

Usefulness, Trust, and Intention to Use M-Banking: Evidence from Metropolitan Jakarta

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Abstract

This study aimed to investigate the determinants of perceived usefulness, trust and intention to use mobile banking. It used the extended Technology Acceptance Model (TAM) with additional variables of perceived risk and trust as a theoretical model. Furthermore, the study adopted quantitative method and purposive sampling technique to obtain data from 265 Muslim individuals residing in the Jakarta Metropolitan area. The results suggested that trust, perceived ease of use, and risk positively and significantly impacted intention to use M-Banking. Perceived usefulness and ease of use positively and significantly impacted trust. Perceived ease of use and risk had a positive and significant impact on perceived usefulness. Therefore, Islamic banks needed to pay attention to these factors to enhance trust and acceptance of M-Banking.

Keywords: TAM, Risk, Trust, Ease of Use, Usefulness, Intention

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1. INTRODUCTION

Advanced technology has transformed numerous aspects of daily life, including transaction patterns for individuals and corporations (OJK, 2020). This transformation has prompted conventional and Islamic banks to digitize their transactions and services through mobile banking (M-Banking) to achieve a competitive advantage (Haider et al., 2018; Kholid, 2019). Despite the numerous benefits of digital transactions and services, some individuals still view them as unfamiliar and risky. To address these concerns and promote the acceptance of M-Banking, many banks are creating more attractive, useful, and easy-to-use services (Sudarsono et al., 2022). To promote acceptance amidst the negative trend of technology usage, it is essential to investigate the factors that affect perceived usefulness, trust, and acceptance of M-Banking in Indonesia.

Several studies have modified the Technology Acceptance Model (TAM) by incorporating other variables such as trust (Mutahar et al., 2018; Ramli et al., 2021) and perceived risk (Alalwan & Yogesh K. Dwivedi, 2016) to predict the intention to use M-

Banking. Studies from Iran (Hanafizadeh et al., 2014) Saudi Arabia (Al-Jabri, 2015) Jordan, (Alalwan & Yogesh K. Dwivedi, 2016) and Vietnam (Sang, 2021) have shown that trust has a positive and significant impact on the intention to use M-Banking. However, perceived risk had a negative impact on intention (Alalwan & Yogesh K. Dwivedi, 2016; Kholid, 2019). Perceived usefulness and perceived ease of use have a positive and significant impact on trust and intention to use M-Banking (Ramli et al., 2021).

Additionally, perceived ease of use and risk can positively and significantly impact perceived usefulness (Siyal et al., 2019). This study incorporates trust and perceived risk into TAM, and provides a literature review for all the variables. The study of M-Banking acceptance has attracted the attention of investigators for several decades. This interest is reflected in numerous studies, where the Technology Acceptance Model (TAM), introduced by Davis in 1989, became one of the widely used conceptual frameworks across different countries for predicting M-Banking acceptance. Perceived usefulness and ease of use are among the vital TAM factors that are often

identified as the main predictors of M-Banking acceptance or intention to use (Nuangjamnong, 2021). Intention is an essential variable in technology acceptance and can be defined as the extent to which an individual consciously plans to engage in a specific behavior in the future (Anggraeni et al., 2021; Chao, 2019; Raza et al., 2018).

Perceived Usefulness

Perceived usefulness is a fundamental TAM variable that has been extensively studied in several investigations (Zarnadze, 2021). It reflects individuals' belief that the use of new technology can enhance performance (Aji et al., 2020; Jouda, 2020; Rptiono et al., 2021) and this construct has received significant attention from several studies. For example, Ramli et al., (2021) from Indonesia showed that perceived usefulness has a significant influence on trust. Furthermore, A. Alalwan et al., (2016) from Jordan and (V. A. Nguyen et al., 2020) in Vietnam found that intention to use M-Banking is significantly influenced by the variable. Therefore, this study proposes the following hypotheses:

H1: Perceived usefulness positively and significantly impact trust

H2: Perceived usefulness positively and significantly impact intention to use M-Banking

