



Determinants of Customer Trust in Digital Banking Services

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Abstract. This study aims to analyze the determinants of customer trust in digital banking services by evaluating the influence of security, privacy, service quality, perceived risk, and bank reputation. Data were collected through an online questionnaire distributed to 130 respondents, who are active users of digital banking services, such as mobile banking and internet banking. The analysis was conducted using Structural Equation Modeling (SEM) with SmartPLS 3.0 to test the relationships between these variables. The results indicate that service quality has the most significant impact on customer trust, followed by security, bank reputation, and privacy. Conversely, perceived risk was found to have a negative impact on customer trust. These findings suggest that the higher the service quality and perceived security, the higher the customer trust in digital banking services. On the other hand, concerns regarding risks, such as data theft and fraud, can decrease customer trust. This study provides practical implications for digital banking providers to enhance service quality, strengthen security measures, and protect customer privacy to build and maintain long-term customer trust.

Keywords: Bank reputation; Customer trust; Perceived risk; Security; Service quality.

1. INTRODUCTION

The advancement of information and communication technology has revolutionized how society interacts, including in the financial services sector. Digital banking services (mobile banking, internet banking, and digital banks) have become the primary means for customers to conduct everyday financial transactions (Laukkanen, 2016; Maqableh & Alia, 2017). In Indonesia, the growth of digital banking users has significantly increased with the penetration of the internet and smartphone usage (Bank Indonesia, 2023; OJK, 2023). Digital transformation in the banking sector not only offers convenience and efficiency but also creates new challenges in security, data protection, risk perception, and customer trust (Luo et al., 2010; Suvanto et al., 2011).

Digitalization of banking services brings not only convenience but also complexity in building customer trust due to increased cybersecurity threats and privacy concerns (Gefen et al., 2003; Kim et al., 2009). Trust is a fundamental construct in technology adoption literature, particularly in contexts where information asymmetry, risk, and uncertainty prevail (Bhattacharjee, 2002; Gefen & Straub, 2004; McKnight et al., 2002). Customer trust in digital banking services is the belief that the system can provide services that are safe, reliable, and consistent in protecting user interests (Pavlou, 2003; Roca et al., 2009).

The phenomenon of customers shifting from traditional banking to digital banking has significant implications for banks' management strategies in retaining and attracting customers (Al-Hawari et al., 2019; Amin, 2016). In the Indonesian context, studies show that factors such as security, privacy protection, risk perception, e-service quality, and customer satisfaction

strongly influence digital banking customer loyalty (Sari & Anggraini, 2019; Prabowo & Riyadi, 2021). However, while previous research has examined trust in digital financial systems, there is still a significant gap in comprehensive models of customer trust determinants that integrate technology, security, user experience, and cultural risk perception within the Indonesian banking environment (Setiawan et al., 2022; Wibowo & Firdaus, 2020).

Customer trust also plays a critical role in technology adoption theory, such as the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), Information Systems Success Model, and Trust-Based Models (Davis, 1989; Venkatesh et al., 2003; DeLone & McLean, 2003; Mayer et al., 1995). These models emphasize that trust is influenced not only by perceived usefulness and ease of use but also by confidence in system security, service provider reputation, and perceived risks experienced by the customer (Gefen et al., 2003; McKnight et al., 2002; Ribbink et al., 2004).

In empirical studies, several research papers have identified perceived security, data privacy, perceived ease of use, service quality, perceived risk, and bank reputation as the primary determinants that significantly affect customer trust levels in the use of digital banking services (Alalwan et al., 2017; Amin, 2016; Chawla & Joshi, 2019; Singh & Sinha, 2020). Research by Sthapit et al. (2019), for example, shows that perceptions of security and privacy have a direct effect on customer trust in mobile banking in South Asia. Similarly, studies in Europe and the United States highlight the importance of service quality and user experience in building digital trust (Yang et al., 2015; Zhou, 2011).

In Indonesia, despite the growing penetration of digital banking, customer confidence in the mechanisms of security and data privacy remains a critical issue due to the high number of data breaches and cybersecurity fraud cases (OJK, 2023; BSSN, 2022). Moreover, customer risk culture and digital literacy have been shown to moderate the relationship between technical factors and trust, highlighting the need for an interdisciplinary approach to develop a more accurate theoretical model (Putra & Nugroho, 2021; Taufik et al., 2020).

Additionally, customer trust is an important predictor of loyalty, customer satisfaction, and continuous usage intention in digital banking services (Chen & Barnes, 2007; Ribbink et al., 2004; Luo et al., 2010). Higher trust tends to reduce perceived risks and enhance customer confidence in conducting digital financial transactions, making it crucial for banks to identify the key determinants that can strengthen that trust (Sultan & Rohm, 2005; Rohm & Swaminathan, 2004).

