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**Original Research Article**

# The Effect of Ease of Use, Security, and E-Service Quality on Customer Loyalty through Customer Satisfaction of Mobile Banking Users of BCA Bank

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**Abstract:** The rapid growth of digital services has increased the need for businesses to understand the factors that influence Customer Satisfaction (CS) and Customer Loyalty (CL). However, achieving high customer satisfaction and loyalty remains a challenge as users often demand both seamless experiences and secure platforms. This study aims to examine the impact of Perceived Ease of Use (PEU), Perceived Security (PS), and Perceived E-Service (PE-S) on Customer Satisfaction (CS), and the subsequent effect of CS on Customer Loyalty (CL). Understanding these relationships is essential for businesses seeking to improve customer retention in the competitive digital marketplace. This study uses a quantitative approach with primary data collected via a Gfom-based questionnaire. Respondents were selected using purposive sampling, targeting active BCA Mobile users in Greater Jakarta. A total of 100 samples were determined using the Lameshow formula. The questionnaire employed a 5-point Likert scale to assess ease of use, security, e-service quality, satisfaction, and loyalty. Data were analyzed using Partial Least Squares (PLS) to evaluate both measurement and structural models. The findings reveal that both PEU and PE-S have significant positive effects on CS, indicating that customers are more satisfied when they find the platform easy to use and receive high-quality digital support. However, PS shows a significant but negative impact on CS, suggesting that while security is essential, it can sometimes reduce user satisfaction if it introduces inconvenience. Interestingly, the path from CS to CL was found to be statistically insignificant, indicating that high customer satisfaction does not necessarily lead to strong customer loyalty. These results also highlight the importance of balancing security and usability while focusing on superior service quality to enhance customer satisfaction. This study provides valuable insights for companies looking to optimize their digital platforms for better customer retention and long-term success.

**Keywords:** Perceived Ease of Use, Perceived Security, Perceived E-Service, Customer Satisfaction, Customer Loyalty, SmartPLS.



## INTRODUCTION

In the rapidly evolving digital landscape, financial institutions have had to adapt to changing consumer behaviors and technological advancements to remain competitive. One of the most significant transformations in the financial services industry has been the widespread adoption of mobile banking, which provides customers with convenient, on-the-go access to a wide range of financial services. Mobile banking applications, such as BCA Mobile in Indonesia, allow users to perform various transactions, including money transfers, bill payments, investment management, and account monitoring, directly from their smartphones. This convenience, combined with the growing penetration of mobile devices and internet access, has driven a significant shift in customer preferences towards digital banking solutions (Li *et al.,* 2021; Suariedewi & Suprapti, 2020).

However, despite the advantages of mobile banking, customer loyalty remains a critical challenge

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for financial institutions. Maintaining customer loyalty is essential for sustaining long-term profitability, reducing churn rates, and enhancing brand reputation. In this context, understanding the factors that drive customer loyalty has become a critical focus for both practitioners and academics. Customer loyalty, in the context of mobile banking, is often influenced by a combination of technological, psychological, and experiential factors that collectively shape the user experience (Kim *et al.,* 2010)

Three key factors that have consistently emerged as significant determinants of customer loyalty in the digital banking sector are ease of use, security, and e-service quality. Ease of use refers to the degree to which a mobile banking application is user-friendly, intuitive, and easy to navigate. Studies have shown that platforms that prioritize ease of use can significantly enhance customer satisfaction and loyalty by reducing cognitive effort and transaction time, thereby improving the overall customer experience. For instance, The ease of use of mobile banking directly and partially has a positive and significant influence on user satisfaction (Kadir, 2024) and the loyalty of customers using mobile banking (Maulana *et al.,* 2024).

Security, on the other hand, is a fundamental aspect of digital banking, as it directly impacts customer trust. In an era where data breaches and cyber-attacks are increasingly common, customers demand robust security measures to protect their personal and financial information. Secure platforms that utilize advanced encryption, multi-factor authentication, and secure communication protocols are more likely to gain customer trust, which is a critical component of long-term loyalty. Previous research has highlighted the importance of security in building customer satisfaction and loyalty intentions. Security significantly influences customer satisfaction, which in turn plays a crucial role in building customer loyalty (Susanto, *et al.,* (2023). The importance of ease of use, efficiency, privacy/security, and reliability lies in their significant impact on customer satisfaction and retention intentions in digital banking services (Egala, *et al.,* 2021).

