THE ANALYTICAL INSIGHT INTO CUSTOMER PERCEPTION OF QUALITY DETERMINANTS OF THE E-COMMERCE MODEL B2C SUBJECTS IN THE CENTRAL EUROPEAN COUNTRIES

DOI: 10.12776/QIP.V18I2.316

RADOVAN BAČÍK, ZSUZSANNA KATALIN SZABO,
RICHARD FEDORKO

Received 04 May 2014, Revised 30 September 2014, Accepted 11 November 2014

1 INTRODUCTION

The issue of e-commerce is not one of the youngest. Despite the efforts of the organisations, the absence of trust is still present among the customers. Because of the lack of personal contact between seller and buyer and one-off nature of business transactions at the online environment as well, the huge focus is now directed towards building the positive image of an organisation realising e-commerce in the eyes of customers, becoming more trustworthy. Sarus et al. (2013) states that if speaking of e-commerce, we talk about electronic commerce as a whole, thus buying through information and communication technologies. Nowadays, when products can be buy via Internet and there are no barriers in purchase, customer loyalty is the key factor in market share preservation (Gavurová et al., 2014; Užík and Šoltés, 2009). There is no need to document the importance of e-trading in modern business. Customer satisfaction measures have many ways, methodologies, theories and practical applications (Gavurová, 2011, 2012; Šoltés and Gavurová, 2013; Vejačka, 2012). Smith (2013) proposed four key customer satisfaction measurements that seem to be crucial to business. Here we include Overall Satisfaction Measure, Loyalty Measurement, Series of Attribute Satisfaction Measurements and Intentions to Repurchase Measurements. Fitzsimmons and Okada (2002) revealed development of the B2C e-commerce in Japan with emphasis on Japanese culture. Rangone et al. (2002) described evolution of the e-commerce in Italy. Lin (2007) identified that system quality, information quality, and service quality are important antecedents of customer satisfaction. Christodoulides and Michaelidou (2011) showed that social interaction help predict e-satisfaction and e-satisfaction is a strong determinant of e-loyalty. Trust was identified as one of the most crucial factor for

economic performance development and sustainability. Luo and Ma (2013) found out that at the post-purchase stage, familiarity, perceived safety, product quality and service quality significantly positively affects consumers' general trust in web-vendor. The findings of Eid (2011) showed that B2C e-commerce customer loyalty in Saudi Arabia is strongly influenced by customer satisfaction but weakly influenced by customer trust. On dataset obtained in Spain, Urueña et al. (2013) proved that B2C electronic commerce managers need to achieve high levels of satisfaction from Internet purchasers by enhancing perceived quality and perceived benefits obtained. Otim and Grover (2006) manifested several findings. Among others, post-purchase services consisting of the support of order tracking, on-time delivery, and customer support positively influence customer loyalty. These findings imply that web-based stores need to pay more attention to post-purchase services in their strategy to retain customers. Khalifa et al. (2002) provided direct support of the importance of satisfaction in explaining repurchase, as well as, for the moderating effect of online shopping habit on the relationship between satisfaction and repurchase. Durkasree and Ramesh (2011) identified seven service quality dimensions that have a strong impact on customer satisfaction and loyalty. These factors are: tangibility, responsiveness, trust and confidence, communication, reliability, ordering and empathy. The significance of trust for electronic business development was confirmed on different level from information quality till, reputation till online dispute management. The aim of the paper is to provide the information about the state of customer satisfaction of the business model B2C subjects in Visegrad group countries, namely Slovakia, the Czech Republic, Poland and Hungary.

2 METHODOLOGY

The aim of the analysis was the post-purchase evaluation of e-commerce subjects of the business model B2C processed on the basis of the evaluations within online portals. The first phase of the research was the identification of the online portals focused on post-purchase evaluation of e-shops in Visegrad group countries. The key factor for the selection of the suitable portal was the need of the highest match of variables evaluated by customers or the highest match of evaluated criteria monitored by online portal. One online portal per research country was identified, i.e. Heureka.sk, Heureka.cz, Arukereso.hu and Ceneo.pl. Interesting finding was that all four online portals are managed by Allegro Group operating in 25 countries around the world, but mainly in the Central and Eastern Europe including: Poland, Russia, Ukraine, the Czech Republic, Hungary, Bulgaria, Romania, Baltic States and Turkey. Allegro Group's activities are focused on e-commerce platforms for consumers enabling easy and safe online transactions in four business segments: marketplaces, retail, classifieds, and payments. Allegro Group owns and operates over 100 e-commerce related websites, most of which are leaders in respective countries thanks to strong focus on local consumers' needs. Today Allegro Group employs over 6500 Europeans directly. In a group of selected online portals, the best match of the evaluated

variables had Heureka.sk and Heureka.cz. Moreover, online portal Heureka.sk had the most evaluated criteria, as well as the most unique evaluated criteria within research countries.

