

# Behavioral Intention Analysis on E-Money Services in Indonesia:

Using the modified UTAUT model

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**Abstract**—The level of use of e-money services in Indonesia is still relatively low. Low in trust and high risk are thought to be determinants of the level of community behavioral intention. On the other hand, other factors of age, gender and level of education also affect the relationship of behavioral intention with the determinants. The purpose of this study is to determine the effect of the dimensions of trust (multi dimensional trust) and perceived risk on the intention of people's behavior on e-money services in Indonesia. Purposive sampling conducted on this study to the population of big city in Indonesia. Data collection was carried out with online Likert scale questionnaire, with instruments distributed in 5 big cities in Indonesia. The results of this study indicate that the dimensions of trust (Multi Dimensional Trust) influence the intention of the community in adopting e-money services, while the perceived risk does not affect the intention of the community in adopting e-money services. Performance expectation variable (Performance Expectancy) is the biggest factor that influences people's intention to adopt e-money services. Education as a moderating variable is the only variable that has significant effect on the influence of determinant variables on behavioral intention.

**Keywords**—e-money; behavioral intention; multidimensional trust; modified UTAUT

## I. INTRODUCTION

E-money, an acronym for electronic money, is a payment system that uses cards that are charged with funds and can be recharged [1]. The application of e-money in Indonesia is too late compared to other countries such as Hong Kong and Singapore. In Indonesia, e-money has only been introduced since 2007, compared to Hong Kong in 1997 and Singapore in 2000 [1]. Although it was introduced in 2007, the level of public awareness and knowledge of e-money services in Indonesia is still low and cash transactions and the use of currency are still high [1,2]. Whereas the National Non-Cash Movement (GNNT) in Indonesia has been around since 2014. Research on the analysis of factors that influence specific behavioral intentions of people on e-money services in Indonesia has not been widely done. On the other hand, the modified model of UTAUT has been widely used in previous researches on behavioral intention in studies of subjects related to information technology [3-8]. E-money as an information

technology-based product will certainly be very suitable if studied using the modified UTAUT model.

Figure 1 shows the Modified UTAUT Model developed by Lou et al. in 2010.

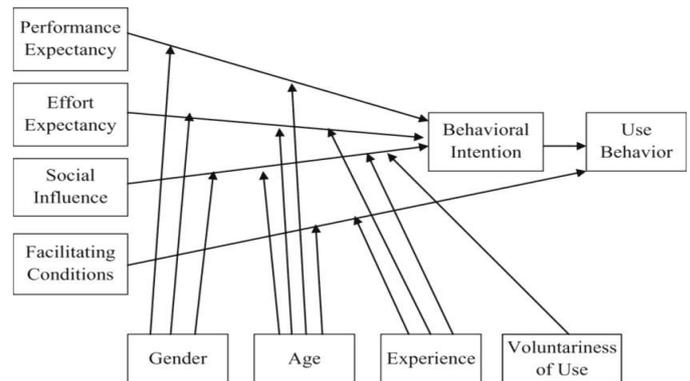


Fig. 1. Modified unified theory of acceptance and use of technology (UTAUT) [6].

UTAUT is a research model that provides a useful tool for managers to access the likelihood of success from the introduction of a technology and can help them understand the drivers of such acceptance in order to further design intervening activities such as training and marketing [8]. Some of the variables in the UTAUT model further experience development according to the context of each study.

Trust and perceived risk are important factors in influencing adoption behavior [3-6]. Multi Dimensional Trust is divided into disposition to trust, structural assurance, trust belief, and all are trust dimensions based on information technology [1,5]. Customers will not accept or use a technology-based service without the trust that has been built previously [5,7].

Community characteristics that tend to avoid risk is one of the causes of the low level of adoption of a technology [5,9]. The type of risk that can occur is the security and confidentiality of the customer's personal financial data [7]. On the other hand, self efficacy has been used in previous research in analyzing behavioral intention [1,8].

Furthermore, the researcher proposes a model that is built based on several previous studies [3-8]. This model can be used to determine the effect of multi dimensional trust and perceived risk on people's behavioral intentions on e-money services in Indonesia. Figure 2 shows the flow of thinking compiled based on the previous theory and related studies. In Figure 2, the hypotheses that will be tested in this study are also presented.

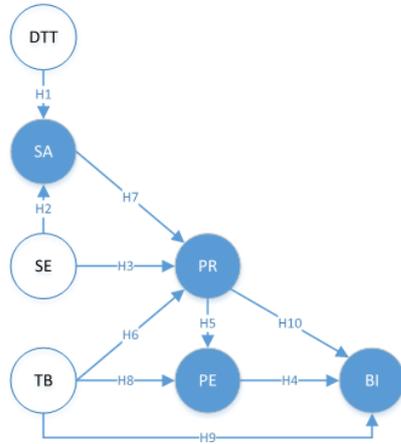


Fig. 2. Research model.