E-service quality, which encompasses the overall performance, reliability, responsiveness, and personalization of the digital platform, also plays a crucial role in shaping customer satisfaction and loyalty. High-quality e-services can enhance customer perceptions of value and trust, leading to stronger emotional connections and long-term loyalty. Research indicates that superior e-service quality is positively associated with customer satisfaction and loyalty across various digital banking contexts, including mobile applications (Beanning & Zulkarnain, 2024) and paying attention to good service quality will lead the creation of trust, satisfaction and customer loyalty when using m-banking.(Suaridewi & Suprapti, 2020). The banking industry is rapidly developing to utilize e-banking as an efficient and suitable tool to satisfy customers. Online banking service is the general service suggested by customary banks to provide faster and more reliable services for customers. With fast technology improvement, e-banking has been utilized to absorb subscribers and conduct banking transactions. Still, the major problem with e-banking is satisfying customers who are now using Internet banking. Customer satisfaction is a significant factor in helping banks to keep their competitive advantage. Service quality is one significant factor influencing customer satisfaction (Li *et al.,* 2021)

Given the critical role of these factors, this study seeks to empirically assess the impact of ease of use, security, and e-service quality on customer loyalty, with customer satisfaction as a mediating variable, within the context of BCA Mobile users in Indonesia. By exploring these relationships, this research aims to provide valuable insights for financial institutions seeking to enhance customer loyalty in an increasingly digital marketplace.

## Literature Review and Hypothesis Development

In the context of mobile banking, understanding the factors that influence customer satisfaction and loyalty is critical for financial institutions seeking to enhance customer retention and maintain competitive advantage. The key factors often studied in this context include ease of use, security, and e-service quality, each of which plays a distinct but interconnected role in shaping customer perceptions and behaviors. These factors not only impact immediate customer satisfaction but also influence long-term customer loyalty, making them essential components of strategic digital banking management.

### *Ease of Use and Customer Satisfaction*

Perceived ease of use, in contrast, refers to "the degree to which a person believes that using a particularsy stem would be free of effort. This follows from the definition of ease: freedom from difficulty or great effort. Others being equal, easier the application perceived to use than another, the more likely to be accepted by users (Davis, 1989), which posits that perceived ease of use significantly influences user acceptance of technology by reducing the cognitive effort required to interact with digital systems. In the context of mobile banking, overall e service quality significantly affects customer satisfaction and loyalty (Puriwat & Tripopsakul, 2017).

Several studies have confirmed the positive relationship between ease of use and customer satisfaction, intention to use, loyalty and word of mouth. For example, Beanning (2024) found that mobile banking users who perceive their platforms as easy to use are more likely to express higher levels of satisfaction and loyalty. This is because user-friendly designs minimize the time and effort required to complete

transactions, check account balances, and access financial services, thereby enhancing the overall user satisfaction (Beanning, 2024) and perceived ease of use has a significant effect on satisfaction and satisfaction has a significant effect on customer loyalty (Li *et al.,* 2021). Moreover, Suariedewi & Suprapti (2020) highlighted that mobile service quality has a positive and significant effect on e-trust. E-trust has a positive and significant effect on e-satisfaction, e-satisfaction has a positive and significant effect on e-loyalty. Based on this argument, the following is hypothesised:

**Hypothesis 1 ($H_1$):** Ease of use has a positive impact on customer satisfaction.

***Security and Customer Satisfaction***

Security is a critical determinant of customer satisfaction in digital banking, as it directly impacts customer trust and confidence in the platform. Ensuring robust security measures is crucial for the growth of e-commerce, as it addresses online consumers' concerns about the safety of their financial data during transmission and storage, thereby enhancing their trust in the reliability of payment methods and reducing fears of fraudulent use. Perceived security can be understood as consumers' confident belief that their personal and financial information will be protected from unauthorized access, viewing, or manipulation during transmission and storage through technical measures that ensure data integrity, confidentiality, authentication, and non-repudiation—where integrity guarantees that data cannot be altered without permission, confidentiality restricts access to authorized individuals, authentication verifies identities before operations are performed, and non-repudiation prevents denial of actions such as transactions, thereby fostering trust and reliability in the information system (Flavián & Guinalíu, 2006). System security positively influences users' intention to adopt the service. Given that digital banks conduct nearly all their activities online without physical branches, both service quality and system security require significant focus and prioritization (Nugroho, *et al.,* 2023).

