

Analysis Factors Influencing the Adoption of Mobile Payment Using the UTAUT2 Model (A Case Study of OVO in Indonesia)

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Abstract:

Although it is already proven that the growth of non-cash transaction promotes economic efficiency, the percentage of non-cash instruments used in Indonesia is still low compared to the internet or smartphone penetrations. Thus, to analyze one of the non-cash instruments adoption rate, the researcher conducted research using OVO application as the object. This research aims to find out the factors influencing the adoption of OVO in Indonesia using the UTAUT2 model and provide suggestion to the company related to respondents' perception toward it. Based on the 400 valid responses, the results show that most of the variables in UTAUT2 model (social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), behavioral intention (BI), and trust (TR)) have a positive influence on the adoption variable except for performance expectancy (PE) and effort expectancy (EE) variables. It also shows that facilitating conditions (FC) are the key determinant of customers' intention to use the services.

Keywords —Adoption, Non-cash Transaction, OVO, UTAUT2, Indonesia

I. INTRODUCTION

Although it is already proven that the growth of non-cash transaction promotes economic efficiency by making it faster, more convenient, and more secure [1], the percentage of non-cash instruments used in Indonesia is still low compared to the internet or smartphone penetrations.

The McKinsey survey revealed that 99.4% of Indonesian transaction is using cash, with non-cash instruments used in just 0.6%. KPMG (2017) also stated that Indonesia is the second largest cash-based economy in the world, where only 36% of Indonesian have a bank account and the adoption of non-cash payments is around 10% [2]. Meanwhile, We Are Social in 2018 shows that internet penetration in Indonesia reach 50% and its smartphone penetration has reached 67% [3].

Further, the research of MDI Ventures and MandiriSekuritas in 2018 reveals that the growth of Indonesia electronic money in 2017 has only increased by 20% while smartphone penetration has increased by 50% from last year [4]. It concluded that there is a high distinction between those two elements.

Thus, those facts encourage the researcher to find the reason why the adoption rate of e-money, especially mobile money in Indonesia is still low compared to smartphone users since when more unbanked consumers gain access to smartphones and mobile internet services, new opportunities for mobile financial services models will arise.

Therefore, the researcher decides to choose OVO as the main object in this research to analyze the adoption rate of mobile payment services in Indonesia. OVO is one of the digital financial

service platforms in Indonesia that establish in March 2017 and has shown significant users growth. In 2018, OVO achieved the top four mobile payments in Indonesia. A high rank for a newly launched startup like OVO is one of the reasons why the researcher chooses OVO as the main object.

Moreover, since OVO is one of the technology-based payment, this research will use the unified theory of acceptance and use of technology (UTAUT) to help the researcher in analyzing the adoption rate of OVO in Indonesia.

II. LITERATURE REVIEW

The reason for the use of the UTAUT2 model in this research is because UTAUT2 is the latest model to study technology acceptance and use of technology, especially in a consumer context. The UTAUT2 model itself was made based on the review and synthesis of eight theories/models of technology use; Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), Motivation Model (MM), Combined TAM and TPB, Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT). Moreover, compared to UTAUT, UTAUT2 extensions produced a substantial improvement in the variance explained in behavioral intention (56 percent to 74 percent) and technology use (40 percent to 52 percent) (Venkatesh et al. 2012) [5].

Further, this research only used UTAUT2 as the general foundation while the theoretical framework in this research used the modified UTAUT2. The modified UTAUT2 used in this research is a replication of the conceptual model that has been proposed and validated by Alalwan et al. (2017) by adapting the model from Gefen et al. (2003) and Venkatesh et al. (2012). The conceptual model proposed by Alalwan et al. (2017) is a modification model, where the habit is excluded in this research because of the differences in potential users, while added trust as the new extensions in this modified model [6]. This new model is suitable for this research since both of its targeted respondents are the people who have not yet tried or use those

systems. Accordingly, Figure 1 below will show the modified UTAUT2 model in this research.

