Analysis of Influencing Factors Intention to Use E-Wallet Using Tam Model

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Abstract

This study aims to determine the factors that influence the intention to use e-wallets in Indonesia. The study has narrowed the knowledge gap of previous studies in terms of examining four factors ina single setting and focusing on vulnerable 18-55year olds as respondents. In addition, this research has developed mainstream literature on the use of e-wallets. The findings ascertained the significance of the four factors under investigation, and three hypotheses supported for respondents, allowing implications from multiple perspectives of the strategy to suggest increased use of e-money. According to the findings in this study, trust in the provider, the value of enjoyment and the value of comfort seem to be important factors that will influence the intention to use an e-wallet, thus requires more attention from online transaction facility providers, banks, and software developers. This means that whatever improvement of the existing e-payment system must consider these characteristics, namely: comfortable, enjoyable and trustworthy.

I. Introduction

The rapid development of communication and information technology has had a tremendous impact on people's lives in recent years (Jorgenson & Vu, 2016). The use of the internet is a growing trend in the field of information technology. The increasing number of individuals using the internet around the world shows this (Poushter, 2016). According to Hootsuite, internet users worldwide will number 4.54 billion by 2020, accounting for 59 percent of the world's population of 7.75 billion people (Hootsuite, 2020).

The number of internet users in Indonesia has increased significantly; According to the results of the 2019 APJII poll, internet users in Indonesia are 171.17 million or 64.8 percent of the total population. As of the second quarter of 2020, 196.71 million Indonesians had access to the internet, which is 73.7 percent of the country's total population (APJII, 2020). This shows that the number of Indonesians using the internet has increased drastically in the past year.

Digital advancements have also penetrated the financial business in Indonesia, changing current payment methods. According to the 2016 Consumer Payment Attitude Study, 80% of Indonesians prefer to do business through electronic payments (Dinisari, Mia Chitra, 2017). The position of cash as a payment method has largely been shifted by technology, so that cashless payments have become more effective and efficient (Suharni, 2018). As a result, fewer people carry cash. For people who want to do business by

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utilizing electronic payments, this trend has resulted in the emergence of the Cashless Society (Miky, 2018).

Data from Bank Indonesia (BI) shows that the volume of e-money transactions increased by 209.8% to 2.9 billion transactions at the end of 2018, compared to 943.3 million transactions in 2017. In July 2019, that reached an e-money transaction volume of 2.7 billion transactions or close to the value of the end of 2018. Likewise, the value of e-money transactions increased by 281.39%. In 2018, the value of e-money transactions reached Rp 47.2 trillion. This amount increased by Rp 34.8 trillion or almost three times compared to 2017 of Rp 12.4 trillion (Jayani, Dwi Hadya, 2019).

According to the government, there are 38 electronic money services allowed as of May 2019. One of the reasons is that from the end of 2017 to the end of 2018, the value of adult account ownership in Indonesia was only 48.9%. (Zaenudin, 2019). The lack of account access for certain groups is inversely proportional to the number of mobile phones in Indonesia which reached 62.69 million. When it comes to this phenomenon, the number of mobile phones exceeds the ownership of the account. This is an opportunity for organizations in the financial industry to use technology to their advantage. The availability of electronic money allows the general public to conduct financial transactions using mobile phones (mobile payments) (Zaenudin, 2019).

The general public must be willing to accept changes in the way they transact, such as switching from traditional to digital payment systems. This transition has its own challenges because, in fact, there are individuals who are ready to accept change and those who have difficulty accepting change, which can make technological innovations unsustainable in terms of development or use. The most significant component in using technology, according to Green and Pearson (2011), is that technology as part of innovation is acceptable to its users, after which users of technology can determine whether the innovations they get are beneficial for their activities or not (Green & Pearson, 2011).

Despite the promising benefits, findings from a number of studies and market research consistently show that consumer adoption of mobile payments is well below previous projections. Research conducted since more than a decade shows differences in customer adoption rates between mobile phones and their mobile payment applications (Chen, 2008; Mallat, 2007), however the same phenomenon has been found in more recent studies (Johnson, Kiser, Washington, & Torres, 2018; Zhao, Anong, & Zhang, 2019). According to the UK telecommunications regulator (Ofcom), 78 per cent of the adult population in the UK owns a smartphone (Ofcom, 2018). However, according to recent industry research estimates, mainstream adoption of mobile payments in the UK is unlikely to happen anytime soon as the slow growth rate is expected to reach only 25.5 per cent of smartphone users by 2023. (eMarketer, 2019).

