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# Analysis of Mobile Banking Usage in Increasing Customer Trust and Loyalty

**Eva Mutiara Afiyah [a*], Mohamad Rizan [a] and Osly Usman [a]**

*[a] Department of Management, State University of Jakarta, Indonesia.*

***Authors' contributions***

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

This research aims to analyze the influence of perceived risk and perceived benefit on customer trust and loyalty in the use of mobile banking services at Bank Rakyat Indonesia (BRI) within the Jabodetabek region. Mobile banking has become an essential component of the banking sector's digital transformation, providing customers with convenient, rapid, and secure transaction capabilities. Nonetheless, concerns persist regarding data security, financial risks, and trust in this technology. The study adopts a quantitative approach utilizing Partial Least Square-Structural Equation Modeling (PLS-SEM) to investigate the relationships among the variables. The results demonstrate that perceived risk has a negative and significant impact on customer trust, while perceived benefit positively and significantly influences trust. Furthermore, trust serves as a key mediator, reinforcing the effect of perceived benefit and risk on customer loyalty. High customer loyalty is determined not only by perceived benefits but also by customers' trust in the security and dependability of mobile banking services. This study contributes to the existing literature on digital banking, particularly in the context of developing countries, by underscoring the importance of managing risks and benefits to build customer trust and loyalty. It also advocates for the development of innovative features and enhanced security measures in mobile banking services to maintain customer loyalty, which is crucial for success in the era of digital banking.

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**Corresponding author: E-mail: evmutiara@gmail.com;*

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*Keywords: Mobile banking; customer loyalty; customer trust; perceived risk; perceived benefit.*

## 1. INTRODUCTION

FinTech has rapidly grown in Indonesia, in line with the rising adoption of digital technology within the banking sector (Idris Balaka et al., 2024; Indriastuti & Hidayat, 2021). Major Indonesian banks, such as BRI, BCA, Mandiri, BNI, and BTN, have integrated financial technology services to facilitate customers' transactions. One of these services is mobile banking, which allows customers to conduct banking activities using mobile devices such as cell phones, smartphones, and personal digital assistants (PDAs) (Arcand et al., 2017). Nevertheless, the introduction of such innovations is not always received positively by all customers. Some remain concerned about data security risks and the potential for financial losses, leading to challenges related to customer trust and loyalty (Indriastuti & Hidayat, 2021).

Data presented by CNBC Indonesia indicate that the number of users and the value of digital banking transactions in Indonesia continue to increase (Setiawati, 2024). During the first quarter of 2024 (year-on-year), banks such as BRI showed significant growth of 30.3%, while BCA experienced 9% growth. This aligns with global trends, where governments in various countries, including Saudi Arabia, support the development of mobile banking services through strategic policies and visions, such as Saudi Arabia's Vision 2030 (Baabdullah et al., 2019). These advances reflect shifting consumer behaviors that increasingly rely on digital technology in various activities, including financial transactions.

Amid the rapid expansion of mobile banking, questions arise regarding how perceived risk and perceived benefits influence customer trust and how this trust impacts customer loyalty (Triwardhani et al., 2023). Previous studies have shown that risk may lower trust, yet perceived benefits can mitigate this negative effect (Triwardhani et al., 2023). By focusing on bank customers who use mobile banking services in the Jabodetabek area, this study offers a fresh perspective on integrating risk and benefit variables as determinants of customer trust, ultimately driving customer loyalty. Such a focus is particularly relevant in the context of the ongoing evolution of digital banking services and financial institutions' efforts to retain customers amidst swift technological transformations.

## 2. LITERATURE REVIEW

### 2.1 Customer Loyalty

Customer loyalty in the banking industry is defined as a long-term commitment by customers to continue choosing and using a particular bank's services, despite the availability of numerous alternatives (Subagiyo et al., 2022). According to Griffin's theory, this loyalty manifests through consistent transactional behavior and a strong emotional bond between customers and the bank. In the digital banking context, loyalty also results from satisfaction with services and interactions that foster trust and emotional connections (Abdillah et al., 2024). Within the Islamic banking sector, loyalty is marked by brand attachment, where customers select a bank not only for its services but also for its alignment with their values and ethics (Susanti & Gunanto, 2022). Other studies emphasize the quality of mobile banking services—namely speed, security, and meeting user expectations—as key factors reinforcing loyalty (Yusfiarto, 2021). For banks, customer loyalty extends beyond merely preserving market share to building mutually beneficial long-term relationships. Similar to trust in a marriage, loyalty requires banks to consistently fulfill, and even exceed, customer expectations to maintain this commitment (Hussain & Siddiqui, 2021). Consequently, customer loyalty emerges from a synergy of positive experiences, sustained satisfaction, strong trust, and an ethical alignment between the bank and its customers.

