

EVALUATING THE USERS' PERCEPTIONS OF SERVICE QUALITY OFFERED BY BANKS VIA MOBILE APPLICATIONS

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Abstract: The use of modern technology has significantly altered how all economic entities operate as well as how customers and clients behave and expect to be treated. The financial sector has experienced substantial changes as a result of the digitalization process in the last decade. These modifications pertain to the client service delivery system, information exchange inside and between financial institutions, service quality, and the degree of security of digital channels used to deliver services to customers. As the most significant type of financial institution in the world and in the Republic of Serbia, banks have mostly digitized their customer communications and business processes. The high degree of service quality is of particular significance for customers. This article specifically aims to assess customer satisfaction with financial services delivered via banking application. For the purposes of this research study, 200 users of banking applications in the Niš region, representing a broad range of age groups, were surveyed. The SERVQUAL model was used to assess user satisfaction, and the data was processed in the SPSS software program with appropriate tests. Since the level of service quality from the perspective of users in Niš is not at a satisfactory level, we concluded from the analysis that banks must keep working on enhancing their apps and security.

Keywords: banks, services, banking applications, SERVQUAL.

Field: Finance and Marketing

1. INTRODUCTION

Nowadays, practically every bank in the world allows its customers to do transactions using mobile apps. In particular, users can pay their bills, move funds to other people's accounts, discover which loans the bank offers, and apply for a loan—which is frequently tailored based on the user's income and other transactions. Additionally, banks give customers the ability to check the amount of money in their account at any given moment, track their savings, deposits, and interest, as well as loans, keep an eye on currency rates, move money between accounts, and more. Users that have access to the Internet can use all of these services from any location. (Oliveira et al., 2014; Boor et al., 2014; Jahan & Shahria, 2022)

Users can complete transactions more easily when they use applications. They can easily do nearly all transactions using their mobile phones instead of having to wait in line at bank counters. (Souiden et al., 2021; Karn, 2023). Banks continually enhance their mobile banking applications to ensure the highest quality customer experience. The population's level of digital literacy, together with their reluctance to accept and trust modern technologies, is one of the challenges that the Republic of Serbia has when it comes to banking applications. (Stojanović & Đorđević, 2016) However, these issues are resolved year after year as a result of banks' ongoing efforts to improve the security of digital communication channels and transaction completion, as well as the state's increasing ambitions to raise the general public's understanding of digital literacy. (Petrović & Novović, 2019; Orehovački et al., 2022)

The satisfaction of customers with the caliber of services offered by mobile banking applications is another crucial factor. (Bharti, 2016; Bhatt & Bhatt, 2016; Giovanis et al., 2019; Malc et al., 2023) In other words, consumers' satisfaction will not reach an acceptable level if the application is difficult to use, features poor navigation, lacks sufficient trustworthiness and effective graphical design, and frequently crashes. In order to ascertain the state of user satisfaction in Nis, a review of the literature was conducted and researchers involved in the analysis of the quality of services provided by mobile banking applications developed a model, which was subsequently implemented and evaluated.

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2. LITERATURE REVIEW

Numerous studies have been carried out on the topic of user satisfaction with banking services, as well as the services offered by banks via their mobile applications. Aghadaie & Faghani (2012) conducted research, which aimed to apply the SERVQUAL model with the aim of analysing the relationship between mobile banking and customer satisfaction levels. This study, which examined user satisfaction with mobile banking, was the first to be conducted concurrently. Reliability, tangibility, responsiveness, security, and empathy are the five aspects of service quality that the researchers utilized as independent variables, and the degree of customer satisfaction (perceived value) as the dependent variable. Their findings demonstrated that while security does not have a statistically significant correlation with user satisfaction, or their perceived value, tangibility, reliability, responsiveness—that is, responsiveness and empathy—and user satisfaction do. When they implemented their survey, they found that respondents reported significantly high satisfaction with the usage of mobile banking applications and, consequently, banking services overall, according to the results of the ANOVA test.

