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The Role of Trust on the Continuance Usage Intention of Indonesian Mobile Payment Application

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Abstract: Mobile payment is a fascinating innovation, developed by the banking and fintech industries. It is growing very fast, shadowing the popularity of smartphones in Indonesia. However, the continuance usage intention of mobile payment still needs to be determined. Based on prior studies, this study investigates trust as an important factor in promoting the m-payment continuance usage intention. Furthermore, drawing upon the innovation diffusion theory, the study uses the model by Shao et al. (2019) to investigate the antecedents of trust: mobility, customization, security, and reputation, and analyzes the moderating effect of gender on the relationship between trust and its antecedents. It also examines the impact of trust on the perceived risk and continuance intention; and the perceived risk on the continuance intention. The postulated links between the variables were tested using a survey design. With 225 respondents who are e-wallet users in Indonesia, the study finds a positive effect of reputation, security, and customization on trust. Trust positively influences continuance intention, while the link between trust and perceived risk is negative. Compared to the previous study by Shao et al. (2019), the current study finds insignificant relationships between mobility and trust, as well as between the perceived risk and continuance intention. Furthermore, there was no moderating effect of gender on the relationship between trust and its antecedents.

Keywords: mobile payment, continuance intention, trust, gender, perceived risk
JEL Classification: M31, O33

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Introduction

The high number of smartphone users in Indonesia, which reached 191.6 million users in 2020 (Nurhayati-Wolff, 2020), has supported the development and popularity of mobile payment (m-payment) applications in Indonesia. In addition, the adoption of mobile technology, an upgraded operating system, an improved internet network, and user interface refinements have also played a role in the development of m-payment (MDI Ventures & Mandiri Sekuritas, 2017; Ramadan & Aita, 2018). Among the types of m-payment systems in Indonesia, e-wallets from fintech companies, such as GoPay, Ovo, Dana, and LinkAja, are more popular and widely used by consumers (IPrice & App Annie, 2020). During the spread of COVID-19, m-payment transactions became increasingly popular because they supported social distancing and avoided physical contact. Ming & Jais (2022) also stated that m-payment has the potential to become a regular payment method, because of its usefulness and compliance with users' lifestyles and mobility. As a result, the value of m-payment transactions in Indonesia reached US$56.995 million in 2021 (Statista, 2020).

Despite the increasing number of transactions, many customers prefer cash or debit/credit cards as payment options. According to Hootsuite & We Are Social (2020), e-commerce payments are still dominated by credit cards (36 percent) and bank transfers (24 percent), while e-wallet transactions only occupy 14 percent. The Jakpat Survey Report (2018) data supports this finding, showing that 42 percent of GoPay users chose cash transactions, and 21 percent chose debit/credit cards. Accordingly, the report also indicates that the usage of m-payment is only limited to particular occasions. This data shows that the stickiness of m-payment is still low in Indonesia, and it has yet to become consumers' first payment method. Therefore, this study adopts the continuance intention model of Shao et al. (2019) to measure m-payment users' stickiness.

Previous studies identified trust as the most significant factor influencing users' intentions to continue using mobile payments (Cao et al., 2018; Shao et al., 2019). However, the Jakpat Survey Report (2018) found that six percent of Indonesian users still need to fully trust m-payment applications, because the systems are prone to illegal access. In addition, 20 percent of the respondents stated that they experienced many problems, such as complicated top-up processes, internet network vulnerabilities, and the fear of fraud. Supporting the survey, the study of the service quality of Indonesian e-wallets by Budiarani, et al. (2022) stated that companies still need to develop the users' trust. These findings raise the question of what factors affect m-payment users' trust. On top of that, Cao et al. (2018) found that trust does not directly affect continuance intention. Therefore, it stimulates further study on trust and continuance intention, because there are still conflicting results related to trust as the factor affecting continuance intention.

Trust is the main issue in this study, because trust is an important factor that can

reduce the perceived risk and increase m-payment continuance usage intention. When trust is built, it provides a sense of security for customers and develops further usage (Susilo, et al., 2022). The antecedents of trust were developed from the innovation diffusion theory (IDT) by Rogers (2003) in the form of mobility and customization as the relative advantages of using m-payment. Shao et al. (2019) added security and reputation, adapted from the trust-building model by McKnight et al. (2002). In addition, Shao et al. (2019) included the perceived risk as a factor, with a reverse effect on continuance intention. Because mobile technology relies on a wireless connection, m-payment applications are prone to errors and hence, have greater uncertainty. Consequently, the risks of m-payment usage related to privacy and security can hinder the m-payment continuance usage intention.

Although men and women differ in their decision-making and tech-related behavior, previous studies found that the effect of gender was still inconsistent (Chawla & Joshi, 2020; Oliveira et al., 2014; Shao et al., 2019). Shao et al. (2019) found that the effects of the antecedents of trust are different between male and female users. According to Ma (2021) and Statista (2021), males dominate m-payment usage in China, revealing a bigger gender gap than in Indonesia. Statista (2021) also shows that 32 percent of m-payment users are aged 25 to 34. Previous studies found that this demographic is more likely to use technology frequently (Lisana, 2021; Cao et al., 2017; Amoroso & Lim, 2017). It should be noted that gender was used as a moderator in this study. The younger members of this study's sample, who are familiar with and frequently use technology, can be analyzed to see if this is a factor affecting the results of the hypothesis.

