Analysis of Factors That Affect Intention to Use e-Wallet through the Technology Acceptance Model Approach (Case Study: GO-PAY)

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Abstract: *The adoption rate of app-based mobile payment services adoption in fact overtook that of the traditional mobile payment services in recent year.Indeed, most of the traditional mobile payment services have transformed into app-based mobile payment services, but very few succeed in building platforms with relevant and sticky daily use cases today. Technology acceptance model (TAM) used to determine the factors related to the intention to use, in this study are users of electronic wallet (e-wallet). The TAM approach is based on the results of hypotheses obtained in research related to the discussion of research. The data used in this study is a questionnaire distributed online. Then the questionnaire data is processed using the structural equation modeling (SEM) method. In processing data based on SEM, SPSS version 22 and AMOS version 23 are used. This study intends to obtain the factors that influence the intention to use e-wallet in Indonesia, in this case GO-PAY users. Then testing the previous hypotheses with the results of the hypotheses obtained in this study.*

Keywords: Mobile payment, e-Wallet, Hypotheses, Technology Acceptance Model, Structural Equation Modelling **.**

1. Introduction

In Indonesia, the majority of the population has little or no access to financial services due to geographical location, infrastructure and cost constraints [1]. The gap between bank account holders and smartphone users is increasing. The increase in smartphone users from 2016 to 2017 is around 50%, while bank account holders only increase by around 20% [2].

The adoption rate of app-based mobile payment services adoption in fact overtook that of the traditional mobile payment services in recent year. Indeed, most of the traditional mobile payment services have transformed into app-based mobile payment services, but very few succeed in building platforms with relevant and sticky daily use cases today [2]. The growth in the use of mobile payments in Indonesia still lags behind those in the ASEAN region. Indonesia only grew about 9%, while Vietnam experienced the biggest growth in the use of mobile payments, which amounted to 24% [3].

GO-PAY or previously referred to as Go Wallet is a virtual wallet to store GO-JEK credit that can be used to pay transactions related to services within the GO-JEK application. Currently GO-PAY has been integrated with several large banks that are GO-JEK partners, and can be used as legal payment instruments. GO-PAY has the largest number of electronic wallet users in Indonesia based on the survey results of 79.38% according to participating respondents [4].

2. Literature review
2.1 Technology Acceptance Model (TAM)
One of the most extensive studies for technology adoption of individuals is the Technology Acceptance Model (TAM). TAM to explain users' habits of using computers [5]. The study explained that TAM is suitable for user acceptance of computers. Besides TAM there are actually many other methods regarding user adoption. such as uses and gratification or diffusion of innovation, but for mobile payment research, TAM is more suitable because it can be modified according to the factors needed for adoption of user acceptance [6].

2.2 Structural Equation Modelling (SEM)

Structural model illustrates the relationship between latent variables. Parameters that show the regression of endogenous latent variables in exogenous are denoted by γ ("gamma"). Whereas for the regression of endogenous variables in other endogenous variables it is denoted by β ("beta"). The exogenous latent variable may also be related in two directions (covary) with denoted φ ("pshi"), while the notation for error is ζ.[7].

Considered estimation method, its underlying assumptions, and some general guidelines as to when each is appropriate. Then moved on to a general discussion of model testing, where the fit of a given model is assessed. Finally, described the specification search process, where information is used to arrive at a more properly specified model that is theoretically meaningful.
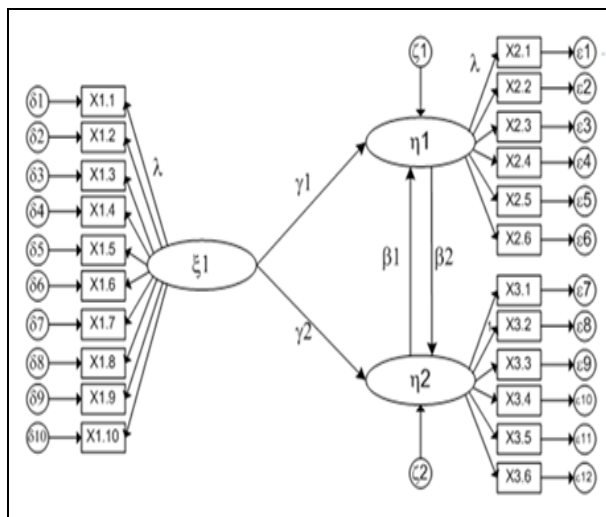
Figure 1: Path diagram and SEM notation

