

Analysis of acceptance behavior and usage of e-wallet applications

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Abstract

The purpose of this study is to find out what factors influence the acceptance behavior and use of E-wallet applications. The population of this study is students who use the Gopay and LinkAja applications in the Special Region of Yogyakarta. Using the convenience sampling method, 100 respondents were selected. Based on data analysis using smartPLS, it is concluded that the overall research model has succeeded in showing the existence of factors that influence a person's behavior in receiving and using E-wallet applications. The results showed that the factors of perceived usefulness, (PU) perceived ease of use (PEOU), and attitudes toward usage (ATU) had a significant positive influence on the intention to use the E-wallet application. Intent to use (ITU) has a significant positive influence on the use of E-wallet applications. Supporting factors, namely information security system (SECURITY), also have a significant positive influence on the use of E-wallet applications. The results of this study have contributed to electronic wallet application service provider companies, especially Gopay and LinkAja to improve their services by considering aspects of ease and security in using electronic wallet applications so that the benefits felt by users are increasing which will later encourage intentions and attitudes to use them..

Keywords: perceived usefulness, perceived ease of use, intention to use, attitude toward usage

INTRODUCTION

According to Ipsos Business Consulting, as of November 4, 2020, the use of electronic wallets (E-wallet) has increased, especially when the Covid-19 pandemic reached 44% (Antara news, 2020). An online survey conducted by Ipsos Indonesia shows that the most frequently used electronic wallets are ShopeePay with 34%, then sequentially OVO 28%, Gopay 17% and LinkAja 7%. Based on the survey, it shows that the use of Gopay and LinkAja is still low compared to ShopeePay and OVO.

Online transaction services using electronic wallet technology include fund transfer services, buying credit, paying for all daily necessities (Hidrando, 2020). In Bank Indonesia regulation Number 20/6/PBI/2018 concerning Electronic Money, it is divided into 2 (two) types of electronic money based on their storage media, namely chip-based and server-based. Gopay and LinkAja are types of electronic money whose storage media is server-based.

Gopay is an electronic wallet owned by Gojek company engaged in online transportation which then develops its business such as Gopay, GoFood, GoPulsa, GoMed and other services. Gopay is an electronic wallet service available in the Gojek application with the aim of making payments without using physical money to facilitate transactions. Gopay collaborates with various banks, namely BRI, BNI, Mandiri, BCA, Permata Bank and other banks that are leading and support technology. Meanwhile, LinkAja is an electronic wallet application owned by PT Fintek Karya Nusantara (Finarya) which was formed on January 21, 2019. LinkAja can be used to make transactions by scanning the QR Code at available offline merchants, then the application can make transfers either between fellow LinkAja users or transfers to the destination bank. In addition, LinkAja can be used to pay for various needs such as buying train tickets, paying for electricity, buying credit and various other facilities available at LinkAja. The emergence of electronic wallet applications such as Gopay and LinkAja is an earlier technological development, so that it can carry out transaction activities using smartphones.

New technological developments such as Gopay and LinkAja need to consider aspects contained in the theory of Technology Acceptance Model (TAM). TAM theory is used to assess whether the technology is acceptable to users (Venkatesh & Bala, 2008). TAM theory discusses several aspects, namely

aspects of Perceived Ease of Use (PEOU) and aspects of Perceived usefulness (PU). Perceived Ease of Use (PEOU) or ease aspect is how easy it is for users to access and use electronic wallet applications. While the Perceived usefulness (PU) aspect or usefulness aspect is how much benefit is received by users when using the electronic wallet application. This TAM model will help e-wallet application developers to understand the desires of their users.