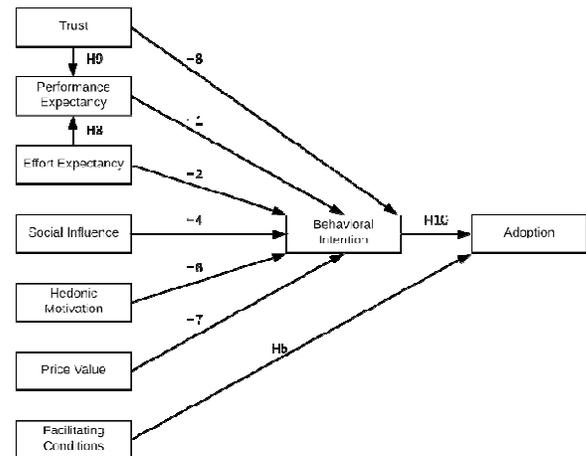


Fig.1Research Model (Replicate from Alalwan et al. 2017)

Based on Venkatesh et al. (2003, 2012) and Alalwan et al. (2016, 2017)[7], the definition of each variable was adapted as follows: Performance Expectancy (PE) conceptualized as "the degree to which an individual believes that using OVO will help him or her to attain gains in job performance." Effort Expectancy (EE), "the extents of ease connected with the use of OVO." Social Influence (SI), "the information and encouragements provided by people surrounding customers that play a dynamic role in contributing to the customers' awareness as well as the intention toward OVO." Facilitating Conditions (FC), "the degree to which an individual believes that an organizational and technical infrastructure exists to support OVO application." Hedonic Motivation (HM), "used for shaping customers' decision to adopt OVO by characterizing high degree creativity and uniqueness." Price Value (PV), "the consumers' cognitive tradeoff between the perceived benefits of the OVO applications and the monetary cost paid for using it." Behavioral Intention (BI), "used in shaping actual usage and adoption of a new system like OVO," and Trust (TR) operationalized as "the accumulation of customers' beliefs of integrity, benevolence, and ability that could enhance customers' willingness to depend on online payment (i.e. OVO payment) to attain the financial

transaction. Meanwhile, Adoption (AD) is the key predictor of the actual adoption of OVO in the future.

III. METHODOLOGY

To collect the data, the researcher needs to assess the measurement validity by performing content validity and pilot study for the questionnaire items in this research model. According to Indrawati (2015), adopting and modifying the existing questionnaire items from related studies and consulting it to experts is one of the ways to meet the content validity [8].

Since this research is a replication of Alalwan et al. research in 2017 and the researcher had done consultations to experts since January 15th – January 30th, 2019, it can be concluded that this research has performed the content validity. Further, this research also had done the pilot study performance by selecting 30 respondents and analyzing the data using IBM SPSS Statistic 25 program. Through those processes, Table 1 below will show the questionnaire items in this research.

TABLE 1
QUESTIONNAIRE ITEM

Item Code	Items of Performance Expectancy
PE1	I find OVO will be useful in my daily life.
PE2	Using OVO will increase my chances of achieving tasks that are important to me.
PE3	Using OVO will help me accomplish tasks more quickly.
PE4	Using OVO will increase my productivity.
Item Code	Items of Effort Expectancy
EE1	Learning how to use OVO will be easy to me.
EE2	My interaction with OVO will be clear.
EE3	My interaction with OVO will be understandable.
EE4	I find OVO will be easy to use.
EE5	It will be easy for me to become skilful at using OVO
Item Code	Items of Social Influence
SI1	People who are important to me think that I should use OVO.
SI2	People who influence my behavior think that I should use OVO.
SI3	People whose opinion that I value prefer that I use OVO.
Item Code	Items of Facilitating Conditions
FC1	I have the resources necessary to use OVO.

FC2	I have the knowledge necessary to use OVO.
FC3	OVO is compatible with other technologies I use.
FC4	I can get help from others when I have difficulties using OVO.
Item Code	Items of Hedonic Motivation
HM1	Using OVO will be fun.
HM2	Using OVO will be enjoyable.
HM3	Using OVO will be entertaining.
Item Code	Items of Price Value
PV1	OVO will have a reasonable price.
PV2	OVO will be a good value for the money.
PV3	At the current price, OVO will provide good value.
Item Code	Items of Behavioral Intention
BI1	I intend to use OVO in the future.
BI2	I will always try to use OVO in my daily life.
BI3	I plan to use OVO in the future.
BI4	I predict I would use OVO in the future.
Item Code	Items of Trust
TR1	I believe that OVO is trustworthy.
TR2	I trust in OVO.
TR3	I do not doubt the honesty of OVO.
TR4	I feel assured that legal structures will adequately protect me from problems on OVO.
TR5	I feel assured that technological structures will adequately protect me from problems on OVO.
TR6	Even if not monitored, I would trust OVO to do the job right.
TR7	OVO has the ability to fulfil its tasks.

