

POSSIBILITIES OF DEVELOPING A SERVQUAL MODEL FOR MEASURING USER SATISFACTION

1 Perica Macura, Faculty of Economics, University of Banja Luka, Bosnia and Herzegovina

2 Aleksandar Smiljanić, Dobož, Bosnia and Herzegovina

*Corresponding author E-mail: perica.macura@ef.unibl.org

1 ORCID ID: [0000-0002-5823-3259](https://orcid.org/0000-0002-5823-3259)

2 ORCID ID: [0000-0001-8980-2947](https://orcid.org/0000-0001-8980-2947)

ARTICLE INFO

Original Scientific Paper

Received: 13.03.2021

Revised: 17.09.2021

Accepted: 25.09.2021

doi [10.7251/ACE2135053M](https://doi.org/10.7251/ACE2135053M)

UDC

005.336.3:338.488.2

Keywords: *marketing services, SERVQUAL, customer satisfaction, regression and correlation analysis.*

JEL Classification: M31.

ABSTRACT

This paper will explore the possibility of adapting the original SERVQUAL model for measuring customer satisfaction. The possibility of developing this model is given through its adaptation in practice. When it comes to services, customization of the original model is necessary due to their intangible nature. In the empirical part, the analysis of the level of user satisfaction with innovative electronic products and services of banks will be conducted through five dimensions of the adapted SERVQUAL model: efficiency, reliability, responsibility, trustworthiness and kindness, where the differences between the characteristics of an excellent bank and the consumer's perception of the performed services of the bank were examined. The collected data were statistically processed in the IBM SPSS program and included in the regression analysis, correlation matrix formation, as well as the analysis of importance – performance. The results of this research can provide additional useful information to decision makers to identify which dimensions of satisfaction with the service cause a sense of happiness in a customer, and which dimensions offer room for improvement of the service levels, in order to achieve the goal – a happy and satisfied customer.

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1. INTRODUCTION

Companies operating on the market are facing increased and sophisticated competition. In order to survive in a highly competitive services market, they realized that by using new technologies and innovative products/services, they can influence the level of consumer satisfaction, and meet their requirements that change very quickly. Consumer satisfaction and loyalty are a constant challenge and the ultimate goal of every company. Innovative products/services can differentiate

companies from the competition and enable them to gain a competitive advantage on the market. In order to know which direction to move, it is necessary to constantly measure the level of satisfaction of service users. This paper will seek to explore the effects and impact of innovative services on the perception and experience of bank service users in relation to five dimensions: efficiency, reliability, responsibility, trustworthiness and kindness, using the SERVQUAL model. In this way, the difference between expected and experienced experience of the using innovative products/services of the bank will be explored, the dimension that has the largest and the smallest impact on satisfaction will be determined, and based on this information it will be possible to give guidelines and recommendations to banks. This paper will try to prove that the development of models for measuring customer satisfaction can measure changes in customer satisfaction.

1.1. Customer satisfaction

Consumers are individuals or companies that buy and use products or services. The buyer of a product does not have to be a consumer. "A consumer is a person who consumes products and services to satisfy his needs and desires. The consumer is at the end of the product production chain, which is why the term end or an end consumer is often used." (Macura, 2009, p. 74). In order for a product or service to cause consumer satisfaction, it must make or do enough for the consumer, i.e. satisfaction is the consumer's assessment of the degree to which a product or service meets his expectations. "Satisfaction is the consumer's response to fulfillment. It is the assessment that the characteristics of a product or service, or the product or service itself, have provided (or provide) a comfortable level of consumption-related fulfillment, including levels of under- or over-fulfillment." (Oliver, 2015, p. 8). In order for a consumer to buy a product or service, in addition to meeting the needs, it is necessary to make the cost of obtaining the product or service lower than the benefits obtained. "Empirical research has shown that consumer satisfaction is a function of expectations associated with certain important attributes and performance evaluations of attributes" (Martilla & James, 1977, p. 77). In order for a company to meet the needs, desires and expectations of consumers, it is necessary to understand consumer: The American Marketing Association (AMA) says that consumer behavior is: "the dynamic interaction of affect, cognition, behavior, and environmental situations by which human beings manage aspects of exchange in their lives." (Peter & Olson, 2010, p. 5). "When choosing and buying a product or service, the individual does not act completely rationally, but also emotionally, and depending on the situation in the environment, there is a combination of these actions that

cause the purchase. Depending on the situation in this combination, sometimes rational action can prevail, sometimes emotional, and sometimes there can be an even influence of these actions” (Macura, 2009, p. 73). By using products and services, the consumer creates certain personal stances about the product or service. If a product or service causes a feeling of satisfaction in the customer every time, then that long-term relationship can grow into consumer loyalty. The road to a loyal consumer is long, so companies make additional efforts to get a loyal consumer with every transaction and interaction with the consumer.

1.2. Measuring customer satisfaction

SERVQUAL (SERvice QUALity) is a model for measuring the amount of customer satisfaction, so it can be used as a model for measuring the perception of service quality. We use the Likert scale (Rensis Likert) to assess the expectations and perceptions of service users. The Likert scale in a certain range gives the possibility to the service user - the respondent, to express his agreement or disagreement with the statement given, to express his position and perception or opinion on the given statement. The questions to which the respondents give answers are most often divided into two groups, so different Likert scales are used to express the respondents' views. In the first group of questions, where the given statements about the “excellent” service provider are evaluated, the respondents can evaluate the attitudes numerically from 1 to 5, i.e. respondents give answers in the range where the lowest score of 1 is less important and the highest score of 5 is very important. In the second group of questions, where the Likert scale is also used, respondents evaluate attitudes related to the perceived situation about the service provider and they can evaluate attitudes numerically from 1 to 5, where the lowest score is 1 – “I do not agree at all”, and the highest grade is grade 5 – “I totally agree”. In this way, the gaps that arise between the expectations and the perception of the respondents are identified. Authors Parasuraman, Cajtaml and Berry developed the SERVQUAL (Parasuraman, Zeithaml & Berry, 1985, pp. 41-50) model for service quality analysis. The last developed model contained five dimensions (Parasuraman, Zeithaml & Berry, 1988, p. 46): tangibility, reliability, responsibility, trustworthiness, and kindness. However, given the intangible and abstract nature of some (innovative) services, it is possible to adjust the original model by replacing the first dimension (tangibility) from the original model with the efficiency dimension, so in this paper the SERVQUAL model for measuring service quality examined the following dimensions:

- Efficiency - means the convenience and speed of using innovative services of service providers, the appearance of the web presentation, the appearance of the application, etc.