This study aims to analyze the antecedents of trust in the case of m-payment applications, comprising mobility, customization, security, and reputation. This study also examines the moderating effect of gender on the relationship between trust and its antecedents, trust and the perceived risk, trust and continuance intention, and the perceived risk and continuance intention. This study replicates the previous research by Shao et al. (2019), but is applied in a different research setting. Shao et al. (2019) conducted a study in China, using popular e-wallets such as AliPay and WeChat Pay, as the research objects. As Shao et al. (2019) suggested, this study uses the research model in a different country, to test its generalizability. The study expects to adopt a similar research model confirming a different result in the Indonesian setting. The study clarifies what factors would be more critical in building trust and the role of gender as a moderating variable. Then, the study also examines the impact of trust on the continuance intention and perceived risk. Therefore, the study contributes to the literature on m-payments' adoption by exposing a unique perspective from Indonesia.

The study will later compare the findings in the current study and the previous

study by Shao et al. (2019). The comparison is based on the study by MDI Ventures & Mandiri Sekuritas (2017), which stated that China and Indonesia are relatively similar regarding the high level of smartphone penetration and the m-payment market. However, the usage levels and growth are different. Customers in China have been using m-payment for various payment purposes. Meanwhile, m-payment usage in Indonesia is less advanced than in China, as it is mainly used for e-marketplaces and ride-hailing services. In addition, China and Indonesia have a different gender gap, which is related to the gender that dominates m-payment usage.

Furthermore, this study contributes to the practical gap in the m-payment industry in Indonesia. As mobile payment continues to develop rapidly in Indonesia, companies need to understand the users in the market. The finding related to continuance intention would be an important insight for m-payment providers to promote m-payment within the Indonesian market, and retain users strategically. For a growing business, the m-payment business needs to retain users to grow and achieve long-term success (Cao et al., 2018). Moreover, m-payment is expected to be a widespread payment choice (Budiarani, et al., 2022). Consequently, a company must consider trust-building factors when designing m-payment services. This can help them earn the users' trust and improve continuance usage intention.

The structure of this paper is as follows. The following section presents the literature review on m-payment, continuance intention, the innovation diffusion theory, and the trust-building theory, followed by the theoretical framework and hypothesis development section. After that, this study describes the methodology and measurements used in this paper. It is then followed by the data analysis, consisting of validity/reliability tests, hypotheses tests, and a comparison of the research's findings. In analyzing the data, this study uses partial least squares structural equation modeling (PLS-SEM) by SmartPLS 3.3. Additionally, the moderating effect is tested using a multigroup analysis (MGA) method. In the next section, this study proposes a discussion related to the results. Lastly, this paper will have conclusions, managerial implications, and limitations.

Literature Review

Mobile Payment (M-Payment)

Mobile payment or m-payment is the payment made through a smartphone, or other mobile device, for bills, goods, and services utilizing wireless technology (Dahlberg et al., 2015). The m-payment application enables users to immediately access and enjoy basic things from anywhere, at any time (Cao et al., 2018), such as payments for top-ups, billing, food delivery, bank transfers, and peer-to-peer transfers. Lu et al. (2011) stated

that m-payment solves the problems of traditional payment's mundane and limited geographical reach. It represents a conventional technological payment innovation that utilizes a mobile device to initiate, authorize, and confirm transactions (Au & Kauffman, 2008; Kim, Mirusmonov, & Lee, 2010). Nevertheless, m-payment differs from traditional online transactions made on a desktop, which are not flexible.

Continuance Intention

The continuance intention is the level of consumers' intention to use m-payment applications after the initial usage (Amoroso & Lim, 2017). The continuance intention is part of the post-adoption processes, which is very important for the success of m-payment (Zhou, 2013). It is related to consumer satisfaction after using them, and determines whether they will use them again or not. Bhattacherjee (2001) proposed a continuance intention model that explores the consumer's intention to continue using technology, and predicts the actual use through the confirmation of the expectations and evaluation after using m-payment. When the performance of m-payment and the users' expectations are met, it can lead to a positive evaluation and promote its continuance intention.

Continuance Intention

The innovation diffusion theory (IDT) examines the decision-making process relating to how consumers adopt technological innovations from time to time (Rogers, 2003). IDT can explain that consumers' willingness to continue using the technology depends on how they perceive the attributes given by the technological innovation itself. The increasing usage, over time, would also increase the risk of mobile payments. Therefore, IDT has been used to analyze the trust-building factors in information technology research. There are five attributes of innovation in IDT: relative advantage, compatibility, complexity, trialability, and observability. Shao et al. (2019) used relative advantage for the research model, operationalized as mobility and customization, to measure consumers' cognitive evaluations of m-payment. Consumers will experience the relative advantage of m-payment when the new service offers more value than the existing one (Taylor & Todd, 1995; Rogers, 1995).

The Trust Building Theory

The trust-building theory by McKnight et al. (2002) analyzes the behavioral intentions of online consumers. According to that theory, consumers' trust consists of "trusting intention" and "trusting belief." Trusting intention is the consumers' intention to depend on the online vendor, whereas trusting belief is defined as trust in the vendor's capability, integrity, and benevolence. The theory clarifies that site quality, reputation, and structural assurance/security strongly affect the consumers' trust. Therefore, Shao et al. (2019) con-

sidered reputation and security to be predictors of trust.

Theoretical Framework and Hypothesis Development

The Effect of Mobility on Trust

Mobility is the relative advantage by which consumers can access m-payment to make transactions from any location at any time (Shao et al., 2019). It is also mentioned as ubiquity, the most critical factor of mobile technology, because it is accessible to users from anywhere (Kim, Mirusmonov, & Lee, 2010; Zhou, 2013). Mobile technology fits modern society's lifestyle, which favors fast and high mobility (Kalinić et al., 2020; Leong et al., 2021). Mobility allows flexibility and convenience for users to do transactions in real time with a gadget everywhere (Chong et al., 2012; Kim, Mirusmonov, & Lee, 2010). When consumers understand that the m-payment application is a unique payment tool with a broad and fast payment range, they will trust it more and prefer to use it rather than other payment methods (Chong et al., 2012). Although Chong et al. (2012) and Leong et al. (2021) found the insignificant effect of mobility, Shao et al. (2019) and Shao and Zhang (2018) found that mobility positively affects the development of consumers' trust. Therefore, this study formulated the following hypothesis.