The next step of the analysis was the identification of the suitable subjects – e-shops for the data collection represented in the form of customers' experience evaluations. The method of automatic data collection was used by a script of programming language PHP 5.4.25, MySQL 5.5.36 databases and web server Apache 2.4.7. In addition, four individual scripts, adapted to source code of the selected online portals, were created for the identification and database recording of the variables, such as e-shop name and url linked to an e-shop subpage (profile) containing customers' evaluations, all within the source code of the subpages summarizing the evaluated e-shops. The realization phase was performed in May 2013. There were 15,194 e-shops identified as follows: SK: 1,123 (7.39 %), CZ: 5,636 (37.09 %), PL: 7,437 (48.95 %), HU: 998 (6.57 %).

The third phase of the analysis was the data collection of the observed variables (evaluations) within online portals of the identified e-shops. From the total number of identified e-shops, only suitable subjects were chosen for the further deeper analysis. To be more concrete, the e-shops with customers' evaluations and e-shops not identified as inactive were analyzed. The method of automatic data collection by script of programming language PHP, MySQL databases and web server Apache were used, as well. This phase of analysis needed considerable effort, because diversity of the observed online portals, concretely the structures of e-shops' profiles, required detailed analysis of their HTML code and further concept of functional script for the automatic data collection. Due to higher demands associated with preparation processes, the realization phase of data collection was performed at the end of May and during June 2013. The result of the phase was the identification of 9,260 (60.95 %) e-shops with customers' evaluations, as well as the identification of 5,934 (39.05 %) e-shops with no customers' evaluations or inactive e-shops. Breakdown by country is presented in Table 1. Within the group of identified e-shops, the largest share of e-shops with customers' evaluations was reached by Slovakia 700 (62.33 %) and the Czech Republic 3,526 (60.56 %), followed by Poland 4,490 (60.37 %) and Hungary 544 (54.51 %).

Finally, the analysis of the research sample of 9,260 identified e-shops was realized. In order to reach the aim of the research, the following evaluation criteria were identified: number of customers recommending e-shop, delivery quality and communication quality. The analysis of the research variables was based on the sample of 5,228,127 customers' evaluations.

As it is shown in Table 2, within the observed countries, Poland and the Czech Republic reached the highest portion of the total number of evaluations, 44.54% and 45.04% respectively. Comparing the average number of evaluations per observed number of e-shops, the Czech Republic dominated with 668 customers'

evaluation, while the lowest average was reported for Hungary at 361 customers' evaluations.

Table 1 – Number of e-shops with evaluation and without evaluation

Country	With the evaluation		Unrated	
	N	%	N	%
Slovakia	700	7.56	423	7.13
The Czech Republic	3,526	38.08	2,110	35.56
Poland	4,490	48.49	2,947	49.66
Hungary	544	5.87	454	7.65
Overall	9,260	100.00	5,934	100.00

Source: own elaboration

Table 2 – The total number of e-shop evaluations

Country	Number of reviews		Number of e-shops	Average per e-shop	
	N	%	N	N	%
Slovakia	347,995	6.66	700	497	24.31
The Czech Republic	2,354,896	45.04	3,526	668	32.66
Poland	2,328,700	44.54	4,490	519	25.38
Hungary	196,536	3.76	544	361	17.65
Overall	5,228,127	100.00	9,260	2,045	100.00

Source: own elaboration

3 RESULTS

According to the results, the vast majority of customers' evaluations, show rather positive evaluation of e-shops. Table 3 presents the information about the number of customers recommending e-shops and evaluating e-shops on the scale from 0 % to 100 %. The most positive e-shop evaluations were in the Czech Republic, where the interval of evaluations up to 100 % represented 95.82 % of the total number of 2,354,896 evaluations. On the contrary, Slovak customers tend to be the most critical; the interval value up to 90 % dominated with 303,392 (87.18 %) evaluations of the total number of 347,995 customers' evaluations. It should be pointed out that cumulatively for all countries; the customer evaluation within a range from 10 % to 40 % had shares less than 1 %.