The current usage pattern of mobile payment apps in the UK shows that only 16% of the UK adult population has installed mobile payment apps, and less than half of their users (46%) are considered permanent users (UK Finance, 2019). Despite this fact that mobile payment wallet applications (Apple Pay, Google Pay, Samsung Pay) provided by global mobile handset manufacturers have been introduced commercially in the last five years in the UK (Payment Systems Regulator, 2018). Therefore, a further understanding of the factors influencing consumers' decision to take advantage of this market diversity is necessary.

As a new technology-based payment service, mobile payment has not gained acceptance from many customers (Johnson et al., 2018; Zhou, 2014), researchers have

identified mobile payments as an interesting research topic to research to find out the potential factors influencing its adoption. Another motivator that has motivated studies on the adoption of mobile payments is the importance of mobile payments as an innovative means of payment. The author argues that mobile payments provide competitive advantages to entrepreneurs and service providers (Mallat, 2007), such as providing different values to consumers and entrepreneurs (Lai & Chuah, 2010); combining the usability value of card payments with the ease of using mobile phones (Cocosila & Trabelsi, 2016); and has significant future growth potential due to the widespread dependence on mobile phones as devices that can be used anywhere (C. Kim, Mirusmonov, & Lee, 2010).

To make it easier for individuals to understand the information systems and information technology of the organization, a model is needed that makes it easier for individuals to learn and receive information systems. TAM (Technology Acceptance Model) is one of the models that can be used to determine how much individuals can accept new technologies and systems (Permana & Setianto, 2017).

Davis proposed the Technology Acceptance Model as a theoretical foundation for analyzing and understanding user behavior in receiving and using information technology. Davis created the Technology Acceptance Model to investigate the factors influencing the utilization of information systems by consumers. The findings of this study show that interest (intention) in utilizing information systems is influenced by beliefs about the usefulness of technology (Perceived Usefulness) and perceptions about the convenience of using technology (Perceived Ease of Use) (Handayani, 2007).

External factors influencing the Technology Acceptance Model (TAM) model can be added to the Technology Acceptance Model (TAM) model. Quality variables were used as external variables in this study. This is reinforced by Thomas, Michael (2014), who stated that quality is one of the external factors of the Technology Acceptance Model (TAM). Previous research has revealed that this hypothesis is capable of explaining and predicting the intentions of behavior and actual behavior of a person in terms of embracing technology (Ashraf, Thongpapanl, & Auh, 2014). As a tool to evaluate the quality of digital products, the Technology Acceptance Model is integrated with operational ideas to generate customer satisfaction (Lavenia, Iqbal, & Irawan, 2018).

Research studies focused on the adoption of mobile payments in the UK have found that consumer perceptions of the risks and trusts involved in the use of mobile payments are strong barrier factors to adoption (Hampshire, 2017; Slade, Dwivedi, Piercy, & Williams, 2015). On the other hand, consumer reluctance to change their old payment habits because they see little added value from using mobile payments compared to traditional payment methods (de Kerviler, Demoulin, & Zidda, 2016; Hayashi & After all, 2020; Pham & Ho, 2015). The results of this study are particularly relevant to the case of the UK, where the increasing popularity of contactless card payments has made mobile payments an alternative that is less accepted among consumers (Titcomb, James, 2017). Indeed, consumers are used to the convenience of paying by card, pointing out that convenience is no longer an attractive part of the value of adopting mobile payments. Given this strong competition, mobile payments should offer the tangible benefits of existing payment methods to gain traction among consumers (Apanasevic, Markendahl, & Arvidsson, 2016). Recommendations from previous studies have shown that adding mobile payments with value-added services, such as account balance checks, integration with member cards, and cashback payments, can add value and increase demand (Apanasevic et al., 2016; de Reuver & Ondrus, 2017; Hayashi & After all, 2020; Madureira, 2017). While these recommendations offer a valuable new view of the potential of mobile payment

value-added services, there is still a lack of empirical evidence to support their alleged prospects as value-added for mobile payments. More importantly, the impact of value-added services on consumer perceptions of value-determinants, and their impact on final behavioral intentions, has not been explored in previous mobile payment research.

Many experts have developed models for analyzing the success and effectiveness of the system due to the difficulty of analyzing its success and effectiveness (Saputro, Budiyanto, & Santoso, 2015). One way to determine whether a digital wallet technology is accepted or not is by using the Technology Acceptance Model (TAM) development model with the concept of value-added services. (Cocosila & Trabelsi, 2016; de Kerviler et al., 2016).