Research has consistently demonstrated the importance of security in shaping customer satisfaction. For instance Quynh, *et al.,* (2023) the perceived security factor has the most substantial influence on customers' behavioral intentions, thereby driving their actual behavior. Similarly, Li *et al.,* (2021) find that cloud services, security, e-learning, and service quality are four significant factors influencing customer satisfaction in using Internet banking services. Ling, *et al.,* (2016) conclude that customer satisfaction with Internet banking is influenced by several factors, including service quality, privacy and security, content and web design, speed, and accessibility, as these elements collectively contribute to a positive user experience. Moreover, Nugroho & Syakila (2023) find that system security are essential for further attention, considering that digital banks carry out almost all of their operations digitally without physical branches. Additionally, Sugijanto, *et al.,* (2025) find that mobile banking security quality and service quality positively and significantly influence customer loyalty, with customer satisfaction playing a key mediating role. Finally, Kassim & Mujinga (2024) argue that security plays a crucial role in e-banking because financial transactions are carried out electronically, making customers vulnerable to various security risks like identity theft and unauthorized access. They highlights the importance of reliability, system availability, efficiency, fulfillment, privacy, and responsiveness as key dimensions of service quality, while also going further by incorporating security concerns that are especially relevant in the Ugandan context, a critical inclusion for addressing the unique challenges faced by banks in developing countries where trust, data protection, and the overall security of e-banking platforms significantly influence customer satisfaction. Therefore, it is hypothesised:

**Hypothesis 2 ($H_2$):** Security has a positive impact on customer satisfaction.

***E-Service Quality and Customer Satisfaction***

E-service quality is developed from Internet marketing and traditional service quality literature. Unlike traditional services, customers tend to evaluate the entire process and outcome rather than each sub-process in detail during a single visit (Santos, 2003). In the online environment, e-service quality is crucial for realizing the potential benefits of the Internet. Key positive aspects include flexibility, convenience, efficiency, and enjoyment. Firms must facilitate the searching, retrieving, and integrating of information to respond efficiently to consumer inquiries. Lee, & Lin (2005) find that Overall service quality has a strong positive effect on customer satisfaction and e-service quality is a strong predictor of customer satisfaction in digital banking, as customers value platforms that offer fast, reliable, and personalized experiences (Beanning, 2024).

Platforms that consistently deliver high-quality digital services can build stronger emotional connections with customers, fostering long-term loyalty and reducing the likelihood of customer churn. For instance, personalized support, fast response times, and reliable transaction processing have been shown to enhance customer satisfaction and loyalty (Marliyah *et al.,* 2021). Thus, the following hypothesis is formulated:

**Hypothesis 3 ($H_3$):** E-service quality has a positive impact on customer satisfaction.

***Customer Satisfaction and Customer Loyalty***

Customer satisfaction is a key determinant of customer loyalty. Satisfied customers are more likely to continue using a platform, make repeat transactions, and recommend the service to others, creating a sustainable competitive advantage for financial institutions (Li *et al.,* 2021). This relationship has been consistently supported by empirical studies, which demonstrate that satisfied customers are less likely to switch to competing

platforms and more likely to exhibit long-term loyalty (Marliyah *et al.,* 2021). Venkatakrishnan *et al.,* (2023) emphasize that customer satisfaction plays a pivotal role in fostering loyalty through enhanced e-service quality and trust. Gull, *et al.,* (2020) found that e-satisfaction significantly influences customer retention in e-commerce sectors. Tedjokusumo and Murhadi (2023) show similar effects in banking services, linking satisfaction to sustained customer loyalty. Additionally, Ashiq & Hussain (2024) find that customer e-satisfaction positively impacts e-loyalty. Furthermore, Ahmed, *et al.,* (2021) highlight customer satisfaction as a mediator that strengthens the link between e-service quality and loyalty in digital banking contexts. Thus, this study assumes the following hypotheses.

**Hypothesis 4 ($H_4$):** Customer satisfaction has a positive impact on customer loyalty.

***Mediating Role of Customer Satisfaction***

Customer satisfaction is also expected to mediate the relationship between ease of use, security, e-service quality, and customer loyalty. This means that the impact of these factors on customer loyalty is likely to be stronger when customers are highly satisfied with their overall experience (Marliyah *et al.,* 2021). Several studies support this mediating role of customer satisfaction. Venkatakrishnan *et al.,* (2023) found that customer satisfaction mediates the effect of e-service quality on customer loyalty, moderated by web design and trust. Gull, *et al.,* (2020) also demonstrated that e-satisfaction mediates the relationship between e-service quality and e-loyalty in the Pakistani e-commerce sector. Tedjokusumo and Murhadi (2023) confirmed that customer satisfaction acts as a mediator between service quality and customer loyalty in the banking sector. Consequently, this study postulates the next hypothesis:

**Hypothesis 5 ($H_5$):** Customer satisfaction mediates the relationship between ease of use, security, e-service quality, and customer loyalty.