This study aims to develop a model for the determinants of customer trust in digital banking services in Indonesia by considering factors from the domains of information technology, consumer psychology, and risk management. This research will also contribute to the development of the trust literature in the context of digital banking and provide practical recommendations for the banking industry to improve trust management strategies and customer experience to strengthen long-term relationships with digital customers (Akter et al., 2016; Al-Hawari et al., 2019).

By understanding the comprehensive determinants of customer trust, banks can design policies, security systems, and services that address customer needs and drive the sustainable adoption of digital services, in line with the national digital transformation roadmap and the increasingly complex demands of consumers (OJK, 2023; Bank Indonesia, 2023; World Bank, 2021).

2. LITERATURE REVIEW

Trust is one of the key psychological constructs in technology adoption, particularly in digital environments such as digital banking. It represents the belief that a system will function as expected and protect users' interests (Pavlou, 2003; Gefen et al., 2003). Trust in digital banking, as part of e-commerce and information systems, plays a critical role in encouraging users to adopt and continue using banking applications (Kim et al., 2009). Digital banking services, including mobile banking, internet banking, and fully digital banks, introduce both opportunities and risks for customers, making trust a vital element of customer loyalty and retention (Luo et al., 2010). In general, customer trust refers to the willingness to rely on the bank's digital services, assuming the bank will maintain the confidentiality of personal and financial information, offer safe transactions, and provide reliable services (Gefen et al., 2003; Roca et al., 2009). Previous research has demonstrated that trust influences customers' decisions to continue using a service and engage with it in the long term (McKnight et al., 2002; Sthapit et al., 2019).

Numerous studies have identified several key factors influencing customer trust in digital banking services. These factors can be grouped into technical factors, psychological factors, and cultural factors (Alalwan et al., 2017; Sari & Anggraini, 2019). A significant determinant of trust in digital banking is perceived security. Studies consistently show that customers are more likely to trust digital banking services when they perceive the platform as secure, especially in the context of data breaches, fraud, and cyberattacks (Gefen et al., 2003; Pavlou, 2003). Research by Roca et al. (2009) and Sthapit et al. (2019) suggests that a bank's

ability to protect user data is a crucial trust-building element. In addition, perceived privacy is another significant factor; customers need assurance that their personal and financial data will be protected (Kim et al., 2009).

The quality of service plays a pivotal role in forming customer trust. Factors such as system reliability, usability, and customer support have been linked to higher levels of trust in digital banking (Alalwan et al., 2017; Ribbink et al., 2004). The user experience (UX) of digital banking platforms such as interface design, transaction speed, and ease of navigation also significantly affects how customers perceive the bank's reliability and security, which in turn affects their trust (Luo et al., 2010). Another critical determinant is the reputation of the bank. A bank with a strong, reputable brand and a history of providing safe and reliable services is more likely to build trust with customers (Al-Hawari et al., 2019). Studies have shown that a bank's reputation regarding its ability to handle customer complaints, resolve issues, and manage fraud contributes positively to trust (Sari & Anggraini, 2019; Wibowo & Firdaus, 2020). Furthermore, bank reputation helps in mitigating customer concerns over the security and privacy of transactions (Mayer et al., 1995). The concept of perceived risk in digital banking reflects customers' concerns about possible losses from using digital banking services. As digital banking involves sharing sensitive financial data and performing monetary transactions online, customers may be worried about financial fraud, identity theft, and privacy violations. The higher the perceived risk, the lower the level of trust (Amin, 2016; Alalwan et al., 2017). This underscores the importance of addressing risk perceptions to enhance trust in digital platforms (Ribbink et al., 2004).

Several theoretical models provide frameworks for understanding the determinants of trust in digital services, including the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). According to the TAM, trust in technology is influenced by perceived ease of use and perceived usefulness, which directly affect customer intention to adopt the technology (Davis, 1989). UTAUT further extends this by including performance expectancy, effort expectancy, and social influence as key predictors of technology adoption (Venkatesh et al., 2003). The Trust-Based Model of Technology Acceptance suggests that the perceived security and perceived privacy directly affect trust, while service quality and reputation serve as secondary factors that build trust over time (Gefen et al., 2003; McKnight et al., 2002). These models highlight the complex interplay between various factors in building customer trust in digital banking services.

Despite the growing body of literature on digital banking trust, there remains a gap in comprehensive models that integrate technology, security, user experience, and cultural risk perception within the Indonesian context. Most studies focus on general digital trust or specific aspects of trust, such as security or privacy, without addressing the multi-dimensional nature of customer trust in digital banking (Wibowo & Firdaus, 2020; Setiawan et al., 2022). Further research is needed to explore how cultural and contextual factors, such as digital literacy and local banking regulations, moderate the relationships between the determinants of trust. Research on the impact of government regulations and cybersecurity policies on customer trust in Indonesia's banking sector is also sparse, presenting an opportunity for future studies to fill this gap (Putra & Nugroho, 2021).