TAM is a development of the Theory of Reasoned Action (TRA) which specifically models user acceptance of the use of information systems and technology (Davis et al., 1989). Priyono (2017) stated that this TAM model has proven to be widely used to assess whether the diffusion of technological innovations is acceptable to users or not. The development of TAM is the Unified Theory of Acceptance and Utilization of Technology (UTAUT). UTAUT is a theory built by Venkatesh et al (2003). Venkatesh et al. (2003) have added supporting condition variables that have a positive influence on usage behavior (Masa'deh 2016; Awwad & Al Majali, 2014). Venkatesh et al. (2013) define facilitating conditions as factors that a person believes that the existing infrastructure and technicalities support the use of a system. Venkatesh et al. (2003) define usage behavior as the intensity or frequency of technology use. Of the various models regarding technology acceptance, the TAM model is the most widely used. Researchers who analyzed indicators of perceived usefulness and perceived ease of use were Hoseini (2015), Cho & Sagynov (2015), Al-Ajam and Nor (2013), and Sentosa et al. (2012).

This study adds one of the variables of UTAUT, namely the information security system which in the UTAUT model is a supporting condition variable. In addition, this study also examines the variable of attitude towards use which is also one of the variables that can be used to analyze the acceptance and use of technology. Based on several previous findings, it shows that a person's perception affects the acceptance and use of technology, namely the perceived usefulness (PU), perceived ease of use (PEOU), attitudes towards use (ATU) and supporting conditions. Therefore, the purpose of this study is to find out what factors influence the behavior of receiving and using E-wallet applications.

LITERATUR REVIEW

Technology Acceptance Model (TAM)

TAM is a development of the previous theory, the Theory of Reasoned Action (TRA) introduced by Fishbein and Ajzen (1975). According to Pavlou (2003), the results of research using TAM show that the TAM model is sturdy and practical enough to explain the level of acceptance of technology by users, especially in the context of information technology. TAM is a theory introduced by Davis (1989) that is used to analyze and understand the factors that affect the acceptance of computer technology.

Several studies have added new models such as Venkatesh & Davis (2000) called the TAM2 model, then Venkatesh & Bala (2008) refined and labeled the model as TAM3 and other studies incorporated new constructions such as technology user satisfaction into the TAM model which was later done by Wixom & Todd (2005). The purpose of TAM Theory is to know and explain that what kind of technology can be easily accepted and used by its users to support human activities as its users. TAM theory can explain the causal relationship regarding the trust aspect, namely the ease of using technology and information systems, usefulness will be obtained in using the technology, then the behavior and intentions of these users in using the technology in everyday life.

E-Wallet Technology

Electronic wallet technology is a combination of financial capabilities with technology that is useful for facilitating human activities as users. While electronic wallets or other terms are digital payments are one of the new technologies for the public that function as a means of non-cash payments that are carried out electronically or non-physically and practically in online transactions, the use of which is not only using mobile phones, but also has other basic forms such as computer networks and electronic systems (Putra & Nugroho, 2020).

Hypothesis Development

Effect of Perceived Usefulness on the Intention to Use of E-Wallet Applications

In TAM Theory, users of information technology will decide which technology to use to facilitate their activities. The intention of using a technology is determined by perceived usefulness. Perceived usefulness in electronic wallet applications is useful to make it easier to get the services they want Gefen et al (2003).

Adiyanti & Pudjihardjo (2014) stated that the usefulness of a new application can increase the intention of use to transact using e-money. If the new application is considered very useful for its users, then users will be interested in using it. Priyono (2017) found that the Perceived Usefulness aspect affects the intention to use E-wallet applications. The first hypothesis is as follows:

H1: Perceived usefulness (PU) has a positive influence on intention to use (ITU) of E-wallet applications

Effect of Perceived Ease of Use on the Intention to Use of E-Wallet Applications

Perceived ease of use is an aspect of ease where existing technology or information systems are able to support the activities of its users and are easy to use. Davis (1989) states that a good online application is one that is easy to use by its users so that it does not require a complicated process in using it.