H1: Mobility has a positive effect on trust.

The Effect of Mobility on Trust

Customization reflects the ability of m-payment applications to personalize the system, in terms of its functionality, payment methods, and security settings to fit specific consumers' needs (Huang et al., 2014). Customization allows users to have more flexibility and control; these features will increase their trust (Suh & Han, 2003). It also gives consumers a sense of ownership of their transactions, as they can design their processes and seek ones that fit their preferences (Huang et al., 2014). For example, in the case of Indonesian mobile payments, GoPay enables its users to choose their favorite features; Dana allows users to decide whether they want to pay from their e-wallet balance, point, or bank account. Consumers expect this flexibility to ease m-payment usage (Iacurci, 2020). Studies by Huang et al. (2014), Shao and Zhang (2018), and Shao et al. (2019) found that customization and flexibility have a positive effect on trust. In addition, Budiarani et al. (2022) also found that the sense of control over the use of personal information and online transaction are satisfactory factors for users when using m-payment. Hence, the hypothesis is formulated as follows.

H2: Customization has a positive effect on trust.

The Effect of Security on Trust

In the m-payment context, security is defined as consumers' perceptions of the system's security and reliability, such as transaction guarantees, assurance, and regulations (Chandra et al., 2010; McKnight et al., 2002; Zhou, 2011). Security is essential to build users' trust in an online environment. Accordingly, the study by McKnight et al. (2002) found that a vendor's reputation and security are two factors that play essential roles in consumer trust-building.

The m-payment transaction highly depends on the reliability of the m-payment system and the technology itself. Consequently, users are worried about possible errors or transaction delays caused by a network failure during transactions (Dahlberg, Mallat, & Öörni, 2003). Therefore, the security of m-payment must be effectively arranged so that consumers will feel safe about their transactions, and more confident in using m-payment applications (Huang et al., 2014; Shao et al., 2019). Conversely, consumer confidence will decrease if they feel insecure (Linck et al., 2006). The study by Zhou (2011) and Kim et al. (2009) stated that security, as a structural assurance, significantly affects consumers' trust-building. Hence, the hypothesis is formulated as follows.

H3: Security has a positive effect on trust.

The Effect of Reputation on Trust

Prior studies show that consumers are very concerned about a company's reputation when they purchase a product or service. Accordingly, the trust-building model by McKnight et al. (2002) revealed that reputation is one of the main predictors of trust. Reputation reflects the consumers' perceptions and belief that the m-payment service has a good impression, related to its ability to effectively provide credible and reliable services (McKnight, Cummings, & Chervany, 1998; Kim et al., 2009). Given the high risk of technological innovation, consumers base their product evaluations on their social circle before using it (Chong et al., 2012; Li, 2004; Lu et al., 2011), and tend to choose a product that the people around them use widely. Since trust is hard to measure (Dahlberg, Mallat, & Öörni, 2003), consumers pay more attention to reputation. Accordingly, Pavlou & Gefen (2004) found that reputation is more effective than structural assurance in enhancing trust. Supporting this argument, Lin et al. (2017) and Oliveira et al. (2014) stated that reputation is an antecedent that affects consumers' trust. Therefore, the study formulated the following hypothesis as follows.

H4: Reputation has a positive effect on trust.

The Moderating Effect of Gender

In the social role theory, men and women tend to behave differently because they have

different social roles (Lin et al., 2017). It assumes that their role is the cause of how they process their experiences. Furthermore, Kim (2010) stated that men and women differ in various decision-making situations, including their attitude and behavior orientations, when encountering technological innovations. Nevertheless, studies investigating gender as the moderating factor have found conflicting results. Chong et al. (2012) and Xin et al. (2015) found that gender is not a good predictor of behavioral intention, or trust. On the other hand, Shao et al. (2019) and Kalinić et al. (2020) found a significant effect of gender on consumer trust-building, and the study by Ming & Jais (2022) showed that gender affects e-wallet usage. Based on the conflicting findings, the hypothesis is stated as follows.

H5: The effect of antecedents on trust is moderated by gender.

Men are more pragmatic and task-oriented than women (Venkatesh et al., 2012). Furthermore, men are more inclined to use unique methods to achieve their objectives, and adopt a more positive attitude toward utility (Zhou et al., 2014). The mobility of m-payment, which allows customers to execute their transactions from any location, at any time, shows that m-payment has a higher utility and usefulness than traditional payment methods. Another study pointed out that men focus more on technology-oriented factors than women (Lin et al., 2017). In other words, men depend on technological factors to build their trust. Prior studies show that the effect of mobility is higher on men than women (Liébana-Cabanillas, Muñoz-Leiva, & Sànchez-Fernández, 2018; Shao et al., 2019). Therefore, the hypothesis is formulated as follows.

H5a: The influence of mobility on trust is stronger for men than women.

On the other hand, some studies revealed that women are more process-oriented than men, and focus on personalization (San Martin & Jimenez, 2011). Due to this, women have a relatively higher level of technology anxiety and lower technology-related literature than men (Venkatesh et al., 2000). As a result, they need more control over m-payment transactions through the customization of payment methods and security settings that make them feel secure (Huang et al., 2014). Accordingly, Shao et al. (2019) found that the effect of customization on trust would be higher in women than in men. Therefore, the hypothesis is formulated as follows.

