The Influence of Security and Quality Mobile Banking Services on Customer Satisfaction and the Impact on Loyalty Private Bank Customers

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Abstract

This study aims to examine the impact of mobile banking security and service quality on customer loyalty, with customer satisfaction as a mediating variable. A quantitative research approach was employed, utilizing a non-probability sampling technique. Specifically, purposive sampling was used to select respondents based on predetermined criteria. The study involved 152 respondents, all BCA bank customers in Surabaya who actively use MyBCA. Data were collected through questionnaires. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that both mobile banking security quality and service quality positively and significantly influence customer loyalty, with customer satisfaction playing a key mediating role.

Keywords: Service Quality, Customer Satisfaction, Loyalty, Banking Industry

INTRODUCTION

Business competition in the banking world is increasingly tight in domestic and international markets. Companies that want to develop and gain a competitive advantage must be able to provide customers with better service than their competitors. Customer trust and satisfaction are factors in business success. Increasing technological developments, the business world, and global economic conditions demand intense competition. Companies are required to be competitive in the existing competition. At this time, user awareness of the importance of the value of service satisfaction provided by companies, both in the form of services and in the form of goods, is increasing (Prasetyo et al., 2023; Sridewi, 2020).

Customer satisfaction not only provides benefits in the short term but also provides benefits in the long term and provides a competitive advantage for banks (Adela, 2020). To fulfill customer satisfaction, the banking industry must provide the best service by providing breakthrough products and services with advanced technology to make it easier for customers to carry out various financial transactions. Satisfied customers will certainly make them loyal. Loyalty will manifest in customer loyalty and positive feelings towards banking, which is indicated by the customer not turning away from another bank.

Customers are the only ones who can judge whether the service quality is good. Users assess the service by comparing the service they receive with what they expect. If a user feels very satisfied with the service provided by a company, it will result in the user returning to make repeat purchases (Hasanah, 2022; Ipa and Di, 2018). Service quality is an effort to fulfill customer desires and needs, as well as the accuracy of delivery to meet customer desires and needs. In the context of this competitive and dynamic business world, companies are faced with significant challenges to maintain and improve service quality. According to Prasetyo et al. (2023), customers are the foundation or core of the business world because they are the primary source of income in the banking business. Service quality plays a pivotal role in determining customer satisfaction and long-term business success.

In the digital era, many hackers attempt to enter the banking system to steal funds from customers, causing significant losses. Therefore, the security system prevents and detects fraud. Factors related to security are considered important, and their nature is essential to study as they reflect customers' intention to use mobile banking. If security in mobile banking is guaranteed and safe, customers will utilize the features provided by banks (Purwanto and Budiman, 2020; Ramayana et al., 2020). Customer satisfaction and loyalty are the goals of every banking company, but customer satisfaction and loyalty are not only focused on the quality of service provided. Business competition in this era is getting tougher and increasing. The main factor that influences customer satisfaction is product quality (Ipa and Di, 2018; Riduansah, 2020). Most business actors highlight the quality of their products as being better than that of their competitors. If the product quality is better, then consumers or buyers will not hesitate to spend more money to get the product. Manufacturers compete to improve their products to be of good quality, which makes consumers interested in purchasing these products.

The quality of a good product will provide customers with a comfortable experience with BCA Bank. One of BCA Bank's superior products is mobile banking, which is good and makes it very easy for customers. Mobile banking can help customers make transactions and pay, so it becomes an essential tool for a company. Banks provide services to their customers. Mobile banking is a new technology and payment solution that facilitates payments for goods and services via devices (Migliore et al., 2022). In the long term, mobile banking is predicted to become the technology most widely adopted by the public (Raman and Asshish, 2021).

Mobile banking is designed to make it easier for customers to meet individual needs and is also easy to use. Mobile banking itself can increase transaction speed and speed up the banking process. Non-cash transactions will improve customer lifestyles with all the conveniences provided (Purwanto and Budiman, 2020). Mobile banking is not only used for transactions but is also a place for investing, making deposits, and even opening an account, all of which can be done via the customer's device (Purwanto and Budiman, 2020). The conveniences provided by mobile banking will make customers feel satisfied with BCA, and hopefully, they will become loyal customers, enhancing their overall banking experience.

Satisfaction can be understood as a condition where someone feels satisfied, happy, and free to consume products or services from a company. According to Novianti et al. (2018), there are several important points related to satisfaction, namely, the feelings that arise after evaluating the experience of using a product, the customer's reaction to the perceived evaluation, or the difference between expectations before the initial purchase and actual product performance. Post-purchase evaluation assesses the performance of a product or service against pre-purchase expectations, measured by the organization's performance against a set of customer requirements. Therefore, customer satisfaction is a condition or feeling that people feel satisfied, happy, and free when using a product or service.