Based on the literature review provided, a proposed framework has been developed to illustrate the relationships between key factors influencing customer satisfaction and loyalty in the context of mobile banking. This framework captures the critical pathways through which ease of use, security, and e-service quality impact customer satisfaction and, subsequently, customer loyalty. It also highlights the mediating role of customer satisfaction in these relationships, reflecting the interconnected nature of these constructs. We proposed framework as follows:

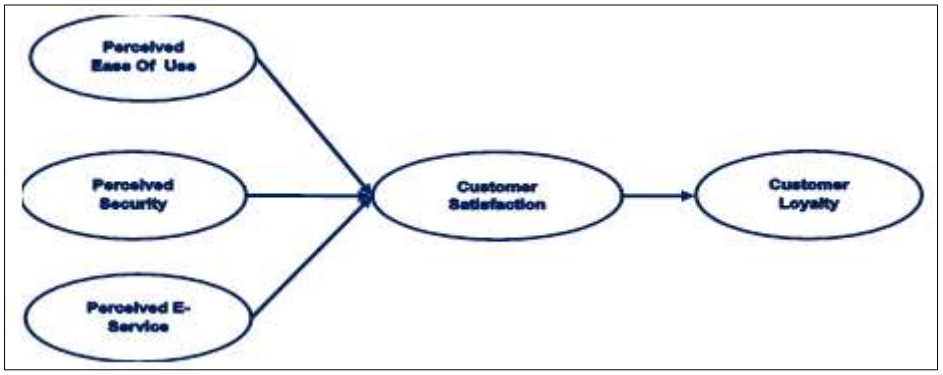


**Figure 1: Proposed Framework**

## RESEARCH METHODOLOGY

This study uses a quantitative research approach using primary data collected through a questionnaire using the Gfom facility. Primary data collection methods are essential to capture the perceptions, attitudes, and real behavior of BCA Mobile users, thus providing in-depth insight into the factors that influence customer satisfaction and loyalty. The questionnaire was distributed to the general public who are active BCA Mobile users to ensure that the responses given are directly relevant to the research objectives.

The sampling method used in this research is nonprobability sampling, specifically purposive sampling. Purposive sampling, in particular, involves selecting respondents based on specific criteria that align with the research objectives. In this study, the criteria for selecting respondents include:

a. Being a BCA mobile user.
b. Residing in the greater jakarta area (jabodetabek), which is a significant market for bca mobile.

To determine the appropriate sample size, the researchers used the Lameshow formula, which is often applied in studies where the population size is large or unknown, ensuring that the sample is representative and statistically valid. The target sample size for this study is 100 respondents, which is sufficient for conducting multivariate analysis using Partial Least Squares (PLS).

The questionnaire was designed to cover multiple dimensions related to the research hypotheses, including ease of use, security, e-service quality, customer satisfaction, and customer loyalty. The items were adapted from established scales in previous studies to ensure reliability and validity. The questionnaire was

structured using a Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), allowing respondents to express the extent to which they agree with each statement.

Data collected from the questionnaires were analyzed using the Partial Least Squares (PLS) approach. PLS is a component-based Structural Equation Modeling (SEM) technique that is suitable for predictive research and complex models with multiple indicators and latent variables. The choice of PLS is appropriate for this study as it allows for the simultaneous examination of the measurement model (outer model) and the structural model (inner model).

The data analysis process includes the following steps:

a. **Convergent Validity** - Assessing the extent to which a set of indicators reflects the underlying latent construct. This is evaluated through the following criteria:
   - Factor Loadings comsistof each indicator should have a loading of at least 0.70 to be considered reliable.
   - Average Variance Extracted (AVE) for each construct should be at least 0.50, indicating that more than half of the variance is captured by the construct rather than measurement error.

b. **Discriminant Validity** - Ensuring that each construct is distinct from others. This is evaluated through:
   - Cross-Loadings consist of:each indicator that should load more strongly on its respective construct than on others.
   - Fornell-Larcker Criterion uses the square root of the AVE for each construct that should be greater than the correlation with any other construct.

c. **Reliability Testing** - Measuring the internal consistency of the constructs using:
   - Cronbach's Alpha should be at least 0.70 to indicate acceptable reliability.
   - Composite Reliability (rho_a and rho_c)values should be at least 0.70, indicating consistent internal measurements.

d. R-Square ($R^2$) should be at least 0.10, with higher values indicating stronger predictive power.

e. Path Coefficients is used to evaluate the strength and significance of the hypothesized relationships among constructs. Path coefficients should be significant (p-value < 0.05) to confirm the hypothesized relationships.

f. Model fit is applied to evaluate how well the proposed structural equation model aligns with the observed data. PLS-SEM prioritizes prediction and exploratory analysis. However, ensuring a good model fit is still essential for confirming that the relationships within the model accurately capture the underlying theoretical structure.