- Reliability - this dimension shows that the service provider tends to deliver on the promises made.
- Responsibility (affability) - is the will of employees to inform the service user when exactly things will be done, give them attention, promote services and respond in accordance with customer requirements.
- Trustworthiness (security) - is the security and knowledge of employees. Parasuraman says trustworthiness indicates employees' attitudes, behaviour, and ability to provide friendly, confidential, and competent services.
- Kindness (empathy) - means caring, paying attention and providing services to the user. The basis of kindness is that the user feels special and unique.

2. EMPIRICAL ANALYSIS

(Banking services)

2.1. Research methodology

Primary data were collected using the questionnaire method. The sample is a structured quota. The questionnaire contains 22 questions that are divided into five dimensions: efficiency, reliability, responsibility, trustworthiness and kindness.

Cronbach's alpha model was used to test the reliability of the measuring instrument, as well as correlation and regression analysis to determine the degree and direction of correlation between model variables. To demonstrate the importance of each relevant attribute, Importance-Performance Analysis was used. This method of sampling was chosen because a structured quota sample involves selecting people who are well informed about the topic or have experience, thus reducing costs and saving time.

The questionnaire consists of three parts. In the first part, the identification of the respondents is offered as an option, with the name of the evaluated bank being obligatory. In the second part of the questionnaire, the respondents assess the importance of the excellent bank's indicators and give assessments of the perception of satisfaction with the electronic products and services of the bank they assess. The Likert scale, which has values from 1 to 5, was used to evaluate indicators (claims) of importance and perception.

The questionnaire contains questions on the performance of components of banking products and services in five dimensions: efficiency - four indicators (claims) from 1 to 4, reliability - five indicators, from 5 to 9, responsibility (af-

fability) - four indicators, from 10 to 13, trustworthiness (security) - four indicators, from 14 to 17, and kindness (empathy) - five indicators, from 18 to 22. In the third part of the questionnaire, several standard questions were asked in order to determine the structure of the respondents to this research.

2.2. Theoretical and conceptual bases of used analysis methods

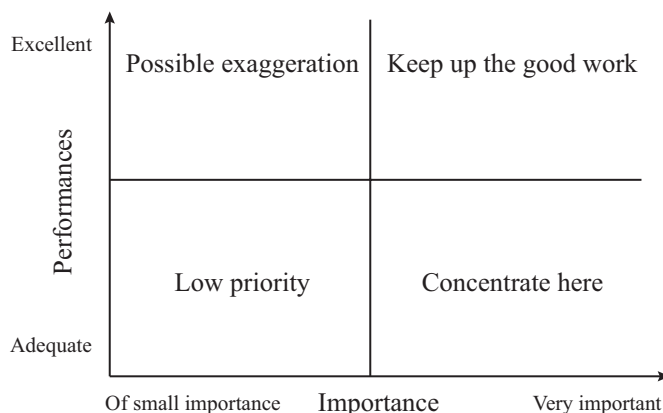
Several statistical methods were used to analyze the collected primary data using IBM SPSS Statistics.

Cronbach's alpha reliability coefficient

The analysis of the reliability measure of the measuring scale was performed using Cronbach's alpha reliability coefficient. Cronbach's alpha reliability coefficient was used to measure the internal consistency, i.e. reliability of the model, of both individual indicators and the overall sample. The Cronbach's alpha parameter can have values "grater than or equal to" $\alpha \geq 0.9$, where consistency is excellent, and $0.5 > \alpha$, where consistency is unacceptable.

Importance / performance analysis

The importance / performance analysis was used in the analysis of the collected data in order to examine which of the five basic characteristics (dimensions) most affect the satisfaction of users of electronic products and services of banks. The graph is obtained by first ranking the performance (performance) and the importance of the characteristics, and thus generating a two-dimensional matrix which is then divided into four quadrants.



Picture 1. Importance/performance analysis map

Source: Hemmasi, Strong & Taylor, 1994, p. 28

The meanings of these quadrants are (Ortinou et al., 1989, p. 80): Concentrate here - users think that a specific attribute is very important, but indicate that they are not satisfied with the performance of that attribute, keep up the good work - users think that specific attribute is very important and they are satisfied with the performance of that attribute, low priority - users think that specific attribute is not important and are not satisfied with performance of that attribute, possible exaggeration - users think that specific attribute is not important but satisfied with performance of that attribute.

