

Analysis of the Influence of System Quality, Information Quality, and Service Quality on User Satisfaction Mobile Banking Users

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ABSTRACT

Keywords: system quality, information quality, user satisfaction, mobile banking.

Mobile banking is one of the banking services that is integral to everyone's daily activities. However, sometimes its use experiences various obstacles, whether it is from the system, service, or information. This study aims to analyze the effect of system quality, information quality, and service quality on mobile banking user satisfaction. Using a quantitative approach and survey design, this study collected data through questionnaires distributed to mobile banking users. Regression analysis was used to identify the relationship and impact of each factor on user satisfaction. The results showed that system quality, information quality, and service quality have a significant influence on the level of user satisfaction. The findings emphasize the importance for banks to focus on continuous improvement in these aspects to enhance user experience and ensure high customer loyalty. This research provides valuable insights for the banking industry in designing more effective strategies to optimize mobile banking services.



Introduction

Mobile banking has evolved rapidly from a traditional banking system that relied on manual transactions and physical bank branch services to a platform that utilizes modern technology. The real revolution happened in the 2000s with the emergence of smartphones and mobile banking apps that allow users to access accounts and conduct transactions directly from their mobile devices. Today, mobile banking apps now provide more advanced features such as personal financial management, expense analysis, and location-based financial services. Consumer behavior is also undergoing significant changes with more and more users choosing to conduct transactions and financial management through mobile devices who expect the convenience, speed, and security offered by modern technology. (Raharjo, 2021); (Mukhra et al., 2024). The following is the number of mobile banking users from several major banks in Indonesia.

Table 1
Number of Mobile Banking Users

	2022	2023
BRI	23,8 million	31,6 million
BCA	26,6 million	30,3 million
Mandiri	17 million	23 million

BNI	13,6 million	16,2 million
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Source: (Bisnis.com, 2024)

The table above shows that there is an increase in mobile banking users every year. This makes it an opportunity for banks to provide the best service. User satisfaction in the context of mobile banking refers to the extent to which customers are satisfied with their experience when using banking services through mobile applications. (Nengsi, 2023). It covers various aspects, including ease of use of the application, transaction speed, data security, and customer service quality. User satisfaction is important as it affects customer loyalty, frequency of use, and the bank's reputation in the market. A mobile banking app that provides a positive experience can increase user engagement and attract new customers, while apps that cause frustration or inconvenience can cause customers to switch to competitors (Albashrawi & Motiwalla, 2017; Geebren et al., 2021).

High satisfaction also impacts customer retention, as satisfied customers are more likely to stick around in the long term, even in the face of offers from other banks. In addition, satisfied customers often share their positive experiences through personal recommendations or online reviews which can strengthen the bank's reputation and attract potential new customers. Conversely, dissatisfaction can cause customers to migrate to other banks and damage the bank's image, negatively impacting business growth and sustainability. (Bharmawan & Hanif, 2022; Cudby, 2020).

System quality in mobile banking refers to how well the application meets user expectations in terms of reliability, performance, security, and ease of use. (Pratiwi & Ellyawati, 2023). High system quality directly affects user experience and satisfaction which consists of reliable, fast, secure, and easy-to-use applications that tend to increase user trust and comfort, potentially increasing loyalty and continued use of the application.

Conversely, low system quality can lead to frustration and dissatisfaction among users. Issues such as frequent downtime, slow transaction processing, lack of security features, or difficult-to-navigate interfaces can disrupt user experience and lower user satisfaction levels. Users may feel concerned about the security of their personal data or feel that the app does not fulfill their needs effectively. This dissatisfaction can lead to decreased app usage, loss of customers, and a negative reputation for the bank.

Service quality in mobile banking involves various important aspects such as responsiveness, empathy, and appropriate service. Good service quality, including efficient customer support and satisfying in-person interactions, plays an important role in influencing user experience. When banks deliver responsive and empathetic services and provide appropriate support, users feel valued and cared for which significantly increases their satisfaction. Conversely, poor or inappropriate service can lead to frustration and dissatisfaction which can affect the overall user experience. (Rahman et al., 2017).