The difference between this study and the previous study is the impact of the interaction between the value-added aspects of the service on the intention of customers to use digital payment systems, as can be seen from the perspective of consumers in Indonesia. This interesting phenomenon sparked the idea for this study. The linkage between convenience and profit factors in utilizing digital payment applications will be investigated in this study. In this study, the theory of the Technology Acceptance Model (TAM) (Davis, 1989) will be used as the theoretical basis, and the technology acceptance model and service value theory will be integrated into the Technology Acceptance Model (TAM).

II. Review of Literature

2.1 Technology Acceptance Model (TAM)

The technological acceptance model (TAM) was developed by Davis (1989) as an adaptation of Fishbein and Ajzen's theory of reasoned action (TRA) theory (1975), which has taken root well in social psychology research. TAM shows that end-user acceptance of computer-based systems is determined by two constructs: perceived usefulness and perceived ease of use (Davis et al., 1989). Perceived usefulness is the degree to which users believe that the system will improve the performance of their work in the context of the organization, while the perceived ease of use is the belief that using that system is easy. The model argues that these two factors determine the user's attitude towards the intention to accept a given system – which leads to actual usage behavior. TAM has been widely used in technology adoption studies (Chandra et al., 2010). This model is also the most widely used model in research on the adoption of m-commerce, m-banking, and mobile payments (Slade et al., 2015). In particular, many studies have used tam constructs (perceived usefulness and/or perceived ease of use) to predict behavioral intent towards payments (Bailey et al., 2017; Chandra et al., 2010; Chen, 2008; C. Kim et al., 2010; Koenig-Lewis et al., 2015; Liébana-Cabanillas et al., 2017; Ooi & Tan, 2016; Pham & Ho, 2015; Schierz et al., 2010; Su et al., 2017).

2.2 Value-Added Approach in Technology Acceptance Research

The theories discussed in the previous section have been instrumental in generating useful contributions to mobile payments and technology adoption research in general by highlighting the impact of various factors on behavioral intentions. However, the application of such the theory in the context of the consumer is criticized for ignoring the role of values and their determinants as predictors of important behavioral intentions (de Kerviler et al., 2016; Ström et al., 2014; Turel et al., 2007). In the consumer context, value maximization has been considered as a basic assumption for testing behavioral intentions towards technology (H. W. Kim et al., 2007). On the other hand, the adoption of

technology among individuals in organizational settings, which is the basic objective of the traditional theory of technological acceptance based on TAM (Jung, 2013), is often based on non-voluntary decisions that seek to increase productivity in the workplace (Turel et al., 2010). More importantly, any costs associated with the adoption and use of such technologies are borne by the organization (H. W. Kim et al., 2007). Instead, digital technologies and services offered to the public are used voluntarily, so the adopters in this case are consumers not just users of technology.

2.3 Perceived Value Theory

Value is considered a multidisciplinary concept that has roots and paradigms across different domains including social psychology, economics, marketing, and consumer behavior research. As a result of this diversity, different terminology has been used to define values mainly including: perceived values (Zeithaml, 1988), consumer values (Sánchez-Fernández et al., 2009), perceived values of consumers (Sweeney & Soutar, 2001) and consumption values (Sheth et al., 1991) . Although the concept of perceived value has been defined by many researchers, Eggert and Ulaga (2002) have identified three elements of general definition. First, the perceived value is a trade-off between the combination of several components of benefits and sacrifices as perceived by consumers in the market offering. Secondly, value is recognized as a subjective construction in which different consumers perceive different dimensions of value in a particular product. Finally, the relative value is perceived compared to the alternative market offerings available in using the situation. The subjective nature of the concept of value appears to be reflected in the different approaches that researchers have followed to conceptualize it (Eggert & Ulaga, 2002). Researchers have identified three different approaches to representing value, namely the unidimensional approach, the multidimensional approach, and the high-level approach (Sánchez-Fernández et al., 2009; Zauner et al., 2015).

III. Research Method

3.1 Research Design

To get an idea of the influence of independent variables, namely convenience value and enjoyment value which are integrated with the variables perceived value, perceived risk and trust in providers on the intention to use (use intention) mobile payment Go-Pay in Bandung, Verifiable research aims to establish a causal relationship between variables and hypothesis testing. Explanatory techniques were used in this study because the analysis was descriptive and evidenced by field data collection. Explanatory studies using SEM were conducted to analyze the problem so that researchers could gain a better understanding of how to deal with the problem (Malhotra et al., 2013).

