

# The Effect of Perceived Risk and Customer Experience on Loyalty Intention for Mobile Banking: The Moderating Role of Customer Satisfaction

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## Abstract

*In the banking industry, providing a range of conventional and high-tech services is crucial to ensure customer satisfaction. One area that requires attention is mobile banking services, which need to offer an engaging experience to keep customers satisfied and loyal. However, empirically, the evidence regarding the impact of the role of mobile banking customer satisfaction on loyalty intention seems to leave room for improvement. Research indicates that customer experience and the risks involved can have a significant impact on consumer satisfaction and loyalty intention. The study is conducted using explanatory research methodology, employing a quantitative approach and adhering to the positivist paradigm. This methodology aims to elucidate the causal relationship between variables, both through direct and indirect means. The research data was analyzed using PLS-SEM, which stands for Partial Least Square Structural Equation Method. The findings indicate that perceived risk has a detrimental influence on customer satisfaction, whereas customer experience has a beneficial effect. Research has demonstrated that customer satisfaction has a clear and substantial impact on the intention of customers to remain loyal. While all indirect links are supported, it is not possible to establish a direct relationship between perceived risk and customer experience on loyalty intention. The significance of customer satisfaction lies in its ability to connect perceived risk and customer experience results with loyalty intention. This study explores the implications for literature and management about mobile banking applications and the integration of perceived risk and customer experience in shaping customer satisfaction and loyalty in the banking sector. These advancements emphasize the significance of excellent customer experiences in enhancing customer happiness and loyalty. Companies must enhance client experience and strive to surpass expectations. Gaining a comprehensive understanding of the concept of "customer satisfaction" and its role as a mediator can help marketing and customer relationship management strategies effectively retain and attract customers.*

**Keywords:** Perceived Risk, Customer Experience, Loyalty Intention, Customer Satisfaction.

## INTRODUCTION

The popularity of smartphones has led to a significant increase in the use of mobile banking, which has been shown to increase customer satisfaction and efficiency, and reduce transaction handling costs for banks (Mullan et al., 2017). Compatibility, perceived usefulness, and attitude are key drivers of mobile banking adoption in both developed and developing countries (Aijaz and Heikki, 2015). Many companies are growing rapidly because they are able to adapt by creating strategies through new technologies and using them as weapons to achieve a competitive advantage, increase brand commitment, create customer loyalty, and expand market share.

Some previous studies explain that banks are one of the industries that are very careful in implementing services to customers to serve online activities and use mobile banking (Souiden et al., 2021). Mobile banking applications provide several features and services. Customers can freely control all features and services, which can improve their performance (Shankar & Rishi, 2020). Mobile banking applications have been developed in recent years as a fundamental medium for banks to provide services to their customers in recent years (Poromatikul et al., 2020). Mobile banking application services are considered the most valuable and vital m-commerce applications (Baabdullah et al., 2019). However, the potential benefits of mobile banking applications for bank customers are not proportional to the number of customers using mobile banking application services. Until now, few bank customers have used mobile banking application services are still

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few (Thusi & Maduku, 2020). Another study, found that the level of use of mobile banking applications in Indonesia remains low. However, the level of use is still not maximized (Majumdar & Pujari, 2022).

Research by (Oliver, 1999) suggests that satisfaction is the beginning of a sequence of transitions that ultimately results in loyalty. Customer loyalty is expressed as a consequence of customer satisfaction (Chauhan & Akhtar, 2022). Research from (Aslam et al., 2019), (El-Adly, 2019), and (Cheng et al., 2019) state that satisfaction has a positive effect on loyalty. This research suggests that satisfied consumers will be loyal consumers in the future. In contrast to the research results of (Ghorbanzadeh, 2021) which state that satisfaction is unable to influence loyalty. The study found that high and low customer satisfaction do not lead to customer loyalty.

The likelihood of negative consequences or ambiguity is relatively high in online contexts due to the inherent risks associated with the Internet, intangibility, limited control, anonymity, potential exploitation, and inadequate security and privacy measures (Baabdullah et al., 2019). Perceived risk is claimed to be a complex construct that has been widely studied by researchers (Chauhan and Akhtar, 2022). Existing research has identified that perceived risk can hinder customer attitudes towards technology and innovation adoption (Damghanian et al., 2016), (Chaudhary and Islam, 2021), (Cong, 2021), (Tzavlopoulos et al., 2019), and (Tandon et al., 2018) suggested the same result that perceived risk has a negative effect on satisfaction. However, the results of this study contrast with those of research from (Sohn et al., 2016) who state that perceived risk does not have a significant effect on satisfaction.

Company efforts to reduce perceived risk also increase consumer loyalty (Hsieh & Tsao, 2014). The research results from (Tuu et al., 2011) also state that perceived risk is a barrier to loyalty formation with a negative moderating effect on the satisfaction-loyalty relationship. A high risk can reduce the level of consumer loyalty. In contrast to the results of research from (Tzavlopoulos et al., 2019) and (Marakanon and Panjakajornsak, 2017) which suggest the results that perceived risk has a positive effect on consumer loyalty.

In order to retain consumers, banking institutions must prioritize enhancing the digital interface of their products and services, as a positive online experience directly affects the financial performance of these businesses (Hamzah et al., 2014; Chauhan and Akhtar, 2022). Research from (Kumar et al., 2022), (Pei et al., 2020), and (Ban and Kim, 2019) stated that customer experience has a positive effect on satisfaction. Creating valuable experiences can increase positive impressions and customer satisfaction. In contrast to the research results from (Fu et al., 2022) and (R. Zhang et al., 2023) which state that customer experience has a negative effect on satisfaction. Customer experience is considered sensitive and can easily change customer perceptions of a product or service so that it can easily affect high and low customer satisfaction. In contrast to the research results from (Fu et al., 2022) and (Zhang et al., 2023) which state that customer experience has a negative effect on satisfaction.

