



DE GRUYTER
OPEN

UDK: 336.71:004.738.5

DOI: 10.1515/jcbtp-2016-0022

Journal of Central Banking Theory and Practice, 2016, 3, pp. 99-119

Received: 10 June 2016; accepted: 10 July 2016

Radislav Jovovic^{*}, Elvis Lekic^{},
Miroslav Jovovic^{***}**

Monitoring the Quality of Services in Electronic Banking

^{*} Mediterranean University
Podgorica

e-mail:
radejovovic@t-com.me

^{**} Societe Generale Bank

e-mail:
elvis.lekic@gmail.com

^{***} Central Bank of Montenegro

e-mail:
miroslav.jovovic@cbcg.me

Abstract: Successful development of electronic banking is in direct correlation with the quality of services in electronic banking. Therefore, it is necessary that the banks are familiar with the attributes of electronic services on which clients assess the bank's quality and client's satisfaction with them, in order to be able to monitor, correct and improve the performance of electronic banking. We start from the hypothesis that there are already developed theoretical models for measuring the quality of e-banking services but they must be adjusted to the specific environment that is analysed in order to obtain reliable and quality information. The qualitative and quantitative research methods are applied in this paper in order to get adjusted theoretical model (instrument) for measuring the quality of electronic banking services. As a result of the conducted analysis, the initial theoretical model has been modified, so that the final version of the model (instrument) for measuring quality of online banking allows obtaining reliable data, and information in the particular environment. And the results are: significant information about the quality of e-banking, modified theoretical model, information about the dimensions of quality of e-banking, customer satisfaction, and pathways and guidelines for the improvement of e-banking. The measuring of quality of electronic banking services in not one time activity but repeated one, as permanent monitoring strategy. This research is widely applicable even though it was conducted in the context of Montenegrin e-banking, since most of the banks in Montenegro are owned by well-known European banks, and it is expected that the obtained knowledge and information can be generalized.

Keywords: electronic banking, electronic services, service quality, models, information technology

JEL classification: G21, D80, L00, I86

1. Introduction

Electronic banking (e-banking) is a “use of technology that allows clients to electronically perform banking transactions without visiting a bank” (Sethi & Bhatia, p. 55). E-banking is providing not only essential services, such as checking account balances, transferring from the account and others, but it develops into various multi-services for its users. E-banking offers a unique service that can be distinguished from traditional offers in banks, including the provision of financial information services, online loan applications, investment products (e.g. buying bonds), and other financial products (e.g. buying life insurance or car insurance), as well as third-party services (e.g. online tax payment, online bill payment) and other similar products. From the client’s perspective, attractiveness of e-banking include: providing services anywhere and anytime, 24-hour availability, no queues, low cost service, speed of provided services, etc. Users are now able to choose their service provider if their demands are not met, given that through e-banking the costs of changing provider have been reduced. The real challenge for providers of banking services is a timely response to demands of these users, given that slow reaction brings risk of losing the existing customers. With these challenges, service quality plays a very important role. Clearly, providing quality services is a guarantee to meet the needs of users, as well as their retention.

Simply said, services are activities, processes and performances. The most important specifics of services with the greatest degree of agreement among experts in this field are the following:

- Intangibility of services,
- Simultaneity (inseparability) of production and consumption of services,
- Heterogeneity (variability) of services,
- Perishability (impermanence) of services.

The specificity of these services is that they could not be in physical possession. Due to their peculiarities, some authors suggest that, in addition to the classic characteristics of services which separate them from physically tangible products, financial services should introduce additional three specificities, to position them in relation to the (physical) products, but also to other services, such as:

- Responsibility to the clients (creditors)
- Duration of the service consumption, and
- Contingency of service

Financial services are complex, but fiduciary responsibility is related to the providers (financial services i.e. financial institutions) who provide financial advice

and manage the money of their clients. This imposes a special responsibility to the financial institutions to explain in detail all the positive and negative aspects of the services they provide to their customers.

Duration of spending and the specificity of financial services are often a long-term, so managing the relations becomes very important. Intangibility is considered the most important feature of services, and all other qualities derive from it. At the banks, as financial organizations, the indicators of quality could be humanistic and mechanical. Humanistic indicators relate to the behaviour of employees towards customers, and mechanical includes relation between the cost and quality of services. Banking services fall into the categories of services where the intangibility is very strong. Transience, i.e. impermanence of services, as the last feature of banking services, arises from the fact that it cannot be stored, preserved, saved or returned. Impermanence is not a problem if the demand for banking products and services is permanent (steady). If demand fluctuates, service companies face problems. A bank needs to develop its operations in a manner to provide good service at the moment when there is a need for this service. Failure to satisfy users' needs, for example due to a malfunctioning ATM, inevitably leads to dissatisfaction of clients.