Note:

- DTT = Disposition to Trust
- SA = Structural Assurance
- SE = Self Efficacy
- PR = Perceived Risk
- PE = Performance Expectancy
- BI = Behavioral Intention
- TB = Trust Belief

II. METHOD

A. Research Design

This research adopts a modified model of Unified Theory of Acceptance and Use of Technology (UTAUT) with research subjects of people living in large cities in Indonesia who have not used e-money services but know about these services. Five cities were chosen, namely Jakarta, Bandung, Surabaya, Medan and Makassar. Data collection was carried out using a sample quota method by distributing questionnaires online through social media such as Line, Whatsapp, Facebook and Blackberry Messenger. Questionnaires collected and can be processed according to predetermined criteria as much as 286.

This study uses seven variables, namely Disposition to Trust (DTT), Structural Assurance (SA), Self-Efficacy (SE), Perceived Risk (PR), Trust Belief (TB), Performance Expectancy (PE), and Behavioral Intention (BI) with 34 question item. The moderating variables are age, gender, and education [11].

B. Data Processing and Analysis Techniques

For the analysis technique, this research used Partial Least Square structural equation model (PLSSEM) using Warp PLS version 4.0 software. The model that was processed and tested consists of the Measurement Model (Outer Model) and Structural Model (Inner Model). Measurement model (outer model) was tested using four tests with rule of thumb and parameters used to test the validity and reliability of the construct used [5]. Inner model was tested by looking at the R<sup>2</sup> value for each endogenous latent construct variable as the predictive power of the structural model [10].

Furthermore, the three moderating variables were tested for their effect using multi group analysis on the relationship between exogenous latent constructs and endogenous latent constructs. Multi group analysis aims to compare data analysis based on sample characteristics with two or more data sets. The trick is to compare each path coefficient for each sample group and compare the standard error and the significance of the T-statistics/P-value obtained [10].

III. RESULTS AND DISCUSSION

A. Characteristics of Respondents

Male respondents amounted to 158 people (55%) and women as many as 128 people (45%), which were dominated by respondents who live in Bandung as many as 114 people (40%), with ages 21-30 years as many as 116 people (41%), have a final education of senior high school/vocational school as many as 115 people (40%), with an income of Rp2,000,001 - Rp5,000,000 as many as 106 people (37%), and working as students/university students as many as 115 people (41%).

Other respondents reside in Jakarta (16%), Surabaya (23%), Medan (11%), and Makassar (10%). Most of the respondents (40%) had the latest senior high school/vocational school education, followed by 42% with Diploma and S1 education. This is in accordance with the age range of respondents between 17-30 years as much as 55%. From these characteristics, respondents who participated in this study are appropriate. It is assumed that these are the people who are sure to have the necessary knowledge and experience.

B. Data Processing Results

The results of reliability indicators, Internal Consistency Reliability, Convergent Validity, and Discriminant Validity show all valid and reliable indicators. Table 1 shows the Latent Construct R<sup>2</sup> values in the research model.

TABLE I. R<sup>2</sup> VALUE OF LATENT CONSTRUCT

Construct	R <sup>2</sup> Value
Structural Assurance (SA)	0.460
Perceived Risk (PR)	0.302
Performance Expectancy (PE)	0.608
Behavioral Intention (BI)	0.708

In this research model, Q<sup>2</sup> value is 0.7747 or 77.47% which means that the structural model of this research is categorized as good. This is because the research model with the constructs

of Structural Assurance (SA), Perceived Risk (PR), Performance Expectancy (PE) and Behavioral Intention (BI) can explain 77.47%. Moreover, the measurement of the fit model for the inner model shows that all indicators are fit with the existing rule of thumb.

Results of each hypothesis test in this study are outlined in Table 2. Table 2 also lists the path coefficient value which indicates a positive or negative relationship between variables and p-values that show a significant level.

TABLE II. HYPOTHESIS TESTING RESULTS

Hypothesis	Correlation	Path Coefficient	P-value (<0.05)	Conclusion
H1	DTT → SA	0.586	<0.001	H0 Rejected
H2	SE → SA	0.196	<0.001	H0 Rejected
H3	SE → PR	0.497	<0.001	H0 Rejected
H4	PE → BI	0.529	<0.001	H0 Rejected
H5	PR → PE	0.083	0.050	H0 Not Rejected
H6	TB → PR	0.150	<0.001	H0 Rejected
H7	SA → PR	0.134	0.004	H0 Rejected
H8	TB → PE	0.765	<0.001	H0 Rejected
H9	TB → BI	0.361	<0.001	H0 Rejected
H10	PR → BI	-0.018	0.363	H0 Not Rejected

Note:

- DTT = Disposition to Trust
- SA = Structural Assurance
- SE = Self Efficacy
- PR = Perceived Risk
- PE = Performance Expectancy
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Based data in Table 2, the respondent's intention to use e-money services is influenced mostly by the performance expectancy. While perceived risk has a negative effect on behavioral intention. Table 2 also shows that disposition to trust has a greater effect on structural assurance than the effect of self-efficacy. Self-efficacy alone has a greater influence on perceived risk than the effect of structural assurance.