However, mobile banking faces several obstacles that can occur, including system failures that can disrupt service accessibility and reliability, security issues that can

threaten the protection of users' personal data, and poor customer service that often leads to frustration and dissatisfaction.

The purpose of this study is to analyze the effect of system, information, and service quality on mobile banking user satisfaction. This research is important because by identifying and measuring how various aspects of quality affect satisfaction, banks can develop more effective strategies to improve their services, reduce problems, and increase customer loyalty. The significance of this research lies in its ability to provide deep insights into user needs and expectations that can assist banks in designing and implementing better and more relevant solutions. The contribution of this research will provide data and analyses that can be used by the banking industry to refine mobile banking practices to improve systems and services and offer a more satisfying and efficient experience for users, thereby supporting growth and innovation in the financial sector.

Method

The research method employed in this study is quantitative, utilizing a survey design. The quantitative research method combines numerical data and statistical analysis to measure, analyze, and test the relationship between variables in a phenomenon. In quantitative research, data is collected using approaches such as surveys, experiments, or organized observations, and then analyzed using statistical tools to provide generalizable findings. (Hildawati et al., 2024; Ramdhan, 2021).

This study began with primary data collecting via a questionnaire designed to assess several aspects of system, information, and service quality, as well as their impact on user satisfaction. To ensure a representative sample, the questionnaire was distributed to mobile banking users. The acquired data was then analyzed using regression analysis with SmartPLS software to determine the link and influence of the factors under study. The application of quantitative approaches enables researchers to objectively and systematically assess the impact of each element on user satisfaction and provide data-driven recommendations that banks can utilize to improve the quality of their services. The outcomes of this analysis are expected to provide deep insights into the crucial areas that require development and how such adjustments might enhance the user experience in mobile banking.

Results and Discussion

Validity and Reliability Test

Validity testing and reliability testing are two important procedures in quantitative research to ensure that data collection instruments, such as questionnaires or tests, are accurate and consistent. The validity test measures the extent to which the instrument measures what it is supposed to measure. It ensures that the questions or items in the instrument are relevant to the concept under study and can provide an accurate picture of the variable being studied. Validity can be tested through various methods, including content validity, construct validity, and criterion validity. Meanwhile, the reliability test

measures the consistency of the results obtained from the instrument when used under the same conditions at different times. A reliable instrument will provide stable and consistent results over time, indicating that the tool is free from random error. Reliability is often tested using the Cronbach's Alpha method. Together, validity and reliability tests ensure that research instruments produce reliable data that can be used to make valid conclusions.

Table 2
Validity and Reliability Test Results

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extract (AVE)	Description
System Quality	0.837	0.839	0.885	0.606	Valid and Reliable
Information Quality	0.861	0.861	0.900	0.642	Valid and Reliable
Service Quality	0.907	0.908	0.931	0.729	Valid and Reliable
User Satisfaction	0.852	0.853	0.895	0.630	Valid and Reliable

Source: Data Processes (2024)

The table above shows that each variable has an AVE value of more than 0.5 as evidence that the questionnaire items used are valid. Meanwhile, to test the reliability of the instrument, it is seen from the Cronbach Alpha value and composite reliability which must exceed 0.7, and each variable exceeds these criteria. Thus, the measurement of variables in terms of validity and reliability has been fulfilled and can be continued to the next stage.

Determination Coefficient Test Result

The coefficient of determination test is a measure in regression analysis that indicates how well the regression model used can explain variations in the dependent variable based on the independent variables. The coefficient of determination test helps researchers to understand the strength and relevance of the regression model used, so as to assess how good the predictions or estimates produced by the model are.

Table 3
Determination Coefficient Test Results

	R Square	Adjusted R Square
User Satisfaction	0.847	0.842

Source: Data Processes (2024)

Based on the acquisition of the Adjusted R Square value of 0.842, this value indicates that mobile banking user satisfaction can be explained by 84.2% by the variables of system quality, information quality, and service quality. While the rest is explained by other factors outside of this research.