## RESULTS AND DISCUSSION

### *Respondent Profile*

The first part of the discussion focuses on the profile of the respondents. The respondents' demographic characteristics are critical for understanding the context in which BCA Mobile is used. Based on the questionnaire data, the majority of respondents were female, predominantly aged 22 years, with a student status, residing in the Depok area. In terms of financial background, most respondents reported a monthly income or allowance exceeding IDR 5,000,000. Additionally, these respondents used the BCA Mobile application more than five times a week, primarily accessing the service through Android devices.

This demographic profile reflects the typical user base of BCA Mobile, which consists largely of younger, digitally savvy individuals with high levels of financial activity. Understanding these characteristics is essential for interpreting the broader results of the study and for formulating targeted marketing and service improvement strategies.

### *Evaluation of Measurement Models*

The evaluation of a PLS model involves three main components: measurement model assessment, structural model assessment, and overall model goodness assessment. The measurement model assessment includes two critical tests: validity and reliability.

Validity testing covers multiple aspects, including convergent validity, which is assessed using loading factors (with a minimum threshold of ≥ 0.70) and average variance extracted (AVE) (with a required threshold of ≥ 0.50). It also includes discriminant validity, evaluated through Fornell and Larcker criteria, HTMT (Heterotrait-Monotrait Ratio) with a maximum acceptable value of < 0.90, and cross-loadings and summarized in table 1 and 2.

Reliability testing focuses on composite reliability (CR) with a criterion value of > 0.70 and Cronbach's alpha with a threshold of > 0.70, ensuring internal consistency (Hair *et al.,* 2021). The detailed results of these validity and reliability assessments are summarized in table 3.

**Table 1: Convergent Validity Test**

| Variable | Factor Loadings | | Average Variance Extracted (AVE) |
|---|---|---|---|
| **PEU** | X1.1 | 0.815 | 0.592 |
| | X1.2 | 0.743 | |
| | X1.3 | 0.775 | |

| | | | |
|---|---|---|---|
| | X1.4 | 0.742 | |
| **PS** | X2.1 | 0.791 | 0.688 |
| | X2.2 | 0.752 | |
| | X2.3 | 0.87 | |
| | X2.4 | 0.897 | |
| **PE-S** | X3.1 | 0.756 | 0.632 |
| | X3.2 | 0.779 | |
| | X3.3 | 0.843 | |
| | X3.4 | 0.799 | |
| **CS** | Y.1 | 0.766 | 0.716 |
| | Y.2 | 0.811 | |
| | Y.3 | 0.952 | |
| **CL** | Z.1 | 0.815 | 0.685 |
| | Z.2 | 0.87 | |
| | Z.3 | 0.796 | |

**Table 2: Discriminant Validity Test**

| **Cross Loadings** | | | | | |
|---|---|---|---|---|---|
| | **PEU** | **PS** | **PE-S** | **CS** | **CL** |
| X1.1 | 0.815 | -0.079 | -0.661 | -0.141 | 0.658 |
| X1.2 | 0.743 | 0.021 | 0.545 | -0.051 | 0.519 |
| X1.3 | 0.775 | 0.135 | 0.445 | 0.091 | 0.551 |
| X1.4 | 0.742 | 0.038 | 0.045 | -0.079 | 0.512 |
| X2.1 | 0.039 | 0.791 | 0.092 | 0.645 | -0.02 |
| X2.2 | 0.065 | 0.87 | 0.056 | -0.67 | -0.056 |
| X2.3 | 0.056 | 0.897 | 0.756 | 0.843 | 0.049 |
| X2.4 | 0.058 | 0.056 | 0.779 | 0.799 | 0.052 |
| X3.1 | 0.586 | 0.056 | 0.843 | 0.093 | 0.056 |
| X3.2 | -0.017 | 0.049 | -0.003 | 0.007 | 0.051 |
| X3.3 | -0.617 | -0.077 | -0.165 | -0.15 | -0.056 |
| X3.4 | 0.526 | -0.086 | -0.496 | -0.19 | 0.87 |
| Y.1 | 0.017 | 0.007 | -0.007 | 0.766 | 0.015 |
| Y.2 | 0.007 | 0.013 | 0.017 | 0.811 | -0.019 |
| Y.3 | -0.012 | -0.01 | -0.067 | 0.952 | 0.045 |
| Z.1 | 0.642 | 0.012 | -0.032 | -0.067 | 0.815 |
| Z.2 | 0.697 | 0.067 | 0.703 | -0.15 | 0.87 |
| Z.3 | 0.526 | -0.223 | -0.496 | -0.19 | 0.796 |
| **Fornell Larcker Criterion** | | | | | |
| | **PEU** | **PS** | **PE-S** | **CS** | **CL** |
| **PEU** | 0.769 | | | | |
| **PS** | 0.035 | 0.829 | | | |
| **PE-S** | 0.689 | -0.033 | 0.795 | | |
| **CS** | -0.072 | 0.795 | -0.11 | 0.846 | |
| **CL** | 0.757 | -0.154 | 0.745 | -0.161 | 0.828 |