2. Quality of e-banking

In summary, the quality of service perceived by a user is based on a comparison of expectations (e.g. what the user can expect from company's offer) and performance (e.g. what are the user's experience and perception in relation to the service provided). In other words, the quality of service can be defined as the gap or difference between the expected and the services provided. Parasuraman et.al (1988) – nje navedeno u references concluded that the quality of services is „a total evaluation of a company that is a result of comparison between the company's performance and the user's expectations about how the companies in given industry should do business.”

Clearly, online services (e-services) are services provided via the Internet, which makes it different from traditional services. In other words, providing online services depends on the information that service providers initially collect from the user, and then analyse. In this way, they can offer services that are in demand, as well as personalized services. Thanks to the rapid development of information technology, online services have already contributed to some changes in habits and people's everyday lives, especially in communication between companies and customers. The main advantage of online services is not only the fact that

their role is crucial for successful e-business, from the perspective of service providers, but also that providing high quality services enables interaction in terms of information flow (Yang, and Fang, 2004).

Comprehension of the online service concept should help better understanding of the quality of online services. According to Santos (2003), the quality of e-services is an overall assessment of the service provided on the virtual market from the perspective of the user. In their study, Zeithaml, Parasuraman, & Malhotra (2000) defined the quality of e-service as a degree to which a website can promote the whole process of online trade, including efficient and effective shopping of products and services. The competitive advantage is one of the major advantages that quality online service can provide through e-commerce. To sum up, the quality of e-services has enormous potential that can be used in realizing the business strategy and improving the efficiency and profitability (Cronin, 2003). Also, the quality of online services has a significant role in the era of information technology. With the increasing popularity of online banking services grows the need to develop scale for assessing e-service quality. Moreover, numerous researches were conducted to define the scale for assessing the e-service quality in order to improve e-business. Those scales for assessing e-service quality can be divided into two categories, based on priorities and tendencies of the very research: website design quality and electronic retailing service quality.

2.1. Theoretical model

The theoretical model applied is ES-QUAL/E-Rec S-QUAL, developed by Parasuraman, Zeithaml & Malhotra (2005), modified for measuring the quality of online banking services. ES-QUAL / E-Rec S-QUAL involves the interaction between the user interface and website, but also the process of trade and services after the interaction. It is believed that the ES-QUAL/E Rec-S-QUAL is model comprehensive measurement of quality assessment of online services that includes prior experience (which can be understood as an estimation of the website quality), during (the purchasing process) and after the transaction process (service after finishing the sale).

Selection of theoretical basis is not made just for the popularity of its application, but also for the results of involvement in the whole process before, during and after completing the transaction process. In other words, the focus is on the post-transaction services, which actually confirm successful or unsuccessful completion of the transaction, provide security to the customer, and create reputation of the service provider.

The model established in this paper was revised by the ES-QUAL/E-Rec S-QUAL instrument. Quality dimensions of e-banking services consist of: efficiency, privacy, readiness to provide answers/contact, as well as dimensions of security, empathy, and website design. Some of them: effectiveness, privacy, responsiveness (willingness to provide answers/ contact) have been taken from the theoretical model ES-QUAL/E-Rec S-QUAL, which serves as the basis, while the rest of dimensions have been taken from other similar models in accordance with the needs of e-banking services in Montenegro.

Efficiency: Parasuraman et.al (2005) defined it as “the ease and speed of accessing and using the website”, including the page loading speed, quick finding what is in the user’s interest, etc. As a result, there are 6 items for this dimension in the survey for data collecting. In fact, the definition of efficiency includes “ease of navigation” and “approach” which have been mentioned in the first phase of the development of E-SERVQUAL instrument.

Privacy/Trust: This dimension is defined as the degree to which the site is safe and protects information about the user. Finally, there are three items on this dimension.

Willingness to provide answers/contact: This dimension combines responsiveness and contact. It actually means “effective solving problems and successful comeback through the website, as well as the availability via phone or online representatives”. There are four questions in the survey for data collection, related to this dimension.