According to Novianti et al. (2018), customer loyalty is the attitude and behavior of customers who like a brand. Loyalty can be described as customer loyalty to a particular product from a company on the market. According to Mulazid et al. (2018), the definition of loyalty is a situation where customers have a positive attitude towards a brand, are loyal to that brand, and are interested in continuing to buy in the future. Loyalty comes from customer satisfaction with the experience. Customers who have a good experience feel satisfied, and satisfied customers tend to become loyal to the company, fostering long-term brand commitment.

This study aims to investigate how customer satisfaction and consequent effects on customer loyalty at Bank BCA are influenced by mobile banking security and service quality. The study specifically seeks to know how mobile banking security affects satisfaction and loyalty, how service quality affects these variables, and whether satisfaction moderates the link between security/service quality and loyalty. This study adds more knowledge and acts as a reference for investigations on the interaction among mobile banking security, service quality, customer satisfaction, and loyalty. Practically, this study provides insightful information for comprehending the impact of mobile banking quality on customer happiness and loyalty, which can guide policies to promote mobile banking services and raise customer retention.

The novelty of this study lies in its comprehensive integration of the technology acceptance model theory to examine how perceived security and service quality influence customer satisfaction and loyalty in mobile banking. Unlike prior studies that often examined these variables in isolation, this research highlights customer satisfaction as a mediating factor between both security and service quality and customer loyalty. It emphasizes that security and service must work hand-in-hand to drive long-term loyalty. Moreover, the study provides empirical evidence specific to the Indonesian banking context, particularly BCA mobile banking, which is relatively underexplored in previous literature. This adds contextual depth and practical relevance to the findings. The approach enriches theoretical understanding while offering actionable insights for practitioners in the fintech and banking industries.

LITERATURE REVIEW

The Technology Acceptance Model (TAM) was introduced by Davis (1989), which modifies the beliefs, attitudes, intensity, and relationships of user behavior by adopting the components of the Theory of Reasoned Action (TRA). The purpose of this theory is to explain the determining factors for the acceptance of information-based technology in general. Apart from that, the TAM can also explain the behavior of end users from information technology with quite wide variations and user populations, which can provide a basis for knowing the influence of external factors on psychological foundations.

TAM theory is usually used to explore how a person develops new technological advances and what variables can influence the selection, recognition, and intention to use innovation (Purwanto and Budiman, 2020). TAM theory also states that the intention to use a particular technology determines a person's willingness to use the technology or not (Tumsifu et al., 2020). This theory has important advantages, including the fact that this model is parsimonious and simple but still valid (Noviarni, 2019). Therefore, this theory is still relevant to translating user readiness in utilizing information technology. This model also determines that the presence of certain factors can influence a person in making decisions about how and why they want to use the technology (Hardinata et al., 2024).

Security quality is security when using existing applications (Pakpahan, 2023). It serves as a characteristic measure when accessing applications, particularly systems that offer high levels of security and transparency (Zhou et al., 2021). The quality of security itself is understood as the ability to protect assets related to information, especially against potential threats that may arise (Mubarokah, 2023). Strong security systems also reflect a company's commitment to protecting user privacy, which is increasingly important in the digital era. Indirectly, security can provide consistent assurances to businesses by minimizing possible risks and supporting operational resilience, ensuring a secure environment for users.

In the context of mobile banking, security quality refers to the effectiveness of protective measures aimed at safeguarding users' personal and financial data from cyber threats, fraud, and unauthorized access (Pakpahan, 2023). A high level of security quality enhances user trust and confidence in mobile banking services, ultimately affecting customer satisfaction and

loyalty. Contributing factors include encryption technology, multi-factor authentication, fraud detection systems, and secure transaction processes (Mubarokah, 2023). When users perceive mobile banking as secure, they are more likely to remain loyal, recommend the service, and maintain long-term engagement with the bank, which fosters customer retention and growth.

Mobile banking is a banking service provided by banks via mobile phones. It is almost the same as Internet banking, which makes it easier for customers to no longer need to go to the bank; customers can carry out banking transactions. Mobile banking is a service that allows bank customers to carry out transactions via cell phone. MB offers convenience compared to SMS banking because customers do not need to remember the format of the SMS message or the destination number. Mobile banking is an e-channel facility accessed via cell phones with Android and IOS systems. According to Hasanah (2022), Mobile banking is an innovative service offered by banks that allows banking transactions via mobile phones. Through mobile banking, customers do not need to come to the bank to carry out banking activities; everything can be done via their mobile phones, so the time required is quicker and more concise.

In an effort to fulfill customer satisfaction, companies are required to be aware of shifts in customer needs and desires, which change almost all the time (Tambunan and Widyadhari, 2024). Buyers will move after forming a perception of the value of the offer; satisfaction after purchase depends on the performance of the offer compared to their expectations. Customer satisfaction can be felt after customers compare their experiences in purchasing goods or services from sellers or providers of goods or services, comments from friends and acquaintances, as well as promises and information from marketers and competitors. Marketing that wants to excel in competition must, of course, pay attention to customer expectations, satisfaction, feedback, loyalty, and preferences (Putra, 2024).