### 2.2 Customer Trust

Customer trust is defined as customers' belief in a bank's integrity, honesty, and competence in safeguarding data confidentiality, protecting transactions, and delivering secure and reliable services (Kala Kamdjoug et al., 2022). In the realm of digital banking, the importance of trust heightens due to the increased cybersecurity risks, compelling banks to establish robust technological measures and privacy protection mechanisms (Jafri et al., 2024). For instance, research conducted in Jordan highlights that perceived security and technological reliability influence customers' willingness to adopt digital financial services (Alsmadi et al., 2022). Furthermore, trust mitigates uncertainty, as a high level of trust promotes loyalty despite potential challenges and risks in a digital ecosystem (Ryu & Ko, 2020). In addition, operational transparency—such as sharing clear information on security policies and data protection—further enhances customers' confidence in digital banking (Babina et al., 2024). Consequently, the higher the level of customer trust, the greater the likelihood that customers will continue using and recommending the bank's digital services, thereby strengthening long-term relationships between banks and their clientele (Wang, 2023).

### 2.3 Perceived Risk

Perceived risk in digital banking encompasses various concerns customers have regarding potential losses or failures when using services such as internet banking and mobile banking (Hu et al., 2019). According to Tanuwijaya & Zainul Arifin (2023), this perceived risk includes privacy threats and technical uncertainties, evoking caution comparable to driving on an unfamiliar road. Furthermore, Caroline (2021) highlights that perceived risk may relate to insufficiently realized benefits and societal acceptance issues, especially if mobile banking services are not widely embraced. In terms of convenience and advantages, (Susanti & Gunanto, 2022) emphasize that customers weigh security, stability, and practical benefits before adopting digital technologies—similar to evaluating various features when selecting a new vehicle. Additionally, Simanjorang & Chandra (2019) point out that uncertainty about whether the service can consistently meet customers' needs further amplifies the risk dimension of digital banking solutions. Hence, perceived risk represents a holistic consideration of data security, technical reliability, social acceptance, and service benefits in digital banking, ultimately influencing customers' decisions to adopt or reject such technologies.

### 2.4 Perceived of Benefit

Perceived benefit in the digital banking context reflects customers' belief that utilizing technologies such as mobile and internet banking can enhance the efficiency, effectiveness, and convenience of financial transactions. According to TP & Sumathy (2023) these benefits are evident through the reduced barriers to traditional banking when digital services are introduced in retail outlets, whereas Hasibuan et al., (2023) highlight the crucial role of ease of access in Islamic banking. This perspective is further reinforced by Hakeem & Ratnasari (2021), who emphasize that perceived benefit is closely associated with application usability, wherein user trust and acceptance increase as the system becomes more user-friendly. Additionally Simanjorang & Chandra (2019) reveal that customers' belief in improved productivity and transaction effectiveness spurs the adoption of digital services. Similarly, Purnamasari et al., (2024) argue that tangible benefits—such as enhanced productivity, effectiveness, and transaction performance—drive customers' interest in embracing mobile banking. Completing this framework, Ly & Ly (2022) assert that perceived benefit encompasses the conviction that technology can simplify and accelerate banking activities, improve efficiency, and offer practical advantages. Consequently, the greater the perceived benefits, the more likely customers are to continuously utilize digital banking services.

## 3. HYPOTESIS

### 3.1 The Influence of Customer Trust on Customer Loyalty

Customer trust plays a crucial role in shaping bank customer loyalty, as indicated by several studies highlighting a positive and significant relationship between trust and loyalty (Haron et al., 2020; Juliana et al., 2023; Muis et al., 2021; Phong & Anh, 2023). Nevertheless, some research also points to a negative or non-significant effect, particularly when customers feel threatened by potential security risks and insufficient assurances of protection (Hilmawan & Yanti, 2023; Sari, 2018; Susanti & Gunanto, 2022; Winasih & Hakim, 2021).

**Hypotesis 1** ($H_1$): Customer Trust has a positive and significant effect on Customer Loyalty.

### 3.2 The Influence of Perceived Risk on Customer Loyalty

Perceived risk in the context of digital banking has been shown to exert varying influences on customer loyalty, with some studies finding a positive effect (Aprilia, 2021; Purnamasari et al., 2024) and others indicating a significantly negative impact (Esmaeili et al., 2021; Hasibuan et al., 2023; Marfuah & Ratnaningrum, 2024; Muis et al., 2021). Nevertheless, these findings converge on the importance of effectively managing risk to foster customer confidence in digital financial services (Hoang et al., 2021b).

Banks must enhance security, transparency, and reputation to ensure that customers feel safe and protected when using digital banking services. Consequently, well-managed perceived risk not only mitigates consumer concerns but also sustains and strengthens their loyalty to the bank.