Safety: According to Parasuraman, Zeithaml, & Malhotra (2000), this dimension is defined as “confidence that the user feels while working on the website, its reputation, and clear and credible information provided through the website.” This dimension covers five questions in the survey for data collection.

Web site design: This concept is very similar to the aesthetic dimension of the website that have been mentioned in the first phase of developing the E-SERVQUAL instrument (2000). The website aesthetics is defined as “the look of the site” Parasuraman et al (2000). According to Ho & Lin (2010) website design referred to the design of website, such as content updating coinciding with dimensions of a lot of previous studies (Aladwani, and Palvia, 2002; Yang, and Fang, 2004), but not limited to technical development, visual design etc. Wolfinbarger & Gilly (2001) have said that access to information plays an important role in online shopping. However, this system helps users to more time savings, if the information is available and accessible. In general, web design can facilitate the

application of information technology, and access to online banking services. This dimension includes four items in the survey for data collection.

Empathy: This dimension is defined as “providing attention, individualised attention to customers” (Parasuraman, Valerie, Zeithaml & Berry, 1985). To make it easily understandable, this actually means that providers put themselves in the position of consumers. According to the real needs of consumers, the products and services are manufactured and offered. At the same time, based on Parasuraman et al. (2000), customization is defined as “how much and how easy the website can be adjusted to individual users, their purchase history, and ways of their purchases.” As such, the dimension of customization has typical characteristics of empathy. This dimension is defined through four questions in the survey for data collecting.

Compensation/preferential treatment: According to Parasuraman et al. (2005), this dimension is defined as “the degree to which the website reimburse customers for the problem that has occurred.” This dimension is linked to the dimension of “price knowledge”, which is explored in the first phase of E-SERVQUAL development by Zeithaml et al. (2000). Originally, these dimensions have been used for measuring the quality of online shopping services when problems occur. Ratings of respondents are classified through two questions in the survey for data collection.

3. Methodology

The aim of the theoretical part is to obtain the necessary information and knowledge about e-banking, and to establish the corresponding multiple scale for measuring the quality of electronic services based on ES-QUAL E-Rec S-QUAL model and other related models. The empirical part tests the models through data collection and statistical analysis with a focus on the analysis of factors, in order to ultimately obtain an improved scale for measuring the quality of online banking in Montenegro.

Hence, we have combined qualitative and quantitative research. Qualitative research has allowed deeper understanding of e-banking and its quality. “Empirical insight” has connected the theory with real life practice. Through quantitative research, the focus was on data collecting and processing, in order to ensure reliability and validity. (Amaratunga et al, 2002).

The five-point Likert scale was used to measure and assess the attribute quality of service in the survey that has been used in the study. It is most commonly used and considered to be the simplest. It consists of five different levels of attitudes. The usual form of a five-point scale includes the following: 1. «I strongly disagree», 2. «I agree», 3. «I am neutral», 4. «I agree to a large extent», 5 «I fully agree». Thus, each number can represent a different attitude level. Once we collected all the polls, we used the quantitative method to determine «to which extent» the customer sees and experiences the quality of e-banking services in Montenegro today. In addition, based on the collected data, it was necessary to perform statistical analysis, i.e. analysis of the factors. Also, thanks to the statistical data analysis, the results of measuring the quality of e-banking can be tested and further improved.

Data collected for the purposes of this study have been analysed in SPSS software. According to the purpose defined in the empirical part of the study, to manage data obtained from the survey we used: descriptive statistics, correlation of the items with the total score (item-total), Cronbach's alpha reliability test, a detailed analysis of the factors, using analysis of the principal components through method of extraction.

4. Data analysis

Before the EFA (Factor Exploratory Analysis), KMO (Kaiser-Meyer- Olkin) test and Bartlett's test have been conducted to ensure adequate factor analysis for this measurement. KMO index higher than 0.5 is a standard for performing factor analysis. P-value of Bartlett's test is below 0.05. The adequacy of KMO test and adequacy of the sample is 0.932. Exploratory factor analysis is adequate for further measurement. (Table 1)

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.932
Bartlett's Test of Sphericity	Approx. Chi-Square	3803.418
	Df	406
	Sig.	.000

After the previous step, factor analysis with Principal Component Analysis, as a method of extraction, was performed in 135 cases. The analysis has provided results indicating that three factors could be drawn from all the data. According

to the Kaiser's criterion, the number of factors is performed if the value is higher than 1.

The Rotated Component Matrix (Table 2) shows the correlation between each variable (rows) and various factors (columns). Each variable should refer to the factor with best correlation. Variable Q23 was ejected from the model because it almost equally correlated two factors.