Gefen et al. (2003) states that website developers will try to create websites that are easier to use and navigation that is easy for users to understand. Davis (1989) stated that if a person feels confident that the information technology system is easy to use, he will use it. On the other hand, if an information technology system is considered difficult to use, then someone does not use it because they find it difficult. Christina et al (2018) concluded that aspect of perceived ease of use affects the intention to use electronic wallet applications. Therefore, the second hypothesis is as follows:

H2: Perceived ease of use (PEOU) has a positive influence on intent to use (ITU) of e-wallet applications

The Effect of Attitude toward Usage on the Intention to Use of Electronic Wallet Applications

The acceptance and use of technology is inseparable from attitudes towards the behavior of using the application. Attitude is one of the determining factors for the intention to use technology (Kusumawati et al, 2014). Fisbaen and Adjen (1975) stated that a person's behavioral attitude is the result of positive or negative considerations obtained from the behavior. The same results were found by Hoseini (2015) in a study of mobile banking. The results of Huseini's research (2015) found that the attitude toward usage variable affects the intention to use mobile banking. Likewise, research conducted by Christina et al. (2018) and Dianta & Zusrony (2019) concluded that attitude toward usage has a positive effect on the intention to use of E-wallet applications. The third hypothesis is as follows:

H3: Attitude toward usage (ATU) has a positive influence on the intention to use (ITU) e-wallet applications

The Effect of Intention to Use on the Use of - Wallet Applications

Naufaldi & Tjokrosaputro (2020) states that Intention to Use as a person's strength of intention to perform an action he wants. Intention to Use is an intention of someone to do something good or bad and right or wrong. In the use of electronic wallet applications, a person's intention to use affects the use of the application. The results of research by Naufaldi & Tjokrosaputro (2020) and Christina et al. (2018) concluded that intention to Use affects the use of electronic wallet applications. The third hypothesis is as follows:

H4: Intention to use (ITU) has a positive influence on the use of e-wallet applications

The Effect of Information Security System on the Use E-Wallet Applications

Security is an important aspect in using an online application or information system related to data owned by prospective users. Prospective users will consider whether the application or information system used

is safe or not from possible dangers. Prospective users will try to minimize risks that may occur related to prospective users' trust in the use of the online application or information system.

Dianta & Zusrony (2019) stated that an information security system has a definition of operating a system from all forms of mechanisms that have the aim that the system avoids various obstacles that can have a negative effect on information security, data and systems. Pratiwi et al. (2018) stated that conducting business transactions using the internet has the potential for crimes such as conventional transactions. Potential crimes that may occur are fraud, transfers using illegal funds from a certain account, credit card hijacking, and other similar crimes that may occur if the security system of e-commerce is still weak. Likewise, in the use of electronic wallets, if the security system is weak, crime will easily occur so that it will make the online application not trusted by users both for storing funds and transacting. Dianta & Zusrony (2019) stated that security aspects need to be improved in order to reduce and prevent vulnerabilities in data security that can result in loss of trust. The fifth hypothesis is as follows:

H5: Information security system (SECURITY) has a positive effect on the use of E-wallet applications

Research Models

The research model that describes the relationship between variables in the acceptance behavior model and use of E-wallet applications in this study is presented in the following figure:

