PERCEIVED CYBERCRIME RISK: MODIFICATION OF THE TECHNOLOGY ACCEPTANCE MODEL ON GENERATION Z

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ABSTRACT

This study attempts to examine the factors that influence the intention to use mobile banking. The decision to use new technology has been widely studied by applying the Technology Acceptance Model (TAM). The main variables in TAM are intention, perceived ease of use, perceived usefulness, and attitude. This study tries to add one more variable, namely the perception of risk of being exposed to cybercrime. Data were collected using a questionnaire adapted from previous studies. The data that has been collected is tested for validity and reliability for further analysis using Structural Equation Modeling (SEM). The results showed that the perceived ease of use had a positive and significant effect on attitudes and perceived usefulness. Another finding is that perceived usefulness affects attitudes and subsequently attitudes affect intentions to use mobile banking. The new variable added in this study, namely the perception of cybercrime risk has a negative and significant effect on intentions to use mobile banking. Based on the findings of this study, it is recommended that banks improve features that provide ease of use and are useful in conducting transactions using mobile banking. This will encourage the public to have a positive attitude and be supported by minimizing the risk of cybercrime, which will increase public interest in using mobile banking.

Keywords: Attitude, Intention, Perceived Ease of Use, Perceived Usefulness, Perceived Cybercrime Risk, Mobile Banking

INTRODUCTION

Public acceptance of technology has received considerable attention from researchers and practitioners of information systems. These topics have been tested across a wide variety of information technology and user populations, and satisfactory empirical support for each of the investigated theories or models has been gathered. Of the various models that have been proposed and tested, the TAM derived from Davis seems the most promising. TAM is an intention-based model specifically developed to explain and/or predict user acceptance of computer technology. TAM has been used as the theoretical basis for many empirical studies on user acceptance/adoption of technology and has had a lot of empirical support.

Mobile banking is a service for smartphone-based banking transactions. Mobile banking is currently the main channel for bank customers to transact. The COVID-19 pandemic has made the use of mobile banking increasingly rapidly. However, not everyone is willing to use mobile banking to support their daily activities. Using mobile banking will be related to internet use and is very risky for crimes that cause material losses. Quoted from Kontan.co.id, Ebi Junaidi – an economist at the Center of Reform on Economics (CORE) stated that recent cases of burglary of bank customer accounts in Indonesia show that there is a gap in our banking system. Therefore, banks must dare to be responsible and take risks in developing digitalization. The important thing that must be done by the banking sector is strengthening the security system or cyber security. Therefore, this study aims to test TAM in mobile banking by adding a cybercrime risk perception variable other than the variables in TAM. The participants in this study were Generation Z (maximum age 25 years) with the consideration that this generation includes people who are very familiar with smartphones (Annisa, 2021). The use of mobile banking is only possible if the community already has a smartphone. Their daily interactions are very close to smartphones, making this segment more likely to adopt mobile banking.

LITERATURE REVIEW

Intention to Use Mobile Banking

Due to cost effectiveness and greater reach, banks prefer m-banking channels to provide banking services and encourage customers to adopt mobile banking services (Shankar & Rishi, 2020). Therefore, several attempts were made to explore the factors influencing the adoption and behavior of using m-banking in the previous literature. The use of intention as the dependent variable in this study refers to the opinion of experts who state that not using actual behavior is not a serious problem. Several previous studies have stated a very strong and significant causal relationship between intentions and actual behavior. Ajzen, (1991) also asserts that the intention to adopt a service has been proposed as a direct antecedent of actual use. This is also supported by several studies which propose that the actual use of mobile banking is significantly influenced by the intention to use mobile banking (Thakur & Srivastava, 2013; Sobti, 2019).

Perceived Cybercrime Risk

The revolution in Information Technology (IT) has led to a significant increase in the number of people connecting and using the Internet. However, it also poses a severe security risk: valuable information such as passwords, financial accounts, and other confidential data is considered an attractive target for attackers. Cyberattacks against these infrastructures can not only lead to data leaks but can also have significant financial implications. Consequently, to defend against such attacks, and given that humans have a key role to play in this technology, it is important to raise cybersecurity awareness. Thusi and Maduku (2020) found that risk perception had a negative and significant effect on the intention to adopt mobile banking. This means that the higher the risk perceived by the public, the lower their intention to use mobile banking. This, of course, must be a concern for banks to convince customers that using the mobile banking they provide is relatively safe from attacks by hackers.