**Hypotesis 2** ($H_2$): Perceived Risk has a positive and significant effect on Customer Loyalty.

### 3.3 The Influence of Perceived of Benefit on Customer Loyalty

Perceived benefit is one of the key factors driving customer loyalty in the digital banking context, with several studies demonstrating a positive and significant relationship between perceived benefit and loyalty (Hasibuan et al., 2023; Marfuah & Ratnaningrum, 2024; Rohmah & Arieba, 2019). In other words, the greater the benefits customers perceive—such as convenient transactions, time efficiency, and cost savings—the higher the likelihood they will remain loyal to the bank and continue utilizing its services. From this standpoint, banks need to continuously innovate and enhance service quality to increase customers' perceived benefits and thus foster stronger loyalty.

**Hypotesis 3** ($H_3$): Perceived Benefit has a positive and significant effect on Customer Loyalty.

### 3.4 The Influence of Perceived Risk on Customer Trust

Perceived risk in digital banking can influence customer trust in various ways, with some studies identifying a positive effect (Saif et al., 2022; Susanti & Gunanto, 2022; Thusi & Maduku, n.d.). Other research indicating a significantly negative impact (Ahsan & Adhi, 2019; Muis et al., 2021; Sani & Ratmono, 2021). This finding suggests that perceived risk does not invariably undermine trust; under certain circumstances, effective and transparent risk management can actually enhance customers' confidence in the security and reliability of digital banking services. Therefore, banks must implement strategic measures to ensure robust security, transparency, and communication, thereby assuring customers that adequate risk protection is in place.

**Hypotesis 4** ($H_4$): Perceived Risk has a positive and significant effect on Customer Trust.

### 3.5 The Influence of Perceived of Benefit on Customer Trust

Perceived benefits play a crucial role in building customer trust in financial technology services, such as internet banking and mobile banking. Shahzad et al., (2022) highlighted that perceived benefits reflect the extent to which customers believe that using these technologies enhances efficiency and convenience in their financial transactions. Previous studies have also demonstrated that perceived benefits significantly increase customer trust, ultimately strengthening their loyalty (Khoa & Huynh, 2022; Yuen et al., 2023). For instance, research by Nurfadilah & Samidi (2021) during the COVID-19 pandemic revealed that the perceived benefits of digital financial services significantly improved customers' positive attitudes toward such technologies. Therefore, high perceived benefits not only foster trust but also serve as a key factor in customers' adoption of financial technologies.

**Hypotesis 5** ($H_5$): Perceived of Benefit have a positive and significant effect on Customer Trust.

### 3.6 Customer Trust as a Mediator Between Perceived Risk and Perceived of Benefit on Customer Loyalty

Trust is a fundamental component that acts as a mediator between perceived benefits and perceived risks on customer loyalty in digital financial services. Research by Khoa & Huynh (2022) demonstrated that perceived benefits have a significant positive effect on loyalty through customer trust, while (Yuen et al., 2023) confirmed that trust strengthens the relationship between perceived benefits and loyalty in the context of delivery services. Furthermore, trust serves as a risk mitigation mechanism, as evidenced by Al-Hattami et al. (2023), where high trust can alleviate customer concerns about privacy and security, thereby enhancing user loyalty to digital services. Hence, trust becomes a key element in building customer loyalty by reducing the negative impact of perceived risks while maximizing the influence of perceived benefits on customer retention (Saoula et al., 2023; Ul Hassan et al., 2020).

**Hypotesis 6** ($H_6$): Perceived Risk has a positive and significant effect on Customer Loyalty through Customer Trust.

**Hypotesis 7** ($H_7$): Perceived Benefit has a positive and significant effect on Customer Loyalty through Customer Trust.

## 4. METHODS

This research was conducted in Indonesia, specifically within the Greater Jakarta area (Jabodetabek), with a particular focus on mobile banking users. A purposive sampling method was employed, targeting active mobile banking users who have been utilizing the service for a minimum of one year. A structured survey methodology was utilized to collect primary data from these users. The questionnaires were distributed via Microsoft Forms and were designed to obtain comprehensive information regarding the factors influencing customers to use mobile banking regularly and consistently. This approach ensures precise data collection and thorough analysis of how these factors affect mobile banking customers.

### 4.1 Design Study

This research adopts a quantitative design with a descriptive-explanatory approach, aiming to describe phenomena and explain causal relationships among variables influencing customer loyalty in the context of digital banking services. This approach was selected due to its suitability for measuring numerical variables and identifying the relationships between perceived benefits, perceived risks, trust, and customer loyalty. By applying quantitative methods, this study is expected to produce measurable and statistically valid data, enabling objective conclusions that can be generalized to a broader population.

The sample size was determined based on the requirements of Structural Equation Modeling (SEM), which recommends a sufficient number of samples to ensure the model's reliability. Following Hair's rule of thumb, the sample size should be 5 to 10 times the number of indicators or questionnaire items (Prastowo, 2021). In this study, the questionnaire includes 20 items, multiplied by 9, resulting in a required sample size of 180 respondents. Each respondent will answer the 20 questionnaire items using a 5-point Likert scale designed to measure the key variables in this research.