Table 3 – Total number of customers evaluating e-shops

Rating	Slovakia		The Czech Republic		Poland		Hungary	
	N	%	N	%	N	%	N	%
Unrated	45	0.01	0	0.00	3,453	0.15	39,918	20.31
Up to 10 %	0	0.00	0	0.00	0	0.00	0	0.00
Up to 20 %	8	0.00	0	0.00	14	0.00	0	0.00
Up to 30 %	0	0.00	0	0.00	19	0.00	0	0.00
Up to 40 %	0	0.00	0	0.00	152	0.01	0	0.00
Up to 50 %	38	0.01	264	0.01	327	0.01	0	0.00
Up to 60 %	146	0.04	343	0.01	267	0.01	0	0.00
Up to 70 %	1,214	0.35	2,665	0.11	2,024	0.09	0	0.00
Up to 80 %	26,872	7.72	9,256	0.39	22,109	0.95	39	0.02
Up to 90 %	303,392	87.18	86,017	3.65	201,057	8.63	16,900	8.60
Up to 100 %	16,280	4.68	2,256,351	95.82	2,099,278	90.15	139,679	71.07
Overall	347,995	100.00	2,354,896	100.00	2,328,700	100.00	196,536	100.00

Source: own elaboration

The quality of communication as a part of marketing communication represents one of the essential factors for the overall customer satisfaction with e-shop. The most satisfied customers were in the Czech Republic, where within observed category, the total of evaluations up to 100 % represented 67.34%. In the same evaluated category, Hungary had the lowest share with 35.44% customers‘ evaluations. The number of customers who did not rate the attribute is 5.68% in Slovakia and 20.31% in Hungary. When conducting the evaluation of the communication quality, the most active were the customers from the Czech Republic and Poland with more than 2,300,000 reviews sent in both countries (Table 4).

Table 4 – Number of reviews according to quality of communication

Rating	Slovakia		The Czech Republic		Poland		Hungary	
	N	%	N	%	N	%	N	%
Unrated	19,753	5.68	0	0.00	14	0.00	39,918	20.31
Up to 10 %	0	0.00	0	0.00	17	0.00	0	0.00
Up to 20 %	0	0.00	0	0.00	46	0.00	0	0.00
Up to 30 %	0	0.00	0	0.00	38	0.00	0	0.00
Up to 40 %	0	0.00	0	0.00	146	0.01	0	0.00

Rating	Slovakia		The Czech Republic		Poland		Hungary	
	N	%	N	%	N	%	N	%
Up to 50 %	0	0.00	0	0.00	276	0.01	0	0.00
Up to 60 %	0	0.00	0	0.00	741	0.03	0	0.00
Up to 70 %	44	0.01	0	0.00	2,294	0.10	0	0.00
Up to 80 %	4,171	1.20	69,818	2.96	85,260	3.66	689	0.35
Up to 90 %	195,094	56.06	699,256	29.69	1,003,601	43.10	86,275	43.90
Up to 100 %	128,933	37.05	1,585,822	67.34	1,236,267	53.09	69,654	35.44
Overall	347,995	100.00	2,354,896	100.00	2,328,700	100.00	196,536	100.00

Source: own elaboration

Quality of delivery/quality of service is the key aspect that can affect overall evaluation and recommendation of an e-shop. The customers in the Czech Republic were the most satisfied with delivery quality. On the evaluation scale up to 90% the indicator value was 34.33% and on the scale up to 100 % the indicator value was 61.39 % which represented 95.72% of the overall satisfaction with delivery quality. Similarly, the customers in Hungary were also satisfied, with the sum value of the indicator 95.52% on the scale up to 100%. The highest number of dissatisfied customers was in Poland, where the sum of the values up to 5% represented 428 reviews.

Table 5 – Number of reviews according to quality of delivery

Rating	Slovakia		Czech Republic		Poland		Hungary	
	N	%	N	%	N	%	N	%
Unrated	19,753	5.68	0	0.00	38	0.00	0	0.00
Up to 10 %	0	0.00	0	0.00	18	0.00	0	0.00
Up to 20 %	0	0.00	0	0.00	13	0.00	0	0.00
Up to 30 %	0	0.00	0	0.00	61	0.00	12	0.01
Up to 40 %	0	0.00	0	0.00	114	0.00	6	0.00
Up to 50 %	0	0.00	0	0.00	222	0.01	23	0.01
Up to 60 %	11	0.00	0	0.00	1,754	0.08	143	0.07
Up to 70 %	1,177	0.34	0	0.00	11,084	0.48	475	0.24
Up to 80 %	17,112	4.92	100,875	4.28	188,277	8.09	8,148	4.15
Up to 90 %	145,400	41.78	808,408	34.33	1,342,164	57.64	93,165	47.40
Up to 100 %	164,542	47.28	1,445,613	61.39	784,955	33.71	94,564	48.12
Overall	347,995	100.00	2,354,896	100.00	2,328,700	100.00	196,536	100.00