Perceived Ease of Use

Perceived ease of use is the extent to which a person believes that using a particular system will be free of effort. This is an important factor in the development and delivery of mobile banking services. Perceived ease of use is a person's subjective perception of the ease of use of a computer system, which affects perceived usefulness and thus has an indirect effect on the user's technology acceptance. In addition, the longer someone uses mobile banking, the more likely they are to find it easy to use. The easier it is for the user to interact with the system, the more likely he or she will find it useful. There is substantial empirical support for this view. This affects consumers' intention to use mobile banking. Pikkarainen, et al (2004) found that perceived ease of use was not positively correlated with the use of online banking. This shows that the perceived ease of use statistically has no significant effect on the use of online banking. In contrast, Wang, et al (2003) found that perceived ease of use had a significant positive effect on behavioral intentions. This finding refers to the fact that users who have higher computer self-efficacy tend to have more positive perceived ease of use.

Perceived Usefulness

Perceived usefulness is one of the components of TAM that has been widely used by information system researchers. Perceived usefulness is defined as the degree to which a person believes that using a particular system will improve his or her job performance. People adapt certain technologies under the assumption that using these technologies and information systems will improve their performance. There is also extensive research in the information systems community that provides evidence of a significant influence of perceived usefulness on usage intentions. Perceived usefulness is a strong determinant of behavioral intention to adopt online banking. The same finding was observed by Eriksson et al (2005) by proving perceived usefulness as a key construct to promote the use of online banking by customers. Meanwhile, research by Wang et al (2003) shows that perceived benefits are a significant antecedent of intention to use the internet banking system. The importance of perceived usefulness has been widely recognized in the field of electronic banking. This is a key prerequisite for mass market acceptance of technology, which hinges on consumer expectations of how technology can improve and simplify their lives. Empirical studies on TAM show that perceived usefulness has a positive effect on information technology adoption.

Attitude toward m-banking

Attitude in marketing terms is defined as a general evaluation of a product or service that is formed over time (Solomon, 2008). Attitudes satisfy personal motives—and, at the same time, influence consumers' shopping and buying habits. Dr. Lars Perner (2010) defines consumer attitudes only as a combination of beliefs, feelings, and behavioral intentions of consumers towards several objects in a marketing context. A consumer can have

negative or positive beliefs or feelings towards a product or service. Attitudes can be influenced by many factors outside of product attributes. The social and cultural environment as well as demographic, psychographic, and geographical conditions can sometimes shape consumer behavior. Consumer attitudes, if positive, are a boon to marketers. Albaroodi et al (2019) examined a model that relies on TAM in Open Source Cloud Computing (OSCC) in Iraq. They found a positive relationship between perceptions and attitudes of OSCC, between perceptions and goals of OSCC, between attitudes and goals, and finally adoption of OSCC relies on mediating the relationship between perceptions and intentions.

Hypothesis

Based on the previous discussion, the hypotheses in this study are as follows:

H1 : the higher the perception of cybercrime risk, the lower the intention to use mobile banking

H2 : the higher the perceived usefulness of mobile banking, the higher the intention to use mobile banking

H3 : the higher the perceived usefulness of mobile banking, the higher the attitude to use mobile banking

H4 : the higher the perceived ease of use of mobile banking, the more positive the attitude towards mobile banking

H5 : the higher the perceived ease of use of mobile banking, the more positive the perceived usefulness of mobile banking

H6 : the more positive the attitude towards mobile banking, the higher the intention to use mobile banking

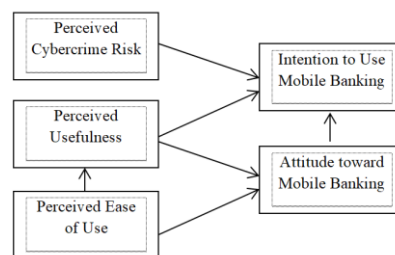Based on the proposed hypothesis, the model proposed in this study can be seen in Figure 1.