3. RESEARCH METHOD

This study uses a quantitative explanatory research design, which aims to test the relationships between various determinants of customer trust in digital banking services. The design allows for the examination of direct effects and moderating variables using cross-sectional data. The population consists of all active customers using digital banking services (mobile banking or internet banking). The sample was selected using purposive sampling, with the following criteria: Active customers who have used mobile banking or internet banking for at least the past 3 months. Customers with regular usage and sufficient experience with digital banking platforms. A total sample of 130 respondents was selected for this study, considered adequate for statistical analysis using Structural Equation Modeling (SEM) or other multivariate methods.

Data were collected using a structured online questionnaire, distributed via email, social media, and digital banking platforms. The survey included closed-ended questions with a Likert scale (1 to 5), assessing respondents' perceptions of security, privacy, service quality, perceived risk, and customer trust. Below is the operationalization of the variables, specifying the measurement indicators and scale for each variable.

Table 1. Operationalization of Variables.

| Variable | Dimension | Indicator | Measurement Scale |
|----------------|--------------------------|---|--------------------|
| Customer Trust | Trust in security | 1. Security of transactions in digital banking. 2. Good data protection. | Likert Scale (1–5) |
| | Trust in service quality | 1. Consistent and reliable service. 2. Fast response to customer issues. | Likert Scale (1–5) |

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|-----------------|------------------------------------|---|--------------------|
| Security | Perception of data security | 1. Protection of personal data by the bank. 2. Secure payment system in the app. | Likert Scale (1–5) |
| | Perception of transaction security | 1. Secure financial transactions in mobile banking apps. | Likert Scale (1–5) |
| Privacy | Privacy protection | 1. Digital banking services maintain customer privacy. 2. Personal information is kept confidential. | Likert Scale (1–5) |
| Service Quality | Technical service quality | 1. Mobile banking app performance. 2. Easy-to-use navigation system. | Likert Scale (1–5) |
| | Customer service satisfaction | 1. Pleasant customer experience with digital banking apps. | Likert Scale (1–5) |
| Perceived Risk | Perception of security risk | 1. Concerns about data theft. 2. Concerns about digital fraud. | Likert Scale (1–5) |
| Bank Reputation | Reputation and credibility | 1. Bank known for its security. 2. Trust in the bank’s data security reputation. | Likert Scale (1–5) |

The data will be analyzed using Structural Equation Modeling (SEM), using software such as SmartPLS. SEM will help test the relationships between latent variables (trust, security, privacy, service quality, perceived risk, and bank reputation) and understand their effects on customer trust in digital banking services. To ensure the validity and reliability of the constructs, convergent validity and discriminant validity will be evaluated. Cronbach's Alpha and com-posite reliability will also be assessed to verify the internal consistency of the constructs.

4. RESULTS AND DISCUSSION

The study collected data from 130 respondents, all of whom are active customers using mobile or internet banking services for at least the past three months. The sample was representative in terms of age, gender, and frequency of using digital banking services. The data reveals that 60% of respondents are aged between 25 and 45 years old, which is a highly tech-savvy group. Furthermore, 75% of the respondents use digital banking services at least once a week.

The descriptive statistics for the key variables (security, privacy, service quality, perceived risk, and customer trust) are as follows:

Table 2. Descriptive Statistics of Key Variables.

| Variable | Mean | Standard Deviation | Range |
|-----------------|------|--------------------|-------|
| Security | 4.32 | 0.63 | 3–5 |
| Privacy | 4.21 | 0.58 | 3–5 |
| Service Quality | 4.41 | 0.71 | 3–5 |
| Perceived Risk | 3.61 | 0.78 | 2–5 |
| Customer Trust | 4.23 | 0.69 | 3–5 |

The Structural Equation Modeling (SEM) analysis was conducted using SmartPLS 3.0 to evaluate the relationships between the variables in the conceptual model. The model aimed to assess the direct and indirect effects of security, privacy, service quality, perceived risk, and bank reputation on customer trust. The measurement model showed good fit indices, and all variables had significant loadings, with composite reliability and Cronbach's alpha values exceeding the acceptable thresholds.

Below are the results from the hypothesis testing, including path coefficients, t-values, and p-values.

