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# Impact of Perceived Convenience on Intention to Use Mobile Payments in Mediating Perceived Risk

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## ABSTRACT

This study analyzes the ease of use of consumer m-payment systems, besides that the risk factors for use are also studied related to the ease of use factor on the intention to use m-payment Gen Z to make payment transactions. The sample in this study was FEB Unmus management students with an average age of 22 years, totaling 165 respondents based on the returned questionnaire. The data were obtained using a research questionnaire adjusted to the variable construct. OLS regression was used to explain the influence of each factor. Given the increasingly advanced mobile technology and online payment instrument competition that continues to grow. The dominant consumer response to PEU2 items provides a clear picture, that privacy data security risks greatly interfere with the intention to use m-payment. Implicitly, mobile-based technology financial services are more compatible with the social behavior of Generation Z consumers, because for them using a mobile platform is a spontaneous solution. This study is certainly not perfect in explaining the role of the TAM model, further implications need to examine other factors such as subjective norms or lifestyle factors, and convenience factors because they use mobile devices anytime to make payments and m-payments quickly and easily. This means that Generation Z will use mobile payments more if they think that m-payment suits their lifestyle.

**Keywords:** *Perceived Convenience, Intention to Use, Perceived Risk, Mobile Payments*

## 1. INTRODUCTION

This section explains the perception of convenience through financial literacy and its impact on digital-based smart payment methods among millennials. In the business area, activities such as payment systems, product marketing, management can be easily carried out with the help of digital platforms. Digital-based smart payment methods are a form of digital financial technology that has started to increase in use since the COVID-19 pandemic. Smart payment instruments are also called electronic or non-cash payments which can be made through various digital platforms such as; mobile banking, e-money, e-wallet, QR code, and so on. Financial technology makes it easy for every individual and business organization to carry out payment activities, but not everyone can easily apply it. There is a need for knowledge and understanding regarding services and risks in using financial technology and always on a good internet network.

Mobile payments are currently owned mostly by banking companies. Globally, US Banks are currently

facing tough competition and narrow margins into the first half of 2023. As such, they will be changing their marketing strategy to win over key customer segments and maintain their bottom line. One target market that is growing is the millennial generation and generation Z as new smartphone users in accessing banking services, in terms of the number of mobile banking users in 2027 it is estimated that the millennial generation will number 64.9 million users while the generation Z will be 52.5 million users. mobile banking at least once a month [1].

Mobile payments provide convenience and experience in financial transactions. Mobile payments present significant advantages over other online payment systems (cash, debit and credit card payments), they can be used anywhere, in terms of convenience, usability, mobility, reach and compatibility [2]. Mobile payments are payments for goods and services, to bills made with mobile devices using wireless communication technologies and other networks [2], [3].

This study uses one of the exogenous latent variable constructs from the Technology Acceptance Model (TAM) theory, namely perceived convenience and an additional variable construct from the TRiTAM theory, namely risk perception to explain behavioral intentions to use cellular payments. The TAM theoretical view explains and predicts user acceptance of the use of information systems. The variables of perceived ease and perceived risk are used by adjusting for the level of use of mobile payments among generation Z. Considering that mobile payment services have developed greatly recently, but not for the use of this type of service among students who are respondents in this study.

The research that has been conducted examines the advancement of mobile device technology that contributes to non-cash payment strategies through mobile payments for users [4]–[7]. While mobile payments provide a level of convenience and benefit, security and privacy concerns about using mobile payments are increasing partly due to the virtual and intangible nature of transactions [2]. Other results show that the use of mobile payments, especially Near Field Communication (NFC) for payment of goods and services has increased, but the application of NFC payments varies based on individual consumer behavior attributes [8].

Therefore, this research is expected to explain the factors that influence consumer intentions to use cellular payment services and provide an overview for the development of cellular payment services in Indonesia to achieve competitive advantage. In addition, these empirical results can also be a reference for individuals, especially in Merauke Regency, South Papua Province who have the intention of becoming entrepreneurs or who already have micro, small and medium enterprises to adopt mobile payment services as a strategy to increase sales of their products.