Review of previous research related to the relationship between customer experience and loyalty intention. Research from (Eckstein et al., 2015), (Martinez-Sanchez and Lahoz-Leo, 2018), shows a significant relationship between customer experience and loyalty intention, supported by research from (Nobar and Rostamzadeh, 2018) and research from (Srivastava and Kaul, 2016) which shows that customer experience has a positive effect on loyalty. In contrast, research from (Gligor et al., 2020) showed that the application of customer experience has no influence on loyalty intention.

Based on the aforementioned empirical evidence, the researcher deduces that there is a correlation between perceived risk and customer experience, which in turn contribute to customer happiness and play a pivotal role in fostering consumer loyalty. This study aims to investigate how satisfaction characteristics mediate the relationship between perceived risk and customer experience variables in influencing the loyalty of mobile banking app users. Our objective is to investigate if customer satisfaction acts as a mediator in the connection between perceived risk, customer experience, and loyalty.

The inconsistency of research findings on perceived risk, and customer experience on loyalty intention is a research gap in this study, so researchers need to re-examine satisfaction to be positioned as mediation and

variable development is a novelty in this study. The theory of research action (Fishbein and Ajzen, 1975) and the theory of planned behavior (Ajzen, 1991) are the reference theories used in this study. Referring to the theory of research action, a person's behavior is closely related to intention, which in turn is closely related to individual attitudes toward behavior and subjective norms. The theory of planned behavior is complementary to the theory of research action by presenting perceived behavioral control.

The study provides practical and academic advantages that may be used as a benchmark and evaluation tool for the advancement of mobile banking applications. Furthermore, this study's findings shed light on the long-term viability of mobile banking application usage, taking into account the factors that influence customer experience. The objective of this study is to assess the long-term viability of the factors that impact the connection between users of mobile banking applications. This will be achieved by proposing a comprehensive model that incorporates perceived risk and customer experience. This study enriches the existing literature on mobile banking applications by integrating the notions of perceived risk and customer experience with satisfaction, particularly in empirical studies. This research provides valuable insights for managers by examining the factors that are associated with the adoption of mobile banking applications. These findings will be used to develop a framework. The validity of the framework in this study will be assessed to ascertain its ability to yield a robust correlation value. Therefore, it can be inferred that the theoretical part possesses a high level of practicality for integration into research in the domain of mobile banking apps.

## **LITERATURE REVIEW**

Actor-network theory can help understand the complex dynamics of network formation and convergence in mobile banking, with implications for technology management in convergence and standardization (Lee et al., 2015). Scholars have explored various theories and models to understand consumer adoption of mobile banking. The Technology Acceptance Model (TAM) is one of the most widely used models in the context of technology adoption. It focuses on user acceptance of new technologies based on perceived usefulness and perceived ease of use. In the case of mobile banking, consumers' intention to use mobile banking services is influenced by their perceptions of the usefulness and ease of use of these services<sup>1</sup>. Another is the Unified Theory of Acceptance and Use of Technology (UTAUT), which impacts technology adoption. It considers performance and effort expectancies, social influence, and facilitating conditions. UTAUT helps explain why individuals choose to adopt or use mobile banking services<sup>1</sup>. In the mobile banking sector, Social Cognitive Theory also plays a significant role in emphasizing the role of social influence and learning in shaping behavior. In the context of mobile banking, exposure to positive experiences (modelling) and expected outcomes (outcome expectancy) influences an individual's intention to adopt mobile banking (Souiden et al., 2021).

### **Perceived Risk**

(Shankar and Rishi, 2020) defined risk as the uncertainty faced by consumers when they cannot predict the impact of their purchasing decisions. According to (Majumdar and Pujari, 2022), risk is defined as a person's belief in the risks inherent in online transactions. According to (Hsu et al., 2016), perceived risk is an unintended consequence consumers want to avoid when buying and using products. (Chen and Lin, 2019) stated that Perceived of Risk is an important component of information processing carried out by consumers. Consumers are increasingly encouraged to seek additional information when they are faced with purchasing high-risk products.

### **Customer Experience**

Customer experience is defined as cognitive recognition or can be interpreted as part of the perception that occurs based on experience and participation in a certain series of events. Consequently, this recognition or perception increases the value of a product and service (Ali, 2016). Customer experience is very important because it is a psychological perception in the hearts of users and substantially affects subsequent usage behavior (Yu and Tsou, 2011); (Ali, 2016); (Hariguna et al., 2021). Customer experience generates a relationship between customers and products. A customer experience can provide an unforgettable

experience for customers so that it can add value to the product. Wibowo et al. (2021), suggest five customer experience constructs as a basis for analyzing experience in terms of overall marketing. These are Sense, Think, Feel, Act, and Relate. The following section explains the five types of experience.

### **Satisfaction**

Satisfaction is an assessment of the experience of interacting with a service provider and is used by customers to predict future experiences (Wibowo et al., 2021). Satisfaction is a broad feeling that is influenced by service quality, product quality, price, and contextual and personal factors. Satisfaction is an antecedent to customer loyalty. Research has shown that satisfaction has a positive effect on customer loyalty (Chen and Lin, 2019). Satisfied customers tend to be more loyal, but not always because of satisfaction. This study adopts the dimensions of customer satisfaction from (Athanasopoulos et al., 2001), including reliability, product innovation, pricing, physical evidence, and convenience.