The equation in the structural model is built with the equation: endogenous latent = β (latent endogenous) + γ (exogenous latent) + ζ (error)

So for mathematical equations for the upper structural model are:

$$\eta_1 = \beta_1\eta_2 + \gamma_1\xi_1 + \zeta_1 \qquad (1)$$

$$\eta_2 = \beta_2\eta_1 + \gamma_2\xi_1 + \zeta_2 \qquad (2)$$

3. Theoretical Framework

3.1 Perceived Ease of Use

Perceived ease of use is defined as the degree to which individuals believe that using a particular system would be free of physical and mental effort (Davis, 1993). In this research variable, it is said to be a direct and significant influence factor. This is supported by the results of a significant study by Wu et al. (2017) and critical ratio (CR)> 1.96 between perceived value and intention to use. Another impact that is quite influential as a factor is through the research of Amoroso & Watanabe (2012) they found the impact of implanted a mobile payment application on a Sony brand mobile phone, so that it makes it easier for users without having to do more activities such as installing additional applications on their mobile phones. In making use of new technology, the thing that becomes one of the considerations for the user is its usefulness. This is supported by research conducted by Ramos et al. (2016), examining the acceptance of NFC technology in mobile payment. The results of this study that the ease of use with its use affects users in deciding to use NFC technology. Based on the statement from the previous research, we obtained several hypotheses, namely:
H1: Perceived ease of use affect perceived usefulness
H2: Perceived ease of use affect social influences
H3: Perceived ease of use affect intention to use

3.2 Perceived Usefulness

In the acceptance of the latest technology, the most valued thing is the usefulness of the technology. This is based on

Amoroso & Watanabe (2012) from the results of their research obtained a significant value between usefulness and value. This can be achieved due to the company's dedication to providing special prices, thereby increasing efficiency and effectively as benefits to be obtained. Even this is a factor that affects the interests of users. The following hypotheses are therefore formulated [8]:
H4: Perceived usefulness affect perceived value
H5: Perceived usefulness affect intention to use

3.3 Perceived Value

In terms of measurement of value is a benefit obtained from new technology. The discussion for this factor has been explained previously in the ease of use factor, that is reflected also from other strengthening studies as examined by Aksoy & Basaran [9]. The following hypotheses are therefore formulated:
H6: Perceived value affect intention to use

3.4 Social Influence

In discussing social influence factors, there are studies which state that this has a very significant influence in the current society. The social influence implication for the business is to effectively communicate with consumers the benefits of using this device. Since it seems that the words of mouth (social influence) are very influential on consumers' intention in this sample. If the consumers can see the benefits of the usage of this device, then they can act as promoters for the businesses. It is also important to illustrate for the consumers that the usage of the MPD will be easy and it does not require technical knowledge [10]. The following hypotheses are therefore formulated:
H7: Social influences affect attractiveness of alternative
H8: Social influences affect intention to use

3.5 Attractiveness of Alternative

In relation to the discussion about the indicators of attractiveness of alternatives, it is indeed not too much to discuss because according to the research conducted by Amoroso & Watanabe (2012) [8], it was found that the conclusion did not significantly influence. But in doing this based on Pham & Ho (2015) they conducted a study of the use of NFC in mobile payment as one of the factors considered, with significant results affecting other variables [11]. The following hypotheses are therefore formulated:
H9: Attractiveness of alternative affect intention to use

