Equity Risk Premium, Country Risk Premium, Total Risk Premium),
- *prediction models* (Altman Model, Index IN05, Index creditworthiness, Taffler Model, Springate Model, Fulmer Model, Balance sheet Analysis by Doucha I, Quick test).

**3-dimensional ERM2** consists of selected indicators:

- *financial indicators* (Current Ratio, Average Collection Period, Turn around Liabilities, Cash – to – cash, Debt Equity Ratio, Return of Assets, Return of Equity, Stability),
- *systematic and unsystematic risks* (business and financial risks according Marik et al. 2011),
- *prediction models* (Altman Model, Index IN05, Index creditworthiness, Taffler Model, Springate Model, Fulmer Model, Balance sheet Analysis by Doucha I, Quick test).

For the creation of the three-dimensional models (ERM1 and ERM2), scoring method was used. The best values of financial indicators were ascribed maximum of 5 points, other financial indicators were given points based on their positive increasing or decreasing development. Maximum total score of the dimension of financial indicators was 40 points. The same method was also used for the conversion of acquired values of prediction models and the maximum total score of the prediction models' dimension was 40 points.

For the conversion of the risk score, we work on the assumption that the lowest value of risk will reach the highest score.

For the model ERM1, the total score of the dimension of systematic risks was reached by the summation of the score valuation of the coefficient  $\beta$  – levered (the lowest acquired value was 20 points and the rest was converted by the principles of the scoring method) and the score of the Total Risk Premium (the score was converted on the basis of the assumption that the lowest value of 0.05 was reached by Germany and Austria and we ascribed this score 20 points; acquired score of the given indicator for the Slovak Republic was converted with the help of the scoring method).

For the model ERM2, the dimension of systematic and unsystematic risks was the summation of business risks' score (determined optimal value of 5 was ascribed maximum of 30 points and the reached values for ERM2 were converted on the basis of the scoring method principles) and financial risks' score (optimal values were ascribed maximum of 10 points and the reached values for ERM2 were converted on the basis of the scoring method principles). Maximum total score of the three-dimensional models (ERM1 and ERM2) was 120 points while each dimension could reach maximum of 40 points.

## Results and discussion

The following section of the report contains input values of selected variables to build the model ERM. In table 3 we can see the development of business and financial risks and Cost of Equity by Marik.

Tab 3 Development of business and financial risks and Cost of Equity (in %) by Marik

<i>Indicators</i>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<i>r<sub>f</sub></i>	4.22	4.39	4.70	4.02	2.21	3.84	3.29	1.88	1.76	3.04	2.17
<i>Business Risk</i>	6.47	6.52	6.60	6.41	5.55	6.35	6.14	5.30	5.20	6.03	5.52
<i>Financial Risk</i>	3.62	3.62	3.61	3.62	3.56	3.62	3.61	3.53	3.51	3.60	3.55
<i>Cost of Equity</i>	<b>14.3</b>	<b>14.5</b>	<b>14.9</b>	<b>14.1</b>	<b>11.3</b>	<b>13.8</b>	<b>13.0</b>	<b>10.7</b>	<b>10.5</b>	<b>12.7</b>	<b>11.3</b>

Source: own processing

For the valuation of the Cost of Equity with systematic risks we apply the CAPM model (Damodaran, 2014). Necessary inputs are shown in the Table 4.

Tab 4 Development of systematic risks and the Cost of Equity by Damodaran (in %)

<i>Indicators</i>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<i>Unlevered <math>\beta</math></i>	0.50	0.50	0.61	0.66	0.63	0.69	0.72	0.47	0.71	0.66	0.82
<i>D/E</i>	22.03	27.28	22.39	19.46	35.37	29.31	27.62	26.81	27.42	28.74	21.46
<i>Levered <math>\beta</math></i>	0.58	0.61	0.72	0.77	0.80	0.86	0.87	0.58	0.87	0.77	0.97
<i>ERP</i>	4.84	4.80	4.91	4.79	5.00	4.50	5.00	6.00	5.80	5.00	5.70
<i>CRP</i>	1.43	1.20	1.05	1.05	2.10	1.35	1.28	1.28	1.50	1.28	1.28
<i>r<sub>f</sub></i>	4.22	4.39	4.70	4.02	2.21	3.84	3.29	1.88	1.76	3.04	2.17
<i>Cost of Equity</i>	<b>8.46</b>	<b>8.52</b>	<b>9.29</b>	<b>8.76</b>	<b>8.31</b>	<b>9.06</b>	<b>8.92</b>	<b>6.64</b>	<b>8.31</b>	<b>8.17</b>	<b>8.98</b>