### **Loyalty Intention**

(Baabdullah et al., 2019) considered loyalty to be a customer's tendency or intention to repurchase from the same company. High customer loyalty increases future purchase intentions. This purchase intention will help the company obtain more business from existing customers and increase its market share. The results show that satisfaction with mobile banking has a positive effect on user loyalty (Thakur, 2014). (Baabdullah et al., 2019) examine the main factors affecting mobile banking usage and user loyalty in Saudi Arabia. The results of their research reveal that user behavior and user satisfaction are known to have a strong influence on customer loyalty. (Sampaio et al., 2017) find that users who are satisfied with their experience in mobile banking services are more likely to be loyal to the bank. This study adopts the dimensions of loyalty intention from (Slack et al., 2020) which include repurchase intention, word-of-mouth, price sensitivity, and complaining behavior.

## **Hypotheses Development**

### **Perceived Risk and Loyalty Intention**

According to (Hariguna et al., 2021), perceived risk is a type of subjective loss, where perceived risk is a real perceived risk in the process of purchasing a product or service, consumers cannot consider the pros or cons of the purchase outcome, and the consequences are generated through uncertain or dubious judgments. Every customer will certainly seek security when using something new. (Biswas et al., 2023) and (Chauhan and Akhtar, 2022) also suggest that the higher the perceived risk, the lower the customer's acceptance of new innovations in the company such as the presence of mobile banking, so that high perceived risk can reduce the level of consumer loyalty. Conversely, companies' efforts to reduce perceived risk increase customer loyalty (Hsieh and Tsao, 2014).

However, other studies (Tzavlopoulos et al., 2019) and (Marakanon and Panjakajornsak, 2017) suggest that perceived risk has a positive effect on consumer loyalty. Perceived risk also plays an important role in consumer loyalty. If the perceived risk is high, consumers tend to be loyal by repurchasing products or services in the long term when they are satisfied. However, if the perceived risk is low, consumer satisfaction does not lead to loyalty. When perceived risk is high, consumers are more concerned about the product and product quality and problems that may arise. However, when the risk is low, consumers may change if they believe that alternative service providers provide better-quality services or at lower prices. Based on the description above, it is known that there is still an empirical gap in the relationship between perceived risk and loyalty therefore, this study reconfirms the following relationship:

H1: Perceived risk has a negative effect on loyalty intention

### **Perceived Risk and Satisfaction**

(Tajvidi et al., 2018) defined perceived risk as a consumer's assessment or perception of the consequences, negative impacts, or dubious results after purchasing a service or making a service transaction. (Yen, 2005)

defined perceived risk as a belief about potential negative outcomes or the dubious results of an online service transaction. In online purchases, perceived risk focuses on the perceived risk of the transaction results of buying products or services from online retailers. Consumers believe that online services and robots can have negative consequences. Consumers also tend to avoid these negative results and consequences, ultimately reducing their satisfaction (Seo and Lee, 2021). The consequences and risks received by consumers significantly and negatively affect consumer satisfaction and future consumer intentions (Chaudhary and Islam, 2021).

(Hariguna et al., 2021) add that low perceived risk encourages consumers to make repurchases and potentially make long-term purchases. The greater the perception of risk, the more dissatisfaction will occur, when the perception of risk received by consumers is greater, it will reduce the level of consumer satisfaction (Cong, 2021) and (Tandon et al., 2018). Perceived risk can also play a role in limiting consumer satisfaction. When perceived risk is high, consumers are more concerned about whether the service will be as efficient as they expect and what damages will arise. In this case, customers want to minimize risk, and to do so, they are likely to choose the same company when the service is worth the cost. However, when the risk is low, consumers may change if they believe that alternative service providers provide better quality services or at a lower cost (Tzavlopoulos et al., 2019).

Previous research from (Seo and Lee, 2021); (Chaudhary and Islam, 2021a); (Cong, 2021); (Tzavlopoulos et al., 2019); and (Tandon et al., 2018) suggest the same results, namely perceived risk has a negative effect on satisfaction. Perceptions related to the high and low risks that consumers accept when shopping online or offline can reduce the level of consumer satisfaction. The higher the consumer's perception of the risk that will be accepted when making a transaction, the lower is the satisfaction felt. Considering this, this study proposes the following relationship.

H2: Perceived risk negatively affects satisfaction

### **Customer Experience and Loyalty**

Companies use two ways to create experiences or events to be remembered by their customers in the business world: intangible and tangible services (Tsaour et al., 2007); (Ali, 2016); (Berlilana et al., 2021). Customer experience is very important because it is a psychological perception in the hearts of users and substantially affects subsequent usage behavior (Yu and Tsou, 2011); (Ali, 2016); (Hariguna et al., 2021). (Chauhan and Akhtar, 2022) state that customer loyalty is a consequence of customer experience. Customer engagement, fewer complaints, reduced switching, and positive WOM are some of the benefits of loyal customers and will be a sustainable competitive advantage (Al-Wugayan, 2019). Customer loyalty is a consequence of the customer experience in online banking (Khan et al., 2016) and (Makudza, 2021). Customer experience management has a positive effect on customer loyalty, namely, service interaction, virtual interaction, and physical interaction (Makudza, 2021).