F Square Test Results

F square (f^2) is an effect size used in structural path analysis or structural equation modeling (SEM) to assess the effect size of predictors on endogenous variables. It measures the magnitude of the contribution of each predictor to the endogenous variable in the model. The f^2 value is calculated based on the change in the R^2 value when a particular predictor is removed from the model. According to Cohen (Rahmawati & Silitonga, 2023), the f^2 value can be interpreted as follows: $f^2 = 0.02$ indicates a small effect, $f^2 = 0.15$ indicates a medium effect and $f^2 = 0.35$ indicates a large effect. The use of f^2 helps researchers to understand the relative contribution of each predictor variable in explaining variation in the dependent variable, thereby providing deeper insight into the structure of the relationships in the research model.

Table 4
F Square Test Result

	User Satisfaction	Description
System Quality	0.126	Weak
Information Quality	0.070	Weak
Service Quality	0.275	Medium

Source: Data Processes (2024)

The table above shows that service quality has the greatest influence and is in the medium category in influencing mobile banking user satisfaction compared to other variables.

Hypothesis Result

Hypothesis testing is a statistical procedure that determines if a sample of data contains sufficient evidence to support a population hypothesis. The hypothesis testing procedure consists of two hypotheses: the null hypothesis (H_0), which claims that there is no effect or difference, and the alternative hypothesis (H_1). The hypothesis testing technique consists of selecting the significance level (α), generating the test statistic, and comparing the p-value to the significance level.

Table 5
Hypothesis Test Result

	Original (O)	Average (M)	Standard Deviation (STDEV)	T Statistic	P Values	Description
System Quality -> User Satisfaction	0.286	0.298	0.107	2.671	0.008	Positive and Significant Effects
Information Quality -> User Satisfaction	0.263	0.255	0.098	2.667	0.008	Positive and Significant Effects
Service Quality ->	0.423	0.418	0.079	5.328	0.000	Positive and

User Satisfaction	Significant Effects
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Source: Data Processes (2024)

System quality has a t value greater than the t table (2.671 vs. 1.984) and a significance level of 0.008. The findings show that system quality has a favorable and significant impact on user happiness. As a result, when system quality improves, so does user pleasure.

The t-value (2.667) was greater than the t-table (1.984), and the significance level was 0.008. These findings suggest that information quality has a favorable and considerable impact on user happiness. As a result, as the quality of information improves, so will the level of user satisfaction.

Service quality has a t-value greater than the t-table ($5.328 > 1.984$) and a p-value of 0.000. These findings suggest that service quality has a positive and considerable impact on user happiness. As a result, when service quality improves, so will user pleasure.

The Effect of System Quality on Mobile Banking User Satisfaction

The test results show that system quality has a positive and significant effect on mobile banking user satisfaction. This finding is in line with the research results from(Hernandez & David, 2022; Wardhana, 2016); (Geebren et al., 2021); (Mohammad Salameh et al., 2018). System quality in mobile banking can be seen in the reliability, performance, and stability of banking applications used by customers. This aspect includes factors such as access speed, frequency of interruptions, and the ability of the system to handle various transactions simultaneously. High system quality ensures that the application can be accessed easily and seamlessly, providing a better user experience. When the mobile banking system is functioning properly, users can perform transactions quickly and efficiently without having to experience delays or technical failures that may cause frustration.

A reliable system reduces the likelihood of glitches that can disrupt the user experience, such as long waiting times or system errors. Conversely, applications that experience frequent technical problems or are slow can lead to dissatisfaction, reduce user trust in the service, and potentially encourage users to seek alternatives.

Good system quality also contributes to user satisfaction by ensuring data and transaction security. Strong security features, such as encryption and double authentication to protect users' sensitive information from cyber threats provide a sense of security when conducting transactions. Assured security reduces users' concerns about the potential risk of fraud or data theft which in turn increases the level of user satisfaction with mobile banking services.

Overall, optimal system quality affects mobile banking user satisfaction directly through increased convenience, efficiency, and security. Banks that focus on developing and maintaining reliable and secure systems can not only improve user experience but also build long-term customer loyalty. A consistently positive experience with a high-

quality mobile banking application can serve as a competitive advantage and strengthen the bank's position in the banking industry.