Similar conclusions were drawn by Shaikh and Karjaluo (2016) in their study. Specifically, by examining the degree of satisfaction derived from using mobile banking applications, they aimed to demonstrate that customers are more loyal to the bank due to the convenience with which they can perform essential banking tasks. They came to the conclusion that there is a strong correlation between user satisfaction and the quality of services provided by mobile banking applications. This finding supports the idea that there is a stronger bond between customers and banks that offer fast and high-quality applications for conducting transactions.

Al Zadjali et al. (2015) examined the SERVQUAL model's implementation in order to survey consumers and ascertain their degree of satisfaction with banking mobile applications. They concluded that while responsiveness and security also have a significant correlation, albeit to a somewhat lesser extent, tangibility and reliability have the strongest relationship with user satisfaction. However, when it comes to empathy as a service quality dimension, no correlation was established.

Following the same techniques as the aforementioned authors, Puriwat & Tripopsakul (2017) concluded that there is a positive correlation between all of the aforementioned aspects of service quality and the degree of user satisfaction (i.e., perceived value) of mobile banking applications. For this reason, they noted that if banks wish to attract devoted customers, they should endeavour to enhance every aspect of the calibre of mobile banking services.

The SERVQUAL-adapted model was also used by Zhao et al. (2019), who noted that mobile banking is the way of the future for the banking industry and the services it provides. The analysis included 244 respondents who used mobile banking services and revealed that customer satisfaction and bank loyalty are significantly impacted by the calibre of mobile banking applications and services.

3. METHODS OF RESEARCH

This study employed the survey research method as a primary means of collecting and organizing participants' opinions. The sort of information required to achieve the goals of the research was taken into consideration when choosing the data gathering strategy. The size of the study team also had an impact on the manner of data collecting that was chosen. (Field, 2017) Data were collected from the surveyed sample based on several established criteria. In particular, the survey included respondents who had not yet used bank mobile applications at the time of the initial survey but had made the decision to do so. To compare what the clients expected and received from the banking application itself, the second survey was carried out a month after the first one.

The first survey was carried out between February 1st, 2025, and March 1st, 2025. Regarding the second survey, which was conducted between April 1st, 2025, and May 1st, 2025, the respondents were contacted after the one-month period had passed. This "face-to-face" contact was done to get their answers regarding how satisfied they were with using bank applications. It was determined that the gender structure of the sample should be equal, meaning that men and women should be included equally. Additionally, data were collected regarding the geographic area. In order to facilitate face-to-face data collection and make it easier to gather responses to two surveys in a month, it was decided to limit data collection to the city of Nis's territory (more efficient collection and lower financial expenditures). This method of sample definition is justified since, despite the fact that the research is being conducted in a single city, it is a city with a sizable population. Field (2017)

The authors modified the questionnaires used in this study by drawing on those of reputable authors (Micuda & Cruceru, 2010; Safakli, 2007; Zhau et al., 2019; Al Zadjali, 2019) who studied bank

customers to determine their expectations and the degree to which they are fulfilled. The 20-question questionnaire, which clients fill out prior to downloading the application (expectations), is broken down into two sections: general client information, demographic data (such as gender, age, and education), and modified SERVQUAL scale questions. Table 1 presents all 20 questions that were posed to clients prior to their downloading of the mobile banking application.

Within a month of using the application, clients answered the second questionnaire, which consists of 24 questions about perception. Four additional questions concerning the perceived value that customers felt when utilizing the banking application to complete their transactions were added to the ones concerning the attained (perceived) quality of banking services. Respondents used a Likert scale to indicate their opinions in both the first and second questionnaires.

Additional four questions, which are included in the second survey and represent the basis of the dependent variable (perceived value) are the following: 1. The cost of mobile banking services is reasonable; 2. The quality of mobile banking services exceeds the price paid for this service. 3. The quality of mobile banking services surpasses my expectations. and 4. I will keep using the bank's services because I feel that I received good value for my money.

The data collection can be regarded as relevant and reliable for the study as respondents showed interest in the questionnaire's content and completed all questions. Following data collection, the SPSS software program and the AMOS v22 software program were both used to enter the data. The Kaiser-Meyer-Olkin test, Bartlett's test, exploratory and confirmatory factor analysis, and the PTH diagram of the dependence model were all used in SPSS in addition to descriptive statistics. The theoretical model was validated using the AMOS v22 software suite.

