

# Investigating The Determinants of Mobile Banking Usage

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**Abstract.** The implementation of m-banking requires a large investment, but does not ensure its success. Technology acceptance model (TAM) is a general model that explains why a technology is acceptable to users. This study aims to examine the effect of perceived usefulness, ease of use and technology readiness on the use of m-banking. The population in this study are m-banking users in Purwokerto. The sample of this study used accidental sampling. Data analysis used PLS-SEM analysis technique. Based on the results of hypothesis testing, it is known that perceived usefulness and ease of use have no effect on the use of m-banking. Respondents who are mostly Generation Z have a high perception of the usefulness and ease of use of m-banking. However, the high perception does not affect the use of m-banking. Meanwhile, technology readiness affects the use of m-banking.

**Keywords:** use of accounting information systems, perceived usefulness, perceived ease of use, attitude, security

## 1 Introduction

Mobile banking (m-banking) provides services with open access (internet) directly to customers [1]. This can be a bank's competitive advantage [2]. M-banking can provide services that are faster, easier and more efficient [3].

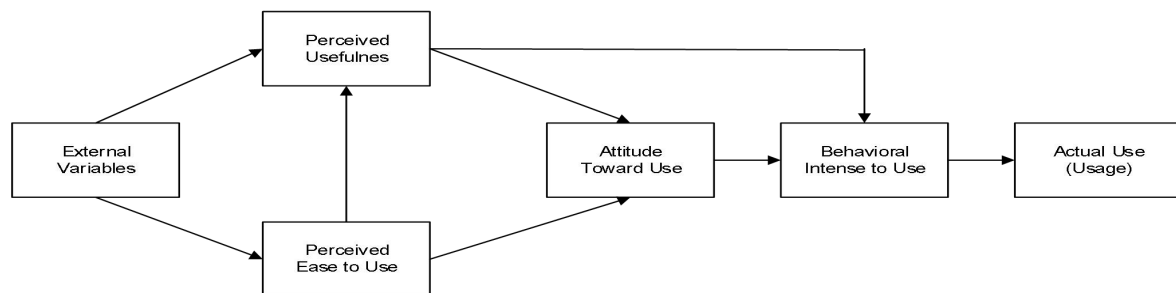
The implementation of m-banking requires a large investment [4]. The high cost of the investment does not ensure the success of its implementation. M-banking is a digital-based business process that has big risks. These risks include cyber security threats, loss of skilled people, speed of technological change and competition for other digital business innovations. This risk is an obstacle to m-banking [5].

Several studies use the Technology Acceptance Model (TAM) to test the success of implementing new technologies. TAM can be used to explain why m-banking is acceptable to users [6]. This research develops TAM. It uses TAM variables, namely perceived usefulness and perceived convenience [6-11]. This study adds that technology readiness affects the use of m-banking [7], [10], [11]. However, there are differences in the results, that perceived ease of use [12], [13], perceived usefulness and technology readiness [14] have no effect on the use of m-banking.

## 2 Literature Review

### Technology Acceptance Model (TAM)

TAM explains that the use of m-banking is because users have perceived usefulness and ease of use [6]. Perceived usefulness is the user's belief that m-banking services will increase financial transactions [6]. Perceived ease of use is defined as the belief that the use of m-banking does not use effort [6]. TAM has been empirically tested from several previous studies [15-18] to explain the acceptance of m-banking, presented in figure 1.



## Figure 1. Technology Acceptance Model (Davis, 1986)

Perceived usefulness and ease of use affect individual attitudes towards the use of m-banking. This perception will determine whether the user's intention to use m-banking. The intention will determine whether the user will use it. In TAM, perceived usefulness affects perceived ease of use but not otherwise [6]. Users who find m-banking useful, they will intend to use it regardless of whether the service is easy or not easy to use [19].

### The effect of perceived usefulness on the use of m-banking

Users will adopt m-banking, if they believe the service will increase the efficiency and effectiveness of their transactions [20-23]. Perceived usefulness is a predictor of willingness to use m-banking services [24-26]. Users believe that using m-banking will create added value and improve the performance, quality and efficiency of their transactions. M-banking provides more flexible services, time optimization, independence, convenience, quick response to customers, reduced operational costs and efficiency of banking transactions [27-29].