Table 2: Rotated Component Matrix (a)

	Component		
	1	2	3
bo10	.805		
wd18	.677		
wd20	.674		
po15	.668		
po16	.667		
wd19	.629		
bp7	.628		
po17	.599		
bp9	.589		
bp8	.579		
po14	.575		
po13	.560		
na28	.535		
E4	.	.786	
E2	.	.761	
E3	.	.715	
E5	.	.694	
E1	.	.684	
em23			.572
E6	.	.524	
wd21		.524	
wd22		.519	
na27			.746
po12			.685
em24			.674
bo11			.612
em25			.602
em26	.		.596
na29			.592

Factor analysis has resulted in changing dimensions of the initial model. Based on the analysis of dispersion level within factor, authors have created new dimensions such as: website, design and reliability, efficiency, communication, and empathy (Table 3).

Table 3: New dimensions

Dim	Description of dimensions
1	Website design and reliability
2	Effectiveness
3	Communication and empathy

4.1.1. Reliability and validity

Reliability refers to internal reliability or internal consistency, i.e. the extent to which all items of one dimension can measure the same thing and express the same idea. The Cronbach's Alpha Test of reliability was applied for this purpose. Table 4 shows the result according to the new dimensions, which confirm the high reliability.

Validity is the "possibility of scale or measuring instrument to measure what needs to be measured" (Eriksson and Wiedersheim-Paul, 1997, p.38). Although there are various types of validity, including apparent (facial) validity, construct validity, criterion validity, etc., the construct validity is determined. It is defined as the «degree to which an instrument measures the ability or theoretical construct that needs to be measured» (Miles, & Huberman, 1994, p. 87). Convergent and discriminant (divergent) validity were applied for the purpose of assessing the construct validity.

Table 4 shows that all dimensions are highly reliable and items related to each dimension can be used to measure the related construct. The survey covers 164 completed questionnaires, of which 135 were completed, so the questionnaires with missing data were eliminated, (i.e. 135 respondents were analysed).

Table 4: Cronbach's Alpha Test by dimensions

Dim	Description of dimensions	Cronbach's Alpha
1	Website design and reliability	0.970
2	Effectiveness	0.929
3	Communication and empathy	0.898

4.1.2. Descriptive statistics

Demographic data. We can see demographic information about the interviewed users. As shown in Table 5, there are 43.7% male users, and 56.3% female users. As shown in Table 6, 66.7% of the users are between 19 and 28 years old, and 25.2% are between 29 and 38 years old, which is understandable in accordance with the criteria of the target group between 19 and 38. Most of the respondents are company employees. Clearly, online banking services are very popular among people with a university degree. Also, e-banking is popular among employees in different areas, as the percentage that applies to them is higher than 20%. As seen in Table 9, the users of all income categories have significant interest in online banking.

Table 5: Gender

	Frequency	Percent	Cumulative Percent
Male	59	43.7	43.7
Female	76	56.3	100.0
Total	135	100.0	

Table 6: Age

	Frequency	Percent	Cumulative Percent
18 and below	3	2.2	2.2
19-28	90	66.7	68.9
29-38	34	25.2	94.1
39 and above	8	5.9	100.0
Total	135	100.0	

Table 7: Education

	Frequency	Percent	Cumulative Percent
High School (4 years)	19	14.1	14.1
Faculty (basic study)	94	69.6	83.7
Master's degree	21	15.6	99.3
PhD	1	0.7	100.0
Total	135	100.0	

Table 8: Occupation

	Frequency	Percent	Cumulative Percent
Company employee	52	38.5	38.5
Administration employee	26	19.3	57.8
Student	27	20.0	77.8
Just an employee	8	5.9	83.7
Worker	7	5.2	88.9
Unemployed	9	6.7	95.6
Other	6	4.4	100.0
Total	135	100.0	

Table 9: Average earnings

	Frequency	Percent	Cumulative Percent
less od 200 €	29	21.5	21.5
200 to 300 €	26	19.3	40.7
300 to 500 €	33	24.4	65.2
More than 500 €	47	34.8	100.0
Total	135	100.0	

Analyses that relate to the use of e-banking. The profile of e-banking user can be seen in Tables 10 to 16. Table 11 shows that Crnogorska komercijalna banka (owned by OTP Bank of Hungary) is the one most used for online banking.