Table 1. Dimensions and characteristics of dimensions for interviewing respondents

Attitude No.	Attitude	Dimension (factor) and its characteristics
1	I want the applications' services to be provided correctly the first time.	Reliability The quality and dependability of banking services offered via mobile applications are excellent.
2	When the order is given or promised, I anticipate that in-app services will be available.	
3	I look forward to successful troubleshooting of service delivery issues in mobile banking applications.	
4	I expect to receive notifications within the application regarding the completion of services or transactions.	
5	I anticipate that the application will inspire confidence among its users.	Trust It implies the security of clients in banking transactions and trust in the application and the bank itself.
6	I expect security in my in-app transactions.	
7	I expect that the application can meet all my requirements as a customer.	
8	I anticipate that the application will give me all the information I need about the services it offers.	
9	I expect banks to have visually attractive applications.	Tangible features They include visual materials related to the banking service, attractiveness of the application, etc.
10	I expect the app to have good navigation.	
11	I expect the materials that I can read and download from the app to be well designed.	
12	I expect all information within the application to be displayed to me without errors.	
13	I expect a personalized service delivery system in banking applications.	Relationship with bank clients It implies individual attention, respect for special needs and work in the interests of clients.
14	I expect to receive quick answers to questions submitted via banking application.	
15	I expect that the applications are created in alignment with the interests of the clients.	
16	I anticipate that the services I require will evolve along with my transactions.	
17	I expect bank employees to react quickly if there is a problem with the application.	Willingness to provide banking services It indicates that bank staff members are willing to assist and deliver high-quality service when needed, as asked by the application.
18	I expect bank employees to respond quickly and without delay to the needs and complaints of clients sent through the application.	
19	I expect that bank employees always have time to answer all the questions of clients asked through the application.	
20	I expect to receive all necessary services and answers to questions via the application.	

Source: Authors

The implementation of all the aforementioned tests enables the achievement of the stated objective and, consequently, provides banks with valuable insights into customer satisfaction with the services they receive via mobile applications.

4. RESULTS AND DISCUSSION

Before presenting and analysing the results of the updated SERVQUAL model, we will first outline the demographic characteristics of the sample used in the analysis. As previously mentioned in the methodology, the sample comprises 200 respondents, with half of the sample being female and the other half being male. Regarding the respondents' age distribution, 5% of clients are under the age of 18, and the same percentage of respondents are between the ages of 18 and 35. The highest percentage of respondents (43.5%) were between the ages of 36 and 55. According to the respondents' educational backgrounds, the majority of them are well educated, meaning that 52% of them have earned a bachelor's, master's, or doctoral degree. 6.5% of respondents, the smallest percentage, only completed primary school.

In order to examine the suitability of the data for application in factor analysis, it is necessary to show that there is a significant correlation among the manifest variables. This fact is tested by Bartlett's test of sphericity. The results of this test are shown in Table 2.

Table 2. Calculated values of KMO indicators and Bartlett's test of sphericity

Kaiser-Mayer-Olkin indicator of sample adequacy		,851
Bartlett's test of sphericity	Chi-square	3515,091
	Degrees of Freedom	276
	Sig.	,000

Source: Authors

Therefore, we ascertain whether the value of the Bartler test of sphericity indicator is significant (i.e., whether the value of sig. 0.05 or less) and whether the value of the KMO indicator (Kaiser - Mayer - Olkin, this indicator) is equal to or greater than 0.6 in order to determine whether the data set is appropriate for factor analysis.

The manifest variables are associated with one another and can be utilized in component analysis, according to the findings of Bartlett's test of sphericity (sig = 0.000).

Confirmatory factor analysis, or CFA, was performed on a measurement model that was described in the publication to guarantee the validity and reliability of the research model. In order to determine all potential correlations between the six groups of latent components in the measurement model, CFA was carried out on each of them. It is evident from factor saturations in both exploratory and confirmatory factor analysis that there is typically a strong link between manifest and latent variables.

The consistency of the variables defined within the latent classes, in the research model, was measured by the size of the Cronbach alpha coefficient (Cronbach, 1951). Cronbach alpha values greater than or equal to 0.7 are considered very acceptable (Ninnally, 1978), while values up to 0.55 can be considered acceptable (Van de Ven & Ferry, 1979). Each group of questions (subdimension) is characterized by high reliability (above 0.700), except in the case of the second group of questions (0.59).