### 4.2 Data Analysis

The collected data were analyzed using the *Structural Equation Modeling* (SEM) method with Smart PLS software. This method was chosen for its ability to analyze complex relationships between latent variables, such as loyalty, trust, and perceived risk, which cannot be directly measured. *Partial Least Squares* (PLS) is a variance-based approach that is more flexible than covariance-based SEM, as it does not require a large sample size, normally distributed data, or continuous measurement scales (Ghozali & Latan, 2015). The analysis process includes testing the outer model to assess the validity and reliability of indicators and the inner model to evaluate relationships between latent variables and test research hypotheses (Prastowo & Rahmadi, 2023). This approach enables researchers to obtain deeper and more accurate insights into the factors influencing customer loyalty in the use of digital banking services.

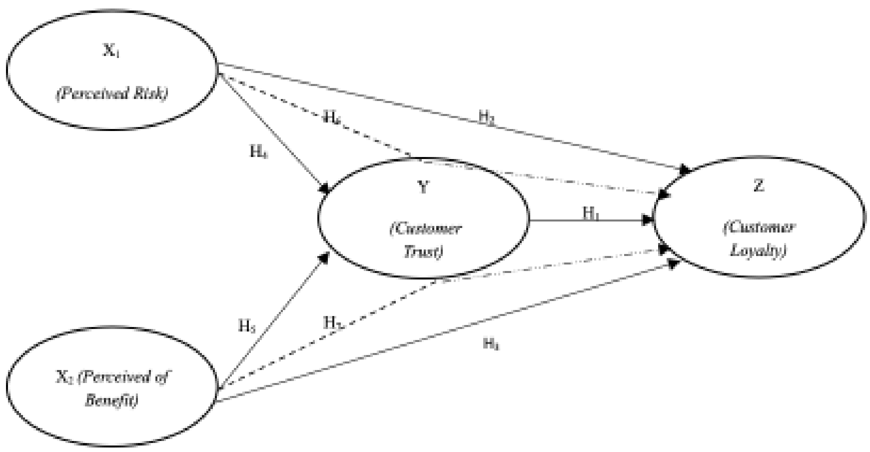


**Fig. 1. Theoritical framework**

**Description:**

H1: Customer trust has a positive and significant effect on Customer Loyalty.
H2: Perceived Risk has a positive and significant effect on Customer Loyalty.
H3: Perceived Benefit has a positive and significant effect on Customer Loyalty.
H4: Perceived Risk has a positive and significant effect on Customer Trust.
H5: Perceived Benefit has a positive and significant effect on Customer Trust.
H6: Perceived Risk has a positive and significant effect on Customer Loyalty through Customer Trust.
H7: Perceived Benefit has a positive and significant effect on Customer Loyalty through Customer Trust.

## 5. RESULTS

Based on the results of collecting online questionnaires from 180 respondents, the following data was found.

After collecting the responses, the researcher will conduct a descriptive statistical analysis, validity and reliability tests and outer & inner model test. The following are the results.

Table 2 presents the descriptive statistical analysis of the perceived benefit variable (PB), including the mean and standard deviation for each item. The highest mean value, 4.822, is observed for item PB.5, which pertains to the statement, "I feel that digital banking services enhance efficiency in managing my financial transactions." This finding indicates a high level of agreement among respondents regarding the perceived benefit of improved productivity and transaction efficiency. Moreover, the standard deviation values for all items are lower than their corresponding mean values, signifying consistent responses and the absence of significant outliers in the dataset.

Based on Table 3, the convergent validity test for each indicator in the questionnaire was conducted to ensure that each question item, as a measurement of a latent variable or construct in the questionnaire, can adequately explain its latent variable. Convergent validity is assessed based on the loading factor value of each question item, where a high correlation between the manifest variable and its construct indicates that the item is valid in a convergent sense. A loading factor value greater than 0.7 is considered acceptable, indicating that the questionnaire items meet the criteria for convergent validity. The data in Table 3 were processed using the PLS Algorithm, derived from the questionnaire responses collected from the respondents. Based on the data processing in the outer model, all indicators are declared valid in the convergent validity test.