Customer satisfaction is a feeling of pleasure or disappointment that someone gets from comparing the perceived product performance (or results) and their expectations. Whether a customer is satisfied or not really depends on the performance of the product compared to the customer's expectations and whether the customer interprets any deviation or gap between performance and these expectations. According to Kotler and Keller (2018), customer satisfaction is a person's feeling of satisfaction or disappointment resulting from the performance of a product or service against expectations. Consumer satisfaction depends on whether performance meets expectations—disappointment arises when it falls short, and satisfaction when it aligns or exceeds customer expectations and desires.

Customer loyalty is a deep customer commitment to resubscribe or repurchase selected products or services consistently in the future, even though the influence of the situation and marketing efforts has the potential to cause changes in behavior (Rusydi, 2023). Customer loyalty is a strong commitment from customers to buy or reuse preferred products or services in the future, in addition to the influence of market situations and efforts by marketers to change customer behavior (Sigit and Soliha, 2017). Customers who are loyal to a bank can usually attract more potential customers, where potential customers consider the actions they will take before they decide to use the bank's services (Sleimi et al., 2020).

Loyalty generally means a loyal attitude that a person has towards a product, be it a service or a good. Loyalty generally means a loyal attitude that someone has towards a product, be it service or a good. Consumers who have high commitment are less likely to be influenced by forms of product or service marketing offered by other companies and still decide to use the services or products previously selected (Fauzan, 2020). Customers who have a high sense of loyalty towards a banking institution will not switch to using products or services marketed by other institutions. Therefore, customers who have a sense of loyalty are considered assets for a company, especially in banking (Shankar and Jebarajakirthy, 2019).

Based on research conducted by Zhou et al. (2021), the results of testing the security quality variable on customer satisfaction show a positive effect on customer satisfaction. According to Maramis et al. (2018), consumer satisfaction is the extent to which product performance responses meet buyer expectations. Based on the results of previous research (Pakpahan, 2023), security quality has a positive and significant effect on customer satisfaction. Higher security quality increases customer satisfaction by making them feel secure.

The quality of security in mobile banking plays a crucial role in shaping customer loyalty, as it directly affects users' trust and confidence in the service. When customers feel assured that their financial data and transactions are protected, they are more likely to continue using the mobile banking platform. Strong security measures—such as end-to-end encryption, biometric authentication, and real-time fraud detection—not only prevent cyber threats but also enhance the customer experience. Conversely, security breaches can lead to distrust, dissatisfaction, and attrition. Therefore, banks that prioritize and continually improve mobile banking security are more likely to retain loyal customers and strengthen their competitive advantage.

The quality of security in mobile banking plays a crucial role in shaping customer loyalty, as it directly affects users' trust and confidence in the service. When customers feel assured that their financial data and transactions are well-protected, they are more likely to continue using the mobile banking platform. Strong security measures such as end-to-end encryption, biometric authentication, and real-time fraud detection not only prevent cyber threats but also enhance the overall customer experience, satisfaction, and retention. Conversely, security breaches or vulnerabilities can lead to distrust, dissatisfaction, and even customer attrition. Based on the literature review, the following hypothesis is proposed.

H1. The quality of mobile banking security influences customer loyalty.

Based on research conducted by Handoko and Ronny (2020), the results of testing the security quality variable have a positive and significant impact on customer loyalty. Based on previous research conducted by Kaltsum and Muslichah (2020), security quality has a positive effect on customer loyalty, which means that the higher the level of security quality, the higher the level of customer loyalty. When the quality of security provided is good, it will create a feeling of satisfaction for the customer, which will make the customer feel happy to come back again. This is what makes the customer loyal to the service provider. A strong sense of trust in the security system further enhances customer retention and satisfaction.

Security quality is a fundamental factor in determining customer satisfaction in mobile banking. When users feel that their financial transactions and personal information are well-protected, they experience peace of mind, leading to a more positive perception of the service. Features like multi-factor authentication, data encryption, and fraud monitoring contribute to a secure environment, reducing concerns about potential cyber threats. On the other hand, security vulnerabilities or frequent fraud incidents can lead to frustration, anxiety, and dissatisfaction. Therefore, a high level of security not only protects customers but also enhances their overall banking experience, increasing their trust and satisfaction with the service. Based on the literature review, the following hypothesis is proposed.

H2. The quality of mobile banking security influences customer satisfaction.

Based on research conducted by Sarimuda (2022), the results of testing mobile banking service quality variables influence customer satisfaction. According to Panjaitan (2023), the quality of mobile banking services influences the level of customer satisfaction. The quality of mobile banking services has a positive effect on customer satisfaction, which means that the higher the level of quality of mobile banking services provided, the higher the level of customer satisfaction. The quality of mobile banking services plays a significant role in shaping customer loyalty, as it directly affects user experience and satisfaction. A seamless, user-friendly, and efficient mobile banking platform encourages customers to continue using the service. Key factors such as fast transaction processing, 24/7 accessibility, intuitive navigation, responsive customer support, and minimal downtime contribute to a positive experience.