Table 10: Client's bank

	Frequency	Percent	Cumulative Percent
Crnogorska komercijalna banka	39	28.9	28.9
Societe Generale Montenegro	29	21.5	50.4
Erste banka	8	5.9	56.3
Atlas banka	7	5.2	61.5
Prva banka Crne Gore	11	8.1	69.6
Hipotekarna banka	15	11.1	80.7
Other	26	19.3	100.0
Total	135	100.0	

According to Table 11.10% of customers use e-banking more than 8 times per month and 53.3% use e-banking services twice a month or less. Table 13 shows that the most common e-banking is daily payments and payments of bills. Less popular service is investing and financing online. Table 16 shows that more than

60% of users have more than one year of experience in e-banking. The result is quite good and shows that e-banking is widespread. Furthermore, the Internet is the most powerful advertising channel, with essential attributes of quality: safety, convenience, and ease of use.

Table 11: Frequency of use per month

	Frequency	Percent	Cumul. percent
Two times or less	72	53.3	53.3
3-5 times	37	27.4	80.7
6-8 times	9	6.7	87.4
8 or more times	14	10.4	97.8
8	3	2.2	100.0
Total	135	100.0	

Table 12: Reasons of use

	Frequency	Percent	Cumul. percent
Online shopping and payment	56	41.5	41.5
Time saving and comfort	44	32.6	74.1
Easier than going to the bank	19	14.1	88.1
Necessity of use for some transactions	16	11.9	100.0
Total	135	100.0	

Table 13: Types of services

	Frequency	Percent	Cumul. percent
Money transfer	36	26.7	26.7
Investing and financing	6	4.4	31.1
Daily operations	45	33.3	64.4
Payment of bills	24	17.8	82.2
Account balance	18	13.3	95.6
All of the above	6	4.4	100.0
Total	135	100.0	

Table 14: Information about E-Banking

	Frequency	Percent	Cumul. percent
Internet	64	47.4	47.8
Directly from a friend or acquaintance	28	20.7	68.7
Television	4	3.0	71.6
Promotion of bank staff	24	17.8	89.6
Magazines and newspapers	1	.7	90.3
Other sources	13	9.6	100.0
Total	134	99.3	
Missing	1	.7	
	135	100.0	

Table 15: Quality of service

	Frequency	Percent	Cumul. percent
Safety	38	28.1	28.1
Lower commissions	8	5.9	34.1
Quality of staff providing services	3	2.2	36.3
Benefits and ease of use	43	31.9	68.1
Adaption to customer service	11	8.1	76.3
All of the above	32	23.7	100.0
Total	135	100.0	

Table 16: Years of use

	Frequency	Percent	Cumul. percent
Less than 1 year	52	38.5	38.5
1 to 3 years	39	28.9	67.4
3 to 5 years	30	22.2	89.6
More than 5 years	14	10.4	100.0
Total	135	100.0	

4.1.3. Analysis of respondent's satisfaction (quality dimensions)

The idea behind these calculations is to conclude on the relative satisfaction of respondents for each survey and different quality dimensions separately. The results of this analysis show the real quality of e-banking and what should be done in the future. The highest percentage of answers (46%) in all dimensions is 2 (I agree), which can be taken as a solid level of satisfaction with e-banking. Espe-

cially important for the overall picture is that only 11% of respondents chose 1 (I totally disagree), which is really positive and indicates that e-banking has a serious progress in Montenegro. This calculation shows satisfaction with the quality of e-banking services, which dimensions and elements need to be more developed, and which aspects of online services should be given special attention?

Table 18 shows response frequencies in percentages by the Likert scale degrees and in all respects in order to gain a deeper insight into how customers perceive the quality of e-banking services that they utilize, based on different quality dimensions of the modified theoretical model. Table 17 summarizes the response frequency by dimensions.

Table 17: Percentage schedule of responses by questions

	Degrees of Likert scale				
	1%	2%	3 %	4%	5%
Web design and reliability	11.1	43.3	22.1	15.1	8.5
Effectiveness	12.2	55.3	18.4	20.8	7.9
Communication and empathy	12.5	52.3	29.8	13.7	6.6

Calculating the percentage of those who chose 1 from the Likert scale shows how many respondents are dissatisfied with the quality. First, it must be observed that the percentages of dissatisfied respondents are not so high (website design and reliability 11.1%, efficiency 12.2%, communication and empathy 12.5%). Detailed insight shows that a greatest dissatisfaction is with questions 7, 14, and 3.