## **2. THEORETICAL BECKGROUND AND HYPOTHESES DEVELOPMENT**

### ***2.1. Prospect Theory***

Prospect Theory is a theory that was first developed by Kahneman & Tversky in 1979 by combining two different fields of science including; economics and psychology, the argument of this theory assumes that human behavior is seen as abnormal and contradictory in decision-making and not always rational [9], [10]. Prospect theory shows that people who have irrational tendencies are more reluctant to take risks of profits than losses, if someone is in a profitable position then that person tends to avoid risks which is called risk aversion, conversely if someone is in a loss position then that person tends to be willing to take risks or likes risks [11]. This means that, individuals make financial

decisions based on the perceived results of the choice rather than the actual benefits.

### ***2.2. TAM***

To find out the basic prerequisites for using financial technology in making payment decisions, the TAM model developed by [12] is used as a theoretical framework. TAM is a development of the theory of reasoned action (TRA) by Ajzen and Fishbein (1980) [13]. TAM was specifically developed to answer the user's desire to accept and use new technology or media in the field of information systems management, this model has been used in social psychology studies [13].

Perceived usefulness and ease of use are individual factors that determine attitudes toward the adoption of a particular technology [14]. This study adopts only the variable convenience considering the research conducted by [10] that financial literacy as knowledge and understanding in making student financial decisions does not have sufficient evidence. Therefore, the convenience variable is prioritized as a construct in this study, to see the behavior of intention to use technology in making cellular payments.

### ***2.3. Mobile Payment (M-Payment)***

M-payment is a model of payment and transactions made between two parties quickly, comfortably, safely, and simply, anytime and anywhere with the help of a mobile device [15]. M-payment enables practical and convenient mobile commerce transactions [2], [16]. The m-payment model has been studied in depth by previous reviewers, who adopted various theoretical models to describe the acceptance of mobile payments. One of them is the TAM model used by Qing Yang [17], Thanh D. Nguyen [18]. Other researchers adopted the Prospect Theory namely Yang., et al [19] and Liu., et al [20] who applied a technology success model to explain the acceptance of mobile payments. This study uses Tan's theoretical approach [21] by using a variable construct that is adjusted to the respondent's perception.

### ***2.4. Perceived ease of use Terhadap Intention to use***

Consumer ease of use refers to applications that are perceived as more simple to use and which are more likely to be accepted by users. That is, if potential users believe that a particular application is useful, they may, at the same time, judge that the system is too difficult to use but the performance benefits from use far outweigh the effort of using the application [12]. In other words, perceived ease of use refers to the extent to which a person believes that using the system will be free from both mental and physical exertion [22].

The empirical results reveal that perceived usefulness, ease of use, compatibility, insecurity, and behavioral intention to adopt a digital wallet have a significant relationship [23]. Other results find compatibility, perceived technology security, performance expectations, innovation, and social impact to have significant direct and indirect effects on mobile payment adoption [24]. However, the novelty of the findings lies in the different behavior adapted to the use provided by the user on the proposed mobile payment instrument [5].

$H_1$ : *There is a significant influence of perceived ease of use on intention to use.*

### 2.5. Perceived ease of use Terhadap Intention to use dimediasi Perceived risk

In addition to ease of use, perceived risk is also another variable that will be analyzed to provide an overview of the behavioral intention to use mobile payments. In the mobile transaction industry, perceived risk plays a crucial role and is affected by factors such as financial and security concerns [25]. To put it simply, the risk refers to the possibility of Internet media malfunctioning [2]. Fear of risk is a major obstacle to the widespread adoption of mobile payments, where being aware of potential risks can change their attitude and act to protect themselves [8]. When using mobile payments, consumers have to face financial and privacy risks [26]. On the one hand, financial risk refers to the perception of possible monetary losses caused by the use of mobile payments [8]. Consumers are not sure whether the system will perform satisfactorily, accurately, and reliably [27].

The results of the study externalize that perceived risk and trust have a major role in the structural model of electronic payment adoption [28]. Other findings show that the use of mobile payment services in Thailand is determined by four compatibility factors, subjective norm, perceived trust, and perceived risk. However perceived usefulness, and perceived ease of use were found to have no direct effect on behavioral intention [29]. Of which, financial-related risks and gender moderating effects are not significant factors [30].

Other results reveal Gen-X and Gen-Z have different experiences with m-payment methods, which lead to different attitudes toward NFC usage. Gen-X consumers perceive more financial risk, while for Gen-Z, financial and privacy risks are considered insignificant when using NFC for m-payments [8].