Previous research has shown a significant positive relationship between customer experience and loyalty intention, supported by research from (Eckstein et al., 2015); (Martinez-Sanchez and Lahoz-Leo, 2018); (Nobar and Rostamzadeh, 2018); (Srivastava and Kaul, 2016). Previous research has confirmed that an interesting and memorable customer experience increases consumer interest, satisfaction, and loyalty. Augmented reality is presented to provide convenience to consumers and to enhance an interesting and best shopping experience for consumers so that it can increase consumer loyalty. In contrast, (Gligor et al., 2020) reported that the application of customer experience had no effect on loyalty intention. (Chandra, 2014) suggests that good and bad customer experiences cannot influence consumer loyalty. Considering this gap, this study confirms the relationship between customer experience and loyalty intention, especially in the context of mobile banking applications in Indonesia. Thus, the following hypothesis was formulated:

H3: Customer experience has a positive effect on loyalty

### **Customer Experience and Satisfaction**

The banking literature is now shifting from an adoption framework to an examination of customer experience with technology (Islam et al., 2020). Customer experience refers to the sensory, emotional, and cognitive impacts. Customer experience can also create a good way of thinking, attract customers and leave a positive impression. Thus, customer experience can create real revenue for companies in the form of company value and reputation (Chang and Chen, 2021). Focusing on traditional banking, (Wasan, 2018) measures the positive impact of customer experience on customer satisfaction. (Lemon and Verhoef, 2016) argued that customer satisfaction is a key component of customer experience when analyzing consumer cognitive behavior. In addition, customer satisfaction is defined as the net result of a good customer experience minus a bad customer experience (Meyer and Schwager, 2007).

Outside the general buying and selling transaction process, customers usually expect other experiences to be obtained at a company or brand. The results of research from (Fu et al., 2022) and (Zhang et al., 2023) state that customer experience has a negative effect on satisfaction. Meanwhile, research from (Kumar et al., 2022); (Pei et al., 2020); and (Ban & Kim, 2019) states that customer experience has a positive effect on satisfaction. Creating valuable experiences can increase positive impressions and customer satisfaction. The interaction and support provided by a company will lead to positive experiences and increased consumer satisfaction (Kumar et al., 2022). Customer experience is considered sensitive and can easily change customer perceptions of a product or service so that it can easily affect high and low customer satisfaction. Thus, the following hypothesis was formulated:

H4: The customer experience has a positive effect on satisfaction

### **Satisfaction and Loyalty**

Commitment refers to an enduring desire to maintain a relationship with a brand. Consumers are willing to enhance and maintain affective bonds with brands that make them feel warm and pleasant. Simultaneously, consumers with high brand commitment will have a stronger affective attachment to the brand. Several studies have investigated the effects of customer satisfaction on brand commitment. Satisfaction is the beginning of a sequence of transitions that ultimately results in loyalty (Oliver, 1999). Many researchers have considered customer satisfaction a critical element for studying behavioral intentions towards a product or service (Chauhan and Akhtar, 2022). (Pikkarainen et al., 2006) explained that customer satisfaction is a form of customer evaluation of a product or service, whether it meets or falls short of expectations (Wasan, 2018). Customer loyalty is a consequence of customer satisfaction (Chauhan and Akhtar, 2022). A customer who is satisfied and emotionally involved with the organization becomes loyal and likely to be satisfied with new innovative channels from the same organization (Baabdullah et al., 2019). When customer satisfaction is high, customers share long-term relationships and tend to resist negative behavioral intentions (Al-Wugayan, 2019). (Sampaio et al., 2017) proposed a direct relationship between satisfaction and loyalty in mobile banking applications in Brazil, India, and the United States. The same relationship between these variables has been validated in online banking in India by (Khan et al., 2016) and (Malhotra et al., 2021). Research from (Aslam et al., 2019); (El-Adly, 2019) , and (Cheng et al., 2019) state that satisfaction has a positive effect on loyalty. This research suggests that satisfied consumers will be loyal consumers in the future.

H5: Satisfaction has a positive effect on loyalty

### **The Mediating Role of Satisfaction**

Studies by (Chen & Lin, 2019) and (Sasono et al., 2021) contribute to the narrative of customer loyalty in several ways. Customer relationships and loyalty will be stronger for service providers when they are satisfied with the organization. According to (Tajvidi et al., 2018), satisfaction has an influence on Customer Loyalty, where the quality of customer-focused relationships will create satisfaction so that they remain loyal to making repeat purchases even with a long period of time which is referred to as customer loyalty. Customer satisfaction is important in building loyalty because it has the strongest direct effect on loyalty intentions (Sasono et al., 2021).

(Nguyen-phuoc et al., 2021) suggest that perceived risk can reduce consumer loyalty. Consumers avoid risk and uncertainty. Consumer satisfaction and loyalty are eroded when they feel risk, uncertainty, and a combination of uncertainty and the seriousness of the results. Consumer satisfaction was an intermediate variable between the effects of perceived risk and loyalty. When consumers accept risk and uncertainty, however they other hand consumers also feel satisfaction with the company's services and innovations, and customer satisfaction will become an intermediate variable that can affect the relationship between perceived risk and loyalty.

(Butt et al., 2023) stated that customer experience through augmented reality can increase consumer satisfaction and loyalty. Consumers who have experienced interesting and memorable experiences when transacting online or offline at a company providing products and services will experience increased customer satisfaction and