Regression and correlation analysis

The correlation matrix provides insight into the linear relationship of variables. It contains the coefficients of linear correlation between all variables that are part of the model. Columns and rows are variables in the model, and the point of intersection of the row and column represents the correlation coefficient of the observed variables. The correlation matrix is symmetric. Observed along the diagonal of the correlation matrix, all the coefficients on it are one. This means that each variable is in a perfect direct linear relationship with itself. Multiple linear regression will be used for the analysis, because we have several independent variables (predictors) that determine the value of the dependent (outcome) variable, the regression function is linear by coefficient β , and regression will give good results predicting the value of the dependent variable based on independent variables. The general equation of the multiple linear regression model is (Žižić, Lovrić & Pavličić, 2000, p. 317):

$$Y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki} + \varepsilon_i$$

Where: Y_i -th is dependent variable, x_{1i} , x_{2i} , ..., x_{ki} -th are values of independent variables, β_0 , β_1 , β_2 , ..., β_k are model parameters, i.e. regression parameters - unknown constants, ε_i is a stochastic term, that is, a random error - a random component of the model, k is the number of independent variables. When calculating multiple regression analysis, the Backward Elimination method in the IBM SPSS Statistics program will be used. In this method, all independent variables are first put into the model (regression equation), and then those variables that do not meet the given conditions are successively removed from the model. At each subsequent step, the variables that are most likely to have occurred by chance are removed from the model. The value p (Pearson's p) is taken as the ejection criterion. The higher the value of the parameter p , the more likely it is that the results were random. The smaller the value (closer to zero) p , the more significant and relevant obtained results are. Durbin-Watson (Durbin & Watson, 1951,

pp. 159-178) statistics reveal whether there is an autocorrelation in the residuals (prediction errors) from the regression analysis. The values of this parameter are always between 0 and 4. Interpretation of Darbin-Watson (d) statistics results are: $d = 0$ - perfect positive autocorrelation, $0 < d < 2$ - positive autocorrelation, $d = 2$ - no autocorrelation in the observed sample, $2 < d < 4$ - negative autocorrelation, $d = 4$ - perfect negative autocorrelation.

3. ANALYSIS RESULTS - SAMPLE STRUCTURE ANALYSIS

Primary data were collected by filling out survey questionnaires, and a quota sample was chosen as a research sample, with the control variable being bank.

Combined electronically and by sharing the printed version of the questionnaire, a total of 258 completed questionnaires were collected. Out of the total number of questionnaires, 187 collected questionnaires are acceptable for this analysis. These 187 questionnaires contain questions answered by respondents from three banks (banks A, B and C). Other rejected questionnaires were either incomplete or related to banks that were not evaluated in this paper due to the insufficient number of collected questionnaires for those banks.

The structure of the research sample is shown in the following tables:

Table 1. Sample frequency according to the rated banks

Bank	Sample frequency	Percentage of bank participation in the total sample frequency	Cumulative percentage
A	72	38.50%	38.50%
B	64	34.22%	72.73%
C	51	27.27%	100.00%
In total	187	100.00%	-

Source: Authors' calculation

Table 2. Sample structure according to the gender of respondents

Gender	Frequency	Percentage	Cumulative percentage
Male	111	59.36%	59.36%
Female	76	40.64%	100.00%
In total	187	100.00%	

Source: Authors' calculation

Table 3. Sample structure according to the age of the respondents

Age	Frequency	Percentage	Cumulative percentage
15 – 24	5	2.67%	2.67%
25 – 34	56	29.95%	32.62%
35 – 44	80	42.78%	75.40%
45 – 54	18	9.63%	85.03%
55 – 64	19	10.16%	95.19%
65 +	9	4.81%	100.00%
In total	187	100.00%	

Source: Authors' calculation

Table 4. Sample structure according to the educational background of the respondents

Educational background	Frequency	Percentage	Cumulative percentage
Primary school	1	0.53%	0.53%
High school	51	27.27%	27.81%
Higher Education School	12	6.42%	34.22%
College	88	47.06%	81.28%
Master degree	19	10.16%	91.44%
Magister degree	12	6.42%	97.86%
Doctor	4	2.14%	100.00%
In total	187	100.00%	

Source: Authors' calculation

Table 5. Sample structure according to the monthly net income of the respondents

Monthly net income	Frequency	Percentage	Cumulative percentage
Up to 500BAM	19	10.16%	10.16%
501KM – 1000BAM	68	36.36%	46.52%
1001KM – 2000BAM	81	43.32%	89.84%
More than 2000BAM	19	10.16%	100.00%
In total	187	100.00%	

Source: Authors' calculation

Table 6. Sample structure according to the frequency of the use of electronic products and services by respondents (monthly)

Frequency of use of electronic products and services (monthly)	Frequency	Percentage	Cumulative percentage
1 – 3 times	75	40.11%	40.11%
4 – 6 times	53	28.34%	68.45%
7 – 10 times	29	15.51%	83.96%
11 and more times	30	16.04%	100.00%
In total	187	100.00%	

Source: Authors' calculation

Table 7. Sample structure according to the time of the use of electronic products and services by respondents (years)

Time period of using electronic products and services of banks	Frequency	Percentage	Cumulative percentage
Less than a year	33	17.65%	17.65%
1 – 5 years	94	50.27%	67.91%
5 and more years	60	32.09%	100.00%
In total	187	100.00%	

Source: Authors' calculation

Table 8. Sample structure according to the number of banks whose electronic products and services are used by respondents

Number of banks whose electronic products and services are used	Frequency	Percentage	Cumulative percentage
1	132	70.59%	70.59%
2	44	23.53%	94.12%
3	10	5.35%	99.47%
4 and more	1	0.53%	100.00%
In total	187	100.00%	

Source: Authors' calculation

Table 9. Sample structure according to the frequency of the use of electronic products and services in relation to the total number of respondents

Electronic products and services used by respondents	Frequency	Percentage of frequency in relation to the total number of respondents (187)
E-Mail	91	48.66%
ATM	179	95.72%
Payment terminal	70	37.43%
Debit/credit cards	142	75.94%
on-line bank services	70	37.43%
Electronic payment	127	67.91%
Electronic means of transfer of funds (EFT/NEFT/RTGS)	37	19.79%

Source: Authors' calculation

3.1. Servqual analysis of customer satisfaction with banking products and services

We will first examine the consistency of the results obtained by using the Cronbach's alpha coefficient.

