

## **Method of Semantic Differential in the Research from the Field of Marketing Communication**

**Dagmar Markechová**

Department of Mathematics, Faculty of Natural Science  
Constantine the Philosopher University in Nitra  
SK-949 74 Nitra, Slovakia  
E-mail: [dmarkechova@ukf.sk](mailto:dmarkechova@ukf.sk)

**Martina Bégerová**

Department of Media Communication and Advertising, Faculty of Arts  
Constantine the Philosopher University in Nitra  
SK-949 74 Nitra, Slovakia  
E-mail: [mbegerova@ukf.sk](mailto:mbegerova@ukf.sk)

**Eva Fandelová**

Department of Media Communication and Advertising, Faculty of Arts  
Constantine the Philosopher University in Nitra  
SK-949 74 Nitra, Slovakia  
E-mail: [efandelova@ukf.sk](mailto:efandelova@ukf.sk)

**Corresponding Author:**

**Anna Tirpáková**

Department of Mathematics, Faculty of Natural Science  
Constantine the Philosopher University in Nitra  
SK-949 74 Nitra, Slovakia  
E-mail: [atirpakova@ukf.sk](mailto:atirpakova@ukf.sk)

### **Abstract**

*The aim of this article is to present the application of semantic differential method in evaluating a research project from the area of marketing communication.*

**Key words:** *semantic differential method, the Kruskal-Wallis test, Wilcoxon's tests, program STATISTICA*

**JEL classification:** C14

## 1. Introduction

In years 2011-2012 a research, in which perception of social responsibility in general and perception of corporate social responsibility on college students was studied, was realized at the Department of Media Communication and Advertising of Constantine the Philosopher University in Nitra. Questions of socially responsible behavior (CSR - Corporate Social Responsibility) started to be monitored both theoretically and experimentally in the early 90's of the previous century.

At present there is a clear change in the focus of companies, namely from paradigm of economic growth based on the uncontrolled free market paradigm, which emphasizes more proactive role of the companies in the development process focused on the harmonization of economic growth with environmental sustainability and social cohesion ([4]).

Mentioned business activities are focused on creating a positive image of the company, brand or the product (good will) and are oriented on the target consumer groups as well as other stakeholders. Sensitivity of public to socially responsible business activity is currently very high, that is why business entities are beginning to pursue actively the questions of CSR regardless their size or the sector in which they operate. In addition to the ability and willingness to be involved in the community and support the development of the company it is also very important to keep the firm's stakeholders informed about their activities. Without communication and without public awareness of the social responsibility of companies CSR would only represent unproductive costs for companies without affecting whether this business is perceived as socially responsible or not ([4]). For this reason, the focus of our research is current, since the research monitors important consumer segment - the college students.

In paper [9] we presented partial evaluation of the results of the above mentioned research, and we focused on identifying the differences in the perception of social responsibility between men and women. The research sample gives us more options in the analysis of research data depending on the study program of the respondents. In the research hypothesis we will further assume that the sense of social responsibility perception and CSR firms are affected by study program of the respondents. In doing so, we used longitudinal ontogenetic examinations ([13, 14]).

The aim of the present paper is to present the evaluation of results of this research project using the semantic differential method and to interpret the obtained results.

## 2. Characteristics of the applied methods and the research sample

Within the process of data gathering the method of semantic differential by authors Osgood, Suci a Tannenbaum was used ([10]). This method was originally developed to measure the significance of connotative terms, later its use was extended in the humanities and social sciences for the examination of social perception, mental and social representations. Currently, the method of semantic differential is used also in market research, public opinion surveys, advertising and in other areas. The application of this method to measure the attitudes is also popular, while there are various modifications of the original procedure. There are often used evaluation scales called polar profile in marketing research, too.