Figure 1. Research Model

METHOD

Data were collected using a questionnaire with the Accidental Sampling technique. Participants are people who fall into the generation Z category, namely those born between 1996-2015 or a maximum of 25 years old. They were given questions using alternative answers on a Likert scale related to the variables of cybercrime risk perception, perceived usefulness, perceived convenience, attitude, and intention to use mobile banking. The perceived risk associated with cybercrime is the uncertainty felt when using internet-connected applications. This variable is measured by five questions such as the dangers of using mobile banking, the possibility of data being hacked, and other fears. The perceived usefulness variable is defined as the subjective perception of users in which they believe that using a particular technology can improve their job performance. This variable is measured by five statements such as using mobile banking to facilitate activities, improve financial management, and increase time, cost and energy efficiency. The perceived ease of use variable is defined as the extent to which a person believes that using a particular system will be very easy. The measurement uses statements such as how easy it is to understand instructions from mobile banking, how easy it is to use mobile banking. Attitude variable is defined as a way of thinking or feeling about something. The measurement uses statements such as using mobile banking is fun, a good idea, feels comfortable. All measurements are modified from various previous studies. After the data is collected, an initial screening is carried out using descriptive statistics. For validity testing using Pearson Correlation while for reliability testing using Cronbach's Alpha. Data that passed the validity and reliability tests were then analyzed using Structural Equation Modeling.

RESULT AND DISCUSSION

Participant Identity

The participants in this study were students who belonged to the Generation Z category. According to Annisa (2021) Generation Z already has full access to smartphones, Wifi, streaming application services, and various other technological conveniences. The impact of technological advances, the internet, and social media has a major influence on the growth of Generation Z. Based on the data in Table 1 the majority of respondents are between 20-25 years old. Women dominate with 197 people or 73% of the participants.

Table 1. Participant Identity

Variable	Frequency	(%)
Age		
Less than 20	98	36
20 – 25	172	62
Gender		
Male	73	27
Female	197	73
Skill Level		
Expert	5	2
Quite Skilled	137	51
Beginner	128	47

Furthermore, based on the data in Table 1, the majority of participants think they are quite skilled in using the internet, but almost half also feel they are still at the beginner level. The following Figure 2 further illustrates the security beliefs of the device while surfing the internet. The majority of participants felt quite safe (43%) and safe (38%). Only 1% feels completely insecure. This is slightly different from the results of Alzubaidi's (2021) study in Saudi Arabia where the majority of participants there feel safe (52%) and very safe (23%).
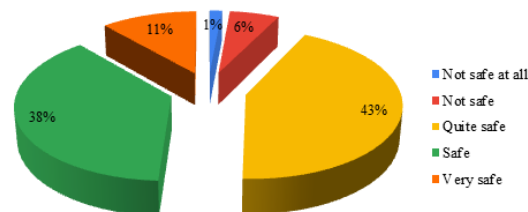

Figure 2. Confidence in Device Security

Validity and Reliability Test

The results of descriptive statistical testing, validity, and reliability can be seen in Table 2. All statement items in this study have met the requirements so that the instrument can be declared valid and reliable.

Table 2. Descriptive Statistics, Validity Test, and Reliability Test

Construct	Item	Mean	Standard Deviation	Pearson Correlation	Cronbach's Alpha
Cybercrime	PR1	2.4444	1.06073	.692	.845
Perceived	PR2	2.2630	1.00617	.785	
Risk	PR3	2.6630	1.11817	.823	
	PR4	3.0407	1.20184	.813	
	PR5	2.9852	1.19158	.815	
Perceived	PU1	4.0852	1.01849	.886	.935

Construct	Item	Mean	Standard Deviation	Pearson Correlation	Cronbach's Alpha
Usefulness	PU2	3.8704	1.04981	.881	
	PU3	4.2778	.90879	.870	
	PU4	4.0000	.96789	.908	
	PU5	4.1259	.93610	.905	
Perceived Ease of Use	PEU1	3.9185	.95670	.875	.955
	PEU2	4.0111	.95428	.928	
	PEU3	3.9444	.96821	.941	
	PEU4	3.9370	.96004	.939	
	PEU5	4.0296	.94015	.917	
Attitude	AT1	3.9704	.96743	.887	.944
	AT2	4.0481	.98384	.889	
	AT3	3.9963	.89400	.894	
	AT4	3.9556	.94744	.917	
	AT5	4.0815	.90887	.921	
Intention to Use Mobile Banking	AI1	3.9741	.97328	.914	.930
	AI2	3.8667	.95862	.902	
	AI3	3.9815	1.01092	.890	
	AI4	4.1259	.92812	.857	
	AI5	3.8407	1.00953	.858	

Goodness of Fit Test

There is no single measure for testing hypotheses when processing data using SEM. There are several types of fit indices to measure the degree of fit of the model. A good model is one that can meet the size of the fit index. If many size criteria are met by the model, then the model is considered suitable for the data or sample owned. Table 2 shows some of the fit indices obtained in this study. Some indices have values above the recommended value, but some indices are still below so that the level of conformity is at the marginal level.