Table 10. Reliability of perception of the total test sample

Cronbach's alpha	Cronbach's alpha based on standardized indicators	Number of indicators
0.955	0.955	22

Source: Authors' calculation

Based on the results obtained from the analysis of the survey questionnaires, it was concluded that the value of Cronbach's alpha for the reliability of perception of the total test sample was 0.955. Given that Cronbach's alpha acceptability scale says that for all α values greater than 0.9 the internal consistency is excellent, we can conclude that for the reliability of perception of the total test sample there is an excellent consistency of indicators within the dimensions.

Table 11. Overall statistics of perception indicators

	Arithmetic mean	Minimum	Maximum	Rank	Maximum/Minimum	Variance	Number of items
Arithmetic mean of the indicators	4.080	3.807	4.422	0.615	1.162	0.037	22
Variance of indicators	0.833	0.605	1.102	0.497	1.821	0.017	22

Source: Authors' calculation

Table 11 gives the overall statistics of perception indicators. It can be seen from the given table that the arithmetic mean of the perception indicator is 4.080, while the variance of the arithmetic mean of the perception indicator is 0.833.

Table 12. Reliability of expectations of the total test sample

Cronbach's alpha	Cronbach's alpha based on standardized indicators	Number of indicators
0.937	0.942	22

Source: Authors' calculation

For the reliability of the expectations of the total test sample, the value of Cronbach's alpha is 0.942. Based on the acceptability scale of the Cronbach's alpha coefficient, we can conclude that there is an excellent consistency of indicators within the expectation dimensions.

Table 13. Overall statistics of expectation indicators

	Arithmetic mean	Minimum	Maximum	Rank	Maximum/Minimum	Variance	Number of items
Arithmetic mean of the indicators	4.471	3.952	4.754	0.802	1.203	0.034	22
Variance of indicators	0.606	0.318	1.336	1.018	4.200	0.042	22

Source: Authors' calculation

Table 13 gives the overall statistics of the expectation indicators. It can be seen from the given table that the arithmetic mean of the perception indicator is 4.471, while the variance of the arithmetic mean of the expectation indicator is 0.606.

Table 14. Cronbach's alpha reliability coefficients of indicators – SERVQUAL

	Cronbach's alpha indicator of perception	Cronbach's alpha indicator of expectations
By using my bank's electronic products and services, I save time and reduce costs.	0.955	0.936
Making transactions using my bank's electronic products and services is fast.	0.952	0.935
I find my bank's electronic products and services easy to use.	0.952	0.935
The use of my bank's electronic products and services is available in multiple languages.	0.956	0.943
I have high confidence in the reliability of my bank's electronic products and services.	0.953	0.933
My bank's electronic products and services channels are available 24 hours a day.	0.955	0.936
My bank's electronic products and services are executed correctly on the first try.	0.953	0.934
The content on my bank's website is accurate, reliable and regularly updated.	0.953	0.933
All links on my bank's website are correct and the pages load quickly.	0.953	0.933
My bank's electronic products and services immediately respond to my requests.	0.952	0.933
Help is immediately available if there are problems with the use of electronic products and services of my bank.	0.952	0.932
The interaction with the services of electronic products and services of my bank is clear and understandable.	0.952	0.934
My bank's electronic products and services provide instant answers to my questions.	0.952	0.933
My bank's electronic products and services provide a high degree of protection for my data and the details of my transaction.	0.952	0.934
My bank's electronic products and services are secure and protected from fraud and hackers.	0.953	0.934
My bank's electronic products and services do not allow anyone but me to access my account.	0.953	0.934
My bank's electronic products and services do not share my confidential personal information with third parties.	0.954	0.935
My bank provides me with individual attention when using electronic products and services.	0.953	0.935
My bank notifies me of all important changes and information	0.952	0.935
I am satisfied with the level of assistance provided by the help desk and call centre of my bank.	0.954	0.933
My bank understands the specific needs I have when using electronic products and services.	0.952	0.935
My bank responds quickly and kindly to my complaints regarding the operation of electronic products and services.	0.953	0.933

Source: Authors' calculation

Based on the data from Table 14, it can be seen that Cronbach's alpha indicators of perception and Cronbach's alpha indicators of expectations are higher than 0.9 for all examined indicators, that is, for all twenty-two indicators from the questionnaire. Thus, we can conclude that there is an excellent consistency of the dimensions of SERVQUAL by indicators.

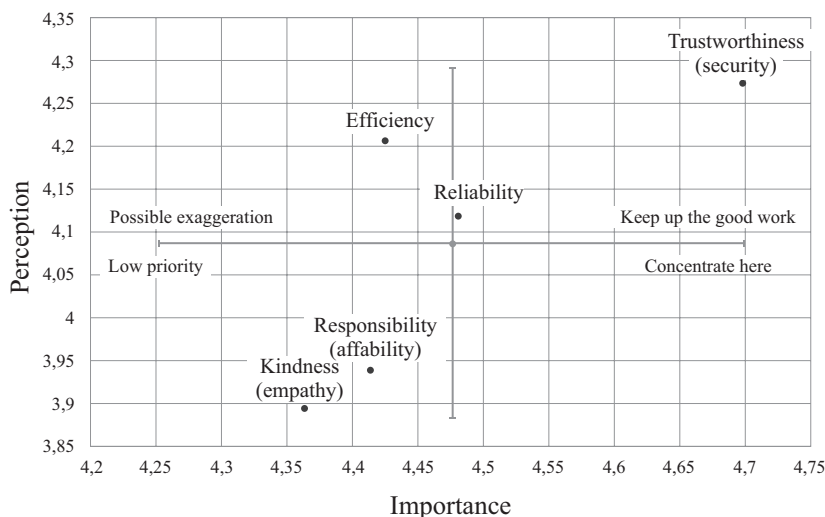
Table 15. SERVQUAL ratings by dimensions (value of Cronbach's alpha indicator)