The number of respondents who chose level 2 on the Likert scale is high (43.3 for website design and reliability, 55.3 for efficiency, and 52.3 for communication and empathy). Slightly lower is the percentage of the design dimensions and reliability. The number of people who chose level 3 is symptomatic (22.1 for website design and reliability, 18.4 for efficiency, and 29.8 for communication and empathy). Slightly lower is percentage of the design dimensions and reliability. The number of people who chose level 4 on the Likert scale is low (15.1 for website design and reliability, 20.8 for efficiency, 13.7 for communication and empathy).

A respectable proportion can be noted at 4 and 5 degrees of the scale, about 20%, but it is also clear that e-banking services in Montenegro are not at a satisfactory level and that there is ample room to increase customer satisfaction. This applies to all dimensions.

Table 18: Percentage schedule of responses on a scale by question

No.	Questions Position	Degrees of Likert scale				
		1%	2%	3%	4%	5%
1	10	9.6	40.7	22.2	17.0	14.4
2	18	11.1	44.4	20.0	14.8	9.6
3	20	11.9	47.4	22.2	10.4	8.1
4	15	14.2	41.0	23.1	11.9	9.7
5	16	8.1	48.1	17.0	17.8	8.1
6	19	13.3	44.4	21.5	11.1	9.6
7	7	15.6	37.0	27.4	14.1	5.9
8	17	6.7	47.4	20.7	17.0	8.1
9	9	5.2	47.4	21.5	12.6	13.3
10	8	10.4	42.2	17.8	20.0	8.9
11	14	18.5	37.0	31.9	9.2	3.4
12	13	11.9	41.5	18.3	21.5	5.9
13	28	8.1	44.4	23.7	18.5	5.2
14	4	14.1	47.4	15.6	16.3	6.7
15	2	11.1	52.6	11.9	16.3	8.1
16	3	14.1	43.0	14.8	23.7	4.4
17	5	8.1	47.4	12.6	20.7	11.1
18	1	8.9	56.3	13.3	14.8	6.7
20	6	8.1	48.9	16.3	17.0	8.9
21	21	12.6	44.5	21.5	19.3	5.2
22	22	8.1	46.7	23.0	17.8	4.4
23	27	8.4	47.9	21.0	18.5	4.2
24	12	9.6	43.0	34.1	8.9	3.7
25	24	14.8	40.0	25.9	15.6	3.7
26	11	8.9	47.4	22.2	12.6	8.9
27	25	11.1	43.7	30.4	8.9	5.9
28	26	11.1	44.4	22.2	6.3	5.9
29	29	11.1	47.4	23.0	11.1	7.4

5. Conclusion

Today, banking is undergoing intensive transformation under the influence of information and communication technologies. Considering that high investments in the Internet infrastructure, customer satisfaction, and his/her binding is a crit-

ical success factor in e-banking, creating positive customer value on the Internet requires the establishment of long-term customer relationships (Bauer Hamerschmidt & Falk, 2005). One way to achieve customer satisfaction and their loyalty is to offer high quality services. This is the reason why banks should be trained to measure and assess the quality of their online banking services. Without this information, banks simply cannot take corrective actions if customers are not satisfied with their services, which leads to the total failure of e-banking.

The theoretical part of this paper defined and established the suitable multiple e-bank service measurement scale based on E-SERVQUAL model and other related models. In the empirical part of the paper, the model for measuring the quality of services of e-banking was created, taking into account specificity of e-banking in Montenegro. The model allows drawing conclusions on customer satisfaction with the quality of various e-banking dimensions.

The Cronbach Alpha Reliability Test and the Component Analysis were used for data analysis and testing. The Cronbach Alpha Reliability Test showed the relative reliability of dimensions used in the model. Analysis of the major components has led to some changes in the initial theoretical model, based on previously conducted studies: the number of dimensions was reduced to three, including web design and reliability, efficiency, as well as communication and empathy.

Thus, the final version of an instrument for measuring e-banking quality consists of a scale with three dimensions: web design and reliability, efficiency and communication, and empathy, with 28 questions.