**Table 1. Respondents and profile**

| | | Total | Percentage |
|---|---|---|---|
| **Age** | 18-24 years | 16 | 9% |
| | 25-34 years | 88 | 49% |
| | 35-44 years | 61 | 34% |
| | 45-54 years | 10 | 6% |
| | 55-64 years | 4 | 2% |
| | > 65 years | 1 | 1% |
| **Employment Status** | State-Owned Enterprise Employee | 49 | 27% |
| | Private Sector Employee | 58 | 32% |
| | Entrepreneur | 38 | 21% |
| | Others | 1 | 1% |
| | Student | 4 | 2% |
| | Civil Servant | 30 | 17% |
| **Frequency of Using Mobile Banking (/month)** | 5-10 times | 86 | 48% |
| | > 10 times | 74 | 41% |
| | > 50 times | 20 | 11% |
| **Duration of Use** | > 1-3 years | 49 | 27% |
| | > 3-5 years | 86 | 48% |
| | > 5 years | 45 | 25% |

**Table 2. Descriptive analysis**

| | Missing | Mean | Median | Min | Max | Standard Deviation |
|---|---|---|---|---|---|---|
| CL1 | 0.000 | 4.756 | 5.000 | 3.000 | 5.000 | 0,324 |
| CL2 | 0.000 | 4.739 | 5.000 | 3.000 | 5.000 | 0,322 |
| CL3 | 0.000 | 4.722 | 5.000 | 3.000 | 5.000 | 0,336 |
| CL4 | 0.000 | 4.728 | 5.000 | 2.000 | 5.000 | 0,350 |
| CL5 | 0.000 | 4.706 | 5.000 | 2.000 | 5.000 | 0,356 |
| CT1 | 0.000 | 4.689 | 5.000 | 2.000 | 5.000 | 0,360 |
| CT2 | 0.000 | 4.750 | 5.000 | 2.000 | 5.000 | 0,334 |
| CT3 | 0.000 | 4.744 | 5.000 | 2.000 | 5.000 | 0,344 |
| CT4 | 0.000 | 4.761 | 5.000 | 2.000 | 5.000 | 0,338 |
| CT5 | 0.000 | 4.739 | 5.000 | 2.000 | 5.000 | 0,345 |
| PR1 | 0.000 | 4.744 | 5.000 | 2.000 | 5.000 | 0,344 |
| PR2 | 0.000 | 4.722 | 5.000 | 2.000 | 5.000 | 0,351 |
| PR3 | 0.000 | 4.750 | 5.000 | 2.000 | 5.000 | 0,342 |
| PR4 | 0.000 | 4.733 | 5.000 | 2.000 | 5.000 | 0,347 |
| PR5 | 0.000 | 4.722 | 5.000 | 2.000 | 5.000 | 0,351 |
| PB1 | 0.000 | 4.733 | 5.000 | 2.000 | 5.000 | 0,340 |
| PB2 | 0.000 | 4.756 | 5.000 | 4.000 | 5.000 | 0,298 |
| PB3 | 0.000 | 4.772 | 5.000 | 3.000 | 5.000 | 0,300 |
| PB4 | 0.000 | 4.806 | 5.000 | 3.000 | 5.000 | 0,284 |
| PB5 | 0.000 | 4.822 | 5.000 | 3.000 | 5.000 | 0,275 |

**Table 3. Outer loading**

| | Customer Loyalty(Z) | Customer Trust (Y) | Perceived Risk(X1) | Perceived of Benefit(X2) |
|---|---|---|---|---|
| CL1 | 0,859 | | | |
| CL2 | 0,920 | | | |
| CL3 | 0,912 | | | |
| CL4 | 0,905 | | | |
| CL5 | 0,890 | | | |
| CT1 | | 0,852 | | |
| CT2 | | 0,900 | | |
| CT3 | | 0,932 | | |
| CT4 | | 0,934 | | |
| CT5 | | 0,921 | | |
| PB1 | | | | 0,817 |
| PB2 | | | | 0,900 |
| PB3 | | | | 0,822 |
| PB4 | | | | 0,854 |
| PB5 | | | | 0,752 |
| PR1 | | | 0,845 | |
| PR2 | | | 0,911 | |
| PR3 | | | 0,916 | |
| PR4 | | | 0,916 | |
| PR5 | | | 0,893 | |

From the PLS Algorithm output, the loading factor values for each indicator of the latent variables show values > 0.7. Therefore, it can be concluded that the questionnaire items or statements for each variable—namely perceived risk, perceived benefit, customer trust, and customer loyalty—have successfully produced respondent data that is valid in terms of convergent validity.

Based on the validity and reliability tests, the Average Variance Extracted (AVE) values for each variable exceeded 0.5, indicating that the indicators for Customer Loyalty (0.805), Customer Trust (0.825), Perceived Risk (0.804), and Perceived Benefit (0.689) met the criteria for convergent validity. Furthermore, the Cronbach's Alpha values for these variables were Customer Loyalty (0.940), Customer Trust (0.947), Perceived Risk (0.939), and Perceived Benefit (0.887), all > 0.6, signifying that the questionnaire items produced reliable and consistent data. The Composite Reliability values also showed strong results, with Customer Loyalty (0.954), Customer Trust (0.959), Perceived Risk (0.953), and Perceived Benefit (0.917), all exceeding the threshold of 0.6. Therefore, it can be concluded that all research instruments are both convergently valid and reliable in measuring their respective constructs.