Dimension	Perception	Expectation	Servqual assessment
Efficiency	0.707	0.716	-0.009
Reliability	0.714	0.673	0.041
Responsibility	0.705	0.689	0.016
Trustworthiness	0.780	0.817	-0.037
Kindness	0.712	0.713	-0.001

Source: Authors' calculation

Table 15 provides an overview of the reliability coefficients of perception and expectations for all five dimensions: efficiency, reliability, responsibility, trustworthiness, and kindness. For each dimension, a SERVQUAL score was calculated as the difference between perception and expectation coefficients. The SERVQUAL assessment is positive for the dimensions of reliability and responsibility, which shows that the respondents for these dimensions stated that the perception, i.e. performance according to these dimensions, exceeded their expectations. In this case, too, banks can invest in increasing customer satisfaction. However, according to current results, banks would have to engage much more resources than would benefit from that investment. For the other three dimensions - efficiency, trustworthiness and kindness, the SERVQUAL rating is negative, which means that in these dimensions there is room for improving the quality of the bank's electronic products and services. The largest negative SERVQUAL rating is for the trustworthiness dimension, and more bank resources should be devoted to it in order to reduce the difference between the perceived and expected rating of the respondents.

The following is an analysis of the importance - performance of the assessed dimensions.



Picture 2. Analysis of the importance - performance of the overall model
Source: Authors' calculation

According to the results of the importance-performance analysis of the overall model, none of the five studied dimensions is in the quadrant “concentrate here”, so there is no dimension which banks should concentrate on. Banks should “continue doing a good job” with the dimensions of trustworthiness and reliability, and especially the dimension of trustworthiness, which showed the highest degree of importance and perception of respondents. For the efficiency dimension, the results of the analysis show that there is a “possible exaggeration” in the quadrant; namely, respondents have a high perception of efficiency, but it is not so important to them, therefore banks are potentially wasting resources on this dimension. For the dimensions of responsibility and kindness, the results of the survey place them in the “low priority” quadrant. For these two dimensions, the perception of performance is low, and the importance is low. Respondents believe that these two dimensions have a low degree of performance, although they believe that the importance of these dimensions is not high. Therefore, banks should make additional efforts to improve the performance of these dimensions.

The correlation matrix by dimensions is shown below.

Table 16. Correlation matrix of the overall satisfaction model by dimensions

Pearson Correlations	Correlations					
	Efficiency	Reliability	Responsibility	Trustworthiness	Kindness	Satisfaction
K1: Efficiency	1	0.578**	0.498**	0.344**	0.427**	0.271**
K2: Reliability	0.578**	1	0.467**	0.394**	0.511**	0.257**
K3: Responsibility	0.498**	0.467**	1	0.362**	0.519**	0.280**
K4: Trustworthiness	0.344**	0.394**	0.362**	1	0.406**	0.270**
K5: Kindness	0.427**	0.511**	0.519**	0.406**	1	0.208**
S1: Satisfaction	0.271**	0.257**	0.280**	0.270**	0.208**	1

Note: ** The correlation is significant at 00.01 level (bilateral test).

Source: Authors' calculation

The correlation matrix of the dimensions of the overall satisfaction of the users of innovative banking products and services shows that all indicators of perception by dimensions are of positive value, i.e. they are positively correlated with customer satisfaction, and range in intensity from a weak to a high positive linear relationship. Observed at the data level within Table 16, the highest level of correlation in relation to overall satisfaction is shown by the dimension of responsibility, while the lowest level is shown by the dimension of kindness. The strongest correlation between the dimensions of the satisfaction components is between the dimensions efficiency and reliability and amounts to 0.578, while the weakest correlation between the dimensions efficiency and trustworthiness is 0.344.

In the continuation of this analysis, the regression model is presented, and the table below gives a summary of the regression of satisfaction with banking products and services.

Table 17. Summary of the regression model of satisfaction with banking products and services

Model	R	R ²	Customized R ²	Standard estimation error	Model summary ^d					Durbin-Watson
					Statistics of change					
					R ² change	F change	df1	df2	Sig. F change	
1	0.358 ^a	0.128	0.104	19.589	0.128	5.307	5	181	0.000	
2	0.357 ^b	0.128	0.109	19.537	0.000	0.022	1	181	0.881	
3	0.354 ^c	0.125	0.111	19.514	-0.003	0.579	1	182	0.448	2.068

a. Predictors: (Constant), Kindness, Trustworthiness, Efficiency, Responsibility, Reliability

b. Predictors: (Constant), Trustworthiness, Efficiency, Responsibility, Reliability

c. Predictors: (Constant), Trustworthiness, Efficiency, Responsibility

d. Dependent variable: Satisfaction

Source: Authors' calculation

In the final, third model, the value of the Darbin-Watson test is 2.068. Relatively low rates of R^2 can be related to the specifics of the tested group.

Table 18. Summary of the significance of the regression model of satisfaction with banking products and services

		ANOVA ^a				
Model		The sum of the squares	df	The arithmetic mean of squares	F	Sig.
1	Regression	10182.173	5	2036.435	5.307	0.000 ^b
	Residual	69456.651	181	383.738		
	In total	79638.824	186			
2	Regression	10173.612	4	2543.403	6.664	0.000 ^c
	Residual	69465.212	182	381.677		
	In total	79638.824	186			
3	Regression	9952.655	3	3317.552	8.712	0.000 ^d
	Residual	69686.169	183	380.799		
	In total	79638.824	186			

a. Dependent variable: Satisfaction

b. Predictors: (Constant), Kindness, Trustworthiness, Efficiency, Responsibility, Reliability

c. Predictors: (Constant), Trustworthiness, Efficiency, Responsibility, Reliability

d. Predictors: (Constant), Trustworthiness, Efficiency, Responsibility

Source: Authors' calculation

F statistics in the ANOVA table test whether the regression model is good for the given values, i.e. whether the independent variables statistically predict the dependent variable. For the third final model $F(3, 183) = 8.712$, $p < 0.05$, and the value of the parameter Sig. (Significance) = 0.000, we can say that the regression model is good.