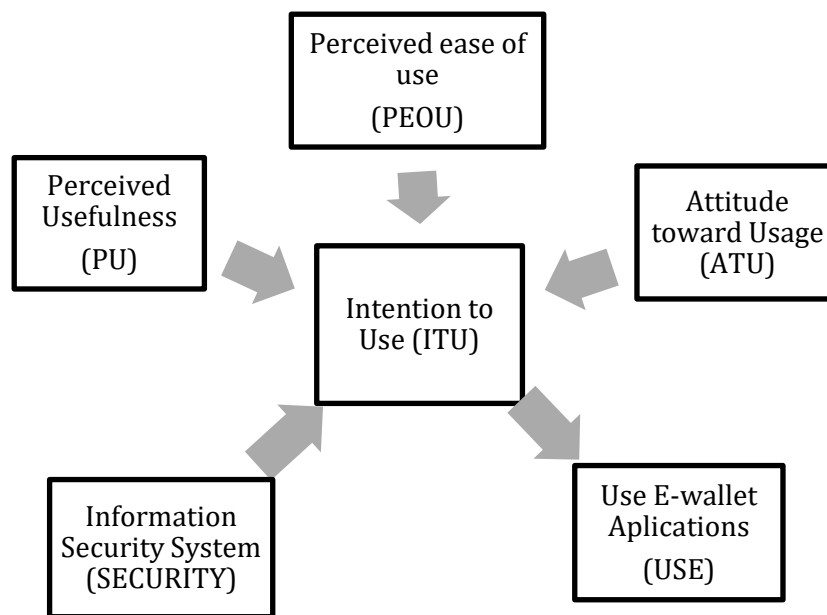


Figure 1. Research Models
Source: Self processed

RESEARCH METHODS

Research Population and Sample

The population of this study is students in the Special Region of Yogyakarta Province. Based on Higher Education Statistics data in 2021, the number of students from universities in the Special Region of Yogyakarta Province was 409,984. The minimum number of samples calculated using the Slovin formula is 98. By using the convenience sampling method, 100 respondents were obtained as research samples.

Data Collection Methods

The data of this study is in the form of primary data. The data collection method was carried out using a questionnaire with 4 likert scales sent to respondents via google form.

Measurement of Research Variables

This study used independent variables consisting of Perceived usefulness (PU), Perceived ease of use (PEOU), Intention to Use (ITU), Attitude toward usage (ATU), and Safety (SAFE). While the dependent variable is Use of E-Wallet Applications (USE). Measurements of each of the research variables are presented in the following table:

Table 1. Variable Measurement

No	Reference Sources	Variable (1)	Indicator (2)	Description (3)
1.	Son & Nugroho, 2020	Use of E- Wallet (USE)	<ol style="list-style-type: none"> 1. Electronic-based technology uses a data network or online system. 2. Non-cash payments 3. The use of electronic wallets is more practical, then there is no need for an authorization process between user accounts so that the money stored in the electronic wallet is automatically recorded like cash, but the value of the money has been converted in the form of electronic money. 	Electronic wallet or other term is digital payment, which is a new technology for the public as a means of non-cash payment that is carried out electronically or non-physically and practically in online transactions, but not only its use using mobile phones, but has other basic forms such as computer networks and electronic systems.
2	Priyono (2017)	Perceived Usefulness (PU)	<ol style="list-style-type: none"> 1. Make it easier to get the desired service. 2. Have benefits in carrying out their activities Make it easier to run user activities 	Perceived of usefulness
3	Priyono (2017)	Perceived Ease of Use (PEOU)	<ol style="list-style-type: none"> 1. It doesn't require any complicated way to use it. 2. Easy to use for its users User-friendly navigation 	Perceived Ease of Use is an aspect of convenience where existing technology or information systems are able to support activities or activities by its users and are easy to use.
4	Christina et al. (2018)	Intention to Use (ITU)	<ol style="list-style-type: none"> 1. Easy to use 2. Has appeal 3. Can reassure consumers Facilities sufficient to meet consumers 	Intention to Use as a power of intention of a person to perform an action that he wants.
5	Christina et al., 2018)	Attitude toward usage (ATU)	Influencing consumers due to innovation	Attitude is something that every human being does and then evaluates him whether what he does is good or bad or right or wrong.
6	Dianta & Zusrony, (2019)	Safety (SAFE)	<ol style="list-style-type: none"> 1. Avoiding Cyber crime 2. Accessible 24 Hours 3. Kept confidential and personal information 	Safety is in operating a system of all forms of mechanisms that have the aim of avoiding various obstacles that can have an adverse effect on the safety of data and system information.