In the presented research, we assessed the concepts of corporate social responsibility (denoted A) and socially responsible behavior of companies and organizations (denoted B) by the method of semantic differential. We proceeded as follows. At first, we compiled a semantic differential which consisted of the following 30 seven-point scales: 1. altruistic – egoistic; 2. cooperative – competitive; 3. prosocial – hostile; 4. empathetic – non empathetic; 5. sensitive – insensible; 6. natural – artificial; 7. moral – depraved; 8. caring – careless; 9. helpful – selfish; 10. fair – unfair; 11. responsible – neglectful; 12. voluntary – compulsory; 13. easy – difficult; 14. different – alike;

15. cultural – barbarous; 16. correct – incorrect; 17. fast – slow; 18. moderate – wild; 19. active – passive; 20. good – bad; 21. white – black; 22. nice – ugly; 23. merciful – cruel; 24. valuable – worthless; 25. clean – dirty; 26. soft – hard; 27. honest – despicable; 28. gentle – rude; 29. beautiful – ugly; 30. brave – cowardly. Individual scales consist of pairs of bipolar adjectives. In doing so, we modified the list of adjectives proposed by Osgood, some of those suggested by Osgood were omitted and others were added. There were 332 respondents involved in the research. Their task was to indicate on a scale to what extent the term is associated with these adjectives. As some respondents did not fill in the semantic differential properly - indication of some scales was missing - the final number of respondents is smaller, we took into account the results of 320 respondents. Respondents were students in Nitra studying Ethics or Mass Media Communication, and students of SPU studying Economics and Management. The aim of the research project was to compare how students of various study programs perceive the above terms. Therefore, we divided respondents into four groups according to their study program.

For the statistical evaluation of the semantic differential data we used non-parametrical test methods, statistics which characterizes the distance in understanding the concepts and Q-correlation. Calculations were made in programs EXCEL and STATISTICA.

### 3. Baseline data and basic numerical characteristics of the semantic differential

Calculated average values for individual scales of the semantic differential are provided in Table 1. We added a column of values  $d_i^2$  to the table ( $d_i$  is the difference in the average values of the  $i$ -th scale) that will be needed for further data analysis of the semantic differential, and a row of the sums. For all four files, we calculated numerical characteristics of the semantic differential, which are the arithmetic averages (denoted  $\bar{x}_A$  resp.  $\bar{x}_B$ ), dispersions (denoted  $\sigma_A^2$  resp.  $\sigma_B^2$ ) and standard deviations (denoted  $\sigma_A$  resp.  $\sigma_B$ ). We obtained the following results:

#### 1<sup>st</sup> file - Students of the Ethics study program:

$$\bar{x}_A = 2,90; \bar{x}_B = 4,32; \sigma_A^2 = 0,40; \sigma_B^2 = 0,15; \sigma_A = 0,63; \sigma_B = 0,39$$

#### 2<sup>nd</sup> file – Students of the Economics study program:

$$\bar{x}_A = 3,50; \bar{x}_B = 3,97; \sigma_A^2 = 0,19; \sigma_B^2 = 0,17; \sigma_A = 0,44; \sigma_B = 0,41$$

#### 3<sup>rd</sup> file - Students of the Mass Media Communication and Advertising study program

$$\bar{x}_A = 2,73; \bar{x}_B = 3,83; \sigma_A^2 = 0,41; \sigma_B^2 = 0,15; \sigma_A = 0,64; \sigma_B = 0,39$$

#### 4<sup>th</sup> file - Students of the Management study program

$$\bar{x}_A = 3,35; \bar{x}_B = 3,85; \sigma_A^2 = 0,24; \sigma_B^2 = 0,16; \sigma_A = 0,49; \sigma_B = 0,40$$

## 4. The analysis of semantic differential data

### 4.1. Testing of statistical significance of differences in the understanding of concept A respectively of B among the observed groups of students of study fields

Firstly, we verify an assumption that students of observed study fields perceive a concept of social responsibility (concept A) respectively concept of socially responsible behavior of companies and organizations (concept B) differently by statistical testing. Tested hypothesis is the hypothesis  $H_0$  that among the observed groups of students there is no difference in the perception of a concept A (resp. of B). Since assumption about normal distribution is not justified, we tested the hypothesis by the Kruskal-Wallis test. We chose a significance level  $\alpha = 0,05$ . The calculations were realized in computer program STATISTICA. We obtained results presented in Table 2.