H5b: The influence of customization on trust is stronger for women than men.

Furthermore, women have a relatively higher anxiety level when dealing with technology (Chawla & Joshi, 2020) and tend to be process-oriented (Shao et al., 2019). Therefore, women focus more on security and data privacy to avoid financial loss because of online transactions (Hoy and Milne, 2010). Consequently, structural assurance and sys-

tem reliability are essential for women using m-payment. Accordingly, Shao et al. (2019) found that security has a stronger effect on female customers' trust than it has on their male counterparts. Therefore, the hypothesis is formulated as follows.

H5c: The link between security and trust is stronger for women than men.

A previous study found that men do selective processing when evaluating an online vendor. Their evaluation is primarily based on cues and symbols given by the vendor (Sanchez-Franco, 2006). Therefore, men will be more affected by m-payment's reputation, as a cue to represent the vendor's impression and image. That reputation is related to recommendations from their social circle as a strong predictor of their trust (Kalinić et al., 2020). Therefore, the hypothesis is formulated as follows.

H5d: The link between reputation and trust is stronger for men than women.

The Effect of Trust on Perceived Risk

Trust is defined as the consumers' belief that m-payment applications will handle their transactions according to their expectations (Kim et al., 2009; McKnight et al., 2002). Trust and the perceived risk are essential aspects of online transactions. Trust has been studied as the factor that can mitigate the perceived risk (Lu et al., 2011; Cao et al., 2018; Shao et al., 2019), and it is capable of making m-payment users feel secure in using the technology (Susilo, et al., 2022). M-payment applications rely on a mobile network and system, which can be perceived as vulnerable. Hence, the risk of using m-payment applications is higher than when using conventional ones. Consumers who trust m-payment applications will have a different perception of the risk. Therefore, the hypothesis is formulated as follows.

H6: Trust has a negative effect on the perceived risk.

The Effect of Trust on Continuance Intention

Previous studies by Shao et al. (2019) and Zhou (2013) found that trust positively affects continuance intention. However, Cao et al. (2018) confirmed the opposite finding. In an online context, trust is an essential factor for behavioral intention, since m-payment transactions carry more significant risks due to their network vulnerability. Trust becomes increasingly important in determining consumers' intentions to continue using m-payment (Köster et al., 2016; Liébana-Cabanillas et al., 2014; Lu et al., 2011; Shao & Zhang, 2018; Zhou, 2013), while the lack of trust is a major barrier to its adoption (Susilo, et al., 2022). Therefore, the hypothesis is formulated as follows.

H7: Trust has a positive effect on continuance intention.

The Effect of Perceived Risk on Continuance Intention

The perceived risk is the consumer's perception of the negative consequences and transaction uncertainty (Kim et al., 2008; Koufaris & Hampton-Sosa, 2004). In the m-payment environment, the perceived risk refers to the probability of losing funds and the leakage of personal information (McKnight et al., 2002), because users have to submit a photo and an identification card to register and access the m-payment application. In addition, an m-payment system still has a higher uncertainty and risk due to the internet network's vulnerability (Köster et al., 2016; Zhou, 2013). There will be a risk of transaction failure in areas with a low or unstable internet network. Therefore, it affects their intention to continue using m-payment. Shao et al. (2019) and Lin et al. (2017) discovered that the perceived risk negatively influences behavioral intentions to utilize m-payment. Therefore, the hypothesis is formulated as follows.

H8: The perceived risk has a negative effect on continuance intention.

Research Model

As shown in Figure 1, the study adopted a research model developed by Shao et al. (2019). The relative advantage label shows mobility and customization as the operationalized variables measuring m-payment's relative advantage, derived from the IDT. Reputation and security were added to the trust-building theory (McKnight et al., 2002). The model examined the relationship of trust and its antecedents, its effect on the perceived risk and continuance intention, and the perceived risk's effect on continuance intention. It also scrutinized gender as the moderating variable on the link between trust and its antecedents.

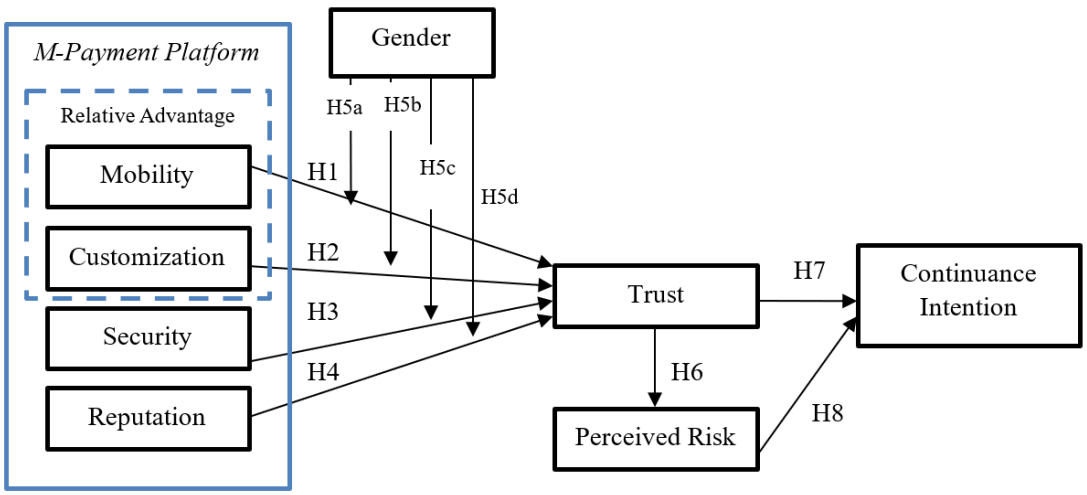

Figure 1. Research Model

Source: Zhen Shao, Lin Zhang, Xiaotong Li, and Yue Guo (2019)