Table 3. Hypothesis Testing Results.

| Hypothesis | Path Coefficient | t-value | p-value | Conclusion |
|--------------------------------------|------------------|---------|---------|------------|
| H1: Security → Customer Trust | 0.35 | 3.45 | 0.001 | Supported |
| H2: Privacy → Customer Trust | 0.28 | 2.91 | 0.004 | Supported |
| H3: Service Quality → Customer Trust | 0.40 | 4.02 | 0.000 | Supported |
| H4: Perceived Risk → Customer Trust | -0.21 | 2.05 | 0.042 | Supported |
| H5: Bank Reputation → Customer Trust | 0.30 | 3.18 | 0.002 | Supported |

The results of hypothesis testing provide valuable insights into the factors that influence customer trust in digital banking services. As seen in Table 4.1, all the proposed relationships between the variables were significant, highlighting the crucial role that security, privacy, service quality, perceived risk, and bank reputation play in shaping customer trust.

The most significant determinant of customer trust in digital banking services was service quality, with a path coefficient of 0.40, a t-value of 4.02, and a p-value of less than 0.01. This result is in line with the findings of Alalwan et al. (2017) and Ribbink et al. (2004), who also emphasized the importance of service quality in digital environments. In the context of digital banking, service quality encompasses several factors, including the reliability of the mobile or internet banking system, the responsiveness of customer support, and the user-

friendliness of the platform. Customers are more likely to trust digital banking services when they experience consistent, high-quality services that meet their expectations and provide smooth, error-free transactions. Therefore, banks must invest in improving their digital platforms by ensuring system uptime, minimizing disruptions, and offering comprehensive customer support to resolve any technical or transactional issues promptly.

Following service quality, security was also found to have a significant positive impact on customer trust, with a path coefficient of 0.35. This confirms that customers' perceptions of security in digital banking play a central role in building trust. As noted by Gefen et al. (2003) & Pavlou (2003), digital transactions inherently carry risks related to data breaches, identity theft, and fraud. The higher the perceived security of a banking platform, the more likely customers are to trust the service. This finding is particularly important in the context of increasing cybersecurity threats, which can undermine customer confidence in digital services. Therefore, digital banking providers must prioritize implementing robust encryption, multi-factor authentication, and other security measures to protect users' personal and financial data. Additionally, clear communication with customers regarding the steps taken to secure their information can further enhance trust.

Bank reputation also emerged as a key determinant of trust, with a path coefficient of 0.30. This suggests that customers are more inclined to trust digital banking services offered by well-established banks with strong reputations. A bank's reputation is often built over time through consistent service delivery, ethical practices, and transparency. Banks that have a history of handling customer complaints efficiently, ensuring data security, and offering fair and reliable services are more likely to gain and maintain customer trust in the long run. This aligns with the work of Mayer et al. (1995), who suggested that trust in a service provider is closely linked to the provider's reputation and reliability. In the competitive landscape of digital banking, banks should focus on enhancing their brand image by promoting their track record of ethical behavior, transparency, and customer-centric practices.

Privacy also plays a significant role in shaping customer trust, with a path coefficient of 0.28. Customers are more likely to trust digital banking services when they believe their personal and financial information is being handled with care. In today's digital world, where data privacy concerns are ever-growing, customers expect their banking service providers to safeguard their information and use it responsibly. This finding echoes the work of Kim et al. (2009) & Roca et al. (2009), who emphasized the importance of privacy protection in building trust in online services. Banks must therefore implement strong data privacy policies, be

transparent about how customer data is used, and comply with relevant privacy regulations to reassure customers about the safety of their personal information.

On the other hand, perceived risk was found to have a negative effect on customer trust, with a path coefficient of -0.21. This result suggests that when customers perceive a higher level of risk whether due to concerns about data breaches, fraud, or system failures they are less likely to trust digital banking services. This finding is consistent with previous research that highlights the inverse relationship between perceived risk and trust (Amin, 2016; Ribbink et al., 2004). The negative impact of perceived risk on trust underscores the importance of banks addressing and mitigating customer concerns related to cybersecurity and financial safety. Efforts to reduce perceived risks can involve offering better security features, transparent communication about how customer data is protected, and providing guarantees or insurances to customers in case of fraud or unauthorized transactions.

5. CONCLUSION

This study identifies that service quality, security, bank reputation, privacy, and perceived risk are the key factors influencing customer trust in digital banking services. The analysis shows that service quality has the most significant impact on customer trust, followed by security and bank reputation. On the other hand, perceived risk was found to have a negative effect on customer trust, indicating that concerns about security and potential fraud can reduce trust in digital services. The implications of these findings suggest that digital banking providers should focus on improving service quality, strengthening security systems, and ensuring privacy protection to build and maintain customer trust. Additionally, it is crucial for banks to address perceived risks by implementing clear and effective risk mitigation measures, thereby creating a safer and more satisfying experience for customers using digital banking services.

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