Perceived Ease of Use

In the M-Banking context, perceived ease of use refers to consumers' belief that M-Banking can provide practical benefits as emphasized by Rptiono et al., (2021), Singh & Srivastava, (2016) and Salmah, (2021). As a crucial construct of TAM, the variable has been extensively investigated in several studies on M-Banking acceptance (Siyal et al., 2019; Zarnadze, 2021). Siyal et al., (2019) in China showed that the variable has a positive and significant impact on perceived usefulness. Moreover, it can also affect the trust and acceptance of M-Banking. Studies conducted in Indonesia by Ramli et al., (2021) and Sukmawati et al., (2021) showed that perceived ease of use has a positive and significant impact on trust. A. A. Alalwan & Yogesh K. Dwivedi, (2016), Singh & Srivastava, (2016), and Sang, (2021) from Jordan, India, and Vietnam proved that intention to use M-Banking is significantly affected by perceived ease of use. Therefore, the hypotheses proposed in this study are as follows:

H3: Perceived ease of use positively and significantly impacts perceived usefulness

H4: Perceived ease of use positively and significantly impacts trust

H5: Perceived ease of use positively and significantly impacts intention to use M-Banking

Perceived Risk

Perceived risk theory has been proposed since 1960 to define consumers' behavior and factors affecting their decision-making. In recent decades, the definition has changed due to the consumers' behavior trend toward online transactions. Initially, the variable was limited to fraud or product quality but was subsequently defined in relation to financial, physical, psychological, or social risk in online transactions (Hanafizadeh et al., 2014). Perceived risk often has a strong negative relationship with M-Banking acceptance (Alalwan & Yogesh K. Dwivedi, 2016; Kholid, 2019). Consumers may accept the variable when M-Banking is perceived as useful, even though there is a previous bad experience (Aji et al., 2020). Considering the relationship between perceived risk and usefulness, the decision to adopt M-Banking may be affected. Siyal et al., (2019) and Kumar et al., (2021) showed that perceived risk has a significant impact on perceived usefulness. Therefore, the following hypotheses are proposed:

H6: Perceived risk has a positive and significant impact on perceived usefulness

H7: Perceived risk has a negative and significant impact on intention to use M-Banking

Trust

Trust is the core of all types of partnerships and is one of the determinants of intention behavior (A. Kumar et al., 2020). Therefore, consumers trust that M-Banking is safe, reliable, and capable of protecting their interests (T. D. Nguyen et al., 2020; Zarnadze, 2021). Hanafizadeh et al., (2014) from Iran, Al-Jabri (2015) from Saudi Arabia, Alalwan & Yogesh K. Dwivedi, (2016) from Jordan, and Sang, (2021) from Vietnam proved that intention to use M-Banking is significantly influenced by trust in M-Banking. Therefore, this study proposes the following hypothesis:

H8: Trust will have a positive and significant impact on intention to use M-Banking

2. METHOD

This study identified the factors influencing trust, usefulness, and intention to use M-Banking. It employed a purposive sampling technique to collect

data and questionnaire instruments using a quantitative approach to measure the variables of usefulness, ease of use, risk, trust, and intention. Furthermore, the items were measured using a 5-point Likert scale, where strongly disagree (SD) to strongly agree (SA) had a value of 1 to 5, respectively. A total of 275 responses from M-Banking users in the Jakarta Metropolitan area, specifically Jakarta, Bogor, Depok, Tangerang, Tangerang Selatan, and Bekasi, were obtained. However, after data screening, 10 responses were removed due to incomplete or missing values, resulting in a final sample of 265. In studies that utilized three or more items per variable, a sample size of 100 was generally deemed adequate for achieving convergence (Raza et al., 2018). The SmartPLS 3.3.9 analysis tool was used to analyze the model and test the 8 hypotheses proposed in this study.

3. RESULTS AND DISCUSSION

3.1. Respondents' Characteristics

An online structured questionnaire was used to obtain primary data, and respondents were Muslims who use M-Banking and reside in Jakarta, Bogor, Depok, Tangerang, South Tangerang, and Bekasi areas. Respondents' characteristics are further described in Table 1.

Table 1. Respondents' Characteristics

Variable	Category	Freq	Percentage
Gender	Man	123	46.42%
	Woman	142	53.58%
Status	Single	248	93.58%
	Married	17	6.42%
Age	18-24	244	92.42%
	25-34	13	4.92%
	35-44	7	2.65%
	45-54	0	0.00%