We evaluate the test based on the calculated  $p$ -values.  $p$ -value is the probability of committed error if we reject the tested hypothesis  $H_0$ . If this probability is less than 0.05, we reject the tested hypothesis  $H_0$  at the chosen level of significance  $\alpha = 0,05$ . Since in the case of the concept A is  $p$ -value less than 0.05, we reject the tested hypothesis  $H_0$  in favor of the alternative hypothesis. Probability of error which we hereby commit is almost zero (almost, because this value is rounded). By that, it is statistically demonstrated that students of observed study fields perceive the concept of social responsibility differently.

In the case of concept B  $p$ -value is bigger than 0.05. Therefore we do not reject the tested hypothesis. This means that the perception of social responsibility of companies and organizations by students of observed study fields is different. The observed differences among the observed fields of study are not statistically significant.

The subject of further analysis was to determine which groups of students are statistically significantly different in the perception of social responsibility. We test the null hypothesis that the two observed sets come from the same basic set, or in other words, the hypothesis that the distribution functions of the distribution of both sets are the same. An alternative hypothesis is the hypothesis that the two distribution functions are distributed differently. We performed the testing by the use of the Kruskal-Wallis test, in this case we tested contrasts. The calculations were realized in STATISTICA. We obtained the results listed in Table 3.

Testing of contrasts was evaluated again based on the calculated  $p$ -values. From  $p$ -values shown in the table it is obvious that the differences in the perception of social responsibility are not statistically significant among students of Ethics and Mass Media Communication and Advertising. The same situation applies to students of Economics and Management. In other cases, the  $p$ -value is less than 0.01, which in these cases demonstrated statistically significant difference in the perception of social responsibility.

#### **4.2. Testing of statistical significance of differences in the perception of concepts A and B among students of study fields**

Further, we wanted to know whether there is a statistically significant difference in the perception of observed concepts among the students of individual study fields. Tested hypothesis is the hypothesis  $H_0$  that students of a given field of study perceive the concepts A and B in the same way. We tested the hypothesis using Wilcoxon one-sample test. The calculation was conducted in the program STATISTICA. In the computer output reports we received the results presented in Table 4.

In the first column there are stated the observed selection samples, in the second column there are the ranges of the selection samples, in the other two columns there are the values of the test statistics and in the last column of the table there are the calculated  $p$ -values. In all cases, the  $p$ -value is approximately 0 (approximately because the numbers are rounded to six decimal places). Therefore, the tested hypothesis  $H_0$  is rejected on the arbitrary small level of significance. Probability of error which was hereby committed is almost zero. It has thus been statistically demonstrated that students of the observed fields of study perceived concepts A and B differently.

### 4.3. Determination of the distance between the concepts

The distance between the concepts  $A$ ,  $B$  can be assessed by Reiterová ([11]) by statistics  $D_{AB}$ , which is defined by the formula  $D_{AB} = \sqrt{\sum_{i=1}^k d_i^2}$ , where  $d_i$  is the difference of the average values in the  $i$ -th scale. Statistics  $D_{AB}$  is a simple measure which represents the linear distance between concepts  $A$ ,  $B$ . The lower is the value of statistics  $D_{AB}$ , the smaller is the distance between notions  $A$ ,  $B$ . On the contrary, higher value of statistics  $D_{AB}$  means bigger distance between notions  $A$ ,  $B$ . Due to the result of Wilcoxon's test, it makes sense to calculate the distance between the considered concepts  $A$ ,  $B$  for individual selected samples. We calculated the following values of the statistics  $D_{AB}$ :