3.6 Perceived Trust

The use of mobile payment in connection with the discussion of research topics is e-wallet is still said to be minimal. This is due to the inability of users in Indonesia to accept the payment system as generated through a survey of increasing the use of mobile payments compared to other Asian countries [3]. However, the research conducted by Maqableh et al (2015) found that hypothesis was supported which seemed relatively logical considering that one would expect some additional trust by the customer to have a good reputation as an online business [12]. The results of the

conclusions with the findings of Gefen (2000), which carried out a survey of the role of familiarity and trust and found that the customer behavioral intentions were highly affected by those two main factors. The following hypotheses are therefore formulated:

*H10: Perceived trust affect intention to use*

3.4 Perceived Security

The crucial factor for users of mobile payment technology is a security problem. Therefore, this is a factor that should have a significant impact on the user. The previous statement was based on research conducted by Amoroso & Watanabe (2012) [8] and Kumar et al (2018) [13] from the study that the effect of security has an impact on the other two factors namely trust and intention to use. This is in accordance with the researchers who have been listed previously that the results of their research lead to positive results about the direction of security in using new technology. In connection with previous research relating to the use of mobile payment, it can be used as a reference in conducting this research. The following hypotheses are therefore formulated:

H11: Perceived security affect perceived trust
H12: Perceived security affect intention to use
H13: Perceived security affect attractiveness of alternative
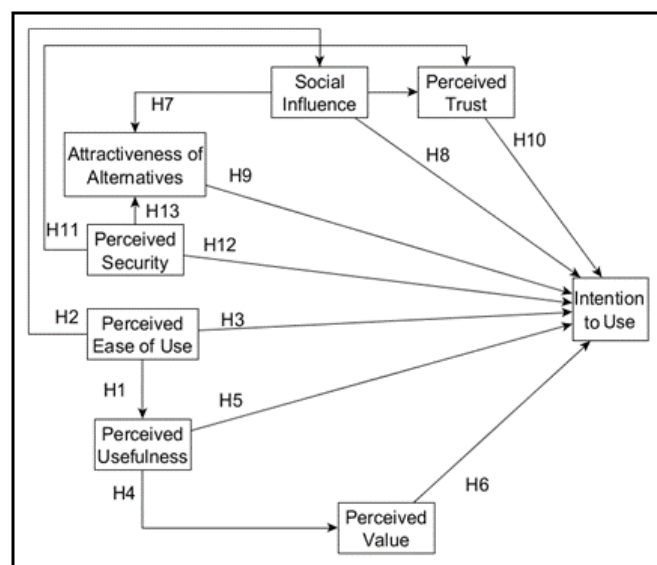
Figure 2: Research model and hypotheses

In figure 2 displays the research model and the use of hypotheses based on previous studies. The discussion on sources cited through several previous studies is intended to be the basis for conducting this research.

4. Research Result

4.1 Demographics of Respondents

This study uses questionnaire data in order to obtain and analyze problems that have been identified previously. In the questionnaire distributed online, there is a section relating to the identity of the respondent in general. Respondents in this study were 214 respondents, and the distribution of respondents who had participated in this study was divided into categories (groups) namely sex group, age category,

domicile category and education history.

In the gender category, there are 2 groups, namely male and female. Respondents who participated in this study were dominated by male compared to female. There were 110 male respondents while 104 female respondents.

The total of each category of respondents who participated in this study were sorted from the largest percentage, namely the category of late adolescents aged 17-25 years as many as 52.3% (112 respondents), age range 26-35 years at 34.6% (74 respondents), age range 36-45 years is 5.6% (12 respondents), age range under 17 years is 6.1% (13 respondents) and age range above 45 years is 1.4% (3 Respondents).