**Table 3: Reliability Test**

| **Construct** | **Cronbach's Alpha** | **Composite Reliability** |
|---|---|---|
| **PEU** | 0.771 | 0.853 |
| **PS** | 0.863 | 0.898 |
| **PE-S** | 0.805 | 0.873 |
| **CS** | 0.85 | 0.882 |
| **CL** | 0.771 | 0.867 |

Table 4 presents the R-Square and R-Square Adjusted values for the two dependent variables, CS and CL, obtained from the SmartPLS analysis. Customer Satisfaction (CS) has an R-Square of 0.693 and an R-Square Adjusted of 0.683. This indicates that approximately 69.3% of the variance in CS can be explained by the independent variables in the model. The adjusted value, which accounts for the number of predictors in the model, is slightly lower at 68.3%, reflecting a minor adjustment for model complexity. This

suggests a strong explanatory power, indicating that the model effectively captures the main factors influencing customer satisfaction. Customer Loyalty (CL), on the other hand, shows an R-Square of 0.026 and an R-Square Adjusted of 0.016. This means that only 2.6% of the variance in CL is explained by the independent variables, with an even lower adjusted value of 1.6%. This indicates a very weak relationship, suggesting that the current model does not adequately capture the factors that influence customer loyalty. Overall, the model appears to be significantly more effective in explaining customer satisfaction than customer loyalty, highlighting a potential need for model improvement or the inclusion of additional relevant predictors for the CL construct.

**Table 4: R Square ($R^2$)**

| | R-square | R-square Adjusted |
|---|---|---|
| **CS** | 0.693 | 0.683 |
| **CL** | 0.026 | 0.016 |

The table 5 and figure 2 below present the path coefficients obtained from the smartpls analysis, showing the strength and statistical significance of the relationships between the constructs in the model. This includes the effects of Perceived Ease of Use (PEU), Perceived Security (PS), and Perceived E-Service (PE-S) on Customer Satisfaction (CS), as well as the impact of Customer Satisfaction (CS) on Customer Loyalty (CL).

**Table 5: Path coefficients**

| | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics (\|O/STDEV\|) | P values |
|---|---|---|---|---|---|
| **PEU -> CS** | 0.482 | 0.481 | 0.082 | 5.889 | 0.000 |
| **PS -> CS** | -0.158 | -0.152 | 0.074 | 2.144 | 0.032 |
| **PE-S -> CS** | 0.408 | 0.406 | 0.087 | 4.697 | 0.000 |
| **CS -> CL** | -0.161 | -0.182 | 0.126 | 1.282 | 0.200 |