Research Method

Sample and Data Collection

This study used a survey method to reach its target population, which was m-payment users in Indonesia. The sample was obtained by a purposive sampling method. The unit sample was any experienced user who used e-wallet-based m-payment applications in the last six months (such as GoPay, Ovo, Dana, and LinkAja). The data were gathered via an online questionnaire from March to April 2021. The study first conducted a pilot survey with 50 respondents. After confirming the items' validity and reliability, the questionnaire, consisting of 21 questions using a 5-point Likert scale, was distributed to several cities in Java, namely: Yogyakarta, Surakarta, Surabaya, Jakarta, Bandung, Semarang, Klaten, and Magelang, as well as various cities and islands outside Java, such as Bali, Lombok, Samarinda, and Kendari. The selection of the locations was based on the data of m-payment users from the Jakpat Survey Report (2019), which showed that the cities with the biggest user base were mainly in Java. There was only a small percentage of users in the other areas.

A study of the 238 responses yielded 225 valid responses from 62 male and 163 female respondents. The profile of the respondents, shown in Table 1, showed that 73.8 percent were between the ages of 23 to 27. This was similar to a report by Statista (2021) which found that most m-payment users fall within the age range of 25 to 34. Most of the respondents lived in Yogyakarta and Jakarta. The respondents have mainly used m-payment for 1 to 3 years, with the usage of more than 12 times in the last three months. The respondents primarily used m-payment for online shopping payments, food deliveries, top-ups, and transportation.

Table 1. Respondents Profile

Demographic Factors	Quantity	Percentage
Gender		
Men	62	27.5
Women	163	72.4
Age		
18 – 22	21	9.3
23 – 27	166	73.8
28 – 32	22	9.8
33 – 37	13	5.8
> 37 years old	3	1.3
Occupation		
University Student	67	29.8
Operational Employee	57	25.3

Managerial Employee	20	8.9
Professional	18	8.0
Entrepreneur	12	5.3
Housewife	13	5.8
Others	38	16.9
Education Background		
High School	26	11.6
Vocational School	13	5.8
Bachelor Degree	168	74.7
Master Degree	18	8.0
Monthly Expenses (exclude debt and investment)		
≤ IDR1,000,000	51	22.7
IDR1,000,001 – IDR 2,000,000	61	27.1
IDR2,000,001 – IDR 3,000,000	38	16.9
IDR3,000,001 – IDR 4,000,000	25	11.1
IDR4,000,001 – IDR 5,000,000	22	9.8
≥ IDR5,000,000	28	12.4
Usage Length		
< 1 year	18	8.0
1 – 3 years	111	49.3
> 3 years	96	42.7
Usage frequency in the last three months		
0 – 3 times	14	6.2
4 – 6 times	35	15.6
7 – 9 times	25	11.1
10 – 12 times	26	11.6
> 12 times	125	55.6
Last usage		
< 1 week ago	181	80.4
1-2 weeks ago	23	10.2
3-4 weeks ago	9	4.0
> 1 month ago	12	5.3
The m-payment application used by respondents		
GoPay	185	82.2
ShopeePay	176	78.2
Ovo	164	72.9
Dana	89	39.6
LinkAja	76	33.8
Paypal	16	7.1

ApplePay	11	4.9
GooglePay	14	6.2
Others	5	2.2
M-payment application usage		
Online shopping	198	88.0
Food delivery	186	82.7
Top-up & bill payment	183	81.3
Transportation	137	60.9
Shop at retail/ minimarket	79	35.1
Others	9	4.0

Source: Primary Data (2021)

Measurements

The questionnaire included the items adopted from Shao et al. (2019), based on studies related to continuance intention (Bhattacherjee, 2001); trust (Huang et al., 2014); perceived risk (McKnight et al., 2002); mobility (Kim, Mirusmonov, & Lee, 2010); customization (Huang et al., 2014; Nidumolu & Knotts, 1998); security (Kim & Prabhakar, 2004; Kim et al., 2009); and reputation (Kim et al., 2009).

Results

All the data were collected from online questionnaires, and the hypothesis testing used SmartPLS 3.3 software.

Validity and Reliability Analysis

This study used convergent and discriminant validity to test each item's validity. The convergent validity was tested using average variance extracted (AVE) with a minimum value of 0.5, which is regarded as acceptable based on Henseler et al. (2016b). Table 2 shows that all the items had loading values between 0.520-0.919, and AVE values per construct were more than 0.5, which fulfilled the convergent validity criteria. Furthermore, the Fornell-Larcker validity test was carried out to test the discriminant validity (Garson, 2016). Table 3 shows that the squared-AVE values on the diagonal line of the correlation matrix were greater than each corresponding correlation value, indicating good discriminant validity. The reliability testing was performed using Cronbach's alpha with a rule of thumb of 0.6 (Sekaran & Bougie, 2013) and composite reliability (CR) with a rule of thumb of 0.7 (Lin et al., 2017). Table 2 shows that all the constructs had values for Cronbach's alpha above 0.6 and CR values above 0.7, which fulfilled the reliability criteria.