**1<sup>st</sup> set - Students of the Ethics study program:**

$$D_{AB} = \sqrt{\sum_{i=1}^k d_i^2} = \sqrt{73,47} = 8,57$$

**2<sup>nd</sup> set – Students of the Economics study program:**

$$D_{AB} = \sqrt{\sum_{i=1}^k d_i^2} = \sqrt{10,35} = 3,22$$

**3<sup>rd</sup> set - Students of the Mass Media Communication and Advertising study program**

$$D_{AB} = \sqrt{\sum_{i=1}^k d_i^2} = \sqrt{45,70} = 6,76$$

**4<sup>th</sup> set - Students of the Management study program**

$$D_{AB} = \sqrt{\sum_{i=1}^k d_i^2} = \sqrt{11,08} = 3,33$$

Based on the calculated values of statistics  $D_{AB}$  for individual courses we can see that the biggest distance in understanding of the observed concepts was obtained for students of Ethics. The distance in understanding of concerned concepts is quite high also for students of Mass Media Communication and Advertising. According to the result of the Kruskal-Wallis test and on the basis of testing of contrasts within the Kruskal-Wallis test, the differences in the perception of concerned concepts between students of these two fields of study are not statistically significant. The students of Economics and Management obtained approximately the same figures of distance. The same result was obtained also by application of the Kruskal-Wallis test. In comparison with students of Ethics and Mass Media Communication and Advertising, the distance in understanding of the concerned concepts is significantly lower.

### 4.4. $Q$ -correlation

Besides the statistics  $D_{AB}$  the semantic differential data can also be analyzed with the help of  $Q$ -correlation ([11]), which represents a modification of the multiplicative correlation and expresses the degree of similarity between two profiles. According to the degree of similarity of profiles, the

similarity of concept understanding can be assumed.  $Q$ -correlation is described by the correlation coefficient  $Q_{AB}$ , which is defined by the formula

$$Q_{AB} = 1 - \frac{\sum_{i=1}^k d_i^2 - k(\bar{x}_A - \bar{x}_B)^2 - (\sigma_A - \sigma_B)^2}{2k \cdot \sigma_A \cdot \sigma_B}.$$

The coefficient  $Q_{AB}$  assumes its values in the interval  $\langle -1, 1 \rangle$ . These values are interpreted in the same way as the values of Pearson's correlation coefficient. The value 1 means complete consistency in understanding the notions  $A, B$ , while the value -1 means completely contradictory understanding of notions. Zero value of the coefficient  $Q_{AB}$  means zero consistency in understanding of notions  $A, B$ . Higher absolute value means closer dependence (direct or indirect) in the understanding of notions  $A, B$ .

We calculated the values of coefficient  $Q_{AB}$  for the considered pairs of profiles as follows.

**1<sup>st</sup> set - Students of the Ethics study program:**

$$Q_{AB} = 1 - \frac{73,47 - 30 \cdot (2,90 - 4,32)^2 - (0,63 - 0,39)^2}{2 \cdot 30 \cdot 0,63 \cdot 0,39} = 0,124$$

**2<sup>nd</sup> set – Students of the Economics study program:**

$$Q_{AB} = 1 - \frac{10,35 - 30 \cdot (3,50 - 3,97)^2 - (0,44 - 0,41)^2}{2 \cdot 30 \cdot 0,44 \cdot 0,41} = 0,656$$

**3<sup>rd</sup> set - Students of the Mass Media Communication and Advertising study program**

$$Q_{AB} = 1 - \frac{45,70 - 30 \cdot (2,73 - 3,83)^2 - (0,64 - 0,39)^2}{2 \cdot 30 \cdot 0,64 \cdot 0,39} = 0,376$$

**4<sup>th</sup> set - Students of the Management study program**

$$Q_{AB} = 1 - \frac{11,08 - 30 \cdot (3,35 - 3,85)^2 - (0,49 - 0,40)^2}{2 \cdot 30 \cdot 0,49 \cdot 0,40} = 0,696$$

Calculated values of the coefficient  $Q_{AB}$  indicate that the lowest agreement in understanding of concepts  $A, B$  was achieved by the students of Ethics. The students of Mass Media Communication and Advertising gained relatively low conformity in understanding of concepts  $A, B$  as well. According to the result of the Kruskal-Wallis test and on the basis of testing of contrasts within the Kruskal-Wallis test, the differences in the perception of concerned concepts between the students of the two mentioned fields of study are not statistically significant. The greatest coincidence in understanding of concerned concepts was achieved by the Management students; high coincidence in the understanding of concerned concepts was reached by the students of Economics. According to the Kruskal-Wallis test, the differences in perception of concerned concepts between students of these two fields of study are not statistically significant.