3.2 Research Variables

Variable operationalization is a mechanism by which a definition or structure is modified or broken down into observable variables to measure (Cooper & Schindler, 2013). Therefore, the operationalization of variables aims to determine the size scale of each variable so that hypothesis testing can be carried out correctly. Here is a table of variable operationalizations in this study:

Table 1. Operationalization of Variables

Indicators	Source
Convenience Value	
Mobile payment is convenient because the phone is usually with me	(C. Kim et al., 2010)
Mobile payment is convenient because I can use it anytime	
Using mobile payment is convenient because it would save me time	(Gupta & Kim, 2009)
Mobile payment is convenient because it would minimise my effort	(Gupta & Kim, 2009)
Compared to traditional payment methods, mobile payment is more convenient	(Chen, 2008)
Enjoyment Value	
Using mobile payment would make me feel good	(Sweeney & Soutar, 2001)
I would feel relaxed about using mobile payment	
I would enjoy using mobile payment	
Perceived Risk	
I do not feel totally safe providing personal private information over mobile payment apps	(Slade et al., 2015)
I am worried about using mobile payment apps because other people may be able to access my account	
Using a mobile payment app would lead to a loss of privacy for me because my personal information would be used without my knowledge	(Featherman & Pavlou, 2003)
The mobile payment app might not perform well and create problems with my payments	(Featherman & Pavlou, 2003)
The likelihood that there will be something wrong with the performance of the mobile payment app or that it will not work properly is high	(Featherman & Pavlou, 2003)
The security measures built into mobile payment apps are not strong enough to protect my finances	(Slade et al., 2015)
I believe that overall riskiness of mobile payment apps is high	(Slade et al., 2015)
Trust in Provider	
I believe mobile payment service providers keep their promise	(Slade et al., 2015)
I believe mobile payment service providers keep customers' interests in mind	(Slade et al., 2015)
The services offered by mobile payment service providers meet my needs	(Lee et al., 2007)
I believe mobile payment service providers will do everything to secure the transactions for users	(Slade et al., 2015)
I believe mobile payment service providers are trustworthy	(Slade et al., 2015)
Use Intention	
Assuming that I had access to mobile payment, I would intend to use it	(Cocosila & Trabelsi, 2016)
Given that I had access to mobile payment, I predict that I would use it	
Given a chance, I plan to use mobile payment in the future	(H. W. Kim et al., 2007)

3.3 Population, Sample and Sampling Techniques

The population in this study is go-jek users who have go-pay, where research (Waruwu & Adhiutama, 2017) shows that Go-jek users are the productive age between 17 and 32 years. The total population of Bandung City aged 15 to 30 years is 897,886 people (Central Statistics Agency of Bandung City, 2020). The target group of this study is mobile payment go-pay users in the city of Bandung. The population to be studied is not identified (notidentified). In conducting this study using assumptions based on the Alvara Research Center survey in 2019, the percentage of Go-Jek users in Bandung City was 68.4%, while Go-Jek's main competitor was Grab with a user share of 31.8% in Bandung City. Bandung city (Alvara Strategic Research, 2019).

In multivariate studies, the sample size should be 10x greater than the number of variables in the study. Based on the theory of Joreskog & Sorbom and Roscoe, the researchers determined the number of samples as many as 400 respondents, because this figure is above the minimum number of values for SEM research.

Sampling technique is a sampling technique. To determine the sample to be used in the study. The technique used in this study is probability sampling technique, namely purposive sampling which in this technique does not provide equal opportunities or opportunities for each element or member of the population to be selected as a sample. This method is done because members of the population are considered not all to have criteria that match the research, namely having used the Go-Jek application and having a Go-Pay account.

IV. Result and Discussion

Table 2. Demographic profiles of respondents

	Frequency	Percentage
Age of respondents		
18-25 years old	354	84.89%
26-35 years old	51	12.23%
36-45 years old	11	2.64%
46-55 years old	1	0.24%
Gender		
Female	305	73.14%
Male	112	26.86%
Highest Academic Qualification		
Junior High School	6	1.44%
Senior High School	187	44.84%
Diploma/Advanced Diploma	36	8.63%

Bachelor's Degree	185	44.36%
Master/PhD	3	0.72%
E-wallet Used		
Funds	167	40.05%
Gopay	71	17.03%
Ovo	29	6.95%
ShopeePay	131	31.41%
LinkAja	9	2.16%
Mandiri e-money	5	1.20%
Brizzi	2	0.48%
Flazz	3	0.72%