Table 19. Initial model of regression of satisfaction with banking products and services

		Coefficients ^a				
Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Standard error	Beta		
1	(Constant)	59.244	2.292		25.853	0.000
	C1: Efficiency	0.150	0.124	0.110	1.216	0.226
	C2: Reliability	0.174	0.225	0.072	0.772	0.441
	C3: Responsibility	0.248	0.155	0.142	1.604	0.111
	C4: Trustworthiness	0.178	0.089	0.158	2.001	0.047
	C5: Kindness	-0.027	0.181	-0.013	-0.149	0.881

a. Dependent variable: Satisfaction

Source: Authors' calculation

Table 19 shows the initial model of regression of satisfaction with banking products and services for all respondents. Given the very high value of the parameter $p = 0.881$ for the courtesy dimension, in the next step this variable will be omitted from the model.

Table 20. Regression model of satisfaction with banking products and services after excluding the kindness dimension

		Coefficients ^a			t	Sig.
Model	Non-standardized coefficients		Standardized coefficients			
	B	Standard error	Beta			
2	(Constant)	59.232	2.284		25.932	0.000
	C1: Efficiency	0.149	0.123	0.109	1.212	0.227
	C2: Reliability	0.165	0.217	0.068	0.761	0.448
	C3: Responsibility	0.241	0.147	0.138	1.640	0.103
	C4: Trustworthiness	0.175	0.087	0.156	2.015	0.045

a. Dependent variable: Satisfaction

Source: Authors' calculation

Table 20 shows the regression model of satisfaction with banking products and services for all respondents without the courtesy variable, since it was excluded from the regression model due to the high value of the parameter p . Now in this new model we still have a high value of the parameter $p = 0.448$ for the dimension reliability, and in the next step this variable will be omitted from the model.

Table 21. Final regression model of satisfaction with banking products and services after excluding the reliability dimension

		Coefficients ^a			t.	Sig.
Model	Non-standardized coefficients		Standardized coefficients			
	B	Standard error	Beta			
3	(Constant)	59.358	2.275		26.086	0.000
	C1: Efficiency	0.189	0.112	0.138	1.690	0.093
	C2: Reliability	0.264	0.144	0.151	1.837	0.068
	C4: Trustworthiness	0.189	0.085	0.169	2.225	0.027

a. Dependent variable: Satisfaction

Source: Authors' calculation

After excluding the reliability dimension, the model remained with three independent variables: efficiency, accountability, and trustworthiness. For all three remaining variables, the value of the parameter p indicates that there is very little

possibility that these variables occurred as a result of chance, and this is now the final regression model.

Based on the results of the final regression model of satisfaction with banking products and services (Table 21), the following regression equation can be constructed:

$$\text{Satisfaction} = 59.358 + 0.189 * \text{Efficiency} + 0.264 * \text{Responsibility} + 0.189 * \text{Trustworthiness}$$

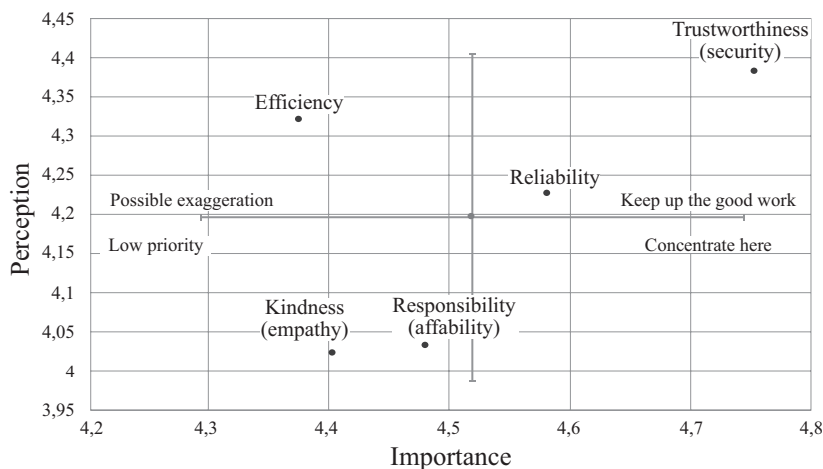
From the given equation, it is evident that according to this model, the greatest impact on consumer satisfaction has the dimension of responsibility with the value $b_{k3} = 0.264$, while the dimensions efficiency ($b_{k1} = 0.189$) and trustworthiness ($b_{k4} = 0.189$) have the same level of impact on consumer satisfaction.

The constant $b_0 = 59.358$ represents the magnitude of consumer satisfaction if the dimensions of efficiency, responsibility, and trustworthiness are zero. Although this statement sounds illogical, it needs to be viewed in terms of the overall relationships of all values in the model. The parameter $b_{k1} = 0.189$ (efficiency) shows the average change of the dependent variable (satisfaction) at the unit change of the independent variable efficiency, where the value of other independent variables does not change. In the present case for a unit increase in independent variable efficiency, consumer satisfaction will increase by 0.189. Observed by the same analogy, for the dimension of responsibility ($b_{k3} = 0.264$) and the unit increase of the independent variable responsibility, consumer satisfaction will increase by 0.264, without the other independent variables changing the value. The same is true for the confidence dimension ($b_{k4} = 0.189$) with a unit change of the independent confidence variable, where the consumer satisfaction will increase by 0.189.