The hypothesis testing results reveal that Customer Trust (Y) has a positive and significant effect on Customer Loyalty (Z), with an original sample value of 0.457, t-statistic of 4.796 (> Z-score 1.96), and p-value of 0.000 (< 0.05), confirming the acceptance of hypothesis H1. Conversely, Perceived Risk (X1) does not have a significant effect on Customer Loyalty (Z) despite showing a positive direction (original sample 0.181, t-statistic 1.167 < Z-score 1.96, and p-value 0.243 > 0.05), leading to the rejection of hypothesis H2. Meanwhile, Perceived Risk (X1) has a positive and significant effect on Customer Trust (Y) (original sample 0.786, t-statistic 5.303 > Z-score 1.96, and p-value 0.000 < 0.05), supporting the acceptance of hypothesis H4. Additionally, Perceived Benefit (X2) does not have a significant effect on Customer Loyalty (Z) despite its positive direction (original sample 0.213, t-statistic 1.644 < Z-score 1.96, and p-value 0.100 > 0.05), resulting in the rejection of hypothesis H3, nor does it significantly influence Customer Trust (Y) (original sample 0.030, t-statistic 0.220 < Z-score 1.96, and p-value 0.826 > 0.05), rejecting hypothesis H5. Regarding mediation, Customer Trust (Y) significantly mediates the relationship between Perceived Risk (X1) and Customer Loyalty (Z) with a positive and significant direction (original sample 0.360, t-statistic 3.197 > Z-score 1.96, and p-value 0.001 < 0.05), supporting hypothesis H6. However, Customer Trust (Y) fails to mediate the relationship between Perceived Benefit (X2) and Customer Loyalty (Z) due to insignificance (original sample 0.013, t-statistic 0.214 < Z-score 1.96, and p-value 0.830 > 0.05), leading to the rejection of hypothesis H7.

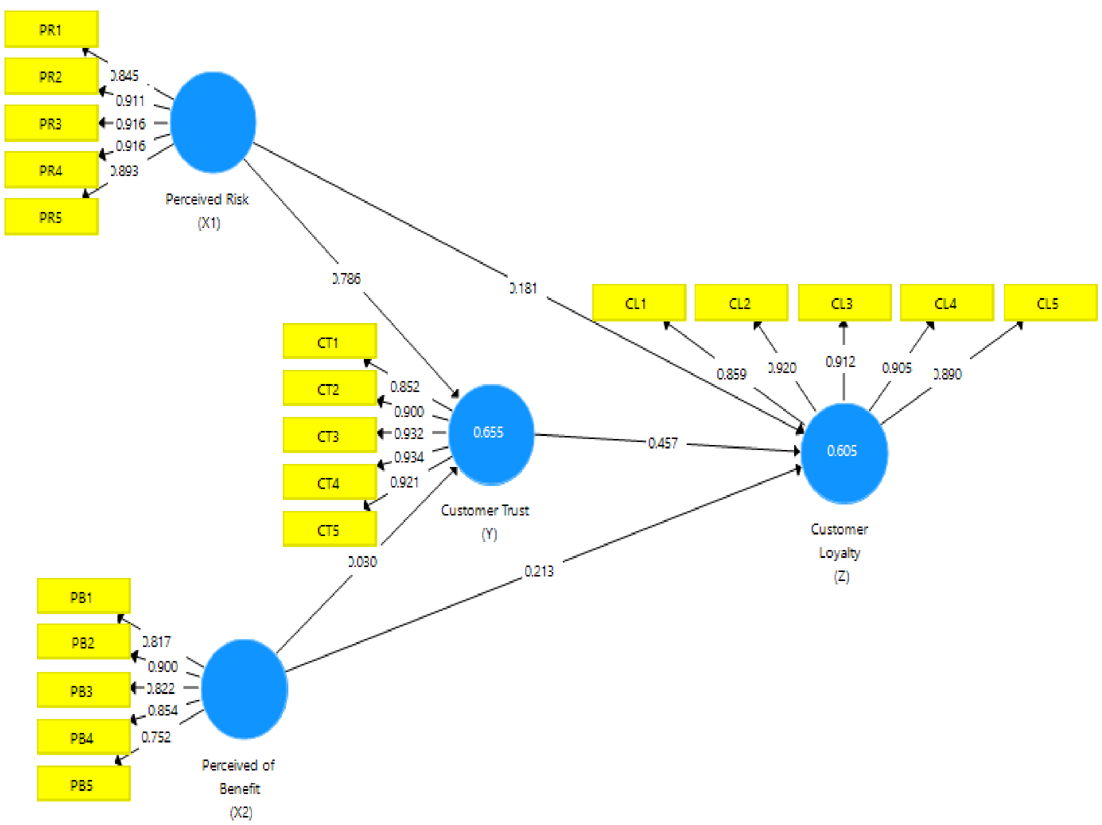


**Fig. 2. Output PLS logarithm**

**Table 4. Validity and reliability test**

| | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| Customer Loyalty | 0,940 | 0,946 | 0,954 | 0,805 |
| Customer Trust | 0,947 | 0,947 | 0,959 | 0,825 |
| Perceived Risk | 0,939 | 0,939 | 0,953 | 0,804 |
| Perceived of Benefit | 0,887 | 0,898 | 0,917 | 0,689 |