Variable	Category	Freq	Percentage
Education	≥ 55	0	0.00%
	Junior High School	0	0.00%
	Senior High School	109	41.13%
	Bachelor Degree	148	55.85%
	Master Degree	8	3.02%
Domicile	Jakarta	59	22.26%
	Bogor	59	22.26%
	Depok	33	12.45%
	Tangerang	73	27.55%
	South Tangerang	34	12.83%
Work	Bekasi	7	2.64%
	Private sector employee	9	3.40%
	Student	241	90.94%
	Civil Servant	4	1.51%
	Businessman	11	4.15%
Long time using M-Banking	< 6 Months	152	57.36%
	6 Months – 1 Year	43	16.23%
	1 Year – 2 Years	31	11.70%
	2 years – 3 Years	14	5.28%
	>3 Years	25	9.43%

3.2. Evaluation of Outer Model

Validity and Reliability Test

The evaluation of the outer or measurement model is applied to identify the validity of the output and differentiate the Composite Reliability (CR) and Cronbach's Alpha (CA) to determine the reliability (Ghozali & Latan, 2015). This evaluation is also implemented to determine the convergent validity value in the Loading Factor (LF) and discriminant validity in the cross-loading factor. The results of the validity and reliability test are presented in the following table.

Table 2. Validity and Reliability

Variable	Item	Reference	LF	CA	CR	AVE
Perceived Usefulness				0.886	0.946	0.816
PU1	M-banking makes transactions more efficient.	Thakur & Srivastava, (2014)	0.926			
PU2	M-banking is useful for managing my finances.		0.860			
PU3	M-banking makes transactions faster.		0.922			
Ease of Use				0.909	0.956	0.916
PE1	I find learning to use M-banking easy.	Singh & Srivarasta (2016) Zarnadze (2020)	0.957			
PE2	It is easy for me to interact with M-banking.		0.958			

Variable	Item	Reference	LF	CA	CR	AVE
Trust				0.915	0.946	0.854
TR1	I trust M-banking to be reliable.	Al-Jabri (2016)	0.919			
TR2	I trust that M-banking delivers on its promises.		0.930			
TR3	I trust that M-banking always considers the interests of its customers.		0.924			
Perceived Risk				0.842	0.899	0.748
PR1	I would not feel safe providing personal privacy information through M-banking.	Al-Jabri (2016)	0.908			
PR2	I am concerned about using M-banking because others may access my account.		0.898			
PR3	When transferring money through M-banking, I am afraid of losing my money.		0.784			
Intention				0.919	0.943	0.805
INT1	I will always use M-banking in the future.	Nuangjamnong (2021)	0.899			
INT2	I will use mobile banking services to make financial transactions.	Nuangjamnong (2021)	0.918			
INT3	I will use M-banking to make financial transactions.	Nuangjamnong (2021)	0.901			
INT4	I want to start using M-banking soon.	Aboelmaged (2013)	0.870			

Table 2 shows the loading factor values resulting from all indicators of each variable. Usefulness, ease of use, risk, trust, and intention have loading factor values greater than 0.50 and extracted average variance (AVE) values > 0.50. These indicators can be considered valid as measurements of latent variables. The variables have high reliability, as indicated by CA values and CR > 0.70. Therefore, it can be concluded that all data meet the criteria for the measurement model, and the results of evaluation are shown in Tables 2 and 3.

Table 3. Discriminant Validity (Fornell-Larcker) Analysis

	INT	PEOU	PR	PU	TR
INT	0.897				
PEOU	0.627	0.957			
PR	0.384	0.373	0.865		
PU	0.635	0.716	0.361	0.903	
TR	0.653	0.679	0.379	0.754	0.924

Evaluation of Inner Model

After evaluating the measurement or outer model, structural model evaluation is conducted to test

the relationship between variables. The relationship is measured by analyzing the path coefficient values of each variable. Furthermore, the obtained path coefficient values from the structural model evaluation are used to test the hypotheses. To determine the acceptance or rejection of the hypothesis, the significance values between constructs, t-statistics, and p-values are considered. The rules of thumb used are t-statistics >1.96, significance level p-value 0.05 (5%), and a positive beta coefficient. The relationships between variables are considered positive and significant when the t-statistics >1.96, the p-value <0.05, and the beta coefficient is positive.

Accuracy and Predictive Relevance

This study used accuracy and predictive relevance to determine how independent variables affect the dependent. Meanwhile, R2 and Q2 values must be measured to determine the prediction level of variables. To find the Q2 value in Smart PLS, an additional step is needed by using the blindfolding calculation ($Q2 = 1 - SSE/SSO$). It can be stated that the

model has predictive relevance when the Q2 value is > 0 . Conversely, when the Q2 value is < 0 , the model has no predictive relevance. Variables with R2 values of 0.75, 0.50, and 0.25 can be stated to have strong, moderate, and weak analytical degrees, respectively (Hair et al., 2011).