When customers consistently receive high-quality service, they are more likely to develop trust and a strong emotional connection with the bank, leading to long-term loyalty. Conversely, poor service quality, such as slow processing times, frequent system errors, or unresponsive customer support, can lead to frustration and customer churn. Therefore, banks that continuously improve their mobile banking services can increase customer retention and strengthen brand loyalty. Based on the literature review, the following hypothesis is proposed.

H3. The quality of mobile banking services influences customer loyalty.

Based on research conducted by Sukarno and Akob (2022), the results of testing the variable quality of mobile banking services have a positive and significant effect on customer loyalty. Apart from that, according to Panjaitan (2023), research results show that the quality of mobile banking services has a positive and significant effect on customer loyalty. The quality of mobile banking services has a positive effect on customer loyalty, which means that the higher the level of quality of mobile banking services provided, the higher the level of customer loyalty. The quality of mobile banking services significantly impacts customer satisfaction, as it determines the overall convenience and efficiency of banking transactions. A well-designed mobile banking platform with fast response times, intuitive navigation, reliable transaction processing, and responsive customer support enhances the user experience.

Features like real-time balance updates, seamless fund transfers, and secure authentication further contribute to customer confidence and ease of use. When customers encounter smooth and hassle-free banking experiences, they are more likely to feel satisfied

and continue using the service. On the other hand, poor service quality, such as frequent app crashes, delayed transactions, or unhelpful customer support, can lead to frustration and dissatisfaction. Based on the literature review, the following hypothesis is proposed.

H4. Mobile banking service quality influences customer satisfaction.

Based on research conducted by Fakhri (2022), the results of testing the customer satisfaction variable show a significant influence on customer loyalty. Previous research conducted by Eltah (2019) also found that there is a positive and significant relationship between customer satisfaction variables and consumer loyalty. Customer satisfaction has a positive effect on customer loyalty, which means that the higher the level of customer satisfaction, the higher the level of customer loyalty. Customer satisfaction plays a crucial role in shaping customer loyalty, as satisfied customers are more likely to return, make repeated purchases, and recommend a brand to others, leading to stronger brand attachment.

When a business provides high-quality products, excellent customer service, and a seamless experience, customers develop a sense of trust and emotional connection. This trust encourages long-term relationships, reducing the likelihood of customers switching to competitors. Additionally, satisfied customers often share their positive experiences through online reviews, further strengthening brand loyalty. Ultimately, businesses that prioritize customer satisfaction create a loyal customer base that drives sustained growth and competitive advantage. Based on the literature review, the following hypothesis is proposed.

H5. Customer satisfaction influences customer loyalty.

Satisfaction is a key factor influencing loyalty, as good service quality increases satisfaction and fosters customer loyalty. According to Hidayati (2023), security quality, mediated by customer satisfaction, positively affects customer loyalty. Service quality effectively meets consumer needs and expectations, leading to satisfaction and loyalty. The quality of mobile banking security, particularly in BCA Bank, plays a crucial role in shaping customer loyalty through enhanced customer satisfaction.

When customers feel protected from fraud, data breaches, and unauthorized access, they develop trust in the bank, which boosts their satisfaction and confidence in using its services. A secure mobile banking experience not only reduces anxiety about potential risks but also enhances convenience, reinforcing positive perceptions of the bank. As a result, satisfied customers are more likely to remain loyal to BCA Bank, continue using its services, and even recommend it to others. Thus, mobile banking security acts as a critical determinant of customer satisfaction, which, in turn, strengthens long-term customer loyalty and overall brand reputation. Based on the literature review, the following hypothesis is proposed.

H6. The quality of mobile banking security influences customer loyalty through the BCA bank customer satisfaction.

According to Lestari (2019), service quality also has a significant effect on customer loyalty, which is mediated by satisfaction, so quality improvement and quality must continue to be actively improved to provide good satisfaction for customers. Satisfaction is one of the factors that influence loyalty, so the good quality of service provided will influence satisfaction,

leading to customer loyalty. The results of previous research conducted by Karnita and Darsono (2017) show that service quality mediated by customer satisfaction has a positive and significant effect on customer loyalty. Mobile banking service quality significantly influences customer loyalty by driving satisfaction among BCA Bank users.

When mobile banking services are efficient, user-friendly, and reliable, customers experience greater convenience in managing their financial transactions. Features such as seamless fund transfers, quick bill payments, and robust security measures enhance their overall banking experience, leading to higher satisfaction. A satisfied customer is more likely to continue using BCA Bank's services, trust the institution, and even recommend it to others. Therefore, by ensuring high-quality mobile banking services, BCA Bank strengthens customer satisfaction, which ultimately fosters long-term customer loyalty, contributing to business growth. Based on the literature review, the following hypothesis is proposed.