**Figure 1.** Conceptual Framework

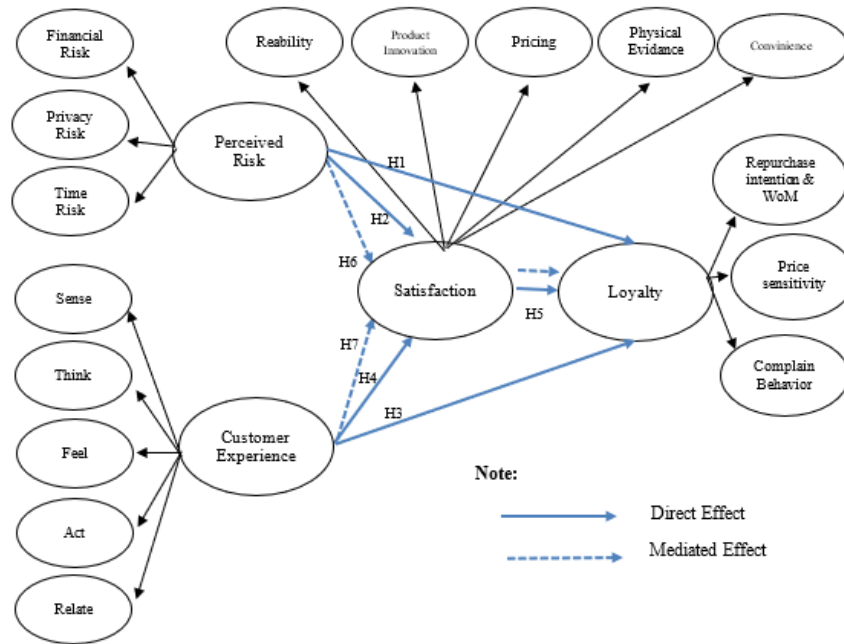
Source: Authors' own research

loyalty. When companies are able to provide customer experiences with insights that are relevant to consumers, this will prevent the loss of customers for the company (Ribeiro et al., 2023).

Based on the relationships described above, the following hypotheses are proposed:

H6: The effect of perceived risk on loyalty intention through satisfaction.

H7: The effect of customer experience on loyalty intention through satisfaction.



## METHODS

### Design and Data Collection

The research is included in explanatory research with a quantitative approach and a positivism paradigm that explains the causal relationship between variables, both directly and indirectly. Social media such as WhatsApp, email, and Instagram were used to send an online-based questionnaire with a cross-sectional survey method. The population in this study were mobile banking user customers in Indonesia. This research does not provide restrictions on the profession of respondents, nor restrictions based on the gender of respondents. With a wide range of target data, the study was conducted over a 10-month period (January 2023 - October 2023) in Indonesia in order to obtain results that are representative of the population and reliable.

The principle ethical judgment procedure was initiated by appointing a few people to enable the researcher to access some of the people who use mobile banking in Indonesia. The primary researcher should have a colleague or family who does mobile banking. So that the questionnaire can be distributed through people who are considered competent to distribute questionnaires. Researchers collected data through online interviews and online-based questionnaires after obtaining approval from respondents through competent people to distribute questionnaires (Rahman et al., 2022).

Preliminary investigations ensured that the voters met the predetermined criteria. Only Preliminary investigations ensured that the voters met the predetermined criteria. Only eligible respondents were allowed to complete the questionnaire. Before respondents participated in answering the questionnaire statement items, we informed them that all answers would be kept confidential, in accordance with the research code of ethics and the Indonesian Statistics Law. We also asked them verbally if they agreed to be respondents in the study. Once the respondents agreed, key questions were asked to select the appropriate respondent criteria for the study: “Do you work in the banking sector?” “Does the company you work for require the use of certain mobile banking?”. The purpose of this question is to ensure that the respondents in this study use mobile banking out of loyalty, not because it is required by the company so that the respondents' answers are not biased.



This research uses a non-probability sampling technique known as purposive sampling. The purposive sampling process begins when the researcher identifies the research issue and the audience that will provide information (Sakaran and Bougie, 2016). Besides the nature of the problem, the reason for choosing purposive sampling over probability is its simplicity, rules, and cost (Rahman et al., 2022); (Abu Zayyad et al., 2021); and (Raza et al., 2020).

### **Respondents' Profile**

Minimum sample size Regarding the sample size, it should be at least five times larger than the number of variables to be analyzed. (Hair Jr. et al., 2014). A total of 600 questionnaires were distributed, and 512 were returned; of these 512, 477 (79.5%) were eligible and could be used for further analysis. Based on type of work, the majority of respondents were entrepreneurs, 211 (44.2%), working in private companies, 189 (39.6%), government employees, 54 (11.3%), freelancers, 23 (4.8%). Hair Jr. et al., (2014) suggest a good sample size for estimation is at least 200. With the number of samples in this study of 477, this number is considered to test the hypothesis and use PLS-SEM. Based on descriptive analysis, it is known that the majority of respondents are male (56.8%), on average 31-40 years old (43.4%), the last education is Bachelor (61%), working as a private employee (44.2%), average monthly income of 4-5 million (25.2%), being a mobile banking customer > 6 years (65.4%) with usage intensity > 12 times a week (35.2%).

### **Instrumentation**

This study examines the effect of perceived risk and customer experience on trust and satisfaction with loyalty intention in mobile banking. The measurement of perceived risk was adopted from (Schmitt, 2012), using the dimensions of financial risk (two items), privacy risk (three items), and time risk (four items). Customer experience was measured by the dimensions of sense (two items), think (two items), feel (two items), act (two items), and relate (two items) adopted from (Ali, 2016). Adopting items from (Wibowo et al., 2021) customer satisfaction is measured by the dimensions of reliability (two items), product innovation (three items), pricing (two items), physical evidence (three items), and convenience (two items). Meanwhile, loyalty intention is measured by adopting (Baabdullah et al., 2019) items which use the dimensions of repurchase intention and WOM (two items), price sensitivity (two items), and complaining behavior (two items). All research variables are measured based on a 5-point gradation with a Likert scale ranging from 1 ("strongly disagree" to point 5 "strongly agree") (Sakaran and Bougie, 2016).

### **Data Analysis**

Research data analyzed using the partial least squares structural equation method (PLS-SEM) is a combination of statistical techniques that have the utility to test a model or series of associations or relationships with relatively complex categories simultaneously. This study uses the Hierarchies Second Order Model (HSOM) used to see the relationships formed related to the primary construct, sub-construct and indicators. This study uses PLS-SEM because it is consistent with recent studies in leading journals (Rahman et al., 2022); (Raza et al., 2020); (Hair et al., 2019). Two steps are performed using Smart PLS: the measurement model and the structural model (Lata et al., 2021).