The respondents of this study who participated in giving their opinions on GO-PAY services totaled 214 respondents. In order to find out the domicile of the respondent, a question is made in one of the contents of the questionnaire that questions the location / domicile of the respondent. The demographics of respondents based on domicile are listed in table 1.

Table 1: Demographics of Responden by Domicile

Region		Total Respondent	% Percentage
Jakarta		60	28%
Bogor		26	12%
Depok		43	20%
Tangerang		12	6%
Bekasi		37	17%
Others	Karawang	10	5%
	Malang	1	0.5%
	Surabaya	6	3%
	Bali	3	1%
	Makassar	6	3%
	Balikpapan	1	0.5%
	Yogyakarta	5	2%
	Semarang	4	2%
Total		214	100%

The conclusion that can be drawn from table 4.2 is that GO-PAY users in Indonesia are dominated by users in the Jakarta area with a percentage reaching 28%.

4.2 Exploratory Factor Analysis (EFA)

Exploratory factor analysis is a complex multivariate statistical approach involving many linear and sequential steps. In addition, many options and rules of thumb apply themselves to EFA emphasising that clear decision sequencing and protocols are paramount in each investigation [14].

In the calculation of EFA the conditions seen are KMO Measure by comparing the results of the KMO calculation of each variable. There is the Kaiser-Meyer Olkin (KMO) assessment standard measure of sampling adequacy seen in table 2.

Table 2: KMO Measure of Sampling Adequacy Standard (Source: Cerny,1977)

Estimate	Conditions
0,00 – 0,49	Unacceptable
0,50 – 0, 59	Misrable
0,60 – 0, 69	Mediocre
0,70 – 0,79	Middling
0,80 – 0,89	Meritorious
0,90 – 1,00	Marvelous

Based on table 3, there is a conclusion that data can be accepted if> 0.50. So if there is data that is <0.50, the data is considered inappropriate and suggested not to be used in the study [15].

Table 3: Kaiser-Meyer Olkin (KMO) Results for each Factors

Factors	Barlett's Test	KMO Measure Result	KMO Measure Standard	Information
PU	200,426	0,788	0,5	Acceptable
PEU	146,646	0,613	0,5	Acceptable
PV	58,836	0,587	0,5	Acceptable
SI	81,702	0,659	0,5	Acceptable
AOA	155,532	0,648	0,5	Acceptable
PT	91,931	0,548	0.5	Acceptable
PS	173,181	0,641	0,5	Acceptable
ITU	120,222	0,675	0,5	Acceptable

The formula of Keiser-Meyer Olkin (KMO) Test:

$$KMO = \frac{\sum_{i=1}^{P}\sum_{j=1}^{P} r_{ij}^2}{\sum_{i=1}^{P}\sum_{j=1}^{P} + \sum_{i=1}^{P}\sum_{j=1}^{P} a_{ij}^2} \quad (3)$$

Where:

r_{ij}^2 = the correlation matrix

a_{ij}^2 = the partial covariance matrix

Bartlett's Test of Sphericity formula:

$$Bartletss\ Test = -\ln|R| \left[(n-1) - \frac{2p+5}{6}\right] \quad (4)$$

Where:
R= determinant value
n= amount of data
p= Number of variables / items / indicators

4.3 Confirmatory Factor Analysis (CFA)

According to Hoyle (2019) [16], Confirmatory factor analysis is a statistical procedure for testing hypotheses about commonality among variables. As multivariate procedure confirmatory factor analysis is used to simultaneously test multiple model. At least two variables, or indicators, are necessary for the most rudimentary measurement model. Confirmatory factor analysis variability in scores on indicators according to sources specified in a measurement model.