Table 2. Validity and Reliability

Construct	Item	Outer loading	AVE	Cronbach's Alpha	CR
Mobility	MOB1	0.739	0.643	0.722	0.843
	MOB2	0.813			
	MOB3	0.849			
Customization	CUS1	0.665	0.592	0.654	0.812
	CUS2	0.799			
	CUS3	0.834			
Security	SEC1	0.882	0.795	0.871	0.921
	SEC2	0.919			
	SEC3	0.872			
Reputation	REP1	0.844	0.683	0.769	0.866
	REP2	0.879			
	REP3	0.751			
Trust	TR1	0.850	0.766	0.847	0.908
	TR2	0.894			
	TR3	0.882			
Perceived Risk	PR1	0.520	0.544	0.617	0.774
	PR2	0.873			
	PR3	0.774			
Continuance Intention	CI1	0.819	0.705	0.790	0.877
	CI2	0.787			
	C13	0.908			

Source: Primary Data (2021)

Table 3. Fornell-Larcker Criteria

	Continuance Intention	Security	Trust	Customization	Mobility	Perceived Risk	Reputation
Continuance Intention	**0.839**						
Security	0.295	**0.892**					
Trust	0.489	0.658	**0.875**				
Customization	0.475	0.548	0.585	**0.769**			
Mobility	0.529	0.307	0.460	0.566	**0.802**		
Perceived Risk	-0.065	-0.182	-0.208	-0.127	0.014	**0.738**	
Reputation	0.521	0.622	0.709	0.555	0.470	-0.177	**0.827**

Source: Primary Data (2021)

Hypothesis Testing

The goodness of fit of the model was assessed using the standardized root mean square residual (SRMR) value. As Henseler et al. (2016a) suggested, the SRMR value is the only indicator for model fit. The study confirmed its research fit due to the SRMR value being 0.085, which was less than the rule of thumb of 0.10 (Hu and Bentler, 1998). The study

tested two types of hypotheses, consisting of direct effect hypotheses, which were H1, H2, H3, H4, H6, H7, and H8, and moderating effect hypotheses, which were H5, H5a, H5b, H5c, and H5d.

Direct Effects

The testing results of the direct effect hypotheses are shown in Table 4. The significance level of the path coefficient was analyzed using the bootstrapping method with 5,000 re-samples, as recommended by Garson (2016). The findings showed that the mobility path coefficient was 0.101 with a p-value of 0.082. Thus, the relationship between mobility and trust was not significant. The positive effect of customization on trust was significant, with a path coefficient value of 0.143 and p-value of 0.013 ≤ 0.05. The positive effect of security on trust, with a path coefficient value of 0.305, and reputation on trust with a path coefficient value of 0.392, were also significant, due to a p-value of 0.000. Trust negatively affected perceived risk with a path coefficient value of -0.208 and a p-value of 0.011. The positive influence of trust on continuance intention was significant, with a path coefficient value of 0.497 and a p-value of 0.000. The perceived risk was found to have a positive effect on continuance intention. However, this effect was insignificant, with a path coefficient value of 0.038 and a p-value of 0.564.

Table 4. Summary of Hypothesis Testing

Hypothesis	Direction	Path Coefficient	t-statistics	p-value
H1: Mobility → Trust	Positive (+)	0.101	1.742	0.082
H2: Customization → Trust	Positive (+)	0.143	2.478	0.013
H3: Security → Trust	Positive (+)	**0.305**	5.418	0.000
H4: Reputation → Trust	Positive (+)	**0.392**	6.875	0.000
H6: Trust → Perceived Risk	Negative (-)	-0.208	2.540	0.011
H7: Trust → Continuance Intention	Positive (+)	**0.497**	9.539	0.000
H8: Perceived Risk → Continuance Intention	Positive (+)	0.038	0.577	0.564

Source: Primary Data (2021)

Moderating Effect of Gender

The study initially applied the measurement invariance of composite models (MICOM) procedure to test the moderating effect of gender, as shown in Table 5. Step 1 was completed by ensuring that the two subgroups were measured with the same constructs and indicators (configural invariance). Step 2 was compositional invariance. Unfortunately, the study found that continuance intention did not meet the requirements of Step 2, because its correlation value was smaller than the five percent quantile (Henseler et al., 2016b).

In Step 3, based on the mean difference (Step 3a) and variance difference (Step

3b), it could be concluded that the result represented a partial measurement variance. The permutation coefficient and multigroup analysis (MGA) outer loading that confirmed an invariance condition supported this result. This finding showed that the two groups were different. Therefore, MGA was done to analyze the difference in the path coefficient between the two groups, as shown in Table 6.

The study compared the relationship among variables with the path coefficient value of mobility, customization, security, and reputation on trust between the subgroups. Then, the p-value of the MGA test explained whether the coefficient difference between the subgroups was statistically significant. Based on the result in Table 6, the p values of each relationship were not significant (p values ≥ 0.05). Therefore, it could be concluded that gender did not moderate the relationship between trust and its antecedents.