## **RESULTS**

### **Measurement Model Assessment**

The first step to see how the relationship between the variables, we ran the measurement model using smart PLS 3.0. Therefore, we assessed the measurement model in this study using convergent and discriminant validity. The factor loadings of each item were examined to evaluate convergent validity. According to (Lata et al., 2021), the factor loadings should be equal to or greater than 0.50. Specifically, all items with outer loadings above 0.50 (Exhibit 1). To check internal consistency in this study we assessed the composite Reliability (CR). The cutoff value for CR is 0.70 (Hair et al., 2020). In this study, the CR for all items ranged from 0.896 to 0.975, which exceeded the recommended value of 0.7. Furthermore, we used Cronbach's alpha (CA) to strengthen the CR results' reliability. The CA value was used to evaluate internal consistency. The CA in this study ranged from 0.767 to 0.971 and was greater than 0.70. Furthermore, to establish convergent

validity, we examined the Average Variance Extracted (AVE). AVE represents the average value of the squared indicator loadings associated with the research constructs hair (Hair et al., 2014). According to (Hair et al., 2014) An AVE value of 0.50, indicates that 50% of the items provide sufficient explanation regarding sufficient constructs. The AVE values for all the constructs in this study are below the range of 0.626 - 0.927, which exceeded the recommended value of 0.5. Exhibit 2 shows the convergent validity of all the constructs confirmed in this study.

Exhibit 2 shows the statistics for discriminant validity using the Fornell-Larcker criterion (Lata et al., 2021). To measure discriminant validity, the square root of AVE was compared with other construct correlations. The results showed that AVE's square root was greater than other constructs' correlation values. The Fornell-Larcker criterion confirmed the discriminant validity of the measurement model as the constructs had more variance with their associated indicators than the other constructs.

**Table 1. Measurement model**

	Outer Loading	CR	CA	AVE
<b>PERCEIVED RISK</b>		<b>0.921</b>	<b>0.900</b>	<b>0.626</b>
<b>Financial Risk</b>	0.869	0.896	0.767	0.811
I am afraid of losing money when transferring money through Mobile Banking	0.895			
I'm worried that I won't be compensated by the bank if I experience a transaction error.	0.906			
<b>Privacy Risk</b>	0.913	0.904	0.841	0.758
I feel unsafe providing personal privacy information through Mobile Banking.	0.880			
I was worried about someone else hacking into my account.	0.856			
I am afraid of sending sensitive information through Mobile Banking	0.877			
<b>Time Risk</b>	0.873	0.913	0.811	0.841
I need more time when using Mobile Banking.	0.928			
I spent a lot of time learning how to use Mobile Banking	0.906			
<b>CUSTOMER EXPERIENCE</b>		<b>0.971</b>	<b>0.966</b>	<b>0.769</b>
<b>Sense</b>	0.876	0.901	0.783	0.820
Visual content in Mobile Banking is attractive	0.928			
I share content on social media about my experience using Mobile Banking	0.883			
<b>Think</b>	0.920	0.932	0.855	0.873
I always update the Mobile Banking application.	0.927			
I am interested in existing Mobile Banking services	0.941			
<b>Feel</b>	0.946	0.971	0.939	0.943
I like using the Mobile Banking app	0.970			
I had a good experience while using Mobile Banking	0.972			
<b>Act</b>	0.941	0.960	0.917	0.923
I feel more modern when using Mobile Banking	0.961			
I find it easier to transact with Mobile Banking	0.961			
<b>Relate</b>	0.935	0.969	0.935	0.939
I always make transactions using Mobile Banking	0.968			
Many people who use Mobile Banking are the same as me	0.970			
<b>CUSTOMER SATISFACTION</b>		<b>0.975</b>	<b>0.971</b>	<b>0.761</b>
<b>Reliability</b>	0.933	0.948	0.891	0.901
Mobile Banking can help me fulfill my transaction needs	0.950			
The Help Center service on Mobile Banking is easy to find	0.949			
<b>Product Innovation</b>	0.940	0.931	0.889	0.819
Rarely do errors occur in Mobile Banking	0.880			
Service providers provide solutions when Mobile Banking has problems	0.938			
Trustworthy mobile banking service	0.897			
<b>Pricing</b>	0.904	0.938	0.869	0.884
Mobile Banking transaction fees are relatively affordable	0.947			
I do not feel burdened by transaction fees in Mobile Banking.	0.934			
<b>Physical Evidence</b>	0.951	0.956	0.930	0.878
The design of the Mobile Banking application is attractive	0.903			
Mobile Banking application features are easy to run	0.971			

	Outer Loading	CR	CA	AVE
Mobile Banking app can be installed easily	0.935			
<b>Convenience</b>	0.922	0.962	0.920	0.926
Mobile Banking apps are easily found on Playstore and Appstore.	0.962			
Mobile Banking application users are easy to find in my work environment	0.962			
<b>LOYALTY INTENTION</b>		<b>0.962</b>	<b>0.953</b>	<b>0.809</b>
<b>Repurchase Intention &amp; Word of Mouths</b>	0.941	0.962	0.921	0.927
I intend to continue using Mobile Banking	0.961			
I recommend others to use Mobile Banking	0.964			
<b>Price Sensitivity</b>	0.968	0.956	0.908	0.915
I will continue to use one Mobile Banking even though competitors offer more attractive features.	0.959			
I feel that the Mobile Banking I use is better than others	0.954			
<b>Complaining Behavior</b>	0.914	0.946	0.887	0.898
I will not switch mobile banking when experiencing technical issues	0.950			
If Mobile Banking has a problem, I take it as a normal thing	0.945			

Source: Authors' own research

We also analyzed the respondents' answers (see Exhibit 2) and interpreted them using the three-box method. The range of five must be divided by three to produce a range of 1.33 (1.00-2.33 = low; 2.34-3.67 = medium; 3.68-5.00 = high) and then used as the basis for interpreting the mean value of the mean value of the variable (Rahman et al., 2022). Based on the respondents' assessment of the research variables (Customer Experience = 4.36; Customer Satisfaction = 4.45; Loyalty Intention = 4.43; Perceived Risk = 1.94), one latent variable was in the low category, and three latent variables were in the high category of the high category.