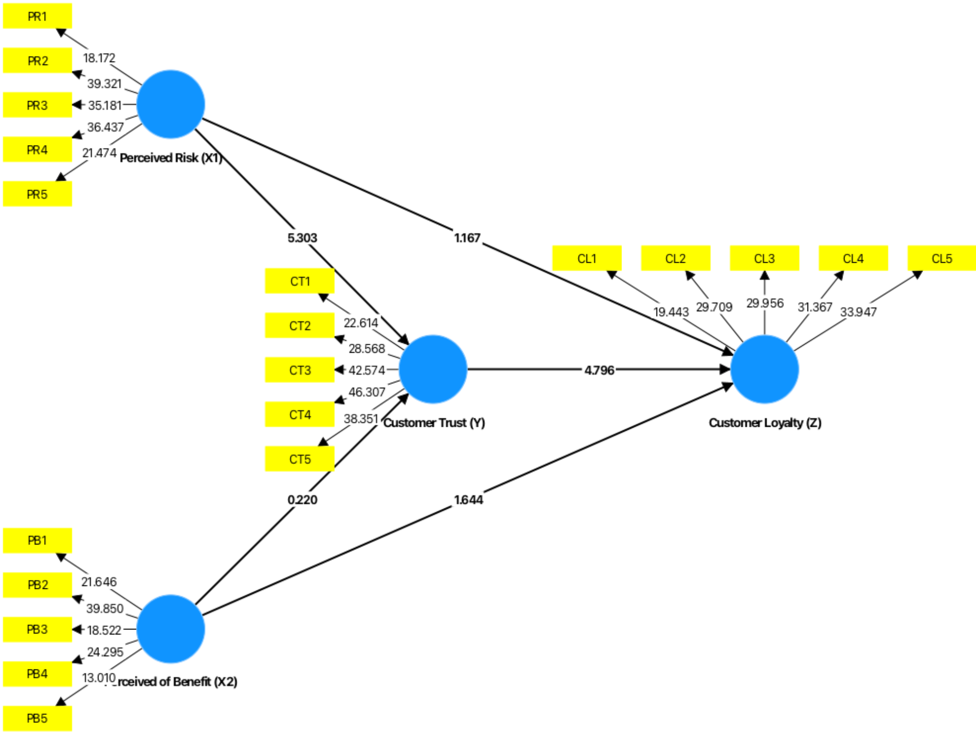


**Fig. 3. Output bootstraping**

**Table 5. Path Coefficient**

| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (\|O/STDEV\|) | P Values |
|---|---|---|---|---|---|
| Customer Trust (Y) -> Customer Loyalty (Z) | 0,457 | 0,467 | 0,095 | 4,796 | 0,000 |
| Perceived Risk (X1) -> Customer Loyalty (Z) | 0,181 | 0,196 | 0,155 | 1,167 | 0,243 |
| Perceived Risk (X1) -> Customer Trust (Y) | 0,786 | 0,745 | 0,148 | 5,303 | 0,000 |
| Perceived of Benefit (X2) -> Customer Loyalty (Z) | 0,213 | 0,190 | 0,130 | 1,644 | 0,100 |
| Perceived of Benefit (X2) -> Customer Trust (Y) | 0,030 | 0,067 | 0,134 | 0,220 | 0,826 |
| Perceived Risk (X1) -> Customer Trust (Y) -> Customer Loyalty (Z) | 0,360 | 0,351 | 0,112 | 3,197 | 0,001 |
| Perceived of Benefit (X2) -> Customer Trust (Y) -> Customer Loyalty (Z) | 0,013 | 0,029 | 0,063 | 0,214 | 0,830 |

**Tabel 6. Analysis results**

| Hypotesis | Result | Explanation |
|---|---|---|
| Customer Trust (Y) → Customer Loyalty (Z) | Accepted | Positive and significant. |
| Perceived Risk (X1) → Customer Loyalty (Z) | Rejected | Not significant. |
| Perceived Risk (X1) → Customer Trust (Y) | Accepted | Positive and significant. |
| Perceived Benefit (X2) → Customer Loyalty (Z) | Rejected | Not significant. |
| Perceived Benefit (X2) → Customer Trust (Y) | Rejected | Not significant. |
| Perceived Risk (X1) → Customer Trust (Y) → Customer Loyalty (Z) | Accepted | Positive and significant mediation. |
| Perceived Benefit (X2) → Customer Trust (Y) → Customer Loyalty (Z) | Rejected | Not significant mediation. |