After modifying the theoretical model in order to obtain a better quality of instruments for determining e-banking quality, the authors performed a descriptive analysis. In addition, customer satisfaction with the different dimensions of quality relating to the modified theoretical model was assessed with a view to concluding which aspects of e-banking services should be improved and which must be monitored by the bank management. Given that research included a well-known European bank with branches in Montenegro, all information and knowledge gained in this survey could be applied to a variety of banks and countries. Research clearly indicates that users of e-banking are predominantly satisfied with the quality of online banking on a small scale. A significant number of users is completely dissatisfied (11%). Banks need to develop and promote all the dimensions to win customer satisfaction. The users of e-banking services must be pleased with the services of e-banking in a higher percentage, so in the coming period more and more users of traditional banking services could start using e-banking. Many users of electronic banking will inevitably imply the update of

the existing databases in commercial banks, by introducing more precise unambiguous data series, which will certainly lead to a higher customer satisfaction with e-banking services. The survey results indicate that there are underutilized promotional channels through which commercial banks could reach out to potential clients.

References

1. Aldwani, A. , Plavia P. (2002), Developing and Validating an Instrument For Measuring User-Perceived Web Quality, *Information & Management*, Elsevier.
2. Amaratunga, D., Baldry, D., Sarshar, M. & Newton, R (2002), Quantitative and Qualitative research in the built environment: application of mixed research approach, *Work Study*, Vol. 51, No 1, PP 17-31.
3. Babakus, E., B. G.W. (1992), An empirical assessment of the SERVQUAL scale, *Journal of Business Research* 24.
4. Bauer, H., Hammerschmidt, M & Falk, T. (2005). Measuring the quality of E-banking portals. *International Journal of Bank Marketing*, Vol. 23, No. 2, pp. 153-175.
5. Caraman J.M. (1990), *Consumer* perceptions of service quality: An assessment of the SERVQUAL dimensions, *Journal of Retailing* 66.
6. Cronin, M. (2003), *Transition and Globalisation*, Routledge, London, and New York
7. Eriksson, L.T., & Wiedersheim-Paul, F. (1997), Att Utreda, Forska och Rapportera, *Malmö: Liber Ekonomi*.
8. Grönroos, C. (1984), A Service Quality Model and its Marketing Implications, *European Journal of Marketing*, Volume 18, Iss:4.
9. Ho, C. T. B., and Lin, W. C. (2010) Measuring the Service Quality of Internet Banking: Scale.
10. Development and Validation. *European Business Review*, Vol. 22, No. 1, pp.5-24
11. Johnson, R. (1995), *The determinants of service quality: satisfiers and dissatisfiers*. *International journal of service industry management*, Vol.6, No.5, 1995.
12. Joseph, M., M. C., Joseph B. (1999), *Service quality in the banking sector: the impact of technology on service delivery*, *International journal of bank marketing*, Vol.17, No.4.
13. Keating, B., Rugimbana R., Quazi A. (2003), Differentiating between service quality and relationship quality in cyberspace, *Managing Service Quality*, 13, (3).
14. Kenova V., Jonasson P. (2006), *Quality online banking services, Technical Report*, Jonkoping International Business School.
15. Lewis B.R. (1991), Service quality: An international comparison of bank customers' expectations and perceptions, *Journal of Marketing Management* 7.

16. Miles, M.B., & Huberman, A.M. (1994), *Qualitative Data Analysis*, Thousand Oaks, CA: SAGE Publications.
17. Parasuraman, A., Valerie, A. Zeithaml, L. Berry, L. (1985), A conceptual model of service quality and its implications for future research, *Journal of Marketing*, Vol.49 (4) Fall.
18. Parasuraman, A., Zeithaml, V., Malhotra, A. (2000), *E-S-QUAL A multiple-Item scale for assessing electronic service quality*, University of Miami, University of North Carolina at Chapel Hill.
19. Parasuraman, A., Zeithaml V., & Malhotra A. (2005), E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality. *Journal of Service Research*, Vol.7, No.3, pp. 213-233.
20. Parasuraman, A., Zeithaml, Valerie A., Berry Leonard L.(1991), Refinement and reassessment of the SERVQUAL scale, *Journal of retailing*, Vol.67, No.4.
21. Parasuraman, A., Zeithaml, Valerie, A., Berry, L.(1991), Perceived service quality as a customer-based performance measure: An empirical examination of organizational barriers using an extended service quality model, *Human resource management*, Vol. 30, No.3
22. Parasuraman, A., Zeithaml, Valerie, A., Berry, L.. (1990), *Delivering quality services: Balancing customer perceptions and expectations*, USA: Free Press.
23. Parasuraman, A., Zeithaml, V. A. and Berry, L. L. (1988) "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Services Quality", *Journal of Retailing*, Vol. 64 No. 1.
24. Parasuraman, A., & Grewal, D. (2000), *The impact of technology on the quality-value- loyalty chain: a research agenda*, *Journal of the Academy of Marketing Science*, Vol. 28, No. 1, pp. 168-174.
25. Santos, J. (2003), E-service quality: a model of virtual service quality dimensions, *An international Journal*, Vol 13, Iss 3, pp 233-246, MCB UP Ltd.
26. Sethi, J., Bhatia, N. (2008), „*Elements of Banking and Insurance*“, PHI Learning Private Limited, New Delhi.
27. Yavas, U., Bilgin, Z., Shemwell, D.J. (1997), Service quality in the banking sector in an emerging economy: a Customer Survey, *International journal of Bank marketing*, 15/16.
28. Waite, K., Harrison, T. (2002), Consumer expectations of online information provided by bank Web sites, *Journal of Financial Services Marketing*, Vol.6, No.4.
29. Wang, Y., Lo, H., & Hui, Y. (2003), The antecedents of service quality and their influences on bank reputation: evidence from the banking industry in China. *Managing Service Quality*, Vol. 13, No.1, pp.72-83.
30. Wolfenbarger, M. and Gilly, M., (2001), Shopping Online for Freedom, Control, and Fun, *California Management Review* Vol. 43, No. 2: 34-56.