H7. The service quality of mobile banking influences customer loyalty through BCA bank customer satisfaction.
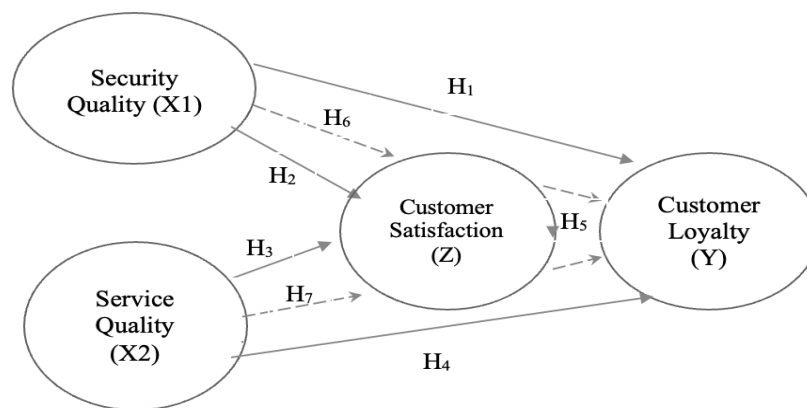

Figure 1. Research model

METHODS

This quantitative study (Fabrigar and Wegener, 2012) was conducted at the BCA Surabaya office, where questionnaires were distributed via Google Forms. Sample size was determined using the rule of 5–10 respondents per indicator (Hair et al., 2019); with 15 questionnaire items, a minimum of 150 respondents was required. We used a non-probability sampling method, which does not give every element in the population an equal chance of selection. Our sample comprised BCA Surabaya customers who owned and actively used BCA mobile banking services. In total, 152 questionnaires were returned, of which 151 were complete and included in the data analysis, ensuring data reliability.

The data source used in this research is primary data. According to Hair et al. (2019), primary data is a data source that directly provides data to data collectors. Data is collected by the researcher himself directly from the first source or place where the research object is carried out. A questionnaire is a data collection technique, and the primary data source used in this

research is a Likert scale as a benchmark for distributing questionnaires. Hair et al. (2019) state that the Likert scale is used to measure the attitudes, opinions, and perceptions of respondents or a certain group of people toward a phenomenon. With a Likert scale, respondents choose answers from several variable indicators with the measuring scale provided, namely a measurement scale of 1 to 5, which indicates opinions of strongly disagree to strongly agree based on an ordinal scale. According to Sugiyono (2018: p. 7), an ordinal scale is a measurement scale that not only states categories but also states the ranking of the constructs with the aim of providing information in the form of values in the answers.

The analytical method used in this research is the PLS-SEM method. The definition of Partial Least Squares (PLS), according to Nasrudin et al. (2022), is a variance-based structural equation analysis (SEM) that can test measurement models and structural models simultaneously. Two models were used to carry out the PLS-SEM research method, namely, the inner model and the outer model. Validity and reliability analysis will be thoroughly carried out in the outer model. In the inner model, R-squared testing, hypothesis testing, and indirect (mediation) relationships will be carefully carried out.

RESULT

Table 1. Construct reliability and validity

Construct	Indicator	Loading Factor	AVE	Cronbach Alpha	R-Squared	Q-Squared	Information
Security Quality (X1)	X1.1	0,916	0,695	0,957			Valid
	X1.2	0,903					Valid
	X1.3	0,956					Valid
	X1.4	0,909					Valid
	X1.5	0,934					Valid
Service Quality (X2)	X2.1	0,939	0,680	0,977			Valid
	X2.2	0,937					Valid
	X2.3	0,945					Valid
	X2.4	0,930					Valid
	X2.5	0,932					Valid
	X2.6	0,870					Valid
	X2.7	0,921					Valid
	X2.8	0,945					Valid
Satisfaction (Z)	Z.1	0,972	0,723	0,942	0,870	0,776	Valid
	Z.2	0,893					Valid
	Z.3	0,976					Valid
Loyalty (Y)	Y.1	0,973	0,745	0,943	0,921	0,802	Valid
	Y.2	0,890					Valid
	Y.3	0,977					Valid

Convergence validity analysis in this study showed positive results. All indicators in the four constructs (security quality, service quality, satisfaction, and loyalty) have a loading factor value above 0.7. When the factor loading requirements are met, a large correlation between the indicator and the latent variable can be ensured. The results from the table above show that all indicators in this study have strong and significant convergent validity. This means that these indicators consistently measure the concept they want to measure, thereby increasing the

accuracy and reliability of research results. The Average Variance Extract (AVE) test will be declared feasible if the value AVE is greater than 0.5. The test results show that the AVE value for each variable is above 0.5, so all variables meet the criteria. An AVE value that meets the criteria means that each latent variable can explain more than half of the indicators on average.