The results of the analyses by banks A, B and C will be presented below. Since the explanations of the results are analogous to the overall model, we will omit them below.

SERVQUAL analysis of bank customer satisfaction A

The analysis for bank A will be presented below.



Picture 3. Analysis of importance - performance of bank A

Source: Authors' calculation

Table 22. Correlation matrix of dimension satisfaction model for bank A

Correlations						
Pearson Correlations	Efficiency	Reliability	Responsibility	Trustworthiness	Kindness	Satisfaction
C1:Efficiency	1	0.586**	0.683**	0.186	0.462**	0.441**
C2:Reliability	0.586**	1	0.358**	0.350**	0.441**	0.457**
C3:Responsibility	0.683**	0.358**	1	0.214	0.487**	0.426**
C4:Trustworthiness	0.186	0.350**	0.214	1	0.262*	0.411**
C5:Kindness	0.462**	0.441**	0.487**	0.262*	1	0.239
S1:Satisfaction	0.441**	0.457**	0.426**	0.411**	0.239	1

** . The correlation is significant at the 0.01 level (bilateral test).

* . The correlation is significant at the 0.05 level (bilateral test).

Source: Authors' calculation

Table 23. Final regression model of satisfaction with banking products and services of bank A after excluding the dimension of kindness

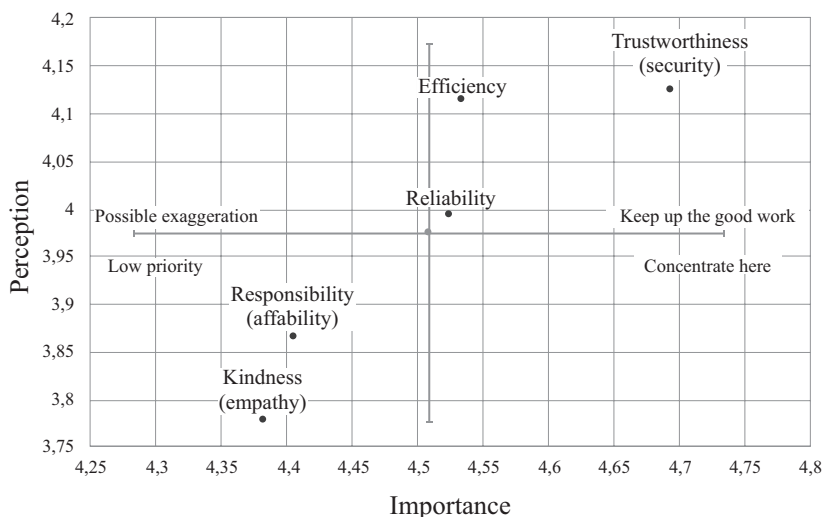
Coefficients ^a						
Model		Non-standardized coefficients		Standardized coefficients	t.	Sig.
		B	Standard error	Beta		
3	(Constant)	17.180	1.752		9.809	0.000
	C2: Reliability	1.173	0.514	0.268	2.284	0.026
	C3: Responsibility	0.650	0.266	0.275	2.442	0.018
	C4: Trustworthiness	0.360	0.156	0.259	2.308	0.024

a. Dependent variable: Satisfaction

Source: Authors' calculation

Based on the results of the final regression model of satisfaction with banking products and services (Table 23), the following regression equation can be constructed: $Satisfaction = 17,180 + 1,173 * Reliability + 0,650 * Responsibility + 0,360 * Trustworthiness$

SERVQUAL analysis of customer service satisfaction for bank B



Picture 4. Analysis of the importance - performance of the bank B
Source: Authors' calculation

Table 24. Correlation matrix of satisfaction model by dimensions for bank B

Correlations						
Pearson Correlations	Efficiency	Reliability	Responsibility	Trustworthiness	Kindness	Satisfaction
Efficiency	1	0.477**	0.492**	0.323**	0.289*	-0.101
Reliability	0.477**	1	0.587**	0.329**	0.360**	0.085
Responsibility	0.492**	0.587**	1	0.507**	0.492**	0.015
Trustworthiness	0.323**	0.329**	0.507**	1	0.518**	-0.071
Kindness	0.289*	0.360**	0.492**	0.518**	1	-0.266*
Satisfaction	-0.101	0.085	0.015	-0.071	-0.266*	1

** The correlation is significant at the 0.01 level (bilateral test).

* The correlation is significant at the 0.05 level (bilateral test).

Source: Authors' calculation

Table 25. Final regression model of satisfaction with banking products and services for bank B after excluding the dimension of efficiency

		Coefficients ^a				
Model		Non-standardized coefficients		Standardized coefficients	t.	Sig.
		B	Standard error	Beta		
4	(Constant)	26.525	1.668		15.903	0.000
	C2:Reliability	0.649	0.380	0.208	1.709	0.092
	C5:Kindness	-0.907	0.324	-0.341	-2.799	0.007