Perceived usefulness as a determinant of user behavior to use m-banking which is more innovative and user-friendly. Perceived usefulness plays an important role in determining user intention to adopt m-banking. Perceived usefulness can influence initial use and continued use [30]. Based on this, the proposed hypothesis is as follows:

**H<sub>1</sub>:** Perceived usefulness has a positive effect on the use of m-banking

### The effect of perceived ease of use on the use of m-banking

Perceived ease of use refers to the user's belief that no effort is made to understand and use m-banking [6]. Perceived ease of use is defined as the level of ease that users expect to use m-banking with minimum effort based on their current skills and knowledge [31]. Perceived ease of use was found to have a positive relationship with the use of m-banking [32-35]. They will use it if they find it easy and comfortable [36]. They perceive ease of use due to simplicity, user capabilities, and information technology infrastructure [37]. Innovations in m-banking will increase ease of use. The more they feel the ease of m-banking, the higher the intention to use it sustainably [32]. Based on this, the proposed hypothesis is as follows:

**H<sub>2</sub>:** Perception ease of use has a positive effect on the use of m-banking

### The effect of technology readiness on the use of m-banking

Technology readiness refers to the tendency of users to accept and use m-banking for their financial transactions [38]. Technology readiness can be reflected into personality dimensions: optimism and innovation [38]. Optimism and innovation are driving the acceptance of m-banking technology [39]. Optimism is the tendency to believe that most people will experience something positive rather than negative. Optimism believes that m-banking will be more useful and easier to use. Optimistic people tend to be more open and responsible for accepting and using m-banking. They don't think about bad experiences [39].

Innovation is also a driving force in the application of m-banking [40-41]. Innovative users have a stronger intrinsic motivation to accept and enjoy the sensation of trying it [41]. More innovative users are usually early adopters and believe that the use of m-banking is less complicated [40]. People who have high innovation feel they will lose certain benefits if they do not use it. They get positive impressions and benefits from using m-banking [40]. There is a positive relationship between innovation and the use of m-banking. Based on this, the proposed hypothesis is as follows:

**H<sub>3</sub>:** Technological readiness has a positive effect on the use of m-banking

## 3 Research Method

The research design used a survey approach with quantitative measurements. The type of data used is primary data. The research instrument used a questionnaire. The population of this research is users of BCA mobile application in Purwokerto. Sampling used non-probability sampling with accidental sampling technique. The period of collecting data is 2 months. This study used 100 respondents. The variables in this study are perceived usefulness, ease of use, technology readiness and actual use.

The analysis method uses Structural Equation Modeling (SEM) - Partial Least Square (PLS). The model consists of two models, namely measurement and structural models. Testing the measurement model using composite reliability, convergent and discriminant validity. Structural model testing using  $R^2$ ,  $f^2$ , t-test and p-value.

## 4 Result and Discussion

Respondents of this study are m-banking users. The profile is presented in Table 1.

**Table 1. Respondents Profile**

	%		%
Gender		Job	
Male	34.0	Student	64.0
Female	66.0	Employee	32.9
		Others	3.1
Old		M-banking usage period	
≤30 years	85.5	<1 year	23.7
>31 years	14.5	1-3 years	56.7
		>3 years	19.6
Education			
≤High school	64.0		
>Diploma/undergraduate	36.0		

Table 1 shows that female respondents dominate (66%). They often have technical problems with the use of information technology [42]. They face more anxiety [43-44]. They have to work more optimally than male [45]. Most of the respondents (85.5%) were young (<30 years old). Most of them (64%) are high school/students. Those who are younger have more experience using technology/information systems [46]. They know these problems more easily and completely [47].

The data were analyzed and the research model was evaluated using the measurement and structural model tests. Measurement model testing was conducted to determine the quality of indicators, including validity and reliability tests. The validity and reliability tests used the significance criteria of factor loading, AVE (Average Variance Extracted), Composite Reliability (CR) and Fornell-Lacker [48]. The results of the measurement model test are presented in Tables 2 – 3.

**Table 2. Measurement model test results**

Variables	AVE	CR	Indicators	Outer Loading	
				Original	p-value
Perceived Usefulness (PU)	0.82	0.93	PU <sub>1</sub>	0.89	0.00
			PU <sub>2</sub>	0.92	0.00
			PU <sub>3</sub>	0.91	0.00
Perceived Ease of Use (PEoU)	0.82	0.93	PEoU <sub>1</sub>	0.89	0.00
			PEoU <sub>2</sub>	0.91	0.00
			PEoU <sub>3</sub>	0.91	0.00
Technology Readiness (TR)	0.70	0.90	Op <sub>1</sub>	0.88	0.00
			Op <sub>2</sub>	0.88	0.00
			In <sub>1</sub>	0.74	0.00
			In <sub>2</sub>	0.84	0.00
Use	0.80	0.92	UI <sub>1</sub>	0.88	0.00
			UI <sub>2</sub>	0.91	0.00
			UI <sub>3</sub>	0.89	0.00

**Table 3. Fornell-Lacker**

	PEoU	PU	TR	Use
PEoU	<b>0.90</b>			
PU	0.76	<b>0.90</b>		
TR	0.75	0.68	<b>0.84</b>	
Use	0.74	0.68	0.81	<b>0.89</b>

Tables 2 and 3 show that the value of outer loading  $> 0.7$ ,  $p$ -value  $< 0.05$ , CR (Composite Reliability)  $> 0.7$  and AVE (Average Variance Extracted)  $> 0.5$ . The Fornell-Lacker value of the indicators of a dimension is greater for that dimension than for the other dimensions. Based on these results, it can be said that the measurement model has met the criteria of validity and reliability. All indicators used in this study have reflected the latent variables.