Each variable is declared reliable if the reliability test meets the criteria for a Cronbach Alpha > 0.7 and Composite Reliability > 0.7. Cronbach's Alpha and Composite Reliability values for all variables, namely security quality, service quality, satisfaction, and loyalty, have values greater than 0.7, so it can be stated that all research variables meet Cronbach's Alpha and Composite Reliability value criteria. A reliability test is an index that shows the extent to which a measuring instrument can be relied on. The R-squared value for loyalty is 0.921, indicating that 92% of the variation in loyalty can be explained by the independent variables. Then, the satisfaction variable has a value of 0.870, indicating that 87% of the independent variables can explain the dependent variable well. Loyalty and satisfaction have high predictive relevance with large indicators because the Q2 prediction for each variable is greater than 0.50. The Q2 predicted value for loyalty is 0.802, and satisfaction is 0.776. Overall, the two Q-Square values indicate that this research model has good predictive relevance, so it can be used to predict loyalty and satisfaction with a satisfactory level of accuracy.

Table 2. Model testing results

Path	t-statistics	p-values	Result	Effect
H1. Security quality → Customer loyalty	2.557	0.011	Supported	Direct
H2. Sales promotion → Customer loyalty	2.598	0.009	Supported	Direct
H3. Word of mouth → Customer loyalty	4.890	0.000	Supported	Direct
H4. Service quality → Customer loyalty	4.861	0.000	Supported	Direct
H5. Sales promotion → Word of mouth	41.255	0.000	Supported	Direct
H6. Security quality → Customer satisfaction → Customer loyalty	2.557	0.011	Supported	Indirect
H7. Service quality → Customer satisfaction → Customer loyalty	4.890	0.000	Supported	Indirect

The research results indicate that all hypotheses in the research model are supported based on statistically significant t-statistics and p-values. H1, H2, H3, and H4 show direct effects of security quality, sales promotion, word of mouth, and service quality on customer loyalty. Specifically, security quality has a significant effect on customer loyalty with a t-statistic of 2.557 and a p-value of 0.011, while sales promotion influences customer loyalty with a t-statistic of 2.598 and a p-value of 0.009. Service quality and word of mouth also significantly affect customer loyalty, with t-statistics of 4.861 and 4.890, respectively, and p-values of 0.000, showing a strong and significant positive relationship.

In addition to these direct effects, H6 and H7 examine mediation paths. H6 shows that security quality influences customer loyalty through customer satisfaction, with a t-statistic of 2.557 and a p-value of 0.011. H7 indicates that service quality influences customer loyalty

through customer satisfaction, with a t-statistic of 4.890 and a p-value of 0.000. These mediation results highlight the importance of customer satisfaction as an intervening variable in the relationship between security quality, service quality, and customer loyalty. Overall, the test results demonstrate that all the relationships between variables in the research model, both direct and mediated, are positive and statistically significant, contributing to customer satisfaction and customer loyalty.

DISCUSSION

The results of this research show that the quality of security in mobile banking has a positive and significant effect on customer satisfaction. This data confirms that a good security infrastructure is an important aspect of security quality in mobile banking that really satisfies customers. The findings of this research are in line with previous research conducted by Zhou et al. (2021); the results of testing the security quality variable on customer satisfaction showed a positive effect on customer satisfaction. According to Maramis et al. (2018), consumer satisfaction is the extent to which product performance responses meet buyer expectations. The security quality of BCA mobile banking provides a sense of security for its users. This can be shown from the analysis where using BCA mobile banking provides a greater sense of security so that customers do not feel worried about data loss and problems that will arise when using mobile banking (Almaiah et al., 2023; Jahan and Shahria, 2022).

The influence of mobile banking security quality on customer satisfaction can be analyzed through the lens of the TAM theory, which explains how users come to accept and use technology. In the context of mobile banking, security quality directly influences these perceptions, ultimately shaping customer satisfaction. When customers perceive a mobile banking system as secure, their trust and confidence in using the platform increase, reducing anxiety about potential risks such as fraud, data breaches, or unauthorized access. This aligns with the perceived usefulness component of TAM, as a secure system enhances the overall value of mobile banking by ensuring safe transactions and protecting sensitive financial data. Customers who trust the security features of mobile banking are more likely to use the service frequently, leading to greater satisfaction with the platform (Li et al., 2021; Zhou, 2021).

The results of this research show that the quality of security in mobile banking has a positive and significant effect on customer loyalty. This data confirms that good security quality is an important aspect of mobile banking that increases customer loyalty. The findings of this research are in line with previous research conducted (Handoko and Ronny, 2020); the results of testing the security quality variable have a positive and significant impact on customer loyalty. Based on previous research by Kaltsum and Muslichah (2020), security quality has a positive effect on customer loyalty, meaning that the higher the level of security quality, the higher the level of customer loyalty. These findings underscore the critical role of security in fostering trust and encouraging long-term customer relationships in mobile banking.

When the quality of security provided is good, it will create a feeling of satisfaction for the customer, which will make the customer feel happy to come back again. This is what makes the customer loyal to the service provider. In this case, the product provided is from mobile banking, which provides a sense of security and has integrity in the sense that the data in the BCA system will not be disseminated, and its security is guaranteed so that it is appropriately used and not used for anything that is not good.