Source: own processing

## ENTERPRISE RISK MODEL (ERM)

To prove the hypotheses  $H_1$  and  $H_2$ , we created the Enterprise Risk Model in two versions. Model ERM1 evaluates the impact of systematic risks and model ERM2 evaluates the influence of business and financial risks according to Marik. The impact of systematic risks is lower and reaches the value around 34.45 points on average, while the impact of business and financial risks is higher and reaches the value of 26.18 points on average. We can conclude that the influence of purely systematic risks is lower than the influence of business and financial risks, which represent the combination of systematic and unsystematic risks, what proves Hypothesis  $H_1$ . The difference of given values in points represents the influence of unsystematic risks, which is 2.32 points. This confirms the hypothesis  $H_2$ . The total valuation of the performance by the model of ERM1 (SCORE) is given in the Table 5. It is obvious from this table that the performance and success development of the analysed enterprises grows, while the systematic risks stay at the approximately same level. If we compare for example years of 2004 and 2013, the level of systematic risks is lower by 0.16 points, but if we compare years 2013 and 2014, we can see a decrease of 5.85 points. This growth in 2013 was caused by the growth of systematic risk –  $\beta_L$  and decrease in 2014 was caused by significant increase of systematic risk –  $\beta_L$  (4.1 points) and slight decreases of Risk premium. The rise of this coefficient was caused by the growth of indebtedness of the analysed enterprises. The market risk (ERP) slightly increased, but the country risk premium (CRP) dropped. Consequently, it was expressed by overall slight decrease of systematic risks.

Tab 5 Development of the indicators in the model ERM1

Year	<i>RISKS</i>	<i>FINANCIAL PERFORMANCE</i>	<i>P - MODELS</i>	<i>SCORE</i>
2004	35.95	32.61	31.56	100.12
2005	36.67	33.28	26.94	96.89
2006	36.78	34.76	28.04	99.58
2007	36.99	33.60	28.85	99.44
2008	33.21	32.03	27.62	92.86
2009	34.88	36.72	32.57	104.17
2010	33.51	33.13	25.90	92.54
2011	33.74	33.92	28.81	96.47
2012	31.28	36.53	33.52	101.33
2013	35.79	37.88	34.45	108.12
2014	30.10	37.08	31.99	99.17

Source: own processing

We constructed the model ERM2 with the application of business and financial risks. During the analysed period, more significant improvement of financial risks from the value of 7.06 % to the value of 3.55 % appeared. The only financial risk to worsen the position of analysed enterprises is the risk which is derived from the indicator of Debt Service Coverage Ratio. Improvement appeared in the field of risks dependent on the indicators of Indebtedness, Interest Coverage, Current Ratio and Inventory Turnover. Improvement expressed in points was 4.57 points. Model ERM2 is depicted in Table 6.

Tab 6 Development of the indicators in the model ERM2

<b>Year</b>	<b>RISKS</b>	<b>FINANCIAL PERFORMANCE</b>	<b>P - MODELS</b>	<b>SCORE</b>
<b>2004</b>	24.07	32.61	31.56	<b>88.24</b>
<b>2005</b>	23.99	33.28	26.94	<b>84.21</b>
<b>2006</b>	23.90	34.76	28.04	<b>86.70</b>
<b>2007</b>	24.30	33.60	28.85	<b>86.75</b>
<b>2008</b>	27.64	32.03	27.62	<b>87.29</b>
<b>2009</b>	24.74	36.72	32.57	<b>94.03</b>
<b>2010</b>	25.31	33.13	25.90	<b>84.34</b>
<b>2011</b>	29.15	33.92	28.81	<b>91.88</b>
<b>2012</b>	29.84	36.53	33.52	<b>99.89</b>
<b>2013</b>	26.37	37.88	34.45	<b>98.70</b>
<b>2014</b>	28.64	37.08	31.99	<b>97.71</b>