31. Yang, Z., and X. Fang (2004), Online service quality dimensions and their relationships with satisfaction: A content analysis of customer reviews of securities brokerage services, *International Journal of Service Industry Management*, Vol. 15 No. 3, pp. 302-326.
32. Yang, Z., and M. Jun (2002), Consumer perception of e-service quality: From Internet purchaser and non-purchaser perspectives, *Journal of Business Strategies*, Vol. 19 No. 1, pp. 19-41.
33. Yang, Z. M Jun, and R.T. Peterson (2004): Measuring customer perceived online service quality: scale development and managerial implications, *International Journal of Operations & Production Management*, Vol. 24 No. 11, pp. 1149-1174.
34. Yang, Z. Yang, R.T. Peterson, and S. Cai (2003), Services quality dimensions of Internet retailing: An exploratory analysis, *Journal of Services Marketing*, Vol. 17 No. 7, pp. 685-70.
35. Zeithaml, V.A., Parasuraman, A. & Malhotra, A. (2000), A Conceptual Framework for Understanding E-Service Quality: Implications for Future Research and Managerial Practice. Marketing Science Institute, Working paper, Report Number 00-115.

Appendix: The final questions in Lickert's scale with new dimensions

This appendix shows the redesigned questions for Likert's scale, rearranged by new dimensions.

Q. N.	Q. P.	Explanation	Dimension
1	10	Employees in the customer service provide good service	Web design and reliability
2	18	Questions relating to the interests and rights of users are visibly located on bank's website	
3	20	Information provided through this website are regularly updated (i.e. these information are topical)	
4	15	Website protects credential of bank cards users	
5	16	Website can react to problems and solve them immediately	
6	19	Website map is very clear, content and images placed on the portal are comprehensible to the users	
7	7	System is stable and reliable (no situation can terminate the transaction)	
8	17	Website can provide adequate solutions to the problems (e.g. several solutions)	
9	9	Reputation and image of e-banking are good	
10	8	Customer service employees have professional knowledge and skills	
11	14	User has confidence in e-banking services	Efficiency
12	13	Website offers several ways to protect the security (password, etc.)	
13	28	E-banking has a reasonable commission for conducting transactions through this service	
14	4	Use of e-banking bank is simple and easy	
15	2	User can quickly and easy get the necessary information from the website	
16	3	Website is loading quickly	
17	5	Navigation (moving) through the website is easy	
18	1	Website can quickly process the information and transactions	
20	6	Information provided by the website are reliable and accurate	
21	21	E-banking provides complete information on the characteristics of different products/services	Communication and empathy
22	22	Website provides various ways of logging (entry) on the portal of e-banking (such as name, account number, etc.)	
23	27	Website contains a promotional video that shows how to use e-banking services	
24	12	Transactions can be performed in a safe mode	
25	24	Website offers a variety of electronic instructions, (i.e. search options)	
26	11	Website can protect users' personal data without abuse	
27	25	Website can offer customized services	
28	26	E-banking is an authorized service for supporting and solving a large number of businesses	
29	29	E-banking provides preferential transaction pricing	
99	23	Information conveyed on this website are presented clearly	