The influence of mobile banking security quality on customer loyalty can be explained through the TAM theory. When customers perceive mobile banking as secure, their trust and confidence in the platform increase, reducing perceived risks and enhancing their willingness to continue using the service. A high level of security reinforces perceived usefulness, as customers feel assured that their financial data and transactions are protected, making the service more valuable. At the same time, if security features are well-integrated without causing inconvenience, they contribute to perceived ease of use, ensuring a seamless and user-friendly banking experience. Together, these factors drive customer satisfaction, which strongly predicts loyalty. When users feel secure and comfortable with a mobile banking platform, the customers are more likely to remain loyal, resist switching to competitors, and even recommend the service to others, solidifying long-term customer retention.

The results of this research show that the quality of mobile banking services has a positive and significant effect on customer satisfaction. This research's findings align with a previous study conducted by Sarimuda (2022), testing the variable quality of mobile banking services that influence customer satisfaction. According to Panjaitan (2023), the quality of mobile banking services influences customer satisfaction. The quality of mobile banking services has a positive effect on customer satisfaction, which means that the higher the quality of mobile banking services provided, the higher the level of customer satisfaction. This can be seen in Table 5.5, which shows that the reliability of the BCA system is excellent and can also be relied on to solve customer needs. In this case, the features and costs provided are very reasonable. As for the features provided, there are many choices in one application, ranging from credit loans to investments. This is indeed offered by BCA to continue to provide the best service for customers via their devices, which have now been transferred to the younger generation, who are more aware of new technology and like service stability.

The influence of mobile banking service quality on customer satisfaction can be analyzed using the TAM theory. High service quality in mobile banking, characterized by fast transactions, reliability, user-friendly interfaces, and responsive customer support, enhances customer perceptions of the platform as an efficient and valuable tool for managing their finances. Additionally, a seamless and intuitive banking experience improves perceived ease of use, reduces frustration, and makes it more convenient for customers to complete transactions effortlessly. When service quality meets or exceeds customer expectations, it leads to greater satisfaction by minimizing errors, enhancing trust, and ensuring a smooth digital banking experience. According to TAM theory, perceived usefulness and ease of use boost satisfaction, making service quality essential for retaining mobile banking users.

The results of this research show that service quality in mobile banking has a positive and significant effect on customer loyalty. This data confirms that good service quality is an important aspect of mobile banking that increases customer loyalty. The findings of this research are in line with previous research conducted by Sukarno and Akob (2022); the results of testing the variable quality of mobile banking services have a positive and significant effect on customer loyalty. Apart from that, according to Panjaitan (2023), research results show that the quality of mobile banking services has a positive and significant effect on customer loyalty.

The quality of mobile banking services has a positive effect on customer loyalty, which means that the higher the level of quality of mobile banking services provided, the higher the level of customer loyalty. BCA's mobile banking services are not limited to the features provided as well as the help service features, which make it easier for customers if they experience significant problems but still don't need to go to a branch or can still be done on each customer's device, this makes customers feel easier and more comfortable. Helped so that customers will always be loyal to BCA, enhancing their overall satisfaction with the brand.

The influence of mobile banking service quality on customer loyalty can be explained through the TAM theory. When mobile banking services are efficient, reliable, easy to navigate, and responsive to customer needs, the platform becomes more valuable to customers. Additionally, a seamless, hassle-free user experience strengthens perceived ease of use, reduces barriers to adoption, and ensures customers can complete transactions effortlessly. When service quality meets expectations, it leads to higher customer satisfaction, which, in turn, fosters loyalty. Satisfied customers are more likely to continue using the platform, resist switching to competitors, and recommend the service to others. Thus, consistent and high-quality mobile banking services reinforce positive user perceptions, strengthening long-term customer commitment and loyalty, ultimately benefiting the company.

The results of this research show that customer satisfaction has a positive and significant effect on customer loyalty. This data confirms that good customer satisfaction is an important aspect of increasing customer loyalty. The findings of this research are in line with previous research conducted by Fakhri (2022). The results of testing the customer satisfaction variable show a significant influence on customer loyalty. Previous research conducted by Eltah (2019) also found that there is a positive and significant relationship between customer satisfaction variables and consumer loyalty. Customer satisfaction has a positive effect on customer loyalty, which means that the higher the level of customer satisfaction, the higher the level of customer loyalty. Based on the result, customers are satisfied with our mobile banking because it meets their needs and handles both investments and payments smoothly.

The influence of customer satisfaction on customer loyalty can be explained through the TAM theory. When customers are satisfied with a service, whether due to its reliability, convenience, or overall experience, they develop a stronger perception of its usefulness, reinforcing their willingness to continue using it. Additionally, a smooth and user-friendly experience enhances perceived ease of use, reduces frustration, and makes the service more enjoyable. High satisfaction fosters emotional attachment and trust, which are crucial in

building long-term loyalty. Satisfied customers are not only more likely to stay with a brand but also to recommend it to others, resist switching to competitors, and increase their engagement over time. Therefore, maintaining high levels of customer satisfaction is essential for businesses aiming to sustain customer loyalty and long-term success.