Table 5. MICOM Measurement Invariance Test

Step 2			
	Original Correlation	**5% quantile**	**Compositional Invariance?**
Continuance intention	0.960	**0.979**	**No**
Security	0.998	**0.998**	**Yes**
Trust	0.998	**0.998**	**Yes**
Customization	0.999	**0.973**	**Yes**
Mobility	0.986	**0.949**	**Yes**
Perceived Risk	0.945	**0.260**	**Yes**
Reputation	0.998	**0.990**	**Yes**
Step 3a			
	Mean-Original Difference	**Confidence Interval 95%**	**Equal Mean Value?**
Continuance intention	-0.406	[**-0.274; 0.285**]	**No**
Security	-0.177	[**-0.296; 0.275**]	**Yes**
Trust	-0.243	[**-0.281; 0.268**]	**Yes**
Customization	-0.310	[**-0.316; 0.283**]	**Yes**
Mobility	-0.360	[**-0.293; 0.260**]	**No**
Perceived Risk	0.018	[**-0.273; 0.280**]	**Yes**
Reputation	-0.252	[**-0.312; 0.282**]	**Yes**
Step 3b			
	Variance-Original Difference	**Confidence Interval 95%**	**Equal Variance?**
Continuance intention	0.134	[**-0.338; 0.290**]	**Yes**
Security	0.172	[**-0.430; 0.375**]	**Yes**
Trust	0.117	[**-0.399; 0.463**]	**Yes**
Customization	0.289	[**-0.465; 0.495**]	**Yes**
Mobility	0.319	[**-0.500; 0.450**]	**Yes**
Perceived Risk	-0.320	[**-0.554; 0.457**]	**Yes**
Reputation	0.504	[**-0.635; 0.760**]	**Yes**

Source: Primary Data (2021)

Table 6. The Results of Multigroup Analysis

Hypothesis	Men		Women		*p-value* MGA	Conclusion
	Coefficient	*p-value*	Coefficient	*p-value*		
H5a: Mobility → Trust	0.024	0.846	0.129	0.045	**0.450**	Rejected
H5b: Customization → Trust	0.156	0.257	0.144	0.018	**0.919**	Rejected
H5c: Security → Trust	0.325	0.004	0.291	0.000	**0.769**	Rejected
H5d: Reputation → Trust	0.425	0.000	0.393	0.000	**0.827**	Rejected

Source: Primary Data (2021)

The Comparison of the Studies

Table 7 shows the difference between the original study by Shao et al. (2019) and this study, and shows the most critical factors that influence trust. The previous study in China showed that security had the biggest impact on customers' trust, while this study showed that reputation was the most critical factor in building customers' trust. Furthermore, the original study found that gender moderated the interactions between trust and its antecedents. In contrast, this study found no moderating effect of gender.

Table 7. Comparison Between Previous and Current Studies

Findings of the original study	**Findings of the current study**
Direct effect	
Mobility has a positive effect on trust in the platform.	The effect of mobility on trust is not significant.
Customization has a positive effect on trust in the platform.	Customization has a positive effect on trust.
Security has a positive effect on trust in the platform.	Security has a positive effect on trust.
Reputation has a positive and significant effect on trust in the platform.	Reputation has a positive effect on trust.
Trust in the platform has a negative effect on perceived risk.	Trust has a negative effect on perceived risk.
Trust in the platform has a positive effect on continuance intention.	Trust has a positive effect on continuance intention.
Perceived risk has a negative effect on continuance intention.	The effect of perceived risk on continuance intention is not significant.
Moderating effect	
The multigroup analysis showed a significant result. Thus, the moderating effect of gender is present.	The multigroup analysis showed an insignificant effect. Thus, the moderating effect of gender is not present.
The effect of mobility on trust is higher for men than women.	The effect of mobility is significant for women and not significant for men.

The effect of customization on trust is higher for women than men.	The effect of customization is significant for women, and not for men.
The effect of security on trust is higher for women than men.	The effect of security on trust is higher for men than women.
The effect of reputation on trust is higher for men than women.	The effect of reputation on trust is higher for men than women.

Source: Primary Data (2021)

Discussion

This study analyzed the importance of trust in affecting continuance usage intention and perceived risk. It also investigated the relationship between trust and its antecedents, and the moderating effect of gender. The findings of this study can help m-payment providers to strategically promote m-payment services within the Indonesian market, and retain users.

M-payment is growing very fast in Indonesia. Along with its fascinating growth, the competition among providers can be very high. M-payment providers are trying to attract more users, and retain their current ones, by emphasizing mobility, security assurance, and user referrals. However, building trust to promote a continuance usage intention is crucial. In this study, trust has been validated as a significant factor in the continuance intention. This result is supported by previous studies by Köster et al. (2016); Liébana-Cabanillas et al. (2014); Lu et al. (2017); Shao et al. (2019); and Zhou (2013). The respondents from the Indonesian market are experienced users who have already used m-payment applications for 1 to 3 years, have already formed their trust, and have the intention to continue using m-payment.

Furthermore, this study found that trust is important in decreasing the perceived risk. This finding aligns with prior studies by Lu et al. (2011), Shao et al. (2019), and Susilo et al. (2022). It indicates that users who trust an m-payment application may have a lower perception of any negative consequences from the transactions. Considering the high risk involved in m-payment transactions, trust can be a "safety net" for users that can reduce their perceived risk. Surprisingly, the study revealed that perceived risk does not affect continuance intention. Respondents perhaps use m-payment because they were impulsively drawn to make such transactions due to cashback offers or sales promotion programs. Thus, they naturally pay less attention to its risk. In addition, the sample, which consisted mostly of members of the younger generations, may affect the result because they are more familiar with technology and its usage in their lifestyle (Leon, 2018).

M-payment users usually choose m-payment applications that make a good impression and offer a reliable service. In line with the research by Lu et al. (2017), Oliveira

et al. (2014), and Shao et al. (2019), this study found reputation to be the most significant predictor of trust. This finding indicates that m-payment applications with a good reputation will be more likely to earn their users' trust. In the context of m-payment, users cannot articulate trust easily. In return, users rely more on a good reputation and linking trustworthiness through the experiences of other users. Moreover, the users' perspectives on using m-payment tend to be influenced by others (Ming & Jais, 2022). Therefore, maintaining a good reputation and building a larger user base is essential to enhance trust.