Source: own processing

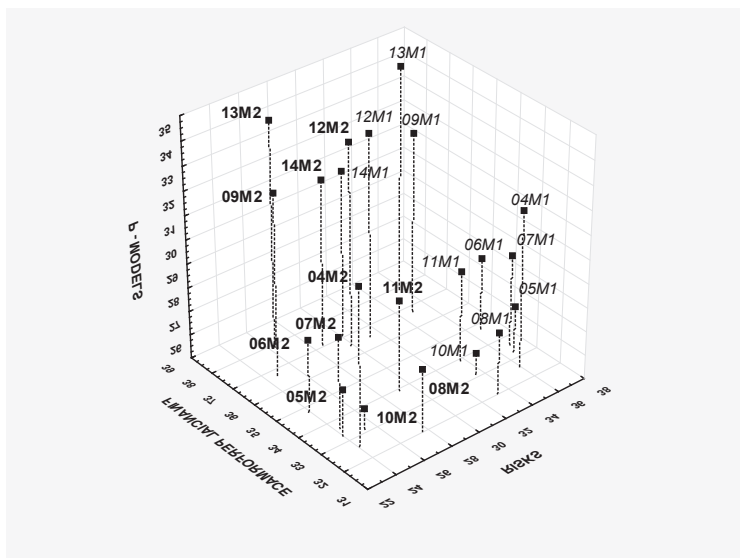
Based on the comparison of models ERM1 and ERM2 we can see that there is a difference in each of the analysed years while obviously the best position is taken by the enterprises in the model ERM1. In 2013, they reached the average values of 108.12 points, while this position is better by 9.42 points than the position in model ERM2. This proves that the impact of systematic risks on the performance of an enterprise is lower than the impact of unsystematic risks according to Marik.

We can see that the values of systematic and unsystematic risks approximate to each other in 2012. In this case, the difference in their values was 1.44 points, which we can ascribe to the influence of unsystematic risks. In 2014, the highest value of these risks was reached, especially thanks to business risks, which were positively influenced by the low value of risk free return at 1.76 %. In 2013, the development of risks went towards the improvement of systematic risks thanks to ERP which reached the value of 5 %, what was at the level of the value of emerging markets. CRP reached the value of 1.28 % and coefficient  $\beta_L$  reached the value of 0.97.

In 2013, the deterioration of unsystematic risks came in spite of the significant improvement of financial risks. Deterioration of development was caused by the business risks, what was also caused by the value of risk free return and by the deterioration of the position of analysed food enterprises in the market of the Slovak Republic. Final comparative matrix of the models ERM1 and ERM2 is depicted in Figure 1.



Fig 1 Enterprise Risk Models



Source: own processing in programme STATISTICA

*In Figure 1 are displayed Enterprise Risk Models (ERM1 and ERM2). Each model consists of 3 - dimensions: X - Risks, Y - Financial indicators, Z - Prediction models.*

*There are models:*

- *ERM1 - in the form of YYM1, where YY is the last two numbers of the year (for example 04 for year 2004) and M1 is acronym for model ERM1,*
- **ERM2** - *in the form of YYM2, where YY = the last two numbers of the year (for example 04 for year 2004) and M2 acronym for model ERM2.*

## Conclusion

We can conclude that the modified model CAPM, which we applied to national market, is the only global, effective pricing model, which is accepted in current corporate practice of the Slovak Republic. Though, it does not mean that the application of this model is absolutely uncomplicated. This model is the most suitable for publicly traded enterprises, which is in itself a precursor for problems with the valuation of the Cost of Equity of enterprises which perform in the Slovak Republic. Nevertheless, in the conditions of the Slovak market and of the enterprises which perform there, it is possible to apply certain modifications of this model.

We can summarize the presented facts and results of the empirical study in following points:

1. CAPM modified for the national market is highly suitable and the most used model for the valuation of the Cost of Equity. Inputs based on historical data are its significant drawback.
2. For the completing of unsystematic risks, the variation of CAPM with added aggregated risks is suitable, e.g. in the case of food industry, it is desirable to complement the risks of the calculation of the Cost of Equity by the financial risks.
3. Specific aggregate risks are the results of detailed financial and business analysis of the enterprise, sector, which should be a part of the Cost of Equity and risks, which enter this valuation.
4. Build - Up model is a method different from CAPM by the fact that it does not accept the coefficient  $\beta$ , what can be considered in the case of food industry as negative based on the found results, because the coefficient  $\beta$  is below the value of 1.
5. The benefit of the Build - Up model is based on the fact that it comes from subjective data with the prediction into the future and respects specific unsystematic risks of each enterprise, sector. Isolation from market risks is its drawback.
6. Build - Up model is highly suitable addition to CAPM, which quantifies systematic as well as unsystematic risks without the quantification of the coefficient  $\beta$ .
7. Based on these facts, we would recommend the CAPM adjusted by the prognosis of the coefficient  $\beta$ , TRP and specific unsystematic risk of the particular analysed enterprise, sector. This way, the CAPM model will be a model that respects systematic as well as unsystematic risks and is not based only on historical data.

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