$H_2$ . *There is a significant effect of perceived ease of use on intention to use mediated by perceived risk.*

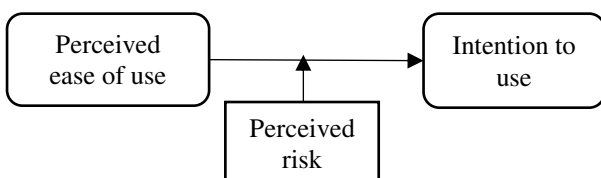


Figure 1. Research Model

### 3. RESEARCH METHODOLOGY

A survey based on a Google form was conducted in order to validate the research model proposed. A sample of 165 Management Study Program students at the Faculty of Economics and Business, Musamus University, a batch of 2020 and 2021 participated in this research. Respondents have passed financial management courses and have participated in m-payment socialization previously and have used the mobile banking application several times. 24.8% of respondents were male, while 75.2% of female respondents.

Respondents in the survey participation were in the 19-24-year age group, where the highest participation was from the 20-year-old group at 32.7%, followed by the 21-year-old group at 30.3% and the 22-year-old group at 24.8%. Prior to conducting the research, the questionnaire instruments that were distributed were tested first for a small group (n = 30) who knew the use of m-payments. Survey respondents were randomly selected from a sample of management students who had no previous m-payment experience.

The data were tested using predictive OLS multiple regression models and explained research modeling with mediated or moderated relationships [31]. The data was tested with the help of STATA software version 14.

To prevent any bias in the research data collection, the variables in our proposed model are operationalized using validated procedures from previous studies, and they are measured on a comparable scale. To operationalize each construct in the proposed model, a Likert measurement scale is used. The instruments used underwent clarity testing with a small group of management students before use. The measurement scale is described in the following table:

Table 1. Measurement Scales

Construct	Item	Source
Perceived ease of use	1. In the future, I plan to use and continue using mobile payment services.	Thakur [16]
	2. In the future, I plan to utilize mobile payment services.	
	3. I plan to continue using mobile payment services in the future.	
Intention to use	1. I desire my experience while utilizing mobile payment services to be straightforward	Thakur [16], Yang

	and easy to comprehend.	[32]
	2. I hope to become an expert in mobile payment services easily.	
	3. I find it easy to operate a mobile payment service.	
<b>Perceived risk</b>	1. I'm concerned that using my smartphone may compromise my privacy and personal information.	Kerviler [33]
	2. I'm worried that my smartphone could compromise my privacy by allowing my data to be used without my consent	
	3. I have concerns about the security of my smartphone and the possibility of hackers accessing my personal data.	
	4. I am worried that using my smartphone could lead to fraudulent activities in my bank account.	
	5. I am concerned that using my smartphone could jeopardize the security of my bank account.	

## 4. RESULTS AND DISCUSSION

### 4.1. Descriptive Data

The mean, standard deviation, minimum, and maximum for each item in the measurement model can be seen in Table 2 below. Where, the mean for the variable Perceived ease of use has a distribution of answers that are close to neutral in response to each item, meaning that each respondent has a similar perception and has experience in using m-payments. For standard deviation values, all items have a value of 0.66 to 1.02 indicating that the data is less varied and the smaller the value, the more accurate the mean.

**Table 2. Measurement Scales**

Var	Item	Obs	Mean	St.Dev	Min	Max
<b>Intention to use</b>	IU1	165	3.752	0.675	2	5
	IU2	165	3.776	0.701	2	5
	IU3	165	3.867	0.658	2	5
<b>Perceived ease of use</b>	PEU1	165	4.218	0.758	1	5
	PEU2	165	4.109	0.716	1	5
	PEU3	165	4.055	0.791	1	5
<b>Perceived risk</b>	PR1	165	2.976	0.869	1	5
	PR2	165	3.212	0.896	1	5
	PR3	165	3.073	1.016	1	5
	PR4	165	3.170	0.985	1	5
	PR5	165	3.139	0.862	1	5

(Source: Stata version 14, 2023)

The lowest distribution of respondents' answers is 1 on the variable construct item perceived ease of use and perceived risk and the highest is 5 for responses to all items.

### 4.2. Research findings

To assess the measurement model begins by looking at the validity and reliability of the data, all items are declared valid and reliable. Data is declared valid if the r-count value > r-table value (0.153), while the data is declared reliable if the Cronbach alpha measure ( $\alpha > 0.7$ ) proves the data is consistent with the construct.