Another factor that has a relatively high effect on trust is security. This positive impact of security on trust is supported in the studies by Shao et al. (2019), Xin et al. (2015), and Zhou (2011). The result is also in line with Budiarani et al. (2022), who found that safety is a must in order to further develop the usage of m-payment. It is because the uncertainty and network vulnerability when using m-payment transactions raise the importance of security, because the users worry about possible transaction errors, data breaches, or fraud. Therefore, they need to know that the application is reliable, and the data are well encrypted. The study also clarified that customization positively affects trust. This is consistent with previous studies by Huang et al. (2014), Kim et al. (2009), and Shao et al. (2019). Customization, which gives users more control over their transactions, can enhance trust. Therefore, promoting flexibility in controlling the payments or in-app processes can help induce trust to attract or retain existing users. Indeed, customization should be done after carefully researching the users' needs and wants.

Unlike customization, the flexibility related to mobility did not significantly affect trust. This finding conflicts with previous studies by Kim et al. (2009), Shao et al. (2019), Zhou (2011), Ming & Jais (2022), and Budiarani et al. (2022). This may occur due to the difference in m-payment usage between the previous study in China and this study in Indonesia. From the perspective of the Indonesian market, m-payment usage is still limited mostly to ride-hailing and e-commerce, while consumers in China use m-payment for various payment purposes. Mobility is a must when using m-payment services, and the young users in this study may have been familiar with m-payment's mobility (Leon, 2018). Hence, the mobility of m-payment applications would not enhance their users' trust. However, it is also a sign that mobility is expected to be the standard, and the minimum requirement that m-payment providers should provide.

In this study, which focuses on the Indonesian market, gender did not moderate the relationship between trust and its antecedents. Although this result differs from the studies by Kalinić et al. (2020), Shao et al. (2019), and Ming & Jais (2022), the study by Xin et al. (2015) and Oliveira et al. (2014) support this finding. The study in China showed that men and women respond differently toward specific m-payment attributes. It was revealed by Shao et al. (2019) that women are more prone to suffer from online transaction

fraud than men. However, this study, in the Indonesian context, did not find the same result. The fact that both subgroups are experienced users might cause this result, as the effect of gender would be smaller when users are more experienced (Chawla & Joshi, 2020). The different gender gap between Indonesian users and Chinese users, and a significant difference in the number of respondents in this study, may also lead to different results. The unequal sample could have been formed because women tend to undertake online transactions more frequently than men do (Cao et al., 2018; Hootsuite & We Are Social, 2020).

It should be noted that a considerable imbalance was found in the previous study, and it did not affect the significance of the moderating effect (Kalinić et al., 2020; Zhou et al., 2018; Köster et al., 2016, Chong et al., 2012). In addition, the younger generation members in the sample usually have similar characteristics (Leon, 2018). Therefore, the effect of gender becomes insignificant.

Conclusions and Suggestion

Conclusions

This study draws several conclusions based on the results described and explained in the previous section. First, this study confirms that trust significantly affects continuance intention. Second, the trust-building model's factors, which are reputation and security, are the most significant antecedents that can enhance trust. Third, customization has a positive effect on trust. On the other hand, the impact of mobility on trust is insignificant.
In addition, this study proves trust has a negative effect on the perceived risk. However, the effect of the perceived risk on continuance intention is insignificant. Lastly, this study found that gender did not moderate the relationship between trust and its antecedents.

Managerial Implications

In the rapid development of m-payment systems, many providers now compete in the market. With many types of m-payment from various companies, the continuity of service would depend on how the company retains its users. In this matter, the continuance intention of using the service would benefit the providers by retaining users. Initially, this study reveals the positive effect of trust on continuance intention. Therefore, providers should focus more on building the users' trust to enhance the users' intentions to continue using m-payment services. In addition, trust is the factor that lowers the potential risk perceived by users. M-payment service providers must accomplish this by reminding users of the transaction's guarantee and data privacy.

In this study, reputation and security are the most significant antecedents that in-

voke trustworthiness. Hence, to enhance the users' continuance intention, m-payment providers should enhance trust by improving the security of the transactions and maintaining a good reputation. Users in Indonesia tend to use m-payment applications that are widely known and reputable. Therefore, popular e-wallets like GoPay and Ovo remain at the top of the users' minds. Improving the providers' reputations through referral programs and encouraging positive word-of-mouth can help providers to earn a good reputation and attract more users. Regarding the security aspect, providers need to increase the level of security due to network vulnerabilities and uncertainty when using m-payment. Periodic system upgrades and careful attention to user identity verification during system registration can accomplish this.

Furthermore, providers should ensure that m-payment applications are simple to customize, since users trust m-payment applications that give them control over the process. The customization is often related to the users' understanding of their transaction options. In order to understand their users' expectations and perceptions when using m-payment applications, providers could conduct user experience research. Understanding which features to customize can help to increase user confidence toward m-payment applications.

Finally, mobility may not be the main factor that influences Indonesian consumers. Consequently, providers should focus on other features for promoting m-payment usage. At the same time, gender did not moderate the relationship between trust and its antecedents. Therefore, for the Indonesian market, m-payment providers do not need to consider this factor when operating in Indonesia.

Limitation

This study has three limitations. First, this study assumes the m-payment application to be a general application that obviously can differ among brands, in terms of its features, performance, and functionality. Second, this study uses gender as a moderating variable, without controlling for other demographic backgrounds, such as education and age. Given that the younger generation formed most of the sample, their demographic background may affect their attitude toward technology. Third, the number of female and male respondents in this study needs to be more balanced. Future research can address these limitations by classifying the applications as objects, based on specific dimensions, and controlling the respondents' demographic backgrounds to make a balanced comparison.

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