Table 2. Goodness of Fit Analysis

Goodness of fit Index	Recommended Value	Results
TLI	≥ 0.90	0.911
RMSEA	≤ 0.08	0.087
CFI	≥ 0.90	0.920
CMIN/DF	between 1-3	3.052

Hypothesis Testing

The results of hypothesis testing can be seen in Table 3. Five hypotheses showed significant results while one hypothesis was not proven significant. The first hypothesis in this study is the effect of perceived cybercrime risk on intentions to use mobile banking. The results found a negative and significant effect, which means that the higher the risk felt by the participants, the lower their intention to use mobile banking. The results of this study support the findings of Kim et al (2009) who found a significant negative effect between risk perception and internet banking adoption. Similar result is found by Thusi & Maduku (2020). However, Hassan & Woodb (2019) also found a negative, but not significant, effect for the sample residing in America, Egypt, and the Egyptian population in America.

Table 3. Hypothesis Testing

				Estimate	S.E.	C.R.	P	Label
H1	Intention	<---	Perceived Risk	-.132	.060	-2.185	.029	par_26
H2	Intention	<---	Perceived Usefulness	-.046	.071	-.658	.511	par_21
H3	Attitude	<---	Perceived Usefulness	.244	.061	4.017	***	par_19
H4	Attitude	<---	Perceived Ease of Use	.647	.065	10.008	***	par_18
H5	Perceived Usefulness	<---	Perceived Ease of Use	.859	.053	16.132	***	par_17
H6	Intention	<---	Attitude	.893	.090	9.969	***	par_20

The second hypothesis fails to prove the effect of perceived usefulness on the intention to use mobile banking because the probability value of 0.511 is greater than 0.05. This finding is contrary to the findings of Hasan & Woodb (2019) where for the American and Egyptian samples the perception of usefulness has a positive and significant effect on the intention to use mobile banking. This is similar to research from Kallanmarthodi & Vaithyanathan (2012). A positive and significant effect was found for the effect of perceived usefulness on the intention to adopt e-banking in India. However, perceived usefulness was found to have a positive and significant effect on attitudes, which means that the third hypothesis is accepted. The higher the perceived usefulness of mobile banking to support daily activities, the more positive the attitude towards mobile banking. Furthermore, the fourth hypothesis states that the higher the perceived usefulness, the more positive people's attitudes towards mobile banking. This study found a positive and significant effect. Contrary to this finding, Hu et al (1999) found no positive and significant effect for this relationship.

Furthermore, this study found that perceived ease of use had a positive and significant effect on perceived usefulness. Participants who feel that mobile banking is easy to use will increase their perception that mobile banking is useful for their daily lives. These results indicate that the fifth hypothesis which states that perceived ease of use has a positive effect on perceived usefulness is proven. The results of research by Hu et al (1999) did not find a significant effect between perceived ease of use toward attitude and perceived usefulness.

The final hypothesis in this study found that attitudes affect the intention to use mobile banking. The more positive the attitude of the participants, the higher their intention to use mobile banking. The findings of Hu et al (1999) support the findings of this study which also proves the influence of attitudes on intentions to use telemedicine technology.

CONCLUSION

Technology adoption generally depends on perceived ease of use and perceived usefulness of the technology. When people view technology as easy to use (perceived ease of use), they are more confident and competent in adopting the technology. People who believe that technology is useful (perceived usefulness), they are more likely to use the technology. This study further investigates their perceptions of risk, convenience, usefulness, and attitudes toward intention to use mobile banking. Some people are self-driven, eager to learn about new technologies; while others are cautious about trying new things. The results of this study found a significant effect except for usefulness and intention. It seems that although mobile banking is very useful to help consumers transact, it does not mean that it will increase their intention to use mobile banking. There are other variables that have a stronger influence, namely risk and ease of use. Due to the strong influence of risk and ease of adoption, banks must prepare technology to minimize risk and create applications that make it easier for consumers to transact. Understanding of public perception allows banks to determine approaches to increase the use of technology by their target market.

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