In Figure 3 displays the CFA model using AMOS v.23. In the construct there are 2 exogenous variables, namely Perceived Ease of Use and Perceived Security. It can be seen that the results generated in the Goodness of Fit still have CFI that has not met the CFA model standard (CFI $> 1,96$),

so that the contruct cannot be accepted as a basis for evaluating covariance between variables. Then the next step is to modify the CFA model. This stage will continue in the next discussion.
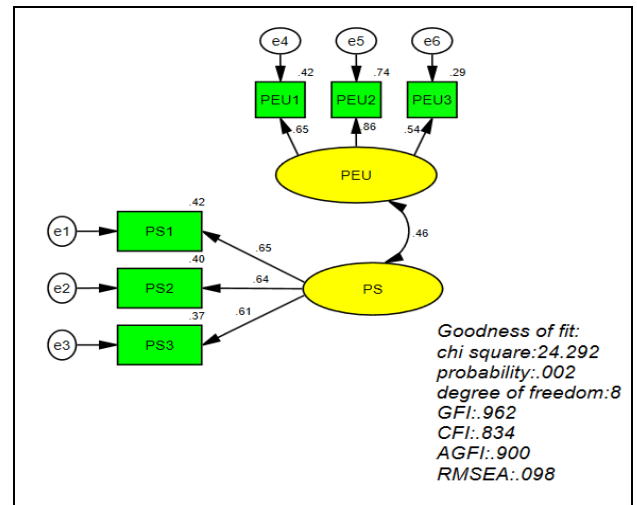
Figure 3: Confirmatory Factor Analysis (CFA) – Exogenous Variable

In Figure 4 it can be concluded that the model has not been fit and cannot be accepted in order to analyze the hypotheses used in this study.
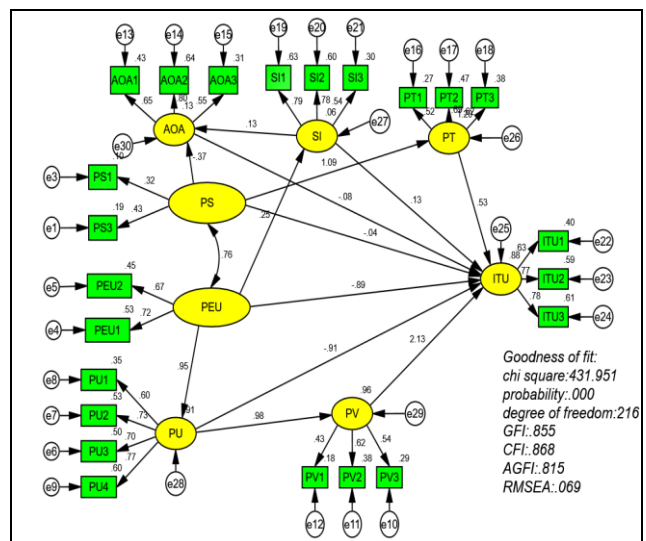
Figure 4: Result of full construct SEM

Table 4: Result and Cut-off value Comparison Results for full construct

Criteria	Result	Cut-off value	Information
Chi Square	431.951	Small value are better	Rejected
RMSEA	0,069	≤0,08 ≤0,05	Accepted with conditions browne & curdeck, 1993)
GFI (Goodness of fit index)	0,855	≥0,90	Rejected
CFI (Comparative fit index)	0,868	≥0,90	Rejected

As seen in the table above, the model that occurred in Figure 4 cannot be used in the steps taken because as seen in table

4, the results obtained still do not meet all the expected measurement criteria.

In table 5 regression weight, it can be seen that the Critical ratio value does not meet the standards in the variables examined in this study. The results shown do not have a relationship between research variables with the intention to use. Then this cannot be said that the execution of the variable test has been completed.