The study successfully collected 417 sets of questionnaires, and demographic profiles are presented in table 1. As mentioned above, respondents to this study were aged 18-55 years. There were about 84.89% of respondents aged between 18-25 years. Meanwhile, 12.23% are between the ages of 26-35 years. In addition, 2.88% were between the ages of 36-55. Based on the table, it can be seen that the majority of respondents are women, namely 73.14% and the rest are men at 26.86%. Most of the respondents had a bachelor's degree of 44.36%, high school 44.84%. The rest of the respondents were highly educated (Diploma) 8.63%, junior high school 1.44%, and the minimum distribution of post-graduate reached 0.72%. The e-wallets used by respondents varied, Dana dominated the respondents' e-wallets by 40.05%, followed by ShopeePay by 31.41%, GoPay by 17.03%, Ovo by 6.95%, LinkAja by 2.16%, Mandiri e-money by 1.20%, and electronic users of Flazz and Brizzi with wallets of at least 0.72% and 0.48%, respectively.

Table 3. Construct Reability and Validity

	Cronbach 's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Trust In Providers	.86602660	.87132722	.90280725	.65029239
Intention	.82886512	.84384358	.89789911	.74630023
The Value of Enjoyment	.76615703	.80912668	.86474979	.68315398
The Value of Comfort	.83295156	.83563627	.88181672	.59890014
Perceived Risk	.85845991	.74261426	.87048334	.50184856

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Trust In Providers	.46826545	.46808175	.04656995	10.05509778	**.00000000**

-> Intentions					
Pleasure Value -> Intention	.20666326	.20642434	.05233481	3.94886820	**.00008979**
Comfort Value -> Intention	.10344258	.10213735	.04403419	2.34914214	**.01920495**
Perceived Risk -> Intention	.07364716	.08011481	.04167947	1.76698895	**.07784008**

Table 3 shows the measurements of the model as a whole. All constructions are reflective assessments and the loading factor for all indicators is above 0.708. Composite reliability for all constructions has met the minimum threshold of 0.7, while the Average Variance Extracted (AVE) is also greater than 0.5 [1]. In conclusion, all constructions meet the requirements of convergent reliability and validity. The value of R2 is 0.44, which indicates that 44% of the variance in vulnerable aged 18 to 55 years of intention to use an electronic wallet can be explained by trust in the provider, the value enjoyment, the value of comfort and perceived risk.

Table 4. Heterotraite–Monotraite Test Ratio

|	Trust Providers	In Intention	The Value of Enjoyment	The Value of Comfort	Perceived Risk
Trust In Providers					
Intention	.72337340				
The Value of Enjoyment	.59531289	.61061563			
The Value of Comfort	.48299857	.49279652	.63487910		
Perceived Risk	.12633015	.14944458	.08960764	.10936770	

Heterotraite–Monotraite Test is used as a benchmark to verify the validity of discriminants. The results shown in Table 3 indicate that all values are below the value of 0.90, thus it can be established that the model has met the requirements for the validity of the discriminant.

Table 5. Model Fit

	Saturated Models	Estimated Models
SRMR	.06845088	.06845088
NFI	.81175357	.81175357

Table 5 shows how good the model is with a series of observations. Standardized Roor Mean Square Residual (SRMR) is used to assess matches between relationships that are at values of 0.068 smaller than 0.08. Then the Normal Fit Index (NFI) is used to assess the suitability of the built model which is at a value of 0.81. In conclusion, the model built, namely trust in the provider, the value of enjoyment, the value of comfort and the perceived risk to the intention, can be declared fit.