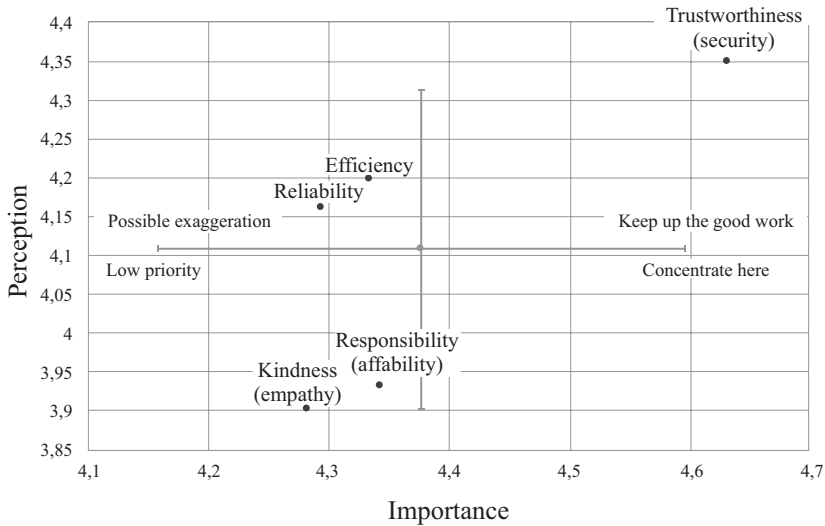
a. Dependent variable: Satisfaction

Source: Authors' calculation

Based on the results of the final regression model of satisfaction with banking products and services (Table 25), the following regression equation can be constructed:

$$Satisfaction = 26.525 + 0.649 * Reliability - 0.907 * Kindness$$

SERVQUAL analysis of customer service satisfaction for bank C



Picture 5. Analysis of the importance - performance of the bank C

Source: Authors' calculation

Table 26. Correlation matrix of satisfaction model by dimensions for bank C

Correlations						
Pearson Correlations	Efficiency	Reliability	Responsibility	Trustworthiness	Kindness	Satisfaction
Efficiency	1	0.598**	0.218	0.420**	0.365**	0.482**
Reliability	0.598**	1	0.328*	0.521**	0.556**	0.355*
Responsibility	0.218	0.328*	1	0.355*	0.473**	0.328*
Trustworthiness	0.420**	0.521**	0.355*	1	0.349*	0.411**
Kindness	0.365**	0.556**	0.473**	0.349*	1	0.301*
Satisfaction	0.482**	0.355*	0.328*	0.411**	0.301*	1

** . The correlation is significant at the 0.01 level (bilateral test).

* . The correlation is significant at the 0.05 level (bilateral test).

Source: Authors' calculation

Table 27. Final model of regression of satisfaction with banking products and services for bank C after excluding the dimension of liability

Coefficients ^a					
Model	Non-standardized coefficients		Standardized coefficients	t	Sig.
	B	Standard error	Beta		
4 (Constant)	16.436	1.239		13.262	0.000
C1:Efficiency	0.605	0.217	0.375	2.788	0.008
C4:Trustworthiness	0.214	0.113	0.254	1.888	0.065

a. Dependent variable: Satisfaction

Source: Authors' calculation

Based on the results of the final regression model of satisfaction level with banking products and services (Table 27), the following regression equation can be constructed:

$$Satisfaction = 16.436 + 0.605 * Efficiency + 0.214 * Trustworthiness$$

4. CONCLUSIONS

Increasing competition between companies that provide services gives increasing importance to measuring the satisfaction of users of these services. In order to adequately examine the satisfaction of service users, the use of a custom SERVQUAL model is justified. Adaptation, and thus the development of the original SERVQUAL model is necessary, because the services are specific in relation to other objects of exchange. Namely, one of the important characteristics of services is immateriality.

In order to determine empirically the degree of customer satisfaction, this paper examines the level of customer satisfaction with innovative electronic products and services of banks. The results of the research using the SERVQUAL model, i.e. examining the service satisfaction in five dimensions - efficiency, reliability, responsibility, trustworthiness and kindness, clearly show that the chosen method is adequate for this purpose. The result of the research gave us a formula for the satisfaction of users of innovative services in banking, and it reads:

$$\text{Satisfaction} = 59.358 + 0.189 * \text{Efficiency} + 0.264 * \text{Responsibility} + 0.189 * \text{Trustworthiness}$$

Specifics of this type of service (innovative e-banking services) have conditioned the indication of the mentioned three factors (dimensions) in the regression analyses. The applied customized model of customer satisfaction survey can help decision makers in companies as an additional source of adequate and timely information in making decisions about creating a marketing mix that will be offered in a highly competitive services market.

It is desirable to explore possible application of this approach to other types of services in order to achieve results for comparison, which would provide additional possibilities for the application and development of this model.

Conflict of interests

The authors declare there is no conflict of interest.

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МОГУЋНОСТИ РАЗВОЈА МОДЕЛА ЗА МЈЕРЕЊЕ ЗАДОВОЉСТВА КОРИСНИКА УСЛУГА (SERVQUAL)

- 1 Перица Мацура, Економски факултет Универзитета у Бањој Луци, Босна и Херцеговина
2 Александар Смиљанић, Добој, Босна и Херцеговина

САЖЕТАК

У овом раду истражиће се могућност прилагођавања оригиналног SERVQUAL модела за мјерење задовољства корисника услуга. Могућност развоја овог модела дата је кроз његово прилагођавање у практичној примјени. Када су у питању услуге, прилагођавање оригиналног модела је неопходно због његове нематеријалне природе. Емпиријски дио садржаће проведenu емпиријску анализу нивоа задовољства корисника иновативних електронских производа и услуга банака кроз пет димензија прилагођеног SERVQUAL модела: ефикасност, поузданост, одговорност, повјерење и љубазност, гдје су испитане разлике између карактеристика изврсне банке

и перцепције потрошача о извршеним услугама банке коју су оцјењивали. Прикупљени подаци су статистички обрађени у IBM SPSS програму и укључивали су регресиону анализу, формирање корелационе матрице, те анализу важност - перформансе. Резултати овог истраживања могу дати додатне корисне информације доносиоцима одлука да идентификују које димензије задовољства услугама код потрошача изазивају осјећај среће и задовољства, а у којим димензијама постоји простор за побољшање нивоа услуга, како би се постигао циљ – срећан и задовољан корисник.

Кључне ријечи: *маркетинг, управљање, задовољство потрошача, регресиона и корелациона анализа, SERVQUAL.*