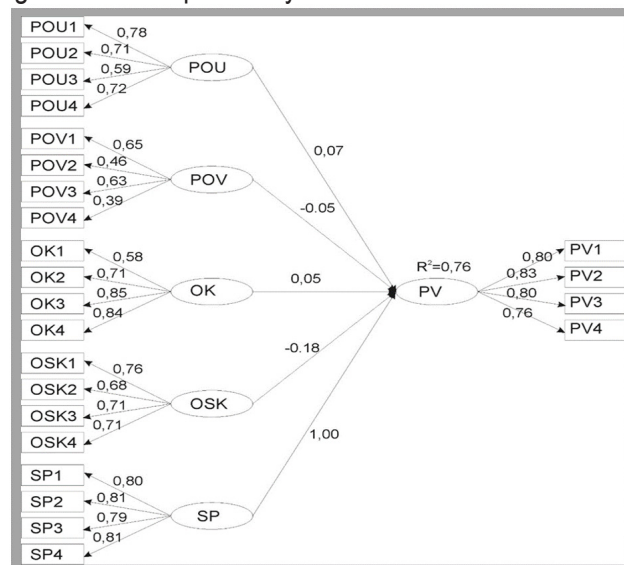
Table 3. Results of exploratory and confirmatory factor analysis

Group of Questions	Observed Variable	Exploratory Factor Analysis (EFA)		Confirmatory Factor Analysis (CFA)		
		PCA		Reliability	Convergent validity	
		Factor Loading	% of Explained Variance	Crombach's Alpha	Factor Loading	sig.
POU	POU1	,833	61,63	0,782	0,78	<0,001
	POU2	,768			0,708	<0,001
	POU3	,724			0,585	<0,001
	POU4	,810			0,72	<0,001
POV	POV1	,805	46,1	0,59	0,652	<0,001
	POV2	,706			0,461	<0,001
	POV3	,732			0,634	<0,001
	POV4	,402			0,386	<0,001
OK	OK1	,812	69,61	0,853	0,578	<0,001
	OK2	,896			0,711	<0,001
	OK3	,826			0,845	<0,001
	OK4	,800			0,84	<0,001
OKS	OSK1	,756	63,66	0,809	0,757	<0,001
	OSK2	,752			0,678	<0,001
	OSK3	,873			0,705	<0,001
	OSK4	,805			0,71	<0,001
SP	SP1	,877	73,23	0,875	0,798	<0,001
	SP2	,867			0,809	<0,001
	SP3	,860			0,786	<0,001
	SP4	,817			0,81	<0,001
PV	PV1	,861	72,66	0,872	0,8	<0,001
	PV2	,866			0,829	<0,001
	PV3	,860			0,802	<0,001
	PV4	,823			0,757	<0,001

Source: Authors

The dependence model is depicted in figure 1 below. The figure's standardized regression coefficients indicate that POU (reliability) and OK (tangible features) have a weakly positive impact on PV (perceived value), whereas trust has a weakly negative impact. Additionally, SP (willingness to give services) has a substantial positive impact on PV (also the strongest impact), whereas OSK (client relationship) has a considerable negative impact on PV (perceived value). 76% ($R^2=0.76$) of the variance of the dependent variable PV can be explained by the five factors that have been observed.

Figure 1. PTH diagram of the dependency model



Source: Authors

This resulted in considerably different outcomes than the authors' findings, which were examined in the literature review. In particular, it was found that security, as a component of mobile banking service quality, has no bearing on users' perceptions of the value and degree of pleasure of mobile banking applications (Aghadaie & Faghani, 2012).

These results are opposite to the results obtained in analysis by Al Zadjali et al. (2015), Puriwat & Tripopsakul (2017), Zhan et al. (2019).

Unlike the aforementioned authors, the analysis conducted in the territory of the city of Nis showed that the readiness to provide services as a dimension is the strongest factor in the perceived value of the quality of mobile banking services, and as we have already stated, it refers to the willingness of banks to respond to the requests and questions of clients through mobile banking applications at any time.