#### 4.5. Data analysis of the semantic differential within dimensions

Individual adjectives of the semantic differential can be divided into the following three dimensions:

**I. Dimension of evaluation** - this dimension is according to several authors the most important. It represents the evaluation of the notion in terms of the impression it creates: good and pleasant, or, on the contrary, bad, unpleasant, nasty.

**II. Dimension of power** - expresses the energy of notion. The concept is assessed in terms of whether it operates as dominant, powerful, or conversely as weak, inexpressive.

**III. Dimension of activity** - this dimension represents assessment of the concept in terms of whether the concept expresses kinetics, activity or whether it has rather quiet, passive effect.

In the original semantic differential, Osgood divided each of adjectives into three dimensions, in which there was the same number of adjectives for each dimension. According to other authors (for example Kerlinger ([6]) and others) it is not necessary to use all three dimensions and it is also not necessary to have the same number of adjectives in all dimensions. However, it is important that these adjectives were relevant for the concept.

We divided the scales of the semantic differential into the above mentioned three dimensions. The dimension of evaluation consisted of 12 scales, the dimension of power of 8 scales and the dimension of activity of 10 scales. The subject of our further analysis was to compare how the students of individual fields of study perceive analyzed concepts within the given dimensions. We calculated the values of numerical characteristics and statistics  $D_{AB}$  and  $Q_{AB}$  for individual dimensions as follows:

### **I. Dimension of evaluation**

#### **1<sup>st</sup> set - Students of the Ethics study program**

$$\bar{x}_A = 2,67; \bar{x}_B = 4,22; \sigma_A^2 = 0,17; \sigma_B^2 = 0,18; \sigma_A = 0,41; \sigma_B = 0,42$$

$$D_{AB} = 5,866; Q_{AB} = -0,358$$

#### **2<sup>nd</sup> set - Students of the Economics study program**

$$\bar{x}_A = 3,41; \bar{x}_B = 3,84; \sigma_A^2 = 0,11; \sigma_B^2 = 0,13; \sigma_A = 0,33; \sigma_B = 0,36$$

$$D_{AB} = 1,770; Q_{AB} = 0,668$$

#### **3<sup>rd</sup> set - Students of the Mass Media Communication and Advertising study program**

$$\bar{x}_A = 2,55; \bar{x}_B = 3,75; \sigma_A^2 = 0,25; \sigma_B^2 = 0,18; \sigma_A = 0,50; \sigma_B = 0,43$$

$$D_{AB} = 4,549; Q_{AB} = 0,341$$

#### **4<sup>th</sup> set - Students of the Management study program**

$$\bar{x}_A = 3,19; \bar{x}_B = 3,74; \sigma_A^2 = 0,11; \sigma_B^2 = 0,16; \sigma_A = 0,33; \sigma_B = 0,40$$

$$D_{AB} = 2,207; Q_{AB} = 0,603$$

The calculated values indicate that within the dimension of evaluation, the smallest distance in understanding of concepts was achieved by students of Economics and the greatest distance of understanding by students of Ethics. The greatest coincidence in understanding the concepts  $A$ ,  $B$  was achieved by students of Economics and relatively high coincidence in the understanding of concepts  $A$ ,  $B$  reached the Management students. Students of Ethics perceive the social responsibility and social responsibility of companies and organizations within this dimension contrarily.