Table 5: Regression Weight CFA before Modifications

	Estimate	C.R.	P	Label
SI<---PEU	.304	2.952	.003	
PU<---PEU	1.000	8.643	***	
AOA<---PS	-.807	-2.974	.003	
PT<---PS	1.741	3.771	***	
AOA<---SI	.098	1.404	.160	Rejected
PV<---PU	.643	7.149	***	
ITU<---AOA	-.059	-.944	.345	Rejected
ITU<---SI	.076	1.888	.059	Rejected
ITU<---PT	.544	.855	.393	Rejected
ITU<---PV	2.128	.368	.713	Rejected
ITU<---PU	-.602	-.158	.874	Rejected
ITU<---PEU	-.616	-1.124	.261	Rejected

At this stage, it is the same as the stages that have been carried out before on exogenous confirmatory factor analysis (CFA) variables. This stage looks at the modifications that have been provided by AMOS by looking at the largest MI value then there are 2 ways that can be done, namely erasing the error value by removing the indicator and other ways by connecting errors with other errors as seen in table 5.

Based on table 4.10, there is an error relationship between e4 5 e5, then a connecting line is found in AMOS to connect the error value to get a good value of goodness of fit for the variables in this study. This is done so on, so that the results are in accordance with what is expected, this is related to the comparison of hypotheses that have been formulated previously with the results obtained through this study based on the method of structural equational modeling (SEM). In Figure 5, displaying the fit model obtained in the study after making several modification processes in accordance with the modification indices that have been shown in table 5.
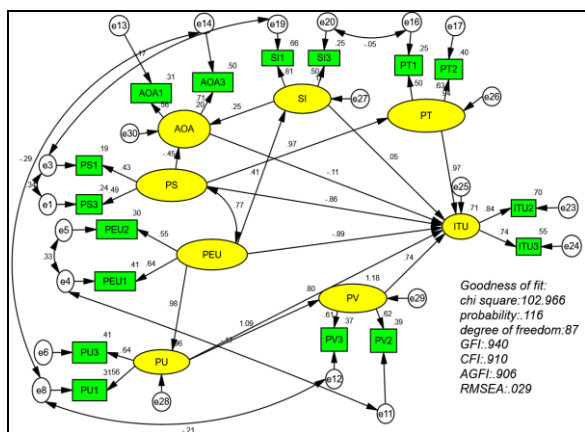
Figure 5: Result of the final model SEM

At the next stage, test the hypothesis and perform the respecification phase of the new model by comparing the initial model in this study. This stage has been completed, with the construct model obtained in using AMOS tools.

The mathematical model for the structural model in Figure 5 is as follows:

$$ITU = 0{,}80PU + 0{,}74PV - 0{,}89PEU + e25 \quad (3)$$
$$PV = 0{,}09PU + e29 \quad (4)$$
$$PU = 0{,}98PEU + e28 \quad (5)$$
$$SI = 0{,}77PEU + e27 \quad (6)$$
$$PT = 0{,}97PS + e26 \quad (7)$$
$$AOA = -0{,}45PS + e30 \quad (8)$$

Where are as follows;
ITU = Intention to Use
PV   = Perceived Value
PU   = Perceived Usefulness
PEU = Perceived Ease of Use
SI   = Social Influence
PT   = Perceived Trust
PS   = Perceived Security
AOA = Attactiveness of Alternative
e25 = Epsilon 25
e26 = Epsilon 26
e27 = Epsilon 27
e28 = Epsilon 28
e29 = Epsilon 29
e30 = Epsilon 30

5. Hypothesis Testing

At this stage it is done to get conclusions from the research related to the factors that influence the intention to use users by using the GO-PAY e-Wallet case study. This stage is based on the research framework that has been discussed in the previous chapter, accompanied by hypotheses in previous studies.

Table 6: Results of Hypotheses Test

	Estimate	*C.R.*	*P*	*Label*
SI<---PEU	.597	3.738	***	Accepted
PU<---PEU	.999	11.975	***	Accepted
AOA<---PS	-.617	-2.454	.014	Accepted
PT<---PS	.999	11.975	***	Accepted
AOA<---SI	.162	1.600	.110	Rejected
PV<---PU	.999	11.975	***	Accepted
ITU<---AOA	-.154	-1.000	.317	Rejected
ITU<---SI	.044	.490	.624	Rejected
ITU<---PT	1.733	.290	.772	Rejected
ITU<---PV	.999	11.975	***	Accepted
ITU<---PU	.999	11.975	***	Accepted
ITU<---PEU	-1.123	-2.440	.015	Accepted
ITU<---PS	-1.578	-.254	.799	Rejected

In table 6, displays the results of this study by looking at the relationship between variables in finding factors that influence the intention to use users of the GO-PAY e-Wallet

application. There are 8 hypotheses received from 13 hypotheses that have been formulated previously, because the value of CR> 1.96 and can also be seen from the significant P value with the symbol ***.