**Table 3. Validity and Reliability Test**

Item	Obs	Sig	item-test correlation	item-rest correlation	average	
					interitem covariance	alpha
IU1	165	+	0.860	0.679	0.275	0.745
IU2	165	+	0.885	0.719	0.241	0.703
IU3	165	+	0.826	0.623	0.316	0.800
Test scale					0.277	0.819
PEU1	165	+	0.834	0.619	0.329	0.734
PEU2	165	+	0.864	0.696	0.293	0.656
PEU3	165	+	0.828	0.594	0.336	0.764
Test scale					0.319	0.792
PR1	165	+	0.578	0.368	0.453	0.807
PR2	165	+	0.764	0.613	0.358	0.734
PR3	165	+	0.807	0.654	0.318	0.718
PR4	165	+	0.765	0.594	0.346	0.740
PR5	165	+	0.760	0.616	0.364	0.735
Test scale					0.368	0.789

(Source: Stata version 14, 2023)

Table 3 shows all items that support the variable constructs declared valid and reliable, then the data can be analyzed to answer the research hypothesis.

Table 4 shows the results of the regression analysis for hypothesis 1, where p-value > alpha (0.05) and t-count < t-table (1.975) that the variable perceived ease of use has no significant effect on intention to use.

**Table 4. The First Regression Analysis**

Source	SS	df	MS	Number of obs	=	165
				<b>F(1, 163)</b>	=	62.63
<b>Model</b>	138.623	1	138.623	<b>Prob &gt; F</b>	=	0.000
<b>Residual</b>	360.770	163	2.213	<b>R-squared</b>	=	0.2776
				<b>Adj R-squared</b>	=	0.2732
<b>Total</b>	499.394	164	3.045	<b>Root MSE</b>	=	1.4877

y	Coef.	Std.	Err.	t	P> t	[95% Conf. Interval]
x	0.483	0.061	7.91	0.000	0.362	0.603
_cons	5.417	0.764	7.09	0.000	3.909	6.926

(Source: Stata version 14, 2023)

Table 5 for the second regression test shows that the perceived risk moderating variable significantly affects

the intention to use the variable, indicated by a p-value <math>\alpha (0.00 < 0.05)</math>.

**Table 5. Second Regression Analysis**

Source	SS	df	MS	Number of obs	=	165
				F(2, 162)	=	33.62
<b>Model</b>	146.48	2	73.24	<b>Prob &gt; F</b>	=	0.000
<b>Residual</b>	352.91	162	2.18	<b>R-squared</b>	=	0.2933
				<b>Adj R-squared</b>	=	0.2846
<b>Total</b>	499.39	164	3.05	<b>Root MSE</b>	=	1.476

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x	0.48	0.06	7.98	0.00	0.36
z	0.09	0.05	1.90	0.06	0.00
_cons	4.55	0.89	5.14	0.00	2.80

(Source: Output stata version 14, 2023)

Additionally, to further support the results of this study, a third regression analysis was conducted to explore how the perceived risk factor moderates the impact of perceived ease of use on the intention to use the variable.

**Table 6. The Third Regression Analysis**

Source	SS	df	MS	Number of obs	=	165
				F(3, 161)	=	23.18
<b>Model</b>	150.63	3	50.21	<b>Prob &gt; F</b>	=	0.000
<b>Residual</b>	348.76	161	2.17	<b>R-squared</b>	=	0.3016
				<b>Adj R-squared</b>	=	0.2886
<b>Total</b>	499.39	164	3.05	<b>Root MSE</b>	=	1.4718

y	Coef.	Std. Err.	Err.	t	P> t	[95% Conf. Interval]
x	0.25	0.18	1.40	0.16	-0.10	0.603
z	-0.23	0.23	-0.96	0.34	-0.69	0.238
xz	0.03	0.02	1.38	0.17	-0.01	0.063
_cons	7.41	2.25	3.29	0.00	2.97	11.854

(Source: Output stata version 14, 2023)

The analysis is concluded in Table 6, which reveals that the statistical test's p-value for XZ is -0.01, indicating a significant negative impact on the intention to use the variable. Additionally, the variable of perceived risk acts as a moderating predictor, implying that it moderates the relationship between perceived ease of use and the intention to use. And there is an interaction between the perceived risk variable and the perceived ease of use variable. The negative perceived risk coefficient (-0.23) indicates that perceived risk actually weakens the effect of perceived ease of use on intention to use.