## II. Dimension of power

### 1<sup>st</sup> set - Students of the Ethics study program

$$\bar{x}_A = 3,08; \bar{x}_B = 4,40; \sigma_A^2 = 0,57; \sigma_B^2 = 0,16; \sigma_A = 0,76; \sigma_B = 0,40$$

$$D_{AB} = 4,010; Q_{AB} = 0,57$$

### 2<sup>nd</sup> set – Students of the Economics study program

$$\bar{x}_A = 3,52; \bar{x}_B = 4,09; \sigma_A^2 = 0,39; \sigma_B^2 = 0,24; \sigma_A = 0,62; \sigma_B = 0,49$$

$$D_{AB} = 1,928; Q_{AB} = 0,779$$

### 3<sup>rd</sup> set - Students of the Mass Media Communication and Advertising study program

$$\bar{x}_A = 2,93; \bar{x}_B = 3,77; \sigma_A^2 = 0,57; \sigma_B^2 = 0,17; \sigma_A = 0,75; \sigma_B = 0,41$$

$$D_{AB} = 2,745; Q_{AB} = 0,622$$

### 4<sup>th</sup> set - Students of the Management study program

$$\bar{x}_A = 3,37; \bar{x}_B = 3,84; \sigma_A^2 = 0,38; \sigma_B^2 = 0,15; \sigma_A = 0,61; \sigma_B = 0,39$$

$$D_{AB} = 1,567; Q_{AB} = 0,836$$

We can see that the minimum distance in understanding of the concerned concepts within the dimension of power was reached by students of Management and these students arrived at the largest consensus in understanding of concepts A, B. High conformity of perception of considered concepts gained the students of Economics. Maximum distance in understanding of concerned concepts was observed in the results of the Ethics students.

## III. Dimension of activity

### 1<sup>st</sup> set - Students of the Ethics study program

$$\bar{x}_A = 3,04; \bar{x}_B = 4,39; \sigma_A^2 = 0,43; \sigma_B^2 = 0,08; \sigma_A = 0,65; \sigma_B = 0,28$$

$$D_{AB} = 4,798; Q_{AB} = -0,258$$

### 2<sup>nd</sup> set – Students of the Economics study program

$$\bar{x}_A = 3,59; \bar{x}_B = 4,04; \sigma_A^2 = 0,10; \sigma_B^2 = 0,13; \sigma_A = 0,32; \sigma_B = 0,36$$

$$D_{AB} = 1,866; Q_{AB} = 0,351$$

### 3<sup>rd</sup> set - Students of the Mass Media Communication and Advertising study program

$$\bar{x}_A = 2,79; \bar{x}_B = 3,96; \sigma_A^2 = 0,40; \sigma_B^2 = 0,06; \sigma_A = 0,63; \sigma_B = 0,25$$

$$D_{AB} = 4,177; Q_{AB} = -0,16$$

### 4<sup>th</sup> set - Students of the Management study program

$$\bar{x}_A = 3,51; \bar{x}_B = 3,99; \sigma_A^2 = 0,24; \sigma_B^2 = 0,12; \sigma_A = 0,49; \sigma_B = 0,35$$

$$D_{AB} = 1,951; Q_{AB} = 0,58$$

This means that the minimum distance in understanding the considered concepts within the dimension of activity was observed for students of Economics. Very small distance in understanding of concepts was also obtained by students of Management. Maximum distance in the understanding of considered concepts occurred in results of Ethics students. The greatest consensus in understanding the concepts A, B within this dimension was observed for students of Management.



## **5. Conclusion**

The study presents the results of research in the field of marketing communication, which was conducted with the help of semantic differential method. We examined the differences in perception of social responsibility in general and SCR companies by the university students depending upon their academic focus. The method of the semantic differential allows a deeper analysis based on three dimensions - evaluation, power and activity. Within the data analysis we used nonparametric testing methods, statistics  $D_{AB}$ , which characterizes the distance in understanding of considered concepts and  $Q$ -correlation. The calculations we performed in Excel and STATISTICA computer programs. The results of statistical analysis confirmed that perception of observed concepts statistically significantly depends on the field of study of respondents. We can conclude that students focused on Ethics are the most sensitive in the critical assessment of studied concepts; while students who study Economics and Management are more tolerant. Generally it holds that the optics of concepts is undersized and it brings information relevant for decision-making of marketers about critical evaluation of communication activities focused on CSR, which companies perform.