Concluded from the IBM SPSS Statistic 25 program results, the pilot study in this research is considered valid and reliable. The validity test result of each item shows that the corrected item-total correlation score is higher than 0.361 while the reliability test reveals that the Cronbach's alpha value is higher 0.70.

Further, the researcher examines the research model by distributing 400 online questionnaires through Google Forms which scattered into six regions of Indonesia. Besides those items above, this questionnaire also asks questions devoted to demographic, namely gender, age, educational level, occupation, expenditure or monthly outcome, and domicile. This research used a seven-point Likert scale to measure responses from the respondents and applied the Indonesian language to avoid misunderstanding.

This research also used the Partial Least Square analysis. PLS is a variant-based SEM statistical method designed to complete multiple regression

when specific data problems occur, such as small research sample sizes, missing values, and multicollinearity (Abdillah& Hartono, 2015: 161) [9]. Analysis of data using PLS generally consists of the measurement model (or outer model) and structural model (inner model). The measurement model explains the relationship between latent variables and their indicators, while the structural model is used to analyze the relationship between latent variables suitable for the proposed hypothesis (Santosa, 2018: 151-152) [10].

IV. RESULTS

A. Respondents' Overview

There are five hundred nineteen online questionnaires that were collected starts from January 29th, 2019 until February 27th, 2019. However, since this research using quota sampling, only 400 valid questionnaires will be used. It divided into six regions in Indonesia, namely Java (58%), Sumatera (19%), Kalimantan (8%), Sulawesi (6.75%), Bali – Nusa (5.75%), and Maluku – Papua (2.5%). From the data obtained, 65% of the respondents were female compared to 35% of the total respondents who were male. Relating to the respondents' age, the class with 20 – 29 years old respondents represented the respondents answer with 57.25%. By educational level, most of the respondents are high school graduated, captured with 55% of the total sample. The descriptive statistic also shows that occupation as a student received 44.75% of the respondents' answer. Further, by its monthly outcome level, the majority (35.5%) of the respondents spend about Rp1, 000,000 – Rp2, 000,000 each month, followed by Rp2, 000,001 – Rp5, 000,000 in the second place with 29% of the total sample.

B. Descriptive Analysis

Cooper and Schindler (2011), describe that a descriptive analysis tries to discover answers to the question who, what, when, where, and sometimes, how [11]. In this research, the descriptive study aims to examine the respondents' assessment of the modified UTAUT2 factors and comprehend how big of their intention to adopt the OVO payment

applications in Indonesia. Further, the table below will show the descriptive analysis summary of each variable.

TABLE2
DESCRIPTIVE ANALYSIS SUMMARY

Variable	Percentage
Performance Expectancy	76.48%
Effort Expectancy	81.33%
Social Influence	73.94%
Facilitating Conditions	79.84%
Hedonic Motivation	78.65%
Price Value	81.02%
Behavioral Intention	79.65%
Trust	79.52%
Adoption	83.99%

Table 2 above describes that respondents' assessments could illustrate that 83.99% chance that Indonesian people would adopt OVO application. It also shows that all the variables are in the high levels (>74% - 86%), except for the social influence which in the quite high level (>62% - 74%).

C. Outer Model Evaluation

The evaluation of the measurement or outer model is used to assess the validity and reliability of a particular model. In this research, there are several ways to evaluate the measurement model, specifically through the convergent and discriminant validity from the latent construct indicator, and the internal consistency reliability.

1) Convergent Validity

To identify the indicator reliability in this research, the researcher could observe the outer (factor) loading of each indicator or the average variance extracted (AVE). The result in this research shows that all the factor loading is higher than 0.70 which means that every item in this research was valid. Further, the AVE scores for each latent in this variable is higher than 0.5. According to Latan and Ghazali (2015), the loading factor for each construct indicator in the confirmatory study should be higher than 0.7 while the AVE should be higher than 0.50 either for confirmatory or exploratory research [12].