## Structural Model Assessment

The process of evaluating the significance of the hypothesis can be done by examining the path coefficient, p value, and t-statistic in the structural model (Hair et al., 2019). Furthermore, through the bootstrapping procedure, we can assess the structural model by examining the significance value to determine the effect between variables. Exhibit 4 shows the results of the hypothesis testing of the direct and indirect effects.

**Table 2. Hypothesis testing of direct and indirect relationships**

Relationship	Coefficient	t-statistics	p-value	Decision
<b>Direct effect</b>				
Perceived Risk → Loyalty Intention	0.022	0.972	0.332	Rejected
Perceived Risk → Customer Satisfaction	-0.138	3.184	0.002	Accepted
Customer Experience → Loyalty Intention	0.087	1.616	0.107	Rejected
Customer Experience → Customer Satisfaction	0.801	15.363	0.000	Accepted
Customer Satisfaction → Loyalty Intention	0.839	15.786	0.000	Accepted
<b>Indirect effect</b>				
Perceived Risk → Customer Satisfaction → Loyalty Intention	-0.116	2.932	0.004	Accepted
Customer Experience → Customer Satisfaction → Loyalty Intention	0.672	15.279	0,000	Accepted

Source: Authors' own research

Significance level (5%): t-statistics = 1.96; p-value <.05

Abbreviations: Perceived Risk, Customer Experience; Customer Satisfaction, Loyalty Intention.

Based on Table 3, we can see a direct effect between the variables. Hypothesis H1 the effect of Perceived Risk on Loyalty Intention is not significant ( $\beta = 0.022$ , t-statistics = 0.972,  $p > .05$ ). Therefore, H1 is rejected. Furthermore, the results confirm Hypothesis H2. This can be explained by the negative effect of perceived risk on customer satisfaction ( $\beta = -0.138$ , t-statistics = 3.184,  $p < .05$ ). This result can be interpreted as the high perceived risk that a person has, which has been proven to have a decreasing impact on customer satisfaction. Hypothesis H3: Customer experience has no significant effect on loyalty intention ( $\beta = 0.087$ , t-statistics = 1.616,  $p > .05$ ). The results of hypothesis H4 show that customer experience has a significant positive effect on customer satisfaction ( $\beta = 0.801$ , t-statistics = 15.363,  $p < 0.05$ ). This result can explain the

high customer experience of a person, and it has been proven to have an increasing impact on customer satisfaction.

Furthermore, for the statistical analysis of the effect of mediation, the results of the study show that Customer Satisfaction negatively mediates the effect of Perceived Risk on Loyalty Intention ( $\beta = -0.116$ , t-statistic = 2.932,  $p < .05$ ); thus, H6 is accepted. Finally, H7 states that Customer Satisfaction positively mediates the relationship between customer experience and loyalty intentions. This relationship was accepted ( $\beta = 0.672$ , t-statistic = 15.279,  $p < .05$ ).

## **GENERAL DISCUSSION**

Perceived risk has no effect on the loyalty intention of Mobile Banking application users, an important finding. This means that, in this case, even though users may have a high level of perceived risk towards the application, it does not become a barrier for them to still have the intention to remain loyal to the application. The results of this research can help companies to better understand their customers' behavior and may indicate that their focus should be on reinforcing the benefits and positive experiences provided by applications to maintain customer loyalty, despite high perceived risks.

Based on the results of this research, Hypothesis H6, namely that perceived risk influences loyalty intention through customer satisfaction, can be accepted. Customer satisfaction can be a strong mediating variable that links the indirect influence of perceived risk on loyalty satisfaction. The results of this analysis show that "customer satisfaction" acts as a significant mediator in connecting "perceived risk" with "loyalty intention." In other words, when customers are satisfied with their experience, they are more likely to remain loyal to the product, service, or organization even though they initially had a high perception of risk.

The level of customer satisfaction can be an important factor in mitigating or overcoming perceived risks and encouraging customer intentions to remain loyal. These results have important implications for customer relationship management and marketing. Emphasizing customer satisfaction can help organizations mitigate the risks perceived by customers and promote stronger customer loyalty. It also underscores the importance of listening to and responding to customer needs to increase satisfaction levels and maintain positive long-term relationships with them.

The influence of perceived risk on loyalty intention through customer satisfaction is negative. Thus, when consumer risk acceptance increases, consumer loyalty decreases because of consumer satisfaction. This is appropriate because the consumer satisfaction variable has a negative relationship with risk acceptance, but is directly proportional to consumer loyalty intentions. For example, when consumer risk increases by 1, consumer satisfaction decreases by 1. Consumer satisfaction, which decreases by one, will affect a 1-fold decrease in consumer loyalty intentions. This is because the consumer satisfaction variable is key to the relationship between the two variables. Likewise with the influence of perceived risk on satisfaction.

Furthermore, customer experience has no effect on customer loyalty intentions. The level of positive customer experience does not significantly influence a customer's intention to remain loyal to a particular product, service, or brand. The results of this study are inversely proportional to those of (Butt et al., 2023) who find that customer experience through augmented reality can increase consumer satisfaction and loyalty. Likewise, research conducted by (Hansopaheluwakan et al., 2023) and (Srivastava & Kaul, 2016) also found that customer experience through omni channels can increase customer loyalty. In this study, customer experience had a positive influence on customer satisfaction and customer trust. Where satisfaction and trust emerge, it will result in customer loyalty. However, in reality, even though there is customer satisfaction and trust, this does not cause customers to be loyal to using the application. This implies that there are elements or aspects that have not appeared or are left behind in the application.