## References

- [1] Anděl, J. (2003). *Statistické metody*. Matfyzpress, vydavatelství MFF KU Praha, ISBN 80-85863-27-8
- [2] Blatný, M. a kol.(2010). *Psychologie osobnosti*. Praha, Grada, ISBN 978-80-247-3434-7
- [3] Břicháček, V. (1978). *Úvod do psychologického škálování*. Bratislava, Psychodiagnostické a didaktické testy
- [4] Džupina, M. (2010). *Nový model spotrebiteľského rozhodovania (The Consumer Decision Journey)*. In: (KO)MÉDIA: sborník konferenčných príspevků ze 4. ročníku mezinárodní konference 21.-22.10. 2009 ve Zlíne. Zlín : UTB, ISBN 978-80-7318-903-7, s. 1-9
- [5] Janoušek, J. (1986). *Metódy sociální psychologie*. Praha, SPN
- [6] Kerlinger, F. (1972). *Základy výzkumu chování*. Praha Academia
- [7] Lund, D. B. (2008). *Gender Differences in Ethics Judgment of Marketing Professionals in the United States*. *Journal of Business Ethics*, 10, p. 501-515
- [8] Markechová, D. – Fandelová, E. – Tirpáková, A. (2012). *Identification of differences in the perception of social responsibility between men and women by the semantic differential method*. *Forum Statisticum Slovacum*, 3, p. 90-96
- [9] Markechová, D. – Tirpáková, A. (2011). *Štatistické metódy a ich aplikácie*. FPV UKF v Nitre, ISBN 978-80-8094-807-8
- [10] Osgood, CH. E. – Suci, G. J. – Tannenbaum, P. H. (1957). *The measurement of meaning*. Urbana. III. University of Illinois Press
- [11] Reiterová, E. (2003). *Základy psychometrie*. Olomouc: UP
- [12] Stendham, Y. – Yamamura, J. H. – Beekun, R. I. (2007). *Gender differences in business ethics: justice and relativist perspectives*. *Business ethics: A European Review*, vol. 16, no 2, p. 163-174
- [13] Šramová, B. – Džupina, M. a kol. (2011). *CSR a implementácia inovatívnych metód v príprave budúcich marketérov*. In: Petranová, D., Čábyová, E. (Eds.). *Špecifika regionálneho a neziskového sektoru*. Zborník z medzinárodnej vedeckej konferencie *Nové trendy v marketingu*. 15.-16.11.2011 - Trnava: UCM, ISBN 978-80-8105-133-3. s.168-183
- [14] Šramová, B. – Džupina, M. a kol. (2012). *CSR and the Implementation of Innovative Methods in ghe Preparation of Future Marketers*. In: *Proceedings of world academy of science, Buseness, Economics, Managements and Behavioral Sciences*. Planetary Scientific Research Centre´s Scientific and Technical Committee, Dubai 2012, ISBN 978-81-922428-4-2