Data Analysis Methods

The data analysis method used to test the research hypothesis is Partial Least Square (PLS) with smartPLS software.

RESULTS AND DISCUSSIONS

Characteristics of Respondents

The characteristics of respondents in this study were distinguished by gender, age, college origin, expenses in a month, then the respondents were or had used Gopay and LinkAja, how long the use of these applications had been, and how often respondents used Gopay and LinkAja. The description of the respondent is presented in the following table:

Table 2. Characteristics of Respondent Based on Gender

Gender	Frequency	Percentage
Woman	63	63%
Men	37	37%
Total	100	100%

Source: Primary data processed

Based on Table 2, it is seen that a large percentage of respondents are female. A total of 63 respondents (63%) were female, and 37 respondents (37%) were male.

Table 3. Age of Respondent

Age	Frequency	Percentage
17 – 19 years old	12	12%
20 – 22 years old	82	82%
23 – 25 years old	5	5%
>26 years old	1	1%
Total	100	100%

Source: Primary data processed

Based on the classification according to the age of respondents, it is known that most respondents are aged in the range of 20-22 years, namely with 82 respondents (82%). Furthermore, respondents with an age range of 17-19 years were 12 respondents (12%), as many as 5 respondents (5%) aged in the range of 23-25%, and as many as 1 respondent (1%) aged over 26 years.

Table 4. Origin of College

College	Frequency	Percentage
UII	74	74%
UNY	11	11%
UGM	3	3%
UPN Veteran Yogyakarta	1	1%
UIN Yogyakarta	1	1%
UAD	2	2%
UMY	3	3%
Univ. Amikom	1	1%
Poltekkes Kemenkes Yogyakarta	1	1%
UTY	2	2%
UST	1	1%
Total	100	100%

Source: Primary data processed

Based on the classification of university origin, the majority of respondents came from UII as many as 74 respondents (74%). Then the second most was UNY, which was 11 respondents (11%). The characteristics of respondents based on expenditure in a month are presented in the following table:

Table 5. Amount of Expenditure

Expenditure	Frequency	Percentage
<IDR 1,000,000	52	52%
IDR 1,000,000 – IDR 2,000,000	37	37%
IDR 2,000,000 – IDR 3,000,000	11	11%
>IDR 3,000,000	0	0%
Total	100	100%

Source: Primary data processed

The table above shows that most students have an expenditure in a month of less than Rp. 100,000,000, which is as many as 52 respondents. Students who have a monthly expenditure of Rp. 1,000,000 – Rp. 2,000,000 as many as 37 respondents. Respondents with monthly expenditure of Rp. 2,000,000 – Rp. 3,000,000 as many as 11 students. Based on this table, none of the respondents had expenditures above Rp.3,000,000. The characteristics of respondents based on the length of time using the E-Wallet Application are presented in table 6.

Table 6. Long Time Using E-Wallet

Length of Use	Frequency	Percentage
1 – 2 years	38	38%
2 – 3 years	31	31%
>3 years	31	31%
Total	100	100%

Source: Primary data processed

A total of 38 respondents have been using the E-Wallet application for 1 to 2 years. Respondents who have used the E-Wallet application for a period of 2 to 3 years are 31 students, as well as respondents who have used the E-Wallet application for more than 3 years as well as 31 students. The following Table 7 shows the characteristics of respondents based on the intensity of the level of frequent use of the E-Wallet application.

Table 7. Intensity of Use of E-Wallet Application

Intensity of Use	Frequency	Percentage
<5 times	60	60%
5 – 10 times	27	27%
10 – 15 times	8	8%
>15 times	5	5%
Total	100	100%

Source: Primary data processed

Table 7 shows the characteristics of respondents based on the intensity of the level of frequent use of the Gopay and LinkAja applications in a month. Respondent who use the application <5 times a month as many as 60 respondents (60%) is the highest number of respondents, then 5 – 10 times a month by 27 (27%) and the remaining 10 – 15 times and >15 times are as many as 8 respondents or 8% and 5 respondents or 5%.