2) Discriminant Validity

The other ways to evaluate the measurement model is by testing the discriminant validity. The discriminant validity assessment has the goal to ensure that a reflective construct has the strongest relationships with its indicators (e.g., in comparison with than any other construct) in the PLS path model (Hair et al., 2017 as cited in SmartPLS) [13]. There are three ways to observe the discriminant validity, namely by using cross-loadings, the Fornell-Larcker, and the HTMT criterion. The discriminant validity in this research already fulfilled because all the indicators' cross factor loading is higher than 0.7 and the AVE square root results also have a higher value than the highest correlation with other latent variables from the Fornel-Larcker criterion.

3) Reliability

The last evaluation in the measurement (outer) model is called the internal consistency reliability or the reliability test. Table 4.24 below shows the internal consistency reliability based on Cronbach's alpha (CA) and the composite reliability (CR) of each variable.

TABLE 3
INTERNAL CONSISTENCY RELIABILITY

Latent Variable	CA	CR
Adoption	0.891	0.932
Behavioral Intention	0.930	0.950
Facilitating Conditions	0.922	0.942
Effort Expectancy	0.877	0.915
Hedonic Motivation	0.897	0.936
Performance Expectancy	0.910	0.937
Price Value	0.899	0.937
Social Influence	0.907	0.942
Trust	0.951	0.959

Table 3 above shows that all the variables in this research are higher than 0.70 which concluded as reliable. According to Latan and Ghazali (2015), the rule of thumb for Cronbach's alpha and the composite reliability parameter is when the value exceeds 0.70 for confirmatory research or around 0.60 - 0.70 for the exploratory study. Since all the indicators and variable in this research are and reliable, hence the result can be served as an outer model testing.

D. Inner Model Evaluation

The structural (inner) model evaluation was examined to predict the relationship between variables. In this research, there are three ways to evaluate the structural model, which was done by observing the R Square of the endogenous variable, the Q² predictive relevance, or the significance levels of a model.

1) R Square

In this process, the result of the PLS R-Square represents the total variance for the endogenous latent construct and predict the strength of this research's measurement model. The following table will show the R Square result of the adoption, behavioral intention, and performance expectancy variable.

TABLE 4
R SQUARE RESULT

Exogenous Variable	R Square
Adoption	0.520
Behavioral Intention	0.782
Performance Expectancy	0.656

According to Hair at al. (2011 as cited in Latan&Ghozali, 2015), the R Square values of 0.75, 0.50, and 0.25 could describe the substantive influence of a particular exogenous variable towards the endogenous variable as substantial, moderate or weak respectively. Based on the definition above, the R Square results in Table 4 above indicates that the overall strength of the measurement model in this research is moderate.

2) Q Square

Another way to evaluate the measurement (inner) model is by examining the Q2 predictive relevance or predictive sample reuse. Latan and Ghazali (2015) said that this technique could describe a synthesis from the cross-validation and fitting function by predicting the variable observed and estimating the parameter construct. The result of Q2 predictive generated from the SmartPLS 3.2.8 software through the blindfolding procedures. Therefore, this following table will show the Q square predictive result.

TABLE 5
Q SQUARE RESULT

Exogenous Variable	Q Square
Adoption	0.398
Behavioral Intention	0.604
Performance Expectancy	0.483

Table 5 above reveals that the Q2 result of the adoption, behavioral intention, and the effort expectancy variables are higher than zero, means that this research's model has predictive relevance. Latan and Ghazali (2015) stated that if the Q2 values are higher than zero, it implies that the exogenous constructs have a predictive connection for the particular endogenous construct, vice versa.

3) Path Coefficient and T Statistics

The last method to evaluate the structural model is by observing the significance levels of a model or its path coefficients. This method performed to identify the influence between variables through the bootstrapping procedures. Thus, the following table will show the bootstrapping result.

TABLE 6
BOOTSTRAPPING PROCEDURES RESULT

Structural Path	Path Coefficient	T Statistics
BI → AD	0.416	5.942
EE → BI	0.063	0.862
EE → PE	0.476	9.027
FC → AD	0.354	4.732
HM → BI	0.202	2.996
PE → BI	0.079	1.053
PV → BI	0.215	3.068
SI → BI	0.157	2.011
TR → BI	0.266	3.876
TR → PE	0.380	7.100

As shown in Table 6 above, besides the relation between performance expectancy and effort expectancy toward the behavioral intention, all of the structural paths have positive value with t-value higher than 1.65.