This could be an important discovery for future development of mobile banking applications. If we adapt the results of previous studies by (Butt et al., 2023); (Hansopaheluwakan et al., 2023); and (Srivastava & Kaul, 2016), the influence of customer experience does not directly affect customer loyalty, but there needs to be a mediating variable.

Customer satisfaction can mediate the influence of customer experience on loyalty intention. The results of this analysis show that "customer satisfaction" plays an important role as a mediator in the relationship between "customer experience" and "loyalty intention." and loyalty intentions. Positive customer experiences not only create satisfaction, but also influence customers' intentions to remain loyal. These results emphasize the importance of providing positive customer experiences to promote customer satisfaction, which in turn can contribute to increasing customer loyalty. Organizations need to focus on improving customer experience and providing services or products that meet or exceed customer expectations. Understanding the important role of "customer satisfaction" and how it acts as a mediating factor in marketing strategy and customer relationship management can help organizations design more effective strategies to retain existing customers and attract new ones.

## **CONCLUSION**

The findings suggest several significant conclusions regarding the relationship between perceived risk, customer satisfaction, customer experience, and loyalty intention in the context of mobile banking applications. First, the study reveals that perceived risk does not directly impact the loyalty intention of mobile banking app users. Despite high levels of perceived risk, users still exhibit loyalty towards the application. This underscores the importance of companies focusing on reinforcing the benefits and positive experiences provided by their applications to maintain customer loyalty, regardless of perceived risks. Second, this research supports the hypothesis that perceived risk influences loyalty intention through customer satisfaction. Customer satisfaction acts as a mediator between perceived risk and loyalty intention, indicating that when users are satisfied with their experience, they are more likely to remain loyal to the application, despite initial concerns about risk. Third, this study highlights the negative influence of perceived risk on loyalty intention through customer satisfaction. When consumer risk acceptance increases, consumer loyalty may decrease because of decreased satisfaction. This emphasizes the crucial role of customer satisfaction in mitigating or overcoming perceived risks and fostering loyalty. Additionally, the research findings challenge previous studies that suggest a direct link between customer experience and loyalty intention. Contrary to prior research, positive customer experience alone does not significantly influence loyalty intention in the context of mobile banking applications. Instead, customer satisfaction emerged as a key mediator between customer experience and loyalty intention. Organizations should prioritize improving customer satisfaction to promote loyalty, even if positive experiences alone do not directly lead to loyalty. Overall, the findings underscore the importance of understanding and addressing the complex interplay among perceived risk, customer satisfaction, customer experience, and loyalty intention in the development and marketing of mobile banking applications. Focusing on enhancing customer satisfaction and effectively managing perceived risks can help organizations build stronger customer relationships and promote loyalty in the competitive mobile banking landscape.

## **Author Contributions**

**Hendra Winata:** conceptualization, validation, and Writing-review and editing. **Armanu Thoyib:** conceptualization, Writing-original draft, Data curation, software, and Writing-review and editing. **Fatchur Rohman:** conceptualization, and Writing-review and editing. **Agung Yuniarinto:** conceptualization, validation, and Writing-review and editing.

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No potential conflict of interest was reported by the author(s).

## **Data Availability Statement**

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

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## Appendix

### PERCEIVED RISK

#### Financial Risk

I am afraid of losing money when transferring money through Mobile Banking  
I'm worried that I won't be compensated by the bank if I experience a transaction error.

#### Privacy Risk

I feel unsafe providing personal privacy information through Mobile Banking.  
I was worried about someone else hacking into my account.  
I am afraid of sending sensitive information through Mobile Banking

#### Time Risk

I need more time when using Mobile Banking.  
I spent a lot of time learning how to use Mobile Banking

### CUSTOMER EXPERIENCE

#### Sense

Visual content in Mobile Banking is attractive  
I share content on social media about my experience using Mobile Banking

#### Think

I always update the Mobile Banking application.  
I am interested in existing Mobile Banking services

#### Feel

I like using the Mobile Banking app  
I had a good experience while using Mobile Banking

#### Act

I feel more modern when using Mobile Banking  
I find it easier to transact with Mobile Banking

#### Relate

I always make transactions using Mobile Banking  
Many people who use Mobile Banking are the same as me

### CUSTOMER SATISFACTION

#### Reliability

Mobile Banking can help me fulfill my transaction needs  
The Help Center service on Mobile Banking is easy to find

#### Product Innovation

Rarely do errors occur in Mobile Banking  
Service providers provide solutions when Mobile Banking has problems

#### Trustworthy mobile banking service

#### Pricing

Mobile Banking transaction fees are relatively affordable  
I do not feel burdened by transaction fees in Mobile Banking.

*The Effect of Perceived Risk and Customer Experience on Loyalty Intention for Mobile Banking: The Moderating Role of Customer Satisfaction*

Physical Evidence

The design of the Mobile Banking application is attractive

Mobile Banking application features are easy to run

Mobile Banking app can be installed easily

Convenience

Mobile Banking apps are easily found on Playstore and Appstore.

Mobile Banking application users are easy to find in my work environment

**LOYALTY INTENTION**

Repurchase Intention & Word of Mouths

I intend to continue using Mobile Banking

I recommend others to use Mobile Banking

Price Sensitivity

I will continue to use one Mobile Banking even though competitors offer more attractive features.

I feel that the Mobile Banking I use is better than others

Complaining Behavior

I will not switch mobile banking when experiencing technical issues

If Mobile Banking has a problem, I take it as a normal thing.