Descriptive Statistics

Here are the descriptive statistics of all research variables consisting of minimum, maximum, mean and standard deviations:

Table 8. Descriptive Statistics

Variable Name	Min	Max	Mean	Standard Deviation
Perceived usefulness (PU)	1.00	4.00	3.680	0.661
Perceived ease of use (PEOU)	2.00	4.00	3.700	0.590
Intention to use (ITU)	1.00	4.00	3.420	0.926
Attitude toward usage (ATU)	1.00	4.00	3.460	0.763
Safety (SAFE)	1.00	4.00	3.310	0.825
Use of E-wallet Apps (USE)	1.00	4.00	3.800	0.725

Source: Primary data processed

Table 8 shows that the variable use of the E-Wallet application (USE) from students in the Special Province of Yogyakarta has an average value of 3.800. With a Likert scale of 1 to 4, the average value of the usage variable is 3.800 which is included in the high category. Likewise, the average value of independent variables consisting of perceived usefulness (PU), perceived ease of use (PEOU), intention to use (ITU), attitude toward of usage (ATU) and safety (SAFE) respectively had average values of 3.680, 3.700, 3.460, 3.420, and 3.310 all of which belong to the high category.

Validity Test

The indicator can be said to be valid if in the discriminant validity test, the value of the loading factor is higher than the correlation involving its latent variables (Kock & Lynn, 2012). Based on table 9, all indicators can be declared valid, because they have a higher loading factor value than the intended variable correlation.

Table 9. Discriminant Validity Test

Variable	PU	PEOU	ITU	ATU	SAFE	USE
PU	0.803					
PEOU	0.706	0.860				
ITU	0.700	0.645	0.718			
ATU	0.586	0.619	0.736	0.646		
SAFE	0.423	0.537	0.477	0.580	0.823	
USE	0.551	0.581	0.580	0.643	0.457	0.736

Source: Primary data processed

Reliability Test

The results of the reliability test are presented in table 10. The composite reliability and cronbach's alpha values of all variables are >0.5 , so it can be said that all latent variables have qualified and adequate reliability.

Table 10. Reliability Test

Variable	Composite Reliability	Cronbachs Alpha	Conclusion
PU	0.861	0.900	Reliable
PEOU	0.912	0.934	Reliable
ITU	0.719	0.825	Reliable
ATU	0.646	0.774	Reliable
SAFE	0.874	0.912	Reliable
USE	0.787	0.854	Reliable

Source: Primary data processed

Hypothesis Test

Testing the researchers' hypothesis using an inner model, with an alpha level (α) = 5. The following table presents the results of the hypothesis test.

Table 11. Hypothesis Test Results

Variable Relationships	Original Sample	T Statistics	P Values
PU -> ITU	0,489	4,982	0,000
PEOU -> ITU	0,300	3,356	0,000
ATU -> ITU	0,736	15,676	0,000
ITU -> USE	0,580	9,453	0,000
SAFE -> USE	0,457	5,884	0,000

Source: Primary data processed

Based on the table above, it shows that all relationships between variables have an original sample value of positive value and a p value of 0.000. This suggests that all research hypotheses covering H1, H2, H3, H4, H5 are supported.

The effect of perceived benefits on the intention to use electronic wallet applications

The results of the first hypothesis test (H1) show that aspek manfaat (PU) has a positive effect on the Intention to Use Electronic Wallet Applications (ITU). This means that the higher the benefits felt by the user, the higher the intention to use the electronic wallet application. If the benefits felt by users for electronic wallet applications increase, the intention to use the application will also be higher. Conversely, if the perceived benefits are low, then the intention to use the application is also low. Gopay is an electronic wallet application created by Gojek, while LinkAja is an application created by PT Fintek Karya Nusantara as a medium that aims to store money electronically and make transactions *online*. This result is consistent with research conducted by Priyono (2017) which concluded that the usefulness aspects of using electronic wallet applications have a positive effect on usage intention.