Table 3. Predictive and Accuracy

	R Square (R ²)	R Square (R ²) Adjusted	Q2
INT	0.514	0.507	0.402
PU	0.523	0.519	0.418
TR	0.608	0.605	0.512

The R² values indicate a moderate criterion for the proposed model, and a large Q2 value suggests that the empirical study supports the fitness. Specifically, the independent variable of intention has an R² value > 0.50 , indicating that perceived ease of use, perceived

usefulness, perceived risk, and trust are strong predictors of users' intention to adopt M-Banking. The independent variable of usefulness also has an R² value > 0.50 , indicating that perceived ease of use and risk are strong predictors of usefulness. Additionally, trust has an R² value > 0.50 , indicating that perceived ease of use and usefulness are strong predictors of trust.

Hypothesis Testing Results

Hypothesis testing was conducted using SmartPLS 3.0 software. To determine the acceptance or rejection, rules of thumb were considered, which were t-statistic > 1.96 , p-value 0.05 (5%), and beta coefficient. These values could be seen from the bootstrapping results as shown in Table 4 and Figure 2 for this model.

Figure 2. Diagram of Path Coefficient and Hypothesis Test

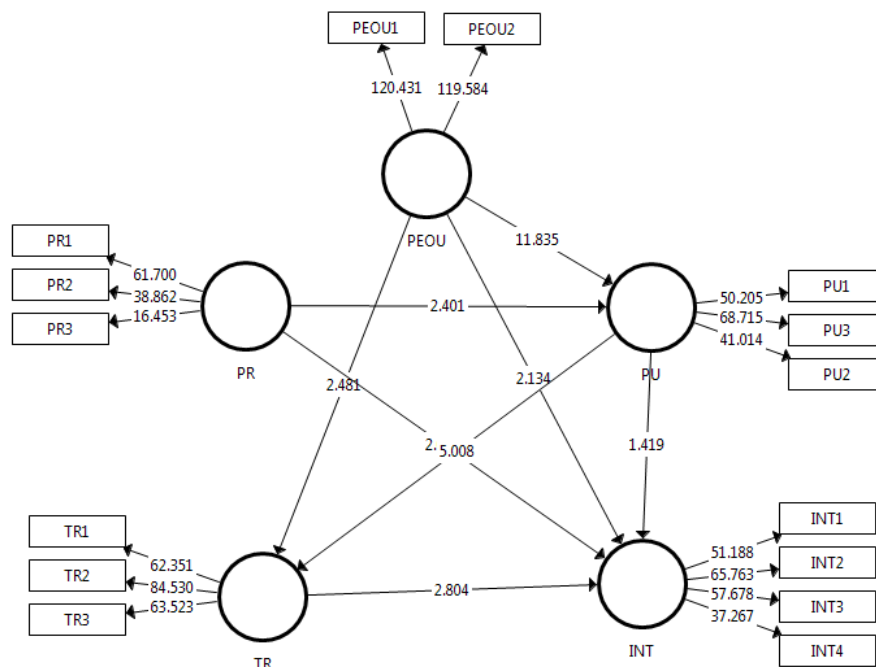


Table 4. Path Coefficient and Hypothesis Test

	Hypothesis	Sample Mean	T Statistics	P-Values	Results
H1	PU -> TR	0.554	5.045	0.000	Accepted
H2	PU -> INT	0.183	1.415	0.157	Rejected
H3	PEOU -> PU	0.673	11.632	0.000	Accepted
H4	PEOU -> TR	0.281	2.462	0.014	Accepted
H5	PEOU -> INT	0.246	2.174	0.030	Accepted
H6	PR -> PU	0.112	2.389	0.017	Accepted
H7	PR -> INT	0.115	2.060	0.039	Rejected
H8	TR -> INT	0.312	2.787	0.005	Accepted

The results in Table 4 showed that out of the 8 hypotheses proposed, 6 (H1, H3, H4, H5, H6, H8) were accepted while the other 2 (H2 and H7) were rejected. The statistical modeling had a good level of significance with a P-value < 0.05 for 6 variables. The testing result for perceived usefulness on trust showed a t-statistic value of $5.045 > 1.96$, a p-value of $0.00 < 0.05$, and a positive beta coefficient value of 0.554 . Therefore, the results indicated that perceived usefulness has a positive and significant impact on trust, and H1 was supported. There was no empirical evidence to support H2, as the testing result for the variable on intention showed a t-statistic value of $1.415 < 1.96$ with a p-value > 0.05 . Furthermore, this study found that perceived ease of use had a positive and significant impact on usefulness, trust, and intention to use M-Banking, supporting H3, H4, and H5. The effect of the variable on usefulness had a t-statistic, p-value, and positive beta coefficient of $11.632 > 1.96$, $0.00 < 0.05$, and 0.673 indicating that perceived ease of use had a positive and significant impact on usefulness.