### 4.3. Discussion

This study obtained results that were slightly different from the existing findings. The first explanation shows that perceived ease of use has surprising results where there is no significant effect on the intention to use for the Z generation market as m-payment users. This is of course in contrast to the construct of the TAM model, which means that the presence of financial technology in the current era cannot be used properly by Generation Z, especially in eastern Indonesia as a developing country and more specifically in the South Papua region. Generation Z is a digital user who interacts the most with smartphones [34]. There needs to be more socialization by m-payment and other e-payment service providers in order to increase user knowledge and understanding, especially in the Z-generation market. Given the increasingly advanced cellular technology and online payment instrument competition that continues to grow.

These findings indicate that perceived risk significantly influences an individual's willingness to use m-payments. It turns out that financial risk is the main factor influencing the use of m-payments in this study. Generation Z is very very sensitive to risk, this can be seen where the highest response to PR2 items is:

*"I'm worried that my smartphone could compromise my privacy by allowing my data to be used without my consent".*

Based on consumer feedback on PEU2 items, it's clear that concerns about privacy and data security hinder their desire to use mobile payment options. The e-payment system as a platform should be able to stimulate convenience and security to reduce risk, The level of risk greatly affects the ease of use of e-payments systems, which in turn affects consumers' willingness to use them [6].

After analyzing the results of multiple regression, it was found that there was a significant negative effect between perceived risk factors and intention to use, so it can mediate and have an interaction with the perceived ease of use. A negative value illustrates that risk indirectly weakens the effect of perceived ease of use on the intention to use m-payment. That is, even though there is a convenience motivation, it is necessary to reduce financial and security risks so that consumers can increase their intention to use in adopting m-payments. Therefore, these results support the construct of the TAM 2 model, where risk is an important factor in technology adoption [35]. Because the perceived usefulness and convenience constructs in TAM focus on improving purchasing performance, the benefits that can be obtained include improving purchasing performance and the availability of online systems that can reduce the price of goods [35]. Perceived usefulness, ease of use,

and construct cost were found to have no direct impact on behavioral intention.

These empirical results add to studies in assessing the intention to use mobile payment systems. A recent study in Indonesia illustrates that ease of use, convenience, perceived usefulness, perceived risk, trust, and digital banking service innovation significantly influence the interest of Generation Z to use products. Islamic banks [36]. These findings are in line with the study of Phonthanukitithaworn., et al [29]. For Gen-Z, the perceived compatibility of NFC m-payments strongly influences their intention to use it [8], but it is necessary to minimize perceived risk as a contributing factor to consumer ease of use in m-payment adoption. In addition, the Gen-Z cohort utilizes their mobile phones as a means of resolving issues [17]. Mobile-based financial services are well-suited to the lifestyle of Gen-Z consumers as they tend to use mobile platforms spontaneously [37].

## 5. CONCLUSIONS AND IMPLICATIONS

Figures and tables should be placed at the top This research is a preliminary study to define the concept of using m-payment-based technology, by linking the variables of ease of use and intention to use mediated by perceived risk as a dimension of consumer confidence in the adoption of the m-payment model for Gen Z countries. develop more specifically in areas that have delays in receiving technological sophistication.

Through multiple regression analysis, it has been found that the TAM and TRITAM concepts act as explanatory risk factors, mediating between ease of use and the intention of consumers to adopt m-payment systems. However, the convenience factor is the differentiator, where statistical results show that there is no effect on usage intentions. The high risk is a direct barrier to the ease of adoption of m-payments, which weakens consumers' intention to use them.

The implications of this finding are more-narrow to electronic payment service providers. Banking as a provider feels the need to increase consumer understanding and knowledge, especially for the Z generation intensively. In addition, mobile payment providers will need to adjust their role in the ecosystem to scale the platform, and that will depend on the choice of coverage, availability, and geographic location of the service provider [38], meaning that in developing and island countries like Indonesia, consumer perceptions certainly vary greatly in terms of adoption. -payment. Considering that Generation Z is expected to be the majority of users of technology-based services in 2027 [1]. The results of this study are certainly not perfect in explaining the role of the TAM model, so further studies need to examine other factors such as; (1) business model innovation for the perceived ease, security, and

compatibility of using mobile payment systems because generation Z wants to improve the user interface [37]–[39]; (2) subjective norms or lifestyle factors, generation Z use mobile payments more widely if they perceive mobile payments to suit their lifestyle [40]; (3) the convenience factor, because using a mobile device at any time to make mobile payments and purchases quickly and easily [4].

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