The Effect of Information Quality on Mobile Banking User Satisfaction

The test results show that information quality has a positive and significant effect on mobile banking user satisfaction. This finding is in line with the research results from (Masrek et al., 2018); (Geebren et al., 2021); (Br Pakpahan, 2023); (Putri & Puspawati, 2024). Information quality in the context of mobile banking can be seen from the accuracy, relevance, and availability of data presented to users through banking applications. Accurate and up-to-date information is essential to ensure that customers can make informed decisions regarding their financial transactions. When the information provided by the mobile banking application such as account balances, transaction history, and banking product information is correct and up-to-date, users feel more confident and satisfied with the services received. Good information quality reduces the risk of errors and confusion which directly increases user satisfaction. (Putra, 2023).

In addition to accuracy, information relevance also plays a role in creating user satisfaction. Relevant and presented information helps users understand their financial situation and make better decisions. For example, notifications about important transactions, product offerings, or policy changes that are relevant to the user can enrich the user's experience with the mobile banking app. Conversely, irrelevant or poorly structured information can confuse users and reduce their satisfaction with the service.

The availability of fast and easily accessible information also affects user satisfaction. Mobile banking users expect easy and seamless access to important data whenever they need it. If the mobile banking app can provide information quickly and responsively, users can perform transactions, check balances, or get the information they need without interruption. This increases the convenience and efficiency of using the app which contributes to a higher level of satisfaction.

Overall, good information quality has a positive and significant effect on mobile banking user satisfaction by ensuring that the data presented is accurate, relevant, and easily accessible. Banks that focus on presenting high-quality information can improve user experience and build greater trust in their services. A satisfying experience through precise and useful information not only increases satisfaction but can also increase customer loyalty and strengthen the bank's position in the digital banking market.

The Effect of Service Quality on Mobile Banking User Satisfaction

The test results show that service quality has a positive and significant effect on mobile banking user satisfaction. This finding is in line with the research results from (Akob & Sukarno, 2022; Arcand et al., 2017; Fernos & Gietricen, 2020; Khan et al., 2021). Service quality in mobile banking includes various aspects such as responsiveness, empathy, and speed of service provided by banks to application users. Responsiveness refers to how quickly and effectively the bank handles user requests, questions, or problems. When users experience problems or need assistance, fast and responsive

service can prevent upset and increase user satisfaction. If the bank can resolve issues quickly and satisfactorily, users will feel valued and get the support they need which contributes to higher satisfaction.

Empathy is another important element in service quality. It involves the bank's ability to understand and respond to users' needs and concerns in a personalized manner. Banks that demonstrate empathy in their interactions, either through friendly customer support or clear communication can create better relationships with users. Users who feel that the bank understands and pays attention to their needs will tend to feel more satisfied and loyal to the mobile banking services they use.

Service speed also significantly affects service quality and user satisfaction. Users expect transactions and processes conducted through mobile banking applications to be completed quickly and efficiently. Long delays in transaction processing or in handling support requests can lead to dissatisfaction and reduce user trust in the application. Therefore, banks should ensure that the system runs smoothly and that the service process can be done in the shortest possible time to increase user satisfaction. (Kumalasari et al., 2022).

High service quality has a positive and significant effect on mobile banking user satisfaction by providing responsive, empathetic, and fast support. Banks that focus on improving service quality can create a better user experience, strengthen relationships with customers, and build a positive reputation in the banking industry. (Duy Phuong & Dai Trang, 2018).

Overall, system quality, information quality, and service quality work synergistically to create a satisfying mobile banking experience. Each aspect contributes significantly to user satisfaction by ensuring that the app functions properly, provides useful and relevant information, and offers responsive and empathetic customer service. Improvements in these three areas will have a positive impact on user satisfaction, build customer loyalty, and strengthen the bank's position in the digital banking market.

Conclusion

Based on the results of research and discussion, it can be concluded that system quality, information quality, and service quality have a significant influence on mobile banking user satisfaction. System quality which includes application reliability and performance, information quality which includes data accuracy and affordability, and service quality which relates to responsiveness and empathy, all contribute to high levels of user satisfaction. This research underscores the importance for banks to continuously improve and optimize these aspects to meet user expectations and needs. The findings provide practical guidance for financial institutions to design strategies that can enhance the mobile banking experience, focusing on system, information, and service improvements to achieve optimal customer satisfaction and support long-term loyalty.

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