The results of this research indicate that the influence of security quality mediated by customer satisfaction has a positive and significant effect on customer loyalty. The findings of this research are in line with previous research conducted by Mukhtisar (2021); the higher the level of security provided by the company to customers who use mobile banking, the more satisfied the customer will be with the fulfillment of their wishes in accordance with the expectations desired by the customer, this will lead to customer satisfaction, of services provided by a company. Satisfaction is one of the factors that influence loyalty, so the good quality of service provided will influence satisfaction, leading to customer loyalty. Hidayati (2023) found that security quality, through customer satisfaction, positively influences loyalty.

Customer satisfaction acts as a bridge between security quality and loyalty. A secure mobile banking environment enhances user trust, minimizes perceived risks, and ensures a smooth banking experience, all of which contribute to higher satisfaction. In turn, satisfied customers are more likely to remain loyal, continue using the service, and even recommend it to others. Without satisfaction, even high-security quality may not guarantee loyalty, as users may still seek alternative platforms that offer both security and convenience. Therefore, customer satisfaction serves as a critical mediator, reinforcing the link between mobile banking security quality and long-term customer loyalty (Alzaydi, 2023; Zhou et al., 2021).

The results of this research indicate that the influence of service quality mediated by customer satisfaction has a positive and significant effect on customer loyalty. Service quality is an effort to fulfill consumer needs and desires with a level of service that is in accordance with customer expectations by fulfilling desires in accordance with the expectations desired by customers, causing customer satisfaction with the services provided by a company. Satisfaction is one of the factors that influence loyalty, so the good quality of service provided will influence satisfaction, leading to customer loyalty. In accordance with the results of previous research conducted by Karnita and Darsono (2017), service quality mediated by customer satisfaction has a positive and significant effect on customer loyalty. Service quality significantly boosts satisfaction, which in turn fully drives customer loyalty.

Customer satisfaction acts as a bridge between service quality and loyalty. A well-functioning mobile banking system that meets customer expectations increases satisfaction by providing a smooth and hassle-free experience. In turn, satisfied customers are more likely to develop loyalty, continue using the platform, and recommend it to others. Without satisfaction, even high service quality may not directly translate into loyalty, as customers may still explore alternatives that better meet their needs. Customer satisfaction mediates service quality's impact on long-term customer loyalty (Alzaydi, 2023; Sadiq and Adil, 2021). Thus, prioritizing customer satisfaction is essential for maximizing the benefits of service quality efforts.

This research implies that both security quality and service quality in mobile banking are critical determinants of customer satisfaction and loyalty. Banks must prioritize enhancing the security infrastructure of their mobile banking platforms to build and maintain user trust. Simultaneously, delivering seamless, efficient, and user-friendly services is essential for sustaining customer engagement and satisfaction. The findings suggest that even advanced security systems may not drive loyalty without a satisfying user experience. Therefore, financial institutions should adopt a holistic strategy that integrates secure systems with high-quality digital services. Doing so will improve customer retention, reduce churn, and potentially lead to positive word-of-mouth promotion (Chang and Wang, 2023; Khalek et al., 2025). These valuable insights underscore the strategic value of aligning technological investment with customer-centric design principles.

CONCLUSIONS

The study concludes that at Bank BCA, customer satisfaction and loyalty are significantly influenced by the quality of mobile banking security and services. Direct hypothesis testing shows that both security and service quality have a direct and positive effect on satisfaction and loyalty, with all links being statistically significant. Satisfaction plays a crucial mediating role, as both security and service quality indirectly enhance loyalty through increased customer satisfaction. These findings emphasize the importance of maintaining high standards of security and service in mobile banking to improve customer experience and retention. BCA's mobile banking security positively impacts customer trust, encouraging loyalty through safe and reliable transactions. Similarly, service quality also shows a significant positive effect on satisfaction and loyalty, highlighting the need for BCA to continuously improve its mobile banking offerings. Overall, customer loyalty is driven by a combination of security, service quality, and satisfaction, reinforcing the importance of maintaining excellent and reliable systems to keep BCA as a preferred choice for customers.

LIMITATION

The limitation of this research is its scope, which is confined to BCA Bank customers in the West Surabaya area, thereby limiting the generalizability of the findings to a broader population. Additionally, the study focuses solely on two independent variables—security quality and service quality—without considering other potential factors that might influence customer satisfaction and loyalty, such as user experience, mobile application design, or customer support responsiveness. Future research is encouraged to expand the geographical coverage and include a wider range of variables to provide a more comprehensive understanding of customer loyalty in mobile banking services. These limitations highlight the need for broader data collection and more diverse variables in similar future studies.

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