Validation of the theoretical model was carried out using the AMOS v22 software package. Additionally, the analysis determined the fit of the measurement model and the values of individual parameters are shown in Table 6. The relative value of the chi-square (1197.36 for d.f. 237) for the measurement model is 5.05, which is slightly above the recommended threshold value of 3, which indicates a certain deviation between the measurement model and the data in the sample.

Apart from the aforementioned, the remaining measurement model fit indices (GFI, AGFI, CFI, IFI, NFI, NNFI, and RFI) are either extremely close to or exceed the recommended threshold value, indicating that the measurement model demonstrates an adequately fit although with some minor discrepancies.

Table 4. Model Fit Indicator Values

Fit Indicators	Recommended Values	Obtained Values in the Structural Model
Chi-Square (χ^2)	-	1197,36
Degree of freedom (d.f.)	-	237
Relative Chi-Square ($\chi^2/d.f.$)	< 3.0	5,05
Root Mean Square Error of Approximation (RMSEA)	0.08 – 1.0	0,143
Goodness-of-Fit Index (GFI)	> 0.8	0,682
Adjusted Goodness-of-Fit Index (AGFI)	> 0.9	0,598
Comparative Fit Index (CFI)	> 0.9	0,718
Incremental Fit Index (IFI)	> 0.9	0,721
Normed Fit Index (NFI)	> 0.9	0,674
Non-Normed Fit Index (NNFI)	> 0.9	
Relative Fit Index (RFI)	> 0.9	0,621

Source: Authors

The difference between perceived and expected service quality is negative for all quality determinants, which is shown in Table 4. Mostly the bank clients who were surveyed have very high expectations regarding the quality of services. Considering the significant difference between the arithmetic means of expected and observed service ratings, we can conclude that there is a lot of space for service improvement.

Table 5. Expected and Achieved Determinants of Mobile Banking Service Quality

Achieved	Mean Value	Expected	Mean Value	Gap	sig.
POU1	2,79	POU1	4,56	-1,77	0,000
POU2	2,81	POU2	4,56	-1,76	0,000
POU3	2,64	POU3	4,51	-1,88	0,000
POU4	2,92	POU4	4,51	-1,59	0,000
POV1	2,77	POV1	4,64	-1,87	0,000
POV2	2,76	POV2	4,42	-1,67	0,000
POV3	2,66	POV3	4,58	-1,92	0,000
POV4	2,90	POV4	4,45	-1,55	0,000
OK1	2,86	OK1	4,35	-1,49	0,000
OK2	2,95	OK2	4,43	-1,48	0,000
OK3	3,10	OK3	4,38	-1,28	0,000
OK4	2,93	OK4	4,49	-1,56	0,000
OSK1	2,79	OSK1	4,40	-1,61	0,000
OSK2	2,98	OSK2	4,44	-1,46	0,000
OSK3	2,94	OSK3	4,39	-1,46	0,000
OSK4	2,92	OSK4	4,36	-1,45	0,000
SP1	2,87	SP1	4,45	-1,58	0,000
SP2	2,57	SP2	4,40	-1,83	0,000
SP3	2,75	SP3	4,42	-1,67	0,000
SP4	2,79	SP4	4,51	-1,73	0,000
Total	2,83		4,46	-1,63	

Source: Authors

The SERVQUAL gap as a whole is negative, measuring -1.63. Based on surveyed customers in Nis, this demonstrates unequivocally the necessity for banks in the Republic of Serbia to take action to close the gap between what customers expect from the application and what it offers in order to guarantee a greater degree of customer satisfaction and loyalty.

5. CONCLUSIONS

Mobile applications are becoming more and more important in all commercial domains. One of the most vital sectors of the economy is the banking industry, which is particularly susceptible to the impacts of the digitalization process. As a result, mobile banking apps are now an essential component of the services that banks provide to their customers. Mobile banking applications require further enhancement, according to the research conducted in the city of Nis with the goal of analysing the expected and achieved level of quality of mobile banking services. This is due to a significant gap between the expected and actual levels of service quality. In order to help banks enhance their applications for dissatisfied customers and to determine the reasons behind the discrepancy between the expected and actual quality of mobile banking services, further research on this topic can focus on analyses related to specific age groups and educational levels.

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