4.1 Hypothesis Testing
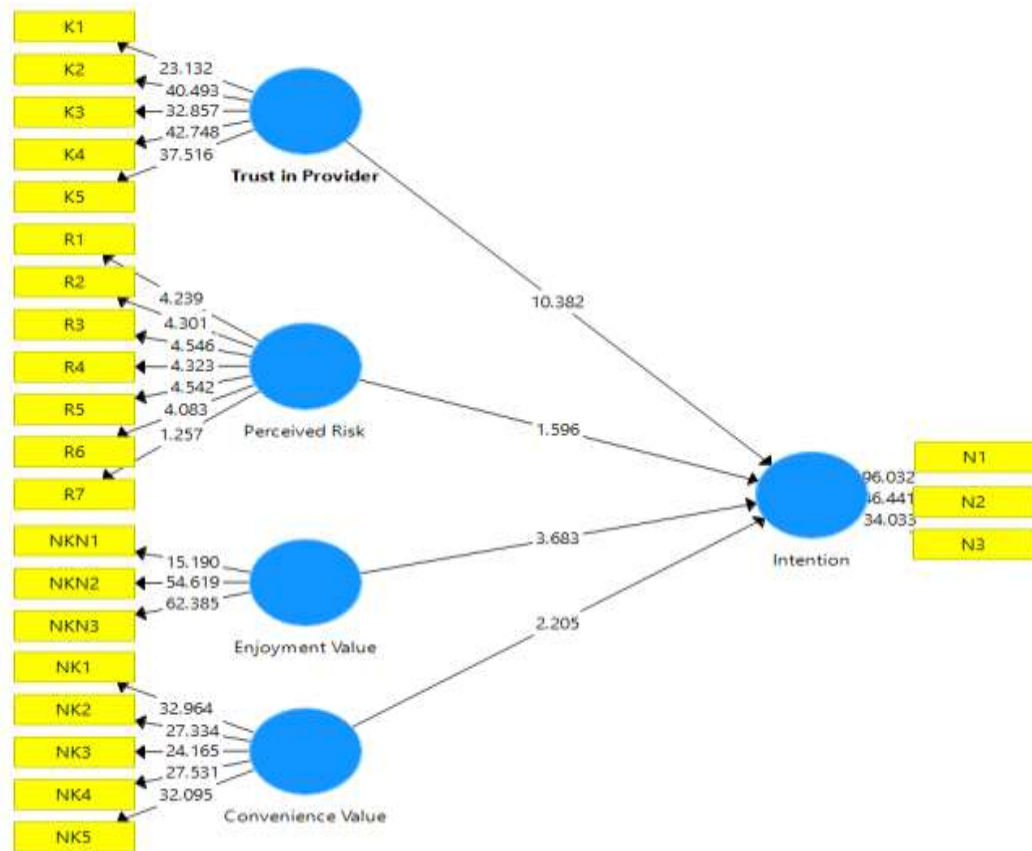
The perception of trust in the provider has reached a t value of 10,470 (p>0.05), which means that the perception of trust in the provider affects the intention to use an electronic wallet at vulnerable age 18-55 year. Therefore, H1 is supported. The reason trust in providers is supported is because the most respondents at the age of 18-25 are known to be techno savy generation. The group was born with the internet generation and learned quickly in adopting the use of technology. In addition, nowadays most of the transaction businesses, government sectors and even education have moved towards online. In addition, most of the respondents are undergraduates and high schools who can be considered very technologically literate. This could be the main reason why H1 is supported.

Furthermore, H2 and H3 are supported by calculated t values of 3,944 and 2,293 (p>0.05), many e-wallets provide benefits to new users, such as points, rebates, rewards, and instant cash back. In addition, there are many features that can facilitate transactions in one door. This could be the reason why H2 and H3 are supported.

V. Conclusion

This study aims to determine the factors that influence the intention to use e-wallets in Indonesia. The study has narrowed the knowledge gap of previous studies in terms of examining four factors ina single setting and focusing on vulnerable 18-55year olds as respondents. In addition, this research has developed mainstream literature on the use of e-wallets. The findings ascertained the significance of the four factors under investigation, and three hypotheses supported for respondents, allowing implications from multiple

perspectives of the strategy to suggest increased use of e-money. According to the findings in this study, trust in the provider, the value of enjoyment and the value of comfort seem to be important factors that will influence the intention to use an e-wallet, thus requires more attention from online transaction facility providers , banks, and software developers. This means that whatever improvement of the existing e-payment system must consider these characteristics, namely: comfortable, enjoyable and trustworthy. Thus, all policymakers, banks, software developers, and electronic payment service providers have played an important role to ensure security and the trust of electronic payment systems to increase customer trust and strengthen their trust. Electronic payment service provider and banks must make sure their systems are always safe from viruses, hackers, and so on. In addition, the government can also play a role in maintaining stability and financial arrangements through regulating epayment services so that customers remain protected. There are several opinions and suggestions that can be put forward for future research in the same field of study to overcome those limitations. First, the researcher must enlarge the sample as the overall size of the study, typically 500 respondents and above. If the total sample size of a study has been increased and expanded, it will result in an increase in hypothesis testing specifically and accurately. Future studies may also consider using other analytical instruments such as qualitative approaches to apply in complete discovery. For example, qualitative methods can be used to collect more up-to-date and precise results than accurate results, as the intention to adopt e-payment may change from time to time due to technological advances.

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