Evaluation of the structural model used the path coefficient significance test (t test and p-value),  $R^2$  and  $f^2$ . The results of the evaluation are presented in Table 4.

**Tabel 4. Path coefficient, statistic-t,  $R^2$  dan  $f^2$**

Variables	Path coefficient	t-statistic	p-value	$R^2$	$f^2$
perceived usefulness	0.11	1.24	0.22		0.02
perceived ease of use	0.24	1.92	0.06	0.71	0.07
technology readiness	0.56	5.21	0.00		0.43

According to Hair et al. [48]  $f^2$  values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects of exogenous variables on endogenous variables. Looking at Table 4, the  $f^2$  value for technology readiness is 0.43, which shows a large effect on the use of m-banking. The  $f^2$  value for the perceived usefulness and perceived ease of use variables shows a weak effect. The  $R^2$  value of 0.71 indicates that the perceived usefulness, perceived ease of use and technology readiness provide a change in the variability of the use of m-banking by 71%. The remaining 29% is influenced by other variables.

## Discussion

Based on the test results, it is known that perceived usefulness and perceived ease of use have no effect on the use of m-banking. This means that the use of m-banking is not influenced by these two variables. Respondents have a high perception of the usefulness and ease of use of m-banking. The use of m-banking also has a high score. However, the high use of m-banking by respondents is not influenced by perceived usefulness and ease of use.

Users have a high perception of usability and ease of m-banking. M-banking has provided banking services that can be accessed quickly by various customers via the internet. They can access m-banking all over the world via their smartphone or tablet. They feel the ease and comfort of using it. The use of m-banking is also increasing. This condition is supported by the growth in internet and smartphone usage occurring worldwide and has led to the growth of banking and electronic payments. M-banking has spread rapidly and expansively [49].

Expansion of customers and m-banking operations facilitates the usability and ease of use perceived by users [50]. M-banking has provided complete accessibility to banking services and ease of transactions, such as bank accounts, installment payments, fund transfers and other banking services. This has an impact on lifestyle changes [51].

The respondents of this study are mostly young m-banking users or what is known as Generation Z. Gen Z experiences life with the internet and technology. Gen Z is a group that is very receptive to new technological advances and innovations. The development of technology and the internet has increased the adoption of m-banking [52]. M-banking services can increase shopping speed, flexibility, convenience of other online purchases. This provides a pleasant experience for them. The use of m-banking becomes a lifestyle and increases their social status [53].

Gen Z realizes that m-banking innovation is aligned with their needs and lifestyle. They like shopping. Mobile payment technology facilitates and simplifies their shopping process [54]. M-banking as a lifestyle and social status allows users to increase their use. This increase is not influenced by perceived usefulness or ease of use. This is a finding that distinguishes the Technology Acceptance Model [6]. This result is concluded that perceived usefulness and ease of use have no effect on the use of m-banking [55-57]. Using m-banking as a lifestyle, banks need to offer features that are appropriate to their lifestyle and changes in the future.

Furthermore, based on the results of the study, it showed that technology readiness had an effect on the use of m-banking. The indicators of technology readiness in this study are optimism and innovation. Technology readiness refers to the tendency of users to accept and use m-banking.

Most of the respondents are Generation Z. They have a high attitude of optimism and innovation. This attitude is the driving force for the use of m-banking. Optimism is the tendency of users to believe that they will experience positive things more often than negative things in life. Optimism causes users to find m-banking to be useful and easy to use. Respondents who are optimistic become more open to accept and use m-banking. Those who are optimistic do not feel that the use of m-banking is not a complicated thing. They generally do not think about negative events [39].

Innovation refers to the tendency of users to become pioneers in the use of m-banking [39]. Innovative respondents are motivated to accept and try the features of m-banking. They were early adopters and believed that the use of m-banking was not too complicated [39]. Those who have high innovation feel that they lose certain benefits if they do not use the features in m-banking. They have positive impressions and benefits of m-banking. These results are concluded that technology readiness affects the use of m-banking [10][11][58].

## 5 Conclusion

Based on the results, it is known that perceived usefulness and perceived ease of use have no effect on the use of m-banking. Respondents have a high perception of the usefulness, ease of use and use of m-banking. However, the use of m-banking is not influenced by perceived usefulness and ease of use.

Research respondents are mostly Generation Z. Gen Z is a group that is very receptive to new technological advances and innovations. The use of m-banking becomes a lifestyle and increases their social status. So that this increase in use is no longer influenced by perceived usefulness and ease of use.

Other results show that technology readiness has an effect on the use of m-banking services. Optimism causes users to find m-banking to be useful and easy to use. And respondents who are innovative have a stronger motivation to accept and use m-banking.

Based on these results, further research needs to develop a new technology acceptance model, especially for Generation Z. This finding also helps bank managers to understand the importance of the needs of m-banking users. Banking should offer services that can increase satisfaction and sustainable use in the future.

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