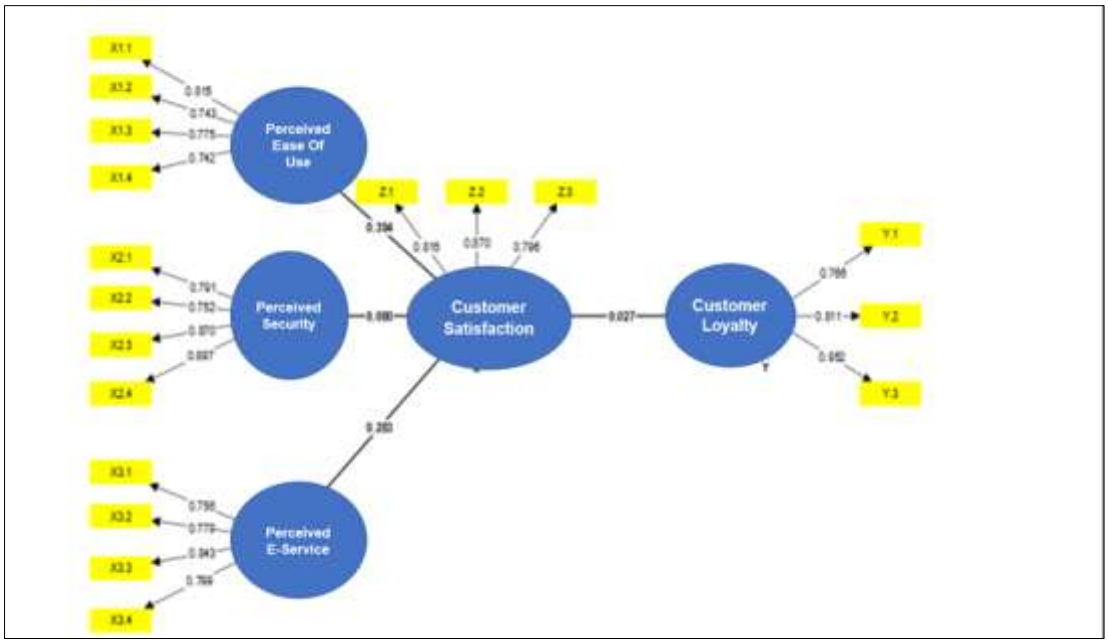


**Figure 2: Path Coefficient**

Table 5 presents the path coefficients obtained from the SmartPLS analysis, which measure the strength and direction of the relationships between various constructs in the research model. These coefficients are critical for understanding how one variable influences another, providing insights into the direct effects of each independent variable on the dependent variables. In this case, the table includes paths from Perceived Ease of Use (PEU), Perceived Security (PS), and Perceived Service (PE-S) to Customer Satisfaction (CS), as well as the relationship from Customer Satisfaction (CS) to Customer Loyalty (CL).

First, the relationship between PEU and CS is positive and highly significant, with a path coefficient of 0.482, a T-statistic of 5.889, and a P-value of 0.000. This indicates that perceived ease of use has a strong impact on customer satisfaction. In practical terms, this suggests that customers who find a product or service easy to use are more likely to be satisfied with their overall

experience, supporting the importance of user-friendly designs in enhancing satisfaction.

In contrast, the path from PS to CS has a negative coefficient of -0.158, with a T-statistic of 2.144 and a P-value of 0.032. Despite being statistically significant, the negative direction is noteworthy, as it implies that higher perceived security might slightly decrease customer satisfaction. This could occur if customers feel that extensive security measures introduce friction or inconvenience, potentially reducing overall satisfaction despite the added protection.

The relationship between PE-S and CS is also positive and highly significant, with a coefficient of 0.408, a T-statistic of 4.697, and a P-value of 0.000. This indicates that perceived service quality has a substantial positive influence on customer satisfaction, reinforcing the idea that delivering high-quality service is a critical driver of customer satisfaction. This result aligns with established marketing theories that emphasize the role of service quality in customer retention and brand loyalty.

Finally, the path from CS to CL has a negative coefficient of -0.161, a T-statistic of 1.282, and a P-value of 0.200, indicating a statistically insignificant relationship. This means that, in this model, customer satisfaction does not significantly impact customer loyalty. This finding is surprising, as it challenges the common assumption that satisfied customers naturally become loyal. This result suggests that other factors, such as brand reputation, emotional connection, or loyalty programs, may play a more substantial role in driving customer loyalty.

**Table 5: Model fit**

| | Saturated Model | Estimated Model | Cut Off Value | Decision |
|---|---|---|---|---|
| **SRMR** | 0.087 | 0.174 | 0.08 | Poor Fit |
| **d_ULS** | 1.307 | 5.172 | Smaller Is Better | Poor Fit |
| **d_G** | 0.655 | 0.940 | Smaller Is Better | Poor Fit |
| **Chi-Square** | 359.684 | 449.230 | p > 0.05) preferred | Poor Fit |
| **NFI** | 0.677 | 0.596 | ≥ 0.90 | Poor Fit |

## DISCUSSION

The present study highlights an intriguing and somewhat counterintuitive finding: an increase in customers' perception of security within mobile banking platforms may be associated with a decrease in overall customer satisfaction. This result contributes to a growing body of literature emphasizing the complex interplay between security measures and user experience in digital financial services.

A plausible explanation for this phenomenon lies in the trade-off between security and usability. While heightened security protocols are essential to protect sensitive financial data and prevent fraud, they often require additional user authentication steps such as multi-factor authentication, biometric verification, or repeated OTP entries. These measures, although effective from a security standpoint, introduce friction into the user journey. Users may experience longer transaction times, increased cognitive load, and procedural complexity, all of which can diminish the perceived ease of use—a critical determinant of satisfaction in technology acceptance models (Davis, 1989).

Furthermore, heightened security can induce psychological discomfort or anxiety among users. When security warnings, alerts, or frequent verification requests become prominent, users may perceive the mobile banking environment as risky or threatening. This heightened risk perception may lead to increased stress or caution, which negatively impacts user satisfaction despite the underlying benefit of protection (Bélanger *et al.,* 2011). Therefore, while security instills trust, excessive security signals may paradoxically generate fear or dissatisfaction.