Source: own elaboration

According to the research results, it is assumed that total customer satisfaction with e-shop is directly dependent on positive evaluation of delivery quality and quality of communication between e-shops and customers. It is assumed that there exists linear trend between variables (total satisfaction and communication or total satisfaction and delivery quality). Pearson's correlation coefficient was used for statistical evaluation to measure the strength of a linear relationship between paired variables.

Hypotheses:

H0: there is no linear relationship between the variables, i.e., $\rho = 0$.

H1: there is linear relationship between the variables, i.e., $\rho \neq 0$.

As it is shown in Table 6 P values in statistical significance testing on correlation coefficients are less than α=0.01. Therefore, null hypothesis, assuming no linear relationship between total satisfaction and communication or total satisfaction and delivery quality, was rejected.

Table 6 – Pearson's correlation

		Satisfaction	Communication	Delivery
Satisfaction	Pearson correlation	1	**.618****	**.611****
	Sig. (2 - tailed)		0.0000	0.0000
	N	9,260	9,260	9,260
Communication	Pearson correlation	**.618****	1	**.702****
	Sig. (2 - tailed)	0.0000		0.0000
	N	9,260	9,260	9,260
Delivery	Pearson correlation	**.611****	**.702****	1
	Sig. (2 - tailed)	0.0000	0.0000	
	N	9,260	9,260	9,260

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

Source: own elaboration

Positive values of correlation coefficients mean that variables evolve in the same direction. According to Cohen (1988), linear dependence between total satisfaction and communication or total satisfaction and quality of can be considered to be strong. The research results indicate that there is dependence between positive evaluation of e-shop and partial evaluations of the indicators of delivery time and communication quality.

Table 7 – Pearson's correlation E-shops in SK

		Satisfaction	Communication	Delivery
Satisfaction	Pearson correlation	1	**.935****	**.841****
	Sig. (2 - tailed)		0.0000	0.0000
	N	700	700	700
Communication	Pearson correlation	**.935****	1	**.734****
	Sig. (2 - tailed)	0.0000		0.0000
	N	700	700	700
Delivery	Pearson correlation	**.841****	**.734****	1
	Sig. (2 - tailed)	0.0000	0.0000	
	N	700	700	700

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

Source: own elaboration

Table 8 – Pearson's correlation E-shops in CZ

		Satisfaction	Communication	Delivery
Satisfaction	Pearson correlation	1	**.917****	**.671****
	Sig. (2 - tailed)		0.0000	0.0000
	N	3,526	3,526	3,526
Communication	Pearson correlation	**.917****	1	**.488****
	Sig. (2 - tailed)	0.0000		0.0000
	N	3,526	3,526	3,526
Delivery	Pearson correlation	**.671****	**.488****	1
	Sig. (2 - tailed)	0.0000	0.0000	
	N	3,526	3,526	3,526

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

Source: own elaboration

Table 9 – Pearson's correlation E-shops in PL

		Satisfaction	Communication	Delivery
Satisfaction	Pearson correlation	1	**.876****	**.795****
	Sig. (2 - tailed)		0.0000	0.0000
	N	4,490	4,490	4,490
Communication	Pearson correlation	**.876****	1	**.788****
	Sig. (2 - tailed)	0.0000		0.0000
	N	4,490	4,490	4,490
Delivery	Pearson correlation	**.795****	**.788****	1
	Sig. (2 - tailed)	0.0000	0.0000	
	N	4,490	4,490	4,490

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

Source: own elaboration

Table 10 – Pearson's correlation E-shops in HU

		Satisfaction	Communication	Delivery
Satisfaction	Pearson correlation	1	**.831****	**1.000****
	Sig. (2 - tailed)		0.0000	0.0000
	N	544	544	544
Communication	Pearson correlation	**.831****	1	**.831****
	Sig. (2 - tailed)	0.0000		0.0000
	N	544	544	544
Delivery	Pearson correlation	**1.000****	**.831****	1
	Sig. (2 - tailed)	0.0000	0.0000	
	N	544	544	544