In this study there are 8 hypotheses that are accepted in relation to finding factors that influence the intention to use GO-PAY application users. The hypothesis accepted as shown in table 6 are as follows:

1) Perceived Ease of Use positively affects Social Influence
   In table 4.12 it can be seen that the value of the critical ratio (CR) reaches more than the standard expected value of 3.738> 1.96. It can be concluded that perceived ease of use has a positive and significant relationship because the value ranges from 0.01 <P <0.05.
2) Perceived Ease of Use positively affects Perceived Usefulness
   The relationship between factors perceived ease of use and perceived usefulness can be accepted, because it has a critical ratio of 11.975> 1.96 and significant.
3) The Perceived Security negatively affects Attractiveness of Alternative
4) Factors perceived security has a negative relationship means that attractiveness of alternatives must give something more first, then the factor will have an effect. It is based on the value of the critical ratio obtained at -2.454, but the relationship between the two factors is not significant because the value of P (probability) obtained is 0.014 which means it approaches the threshold of a probability value of 0.01.
5) Perceived Security affects positively the Perceived Trust
   In contrast to the previous relationship, perceived trust is positively affected by perceived security. This can be seen in the results of the critical ratio obtained at 11.975> 1.96 and also significantly influence.
6) Perceived Usefulness positively affects Perceived Value
   Perceived usefulness positively affects perceived value, because the value of the critical ratio obtained is 11.975> 1.96 and also significantly influences.
7) Perceived Value positively affects Intention to Use
   There is a relationship between perceived value and intention to use positive which also experiences a significant value. This can be seen in table 4.12 that the value of the critical ratio and its probability meet the existing standards.
8) Perceived Usefulness positively affects Intention to Use
   Positive perceived usefulness has a relationship to the intention to use obtained from the results of this study with the standard value of the critical ratio and the probability is fulfilled.
   Perceived Ease of Use negatively affect Intention to Use

The relationship between perceived ease of use towards the intention to use has a negative value, which means that the intention to use must first be obtained then there will be a relationship between the two. It can be seen in table 4.12, it can be seen that the value of the critical ratio obtained in this relationship is -2.440 and also insignificant means that there is still a possibility that there is no relationship between the two because the probability value obtained is 0.015 near the 0.01 threshold.

6. Conclusion

In study of determining the factors that influence the intention to use for GO-PAY users by using the technology acceptance model (TAM) method can be identified. The data collection techniques carried out in this study were questionnaires. The questionnaire was distributed through online media, the data collection process began on July 18, 2019 until July 21, 2019. Respondents who participated in this study amounted to 214 people. In the research male respondents were more numerous than female respondents with a total of 110 male, 104 for female respondents.

In the results of the hypothesis test it was found that there are influences that influence the intention to use in this case, namely perceived value, perceived usefulness and perceived ease of use. The method test was carried out using a structural equation modeling (SEM) approach using a tool in the form of AMOS v.22 and SPSS v.23 software in moving questionnaire data.

The recommendations for subsequent development so as to obtain better results, among others;

1) It is expected that further research will use more factors that have been defined in the technology acceptance model (TAM).
2) In conducting further research, it is expected to use more data to be processed using the structural equation modeling (SEM) method. So that better results are expected.
3) Further research is recommended to use other tools in processing data other than AMOS such as LISREL, PLS, and others

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