Another critical factor influencing this dynamic is the communication gap regarding security features. Users often lack a clear understanding of why certain security measures are implemented, which can cause frustration and the perception that such measures are unnecessary barriers rather than protective mechanisms. Without effective communication and user education, banks risk alienating customers by failing to align their security efforts with user expectations and comprehension (Nguyen *et al.,* 2020).

The findings also suggest the importance of customizing security protocols to user segments. Variations in users' technological proficiency, risk tolerance, and preferences imply that a uniform, highly stringent security approach may not be optimal for all customers. Offering adaptable security settings that balance protection and convenience could enhance satisfaction by meeting diverse user needs (Li & Sakamoto, 2022).

The findings of this study reveal that Customer Satisfaction does not have a statistically significant effect on Customer Loyalty in the mobile banking sector. This contradicts the traditional view that customer satisfaction is a key driver of loyalty (Oliver, 1999). Several factors can explain this phenomenon within the mobile banking context.

Firstly, mobile banking is primarily perceived as a utilitarian service focused on convenience, speed, and functionality rather than emotional engagement (Kim *et al.,* 2016). Customers use these platforms mainly for transactional purposes, which makes the emotional connection weaker compared to other service industries like retail or hospitality. Consequently, even satisfied customers may not develop strong loyalty, as their relationship with the service remains transactional and easily replaceable.

Secondly, the highly competitive nature of mobile banking exacerbates the weak link between satisfaction and loyalty. With numerous banks and fintech companies offering similar services, customers face low switching costs and abundant alternatives (Shin, 2020). Research shows that when alternatives are readily available and perceived as equivalent or better, satisfaction alone becomes an insufficient predictor of loyalty (Reichheld & Schefter, 2000).

Thirdly, trust and perceived security concerns are critical in mobile banking, potentially overshadowing the influence of satisfaction (Lu *et al.,* 2011). Customers might be satisfied with the app's ease of use and functionality but still hesitant to commit long-term loyalty if they doubt the security of their financial information. Hence, loyalty in mobile banking is likely multifaceted, involving satisfaction as well as trust, privacy assurance, and perceived risk.

Moreover, habitual usage behavior can diminish the direct impact of satisfaction on loyalty. Some customers continue using a particular mobile banking app out of habit or inertia rather than emotional attachment or high satisfaction levels (Limayem *et al.,* 2007). This habitual use can mask the true loyalty drivers, as customers might stick with an app simply due to convenience or switching effort rather than deliberate loyalty based on satisfaction.

Finally, the rapid pace of innovation in mobile banking means that customers continuously expect new features and improvements. Satisfaction with current services might quickly become obsolete if competitors offer more advanced or user-friendly solutions. This dynamic environment challenges mobile banks to do more than just satisfy customers; they must continuously innovate to build lasting loyalty.

# CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

## Conclusion

Based on the analysis of the path coefficients and structural model, it can be concluded that Perceived Ease of Use (PEU) and Perceived E-Service (PE-S) have a significant positive impact on Customer Satisfaction (CS). This indicates that when customers find a platform or service easy to use and receive high-quality online support, their overall satisfaction tends to increase. In contrast, Perceived Security (PS), despite being statistically significant, shows a negative relationship with customer satisfaction, suggesting that excessive security measures may sometimes reduce user convenience. However, the relationship between Customer Satisfaction (CS) and Customer Loyalty (CL) was found to be statistically insignificant, indicating that satisfaction alone might not be enough to secure long-term customer loyalty.

## Implications

These findings have important implications for businesses aiming to improve customer experience. First, focusing on enhancing the ease of use and quality of digital services can significantly boost customer satisfaction, which remains a critical factor in customer retention and brand reputation. However, companies should carefully balance security features to avoid negatively impacting the user experience. The lack of a significant relationship between satisfaction and loyalty suggests that businesses should not rely solely on satisfaction as a predictor of loyalty. Instead, they should consider other factors such as emotional connection, perceived value, personalized experiences, and loyalty programs to strengthen long-term customer relationships.

## Recommendations

To enhance both customer satisfaction and loyalty, businesses are advised to:

a. **Invest in User-Friendly Design:** Simplify the user interface and improve overall usability to reduce customer frustration and increase satisfaction.
b. **Optimize Digital Services:** Continuously improve the quality and reliability of online services, ensuring fast, responsive, and personalized support.
c. **Balance Security and Convenience:** Implement security measures that protect customer data without compromising ease of use. Consider using technologies like biometric authentication or single sign-on (SSO) to streamline security processes.
d. **Focus on Building Emotional Connections:** Develop targeted marketing strategies that foster emotional bonds with customers, which can enhance loyalty even when satisfaction is moderate.
e. **Implement Loyalty Programs:** Introduce loyalty programs or exclusive benefits to encourage repeat purchases and long-term loyalty.

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