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

Source: own elaboration

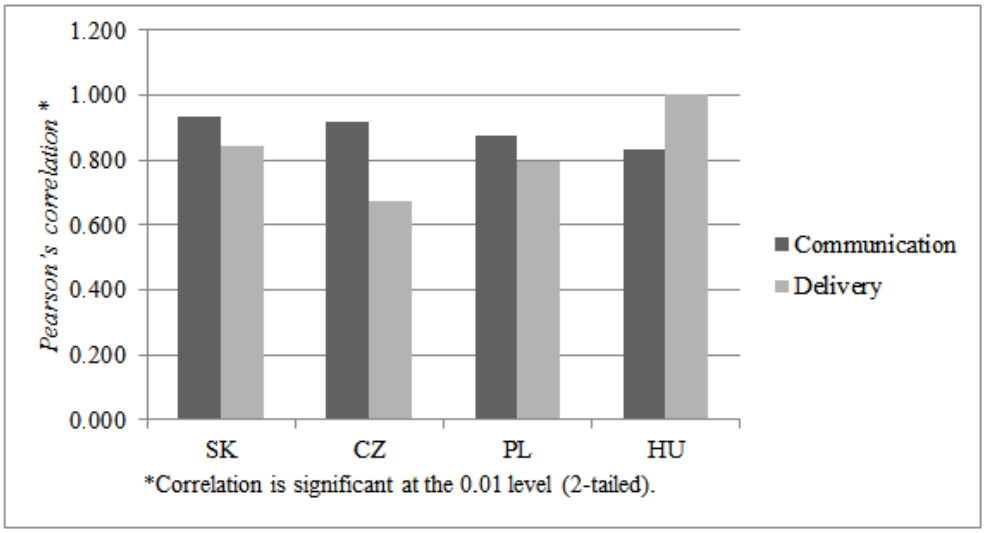

Figure 1 – Pearson's correlation – Satisfaction & Selected variables
Source: own elaboration

Closer look at the analyzed countries as it is shown in Tables 7-10 and Figure 1 also highlighted the positive values of correlation coefficients mean that variables evolve in the same direction. Which means that linear dependence between total satisfaction and communication or total satisfaction and quality of delivery can be considered to be strong. Strongest linear dependence between total satisfaction and communication was identified in Slovak e-shops. On the other side weakest linear dependence was identified in Hungary e-shops. In case of linear dependence between total satisfaction and quality of delivery was the strongest dependence identified in Hungary e-shops and weakest in Czech e-shops. As we mentioned research results indicate that there is dependence between positive evaluation of e-shop and partial evaluations of the indicators of delivery quality and communication quality.

4 CONCLUSION

Nowadays, there is an increasingly growing interest in e-commerce in all analyzed countries, which causes the slight decrease in interest in a physical shop. From the point of e-commerce subjects, on-line environment of internet has an indisputable advantage. The relative low operating costs comparing to physical shop, functional convenience of e-shops, the speed of distribution channels, the possibility of a global impact and effective marketing tools of promotion represent an ideal platform for the realization of business activities focused on maximization of customer satisfaction, while used properly. The paper presents the position of e-business and e-commerce in four Central European countries – the countries of Visegrad group. The possible measure of customer satisfaction measurement was outlined using software automatic identification and data capture. Moreover, the preliminary study of the state of the art in Central Europe was proposed. Above 5 million observations in more than 9,000 e-shops showed that overall customers´ satisfaction is directly positively linked to communication with customers and shipment delivery. A theoretical benefit of this paper lies primarily in the findings that have the ambition to help subjects of commerce in their marketing decisions, such as in the case of effective allocation of financial resources to support sales and customers´ satisfaction. Last but not least, it is a sophisticated method of data collection, which created the basis for the statistical validation in this area of knowledge. The challenge for the future is the identification of vital factors necessary for success in domain of customer satisfaction. It is important to emphasize that the customer satisfaction and related perception of the e-commerce subjects is created by the interaction between subjects. Therefore, the future challenge is to identify the vital factors necessary for success in domain of customer satisfaction.

REFERENCES

Cohen, J., 1988. *Statistical power analysis for the behavioral sciences.* New Jersey: (2nd ed.). Lawrence Erlbaum.

Christodoulides, G. and Michaelidou, N., 2011. Shopping motives as antecedents of e-satisfaction and e-loyalty. *Journal of Marketing Management*, 27(1/2), pp.181-197.