## 6. DISCUSSION

The results indicate that Customer Trust (Y) has a positive and significant effect on Customer Loyalty (Z) in the context of mobile banking usage among BRI customers in Jabodetabek. The findings reveal that every unit increase in Customer Trust (Y) leads to a 45.7% increase in Customer Loyalty (Z). This aligns with trust and relationship marketing theories, emphasizing the critical role of trust in fostering customer retention. Customers who perceive their data as secure and transactions as safe are more likely to remain loyal to the service. These findings are consistent with research by Esmaeili et al., (2021), which demonstrated that perceived risk negatively impacts customer loyalty in banking services. Similarly, Marfuah & Ratnaningrum (2024) reported that perceived risk has an insignificant negative effect on customer loyalty among users of Bank Syariah Indonesia.

Furthermore, the study underscores the mediating role of Customer Trust (Y) in the relationship between Perceived Risk (X1) and Customer Loyalty (Z). This finding aligns with research by Susanti & Gunanto (2022) and Saif et al., (2022), which found that mitigating perceived risks through enhanced trust effectively promotes customer loyalty. The Structural Equation Modeling (SEM) results further validate the importance of perceived risks and benefits in influencing trust.

The findings regarding Perceived Benefit (X2) indicate that it does not have a direct and significant impact on either Customer Loyalty (Z) or Customer Trust (Y). However, the abstract suggests that perceived benefits positively influence trust, which in turn indirectly affects loyalty. This clarification reconciles the inconsistency by emphasizing that while perceived benefits alone may not directly drive trust or loyalty, their role as an indirect contributor via trust remains relevant. This nuanced understanding highlights that perceived benefits must be leveraged in conjunction with trust-building strategies to achieve customer loyalty.

The results diverge from findings by Khoa & Huynh (2022), which reported that perceived benefits positively influence trust and loyalty in e-commerce. This discrepancy may be attributed to differences in industry context, as trust appears to outweigh perceived benefits in the mobile banking sector. These findings emphasize the paramount importance of trust-building measures, such as implementing robust security systems, fostering transparency, and improving service quality, to secure customer loyalty in digital banking.

## 7. CONCLUSION

In conclusion, while perceived benefits are valuable, they are insufficient as standalone drivers of customer loyalty. Financial institutions must address broader customer concerns, including trust, satisfaction, and service reliability, to ensure sustained retention. Trust remains the cornerstone of customer loyalty, mediating the relationship between perceived risks, benefits, and loyalty, and serving as the key determinant of long-term commitment in the mobile banking context.

## 8. IMPLICATION

Based on the research results that have been conducted, several aspects requiring improvement and subsequent action steps that need to be implemented have been identified. The details of these are as follows:

### 8.1 Theoritical

This study makes a significant contribution to the theoretical framework of digital banking adoption by integrating perceived risks and benefits as key factors influencing trust and customer loyalty. It advances existing theories of consumer behavior, particularly in the context of financial technology in developing countries. The research highlights the pivotal role of trust as a mediating variable between perceived risks, benefits, and loyalty, suggesting that banks should prioritize trust-building strategies. Furthermore, this study enriches the literature by addressing a research gap, emphasizing how risk perception can be mitigated through perceived benefits in fostering customer retention and satisfaction. This theoretical model can serve as a basis for future studies in similar contexts or industries.

### 8.2 Practical

The findings provide actionable insights for banks, particularly BRI, to enhance mobile banking services. Improving security measures, such as robust encryption and transparent safety protocols, is essential to address customer concerns. Optimizing user interfaces, promoting accessibility, and effectively communicating mobile banking benefits can also foster trust. Additionally, educational campaigns to raise awareness about benefits and risk mitigation strategies can strengthen loyalty.

This research is crucial for bank managers and policymakers. Managers can use these insights to enhance trust, prioritize security, and improve service quality, while policymakers can develop regulations to ensure secure digital transactions, protect consumer data, and promote financial literacy, ultimately fostering a more reliable and customer-focused banking environment.

## 9. LIMITATION

Several limitations of this study should be acknowledged. First, the research was geographically restricted to customers of BRI in the Greater Jakarta area, which may limit the generalizability of the findings to other regions or customer bases. Second, the respondent sample lacked significant demographic diversity, potentially overlooking the perspectives of different age groups, income levels, or educational backgrounds. Third, the reliance on a quantitative approach, while providing statistical rigor, limited the exploration of nuanced individual experiences and customer sentiments regarding mobile banking. Lastly, the study's temporal scope was narrow, meaning that shifts in technology, customer preferences, or regulatory environments occurring after the research period may not be reflected in the findings. Future research could address these limitations by incorporating a broader geographic scope, more diverse demographic samples, mixed-method approaches, and longitudinal study designs.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

## COMPETING INTERESTS DISCLAIMER

Authors have declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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