4) Global Goodness of Fit (GoF)

Latan and Ghazali (2015) said that GoF index conceptually suitable for the model with reflective indicator measurement. Thus, this following table will show the GoF index of this research model.

TABLE 7
GLOBAL GOODNESS OF FIT (GOF) RESULT

\overline{AVE}	$\overline{R^2}$	$GoF = \sqrt{\overline{AVE} \times \overline{R^2}}$
0.801	0.653	0.723

Based on Table 7, the Goodness of Fit (GoF) index value in this research is 0.723, which means that the overall model is valid because this research has a large GoF. Latan and Ghazali (2015) stated that the GoF value of 0.10, 0.25, and 0.36 indicates that GoF was small, medium, or large respectively.

E. Importance Performance Matrix Analysis

According to Larasati and Dirgahayani (2015), IPMA is an additional analysis to capture the level of independent variable importance to a particular dependent variable [14]. IPMA used to contrasts the total effects by illustrating the importance of a construct in shaping the target construct with the performance of a variable (Fornell et al., 1996; Martilla & James, 1977; Slack, 1994 in Sarstedt, 2016) [15]. This figure below will shows the IPMA result based on its indicators.

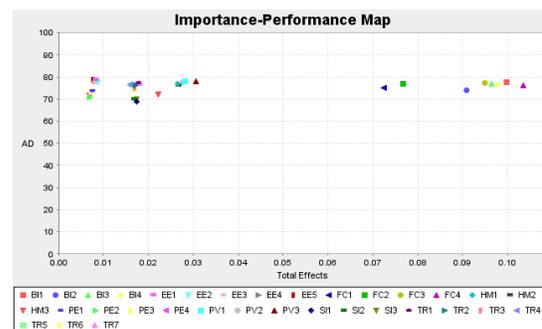


Fig. 2 IPMA Result based on Indicators

The figure above reveals that there are six indicators categorized in Quadrant I. Those indicators were FC4, BI1, BI4, BI3, FC3, and BI2. They imply that there is an opportunity to increase or maintain the fundamental construct because they have high importance and high performance. Further, it also indicates that FC2 and FC1 which lies in the Quadrant II are the factors that the company need to concentrate since it considered crucial but has low performance.

V. CONCLUSION

Based on the result of this research, the researcher obtained several conclusions which described as follows:

- 1) The respondents' assessment of factors influencing the adoption of OVO application in Indonesia could illustrate that 83.99% of Indonesian people would likely to adopt the system.
- 2) Performance expectancy and effort expectancy do not positively influence the intention of OVO payment adoption in Indonesia. On the other hand, such factors, for example, social influence, facilitating conditions, hedonic motivation, price value, trust, and behavioral intention had proven to have a positive effect of the OVO payment adoption.
- 3) Based on respondents' assessment in the IPMA analysis, the factor that considered necessary and needs to be improved is the facilitating conditions, specifically the first and second items of the variable which were lies in Quadrant II. Both were related to the resources and knowledge needed in using OVO application.

VI. SUGGESTION

Based on this research's results, the researcher suggests to PT VisionetInternasional to continuing the development of their technology by maintaining the compatibility of OVO, provide guidance or support to help customers when they have difficulties when using OVO apps, or by improving the features in the apps which can make the customers will have intention in using one.

VII. LIMITATION AND FUTURE RESEARCH DIRECTIONS

Acknowledging that this research has several limitations, the researcher would like to recommend some suggestion based on its limitation for future research. Since this research is a cross-sectional study, there will be some problems related to the application of this research's results in the long-

term since technologies will have the potential to develop in the future. So, the researcher would suggest a long-term study for the next research. Based on the suggestion above, the next researcher could also use factors such as habit or experience which not included in this research by targeting a different type of respondents (people who have rich experiences in using OVO), since OVO might have a massive user based in the meantime. Last, the researcher would suggest the future researcher undertake similar research related to electronic money (internet, card or chip based), since this research only covered the mobile payment channel, or they can do the similar research with certain large cities or regions.

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