The belief trust variable has a relatively equal influence on the behavioral intention both directly and through variable performance expectancy. This can be seen from the magnitude of the TB coefficient path → BI of 0.361 compared to the TB coefficient path value → PE → BI of 0.405 (result of 0.765 x 0.529).

This study also tested the effect of moderating variables (age, gender, and education) using multigroup analysis on the relationship between exogenous latent constructs and endogenous latent constructs. The test results with the moderating variables of age are shown in Table 3, while gender as moderating variable is presented in Table 4, and education as the moderating variable is described in Table 5.

TABLE III. HYPOTHESIS TESTING WITH AGE AS MODERATING VARIABLE

Hypothesis	Correlation	Conclusion
H4a	PE → BI	H0 not rejected
H9a	TB → BI	H0 not rejected
H10a	PR → BI	H0 not rejected

TABLE IV. HYPOTHESIS TESTING WITH GENDER AS MODERATING VARIABLE

Hypothesis	Correlation	Conclusion
H4b	PE → BI	H0 not rejected
H9b	TB → BI	H0 not rejected
H10b	PR → BI	H0 not rejected

TABLE V. HYPOTHESIS TESTING WITH EDUCATION AS MODERATING VARIABLE

Hypothesis	Correlation	Conclusion
H4c	PE → BI	H0 rejected
H9c	TB → BI	H0 rejected
H10c	PR → BI	H0 not rejected

Results shown in Table 3 and Table 4 conclude that age and gender as moderating variables do not significantly moderate the proposed research model. On the other hand, education as a moderating variable significantly moderates the effect of performance expectancy on behavioral intention. Likewise, education significantly influences the trust beliefs on behavioral intention.

#### IV. DISCUSSION

Trust Dimension (Multi Dimensional Trust) with variable Disposition to Trust (DTT), Structural Assurance (SA), Self Efficacy (SE) and Trust Belief (TB) influences the behavioral intention of Indonesian people in adopting e-money services. This further strengthens the theory and results of previous studies which reported that efforts are needed to increase the dimensions of Indonesian public trust (confidence in oneself, technology, institutional environment, and e-money service issuer) should they wish to increase community behavioral intention in adopting e-services money [12]. The e-money issuer shall continue to maintain the trust of the people with reliable capabilities, always maintain commitment, maintain sincerity and originality, respond quickly to complaints and provide legal protection competently and effectively.

Empirical results show that there are two research hypotheses that are not accepted, namely that perceived risk influences performance expectancy and perceived risk affects behavioral intention. The perceived risk does not affect the behavioral intention of the Indonesian people in adopting e-money services. These results indicate that the Indonesian people tend not to consider the perceived risk issues of using e-money services [13]. Another thing that can be a reason is because respondents are dominated by students/university students who are likely not to make too many e-money transactions compared to other people from different occupations. With low usage intensity, the perceived level of risk is also low. Although the risk felt when using e-money services is the lowest factor in influencing the public's intention to use the service, the issuer of e-money services must still provide a guarantee of protection of user data given that when e-money is lost, other users can directly use the e-money card.

The present study also examined the effect of moderating variables (age, gender, and education) using multigroup analysis on the relationship between exogenous latent constructs and endogenous latent constructs. The latent constructs used are Structural Assurance (SA), Perceived Risk (PR), Performance Expectancy (PE), and Behavioral Intention (BI). The results show that education is the only moderating variable that has a significant effect. This happens because age and gender do not differentiate in behavioral intention towards e-money services.

Overall, the variable that most influences respondent's intention to use e-money services is the respondent's expectation of performance when using e-money services (performance expectancy). This shows that the characteristics of Indonesian people are more likely to use e-money services if they get the benefits after using the service. Based on this, the publisher should be able to carry out activities such as socialization about the benefits obtained when using e-money services [14]. It is expected that in this way, the number of people interested in using e-money services is increasing. The research model with the constructs of Structural Assurance (SA), Perceived Risk (PR), Performance Expectancy (PE) and Behavioral Intention (BI) can produce a good model so that it can provide valid and reliable research estimates. The results of the study reported that the Multi Dimensional Trust with variable Disposition to Trust (DTT), Structural Assurance (SA), Self Efficacy (SE) and Trust Belief (TB) influences the behavioral intention of the Indonesian people in adopting e-money services. On the other hand, the research hypothesis that is not accepted is the perceived risk influence on performance expectancy and the influence of perceived risk on behavioral intention. Variables that have the greatest influence on respondents' intention to use e-money services are respondents' expectations of performance when using e-money services (performance expectancy).

## V. CONCLUSION

Testing the effect of moderating variables (age, gender, and education) was done using multigroup analysis. The test results on the relationship between latent constructs of Structural Assurance (SA), Perceived Risk (PR), Performance Expectancy (PE), and Behavioral Intention (BI) indicate that education in the only moderating variable that has a significant effect.

This study has several limitations that are expected to be refined in subsequent studies, namely by:

- Using more diverse respondents from other cities/regencies in Indonesia;
- Using facilitating conditions (such as infrastructure availability) and security (such as security in charging money and security in transactions) as variables to be added to the research model.

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