Durkasree, P. and Ramesh, M., 2011. Service Quality In Online Marketing: Customers Centric Analysis. *Perspectives of Innovations*, Economics & Business, 7(1), pp.27-34.

Eid, M.I., 2011. Determinants of e-commerce customer satisfaction, trust, and loyalty in Saudi Arabia. *Journal of Electronic Commerce Research*, 12(1), pp.78-93.

Fitzsimmons, J. A. and Okada, J., 2002. Evolution of B2C e-commerce in Japan. *International Journal of Business Performance Management*, 4(2/3/4), pp.202-217.

Gavurová, B., 2011. The Balanced Scorecard System in Enterprise Management. (Systém Balanced Scorecard v podnikovom riadení). *Ekonomický časopis*, 59(2), pp.163-177.

Gavurová, B., 2012. Source Identification of Potential Malfunction of Balanced Scorecard System and Its Influence on System Function. E+M Ekonomie a management, 15(3), pp.76-90.

Gavurová, B., Šoltés, M. and Balloni, A. J., 2014. The Economic Importance of Using of ICT in the Health System (Ekonomický význam využívania informačno-komunikačných technológií v systéme zdravotníctva). *Ekonomický časopis*. 62(1), pp.83-104.

Khalifa, M., Limayem, M. and Liu, V., 2002. Online Customer Stickiness: A Longitudinal Study. *Journal of Global Information Management*, 10(3), pp.1-14.

Lin, H. F., 2007. The Impact of Website Quality Dimensions on Customer Satisfaction in the B2C E-commerce Context. *Total Quality Management & Business Excellence*, 18(4), pp.363-378.

Luo, H. and Ma, L., 2013. Empirical research on consumers' post-transaction general trust in B2C E-business. 2013 *Proceedings of the 10th International Conference on Service Systems and Service Management*, 17 - 19 July 2013. Hong Kong, China.

Otim, S. and Grover, V., 2006. An empirical study on Web-based services and customer loyalty. *European Journal of Information Systems*, 15(6), pp.527-541.

Rangone, A., Renga, F. M. and Balocco R., 2002. Mobile Internet: An Empirical Study Of The Evolution Of The Supply Of B2c Mobile Internet Applications In Italy. *The First International Conference on Mobile Business*, 21 – 24 September 2014. Athens, Greece.

Sarus, N., C., Dorcak, P. and Pollak, F., 2013. E-business and its application in conditions of central european market. *Quality Innovation Prosperity*, 17(1), pp.9-15.

Smith, S., 2013. How to Measure Customer Satisfaction: Do You Overlook these 4 Key Customer Satisfaction Measurements? *Q Insights* [blog] 3 December. Available at: http://www.qualtrics.com/blog/customer-satisfaction-measurement/.

Šoltés, V. and Gavurová, B., 2013. Application of the cross impact matrix method in problematic phases of the Balanced Scorecard system in private and public sector. *Journal of Applied Economic Sciences*, 8(1), pp.99-119. [online] Available at: http://www.cesmaa.eu/journals/jaes/jaes_issues.php.

Urueña, L. A., Iglesias, P., S. and Hernández, G., A., 2013. Extrinsic Benefits and Perceived Quality as Determinants of Perceived Satisfaction: An Application to a B2C Repurchase Model. In Lytras, M.D. et al. ed., *Information Systems, E-learning, and Knowledge Management Research.* Springer Berlin Heidelberg, pp.98-106.

Užík, M. and Šoltés, V., 2009. The Effect of Rating Changes on the Value of a Company Listed in the Capital Market. E + M. *Ekonomie a management*, 12(1), pp.49-55.

Vejačka, M., 2012. Facebook Advertising and Its Efficiency on the Slovak Market. E+M *Ekonomie a Management*, 15(1), pp.116 – 127.

ABOUT THE AUTHORS

Radovan Bačík, PhDr., PhD. MBA, Faculty of management, Department of Marketing and International Trade, University of Prešov in Prešov, Konštantínova 16, 080 01 Prešov, Slovakia, e-mail: radovan.bacik@unipo.sk

Zsuzsanna Katalin Szabo, Professor, Faculty of Economics, Law and Administrative Sciences, N. Iorga Street no.1, 540088, Tg.Mures, Romania, e-mail:szabo.zs.katalin@gmail.com

Richard Fedorko, Mgr., PhD., Faculty of Management, Department of Marketing and International Trade, University of Prešov in Prešov, Konštantínova 16, 080 01 Prešov, Slovakia, e-mail: richard.fedorko@unipo.sk