The Effect of Convenience on the Intention to Use Electronic Wallet Applications

The results of the second hypothesis test (H2) show that the convenience aspect (PEOU) has a positive effect on the intention to use the Electronic Wallet Application (ITU). This means that the higher the convenience felt by the user, the higher the intention to use the electronic wallet application. The application developed can facilitate all the activities needed by its users, so users tend to continue to use the electronic wallet application. These results are consistent with research conducted by Christina et al. (2018) which concluded that the ease of use aspect of electronic wallet applications has a positive effect on their usage intention.

The Effect of Usage Attitude on the Intention to Use Electronic Wallet Applications

Gopay and LinkAja are electronic wallet applications created with the aim of storing money electronically, and making transactions *online*. Based on the results of testing the third hypothesis (H3) shows that usage attitudes have proven to have a significant positive effect on the intention to use electronic wallet applications. This means that the better the usage attitude, the more it will encourage users to have the intention of using the electronic wallet application. With the intention of using a high electronic wallet application, users will increasingly understand how to behave in the use of the electronic wallet. These results are consistent with research conducted by Christina et al. (2018) and Naufaldi & Tjokrosaputro (2020) which found that usage attitudes positively affect the intention to use E-wallet applications.

The Effect of Use Intent on the Use of Electronic Wallet Applications

Based on the results of testing, the fourth hypothesis (H4) shows that the intention to use (ITU) has a positive effect on the use of Electronic Wallet Applications (USE). This means that the greater the intention to use an e-wallet application, the more the use of E-wallet applications. These results are consistent with research conducted by Christina et al. (2018) and Dianta & Zusrony (2019) which concluded that the intention to use electronic wallet applications has a positive effect on the use of these applications.

The Effect of Security on the Use of Electronic Wallet Applications

Based on the results of testing the fifth hypothesis (H5) shows that the information security system (SECURITY) has a significant positive effect on the use of electronic wallet applications (USE). This means, the higher the sense of security in using an electronic wallet application, the higher the level of use of the electronic wallet application. This means that if users feel that the electronic wallet application they use is guaranteed security, both personal information and transactions, the use of the electronic wallet application will increase. These results are consistent with research conducted by Dianta & Zusrony (2019) which concluded that security has a positive effect on the use of electronic wallet applications. With the availability of fast and reliable services when they need service and information assistance, users will consider continuing to use or move to other electronic wallet services. Gopay and LinkAja are electronic wallet applications created with the aim of storing money electronically, and making transactions *online*. Gojek and PT Finarya have innovated in various ways in order to improve the security of both data and electronic money stored in electronic wallets so as to increase user trust in electronic wallet providers.

CONCLUSION

The purpose of this study is to find out what factors influence the acceptance behavior and use of E-wallet applications. The results of hypothesis testing show that the overall research model has successfully demonstrated the existence of factors that influence a person's behavior in receiving and using E-wallet applications. The results showed that the factors of perceived ease of use, perceived benefits and behavioral attitudes had a significant positive influence on the intention to use the E-wallet application. Intent to use has a significant positive influence on the use of E-wallet applications. Supporting factors, namely information security information, also have a significant positive influence on the use of E-wallet applications.

Research Implications

The results of this study have implications for electronic wallet application service provider companies, especially Gopay and LinkAja to improve Electronic Wallet Application services. Services should consider aspects of ease, and security in using electronic wallet applications so that the benefits felt by users are increasing which will later encourage intentions and attitudes to use them.

Limitations

The limitation of this research is that the study only examines factors that affect the Gopay and LinkAja App services. Therefore, it is expected that future research can examine other electronic wallet applications, such as ShopeePay and OVO and make comparisons between these electronic wallet applications.

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