Similarly, the testing result for perceived ease of use on trust showed a t-statistic, p-value, and positive beta coefficient of $2.462 > 1.96$, $0.014 < 0.05$, and 0.281 . Therefore, it could be concluded that the variable had a positive and significant impact on trust. The results of perceived ease of use on intention showed a t-statistic, p-value, and positive beta coefficient of $2.174 > 1.96$, $0.030 < 0.05$, and 0.246 , respectively. Therefore, it could be concluded that the variable had a positive and significant impact on intention to use M-Banking. This study also showed that perceived usefulness was positively and significantly influenced by perceived risk, with a t-statistic, p-value, and positive beta coefficient of $2.389 > 1.96$, $0.017 < 0.05$, and 0.112 , respectively, hence, H6 was supported. Perceived risk and trust had a positive and significant impact on intention to use M-Banking. This was evidenced by the results of perceived risk and trust on intention with a t-statistic, p-value, and positive beta coefficient of $2.060 > 1.96$, $0.039 < 0.05$, and 0.115 , respectively, hence H7 was rejected. The impact of trust on intention showed a t-statistic, p-value, and positive beta coefficient of $2.060 > 1.96$, $0.00 < 0.05$, and 0.115 , respectively. Therefore, trust has a positive and significant impact on intention to use M-Banking, and H8 was accepted.

Discussion

The empirical findings indicated the importance of the variables of usefulness and ease of use in shaping trust in M-Banking. These results were consistent with Ramli et al., (2021), where the variables had a positive and significant impact on trust. The effect of perceived usefulness on trust had a coefficient of 0.554 , which was larger than perceived ease of use, with a coefficient of 0.281 . Therefore, trust in M-Banking was strongly influenced by perceived usefulness than ease of use. The variables of ease of use and trust have an impact on intention to use M-Banking. This study showed that intention, which was affected by ease of use and trust, was a positive and significant factor, consistent with the findings of Ramli et al., (2021). However, perceived usefulness did not have an impact on intention, in line with the findings of Al-Jabri, (2015). This study found that perceived risk did not hinder intention to use M-Banking. The potential explanation was that the respondents were highly educated and aware of the risks associated with using M-Banking.

Furthermore, the advancements in M-Banking had led to the average user being less concerned about risks. Before definitive statements could be made, additional study was required, since previous studies showed that perceived risk had a stronger negative effect on intention to use M-Banking. A significant positive impact of trust on intention to use M-Banking was also reported in line with (Alalwan & Yogesh K. Dwivedi, 2016; V. A. Nguyen et al., 2020; Sang, 2021). The trust variable had a coefficient of 0.312 , larger than perceived ease of use, usefulness, and risk on intention to use M-Banking. Therefore, intention was more strongly influenced by trust than perceived ease of use, risk, and usefulness. Perceived ease of use and risk were found to have a significant positive impact on usefulness, according to Siyal et al., (2019). The impact of the variable on usefulness had a coefficient of 0.673 , larger than perceived risk with a coefficient of 0.112 . In addition, perceived usefulness was more strongly affected by ease of use than risk.

4. CONCLUSION

M-Banking plays an important role in providing the financial products and services needed by society in the current digital era. Therefore, this study investigated the factors determining usefulness, trust, and intention to use M-Banking. The empirical findings indicated that perceived usefulness and ease

of use had a positive and significant impact on trust. Ease of use and trust were also found to have a positive and significant impact on intention to use M-Banking. Furthermore, perceived risk had a positive and significant impact on intention to use M-Banking. Ease of use, trust, and perceived risk variables had a positive and significant impact on usefulness. The findings indicated that these variables were important aspects for M-Banking users. Therefore, Islamic banks needed to pay attention to these variables to improve usefulness, trust, and acceptance of M-Banking.

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