## Tables and Figures

**Table 1. The average values for each scale of the semantic differential**

Scale n. $i$	1 <sup>st</sup> file			2 <sup>nd</sup> file			3 <sup>rd</sup> file			4 <sup>th</sup> file		
	$A$	$B$	$d_i^2$	$A$	$B$	$d_i^2$	$A$	$B$	$d_i^2$	$A$	$B$	$d_i^2$
1	2,79	4,95	4,67	3,76	4,84	1,17	2,68	4,40	2,96	3,53	4,47	0,88
2	2,85	4,12	1,61	3,54	4,39	0,72	2,39	4,05	2,76	3,26	3,90	0,41
3	2,63	4,29	2,76	3,49	4,04	0,30	2,35	3,73	1,90	3,48	4,00	0,27
4	2,35	4,35	4,00	3,18	4,21	1,06	2,10	3,77	2,79	2,98	3,93	0,90
5	2,64	4,64	4,00	3,19	4,46	1,61	2,34	4,01	2,79	3,05	3,97	0,85
6	2,68	5,08	5,76	3,87	4,63	0,58	3,07	4,94	3,50	3,51	4,79	1,64
7	2,47	4,06	2,53	3,15	3,79	0,41	2,09	3,69	2,56	3,09	3,52	0,18
8	2,26	4,23	3,88	3,30	3,88	0,34	2,19	3,88	2,86	2,98	3,57	0,35
9	2,37	4,64	5,15	3,22	4,12	0,81	2,03	4,07	4,16	3,09	4,18	1,19
10	2,78	4,59	3,28	3,94	4,18	0,06	2,91	3,84	0,86	3,71	3,91	0,04
11	2,37	4,27	3,61	3,45	3,72	0,07	2,15	3,67	2,31	3,15	3,59	0,19
12	4,05	4,63	0,34	3,76	3,72	0,00	3,56	4,30	0,55	4,36	4,64	0,08
13	4,81	4,97	0,03	4,88	4,78	0,01	4,61	4,48	0,02	4,79	4,62	0,03
14	3,71	3,21	0,25	3,45	3,42	0,00	3,73	3,43	0,09	3,68	3,63	0,00
15	2,26	3,95	2,86	2,94	3,43	0,24	2,33	3,49	1,35	2,90	3,51	0,37
16	2,45	3,92	2,16	3,00	3,36	0,13	2,00	3,27	1,61	2,56	3,16	0,36
17	4,28	4,50	0,05	4,40	4,30	0,01	4,16	4,07	0,01	4,52	4,16	0,13
18	3,38	3,91	0,28	3,42	3,63	0,04	3,14	3,77	0,40	3,36	3,64	0,08
19	3,23	4,35	1,25	3,52	3,75	0,05	2,97	3,78	0,66	3,36	3,59	0,05
20	2,40	4,19	3,20	3,06	3,58	0,27	2,08	3,25	1,37	2,85	3,30	0,20
21	3,29	4,38	1,19	3,76	3,81	0,00	2,78	3,92	1,30	3,41	3,86	0,20
22	2,85	4,29	2,07	3,03	3,75	0,52	2,63	3,48	0,72	2,99	3,48	0,24
23	2,82	4,47	2,72	3,27	4,00	0,53	2,47	3,73	1,59	3,22	3,77	0,30
24	2,19	3,51	1,74	2,75	3,09	0,12	2,06	3,01	0,90	2,67	3,21	0,29
25	2,63	4,26	2,66	3,49	3,93	0,19	2,80	3,69	0,79	3,30	3,86	0,31
26	3,63	4,53	0,81	3,72	4,39	0,45	3,44	3,98	0,29	3,74	4,06	0,10
27	2,65	4,36	2,92	3,69	4,03	0,12	2,58	4,03	2,10	3,15	3,82	0,45
28	3,09	4,54	2,10	3,94	4,32	0,14	3,01	3,91	0,81	3,44	3,91	0,22
29	2,63	4,23	2,56	3,37	3,96	0,35	2,92	3,56	0,41	3,08	3,72	0,41
30	2,58	4,32	3,03	3,49	3,72	0,05	2,45	3,58	1,28	3,16	3,76	0,36
$\Sigma$	<b>87,12</b>	<b>129,74</b>	<b>73,47</b>	<b>105,03</b>	<b>119,23</b>	<b>10,35</b>	<b>82,02</b>	<b>114,78</b>	<b>45,70</b>	<b>100,37</b>	<b>115,53</b>	<b>11,08</b>

**Table 2. Results of Kruskal-Wallis' test**

	The value of the testing criteria	<i>p</i> -value
Concept A	42,89693	<b>0,0000</b>
Concept B	4,255976	0,2351

**Table 3. Test results of contrasts**

	Economics	Mass Media Communication and Advertising	Management
Ethics	<b>0,000288</b>	1,000000	<b>0,003413</b>
Economics		<b>0,000000</b>	1,000000
Mass Media Communication and Advertising			<b>0,000004</b>

**Table 4. The results of the Wilcoxon test**

Field of Study	Valid N	<i>T</i>	<i>Z</i>	<i>p</i> -level
Ethics	78	0,00	7,672849	<b>0,000000</b>
Economics	67	0,00	7,114930	<b>0,000000</b>
Mass Media Communication and Advertising	88	3,000000	8,134473	<b>0,000000</b>
Management	87	1,000000	8,096561	<b>0,000000</b>