
Determinant of Continuance Usage Intention of Mobile Payment Application Using Extended Tam Model

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To cite this document :

Alomau, G. P. ., & Ellyawati, J. . (2021). Determinant of Continuance Usage Intention of Mobile Payment Application Using Extended Tam Model. Conference Series, 3(1), 498 - 508. <https://doi.org/10.34306/conferenceseries.v3i1.384>

Abstract

The purpose of this study is to examine factors that influence on continuance usage intention (CUI) of OVO mobile payment applications in Indonesia. This study uses the concept of the Technology Acceptance Model (TAM) that has been further developed to examine the factors that influence on CUI, namely perceived usefulness (PU), perceived ease of use (PEOU), perceived credibility (PC), social influence (SI), and customer awareness (CA). Some 241 mobile payment application user was recruited as respondents. Data were collected using a cross-sectional survey design with a structured questionnaire via a Google form. SmartPLS is used to verify hypotheses. The study results showed that all observed variables influence positively on CUI of mobile payment application. The study found that the service provider needs to maintain and monitor the functions of PU, PEOU, PC, SI, and CA so that mobile payment application will always be attractive to users to continue using mobile payment application.

Keywords: TAM, perceived credibility, social influence, customer awareness, continuance usage intention

I. INTRODUCTION

This Word document A survey conducted by the Indonesian Internet Service Providers Association [1] on internet user penetration stated that 64.8% of the 264.16 million Indonesia society were internet users. Of the total users, most of them (93.9%) use smartphones to connect to the internet. The number of smartphone users in Indonesia is certainly the main target of business people to offer their products via smartphones, and one of them is mobile payment. This can be seen from the large number of companies both from banks and non-bank institutions that have obtained electronic money management licenses on May 27, 2020, where 51 institutions provide server-based electronic money products [2]. Based on a survey conducted by PricewaterhouseCoopers [3] shows that mobile payment users in Indonesia in 2019 have reached 47%. This number increased by 9% from the number of users in 2018. This shows that there is a market opportunity for the mobile payment industry business that is still wide open in Indonesia. Mobile payment is a payment system using a mobile device where users can make payments, check balances, and send money without being limited by space and time [4]

A past study about the adoption of mobile payment services found that factors of comfort, security, and the ability to adapt mobile applications have a significant relationship to the intention to adopt mobile payment applications. The study also concluded that mobile payment plays an important role in everyday life because of the increase in smartphone users and the lifestyle of people who need everything quickly and comfortably [5]. Another study uses the TAM concept, which results in the finding that PU, PEOU, information sharing, and trust have a significant relationship with the intention to adopt mobile payment [6].

There are many studies on mobile payments that focus only on early adoption, whereas post-adoption mobile payment studies relating to continued use are rarely examined [7]. Research on the post-adoption mobile payment that has been conducted was continuance usage of mobile payment services conducted by [8]. The study found that satisfaction has a positive effect on the intention to adopt mobile payment services. In the previous study, the concept of the TAM model was developed by adding other variables, namely PC, CA, and SI [9]. Similar studies were conducted by [10] by adding trust variables that have similar meanings to PC variables [9]. This study adopts the research model from [9] to examine the effect of perceived usefulness, perceived ease of use, perceived credibility, customer awareness, and social influence on continuance

usage intention of OVO mobile payment service, one of the mobile payment services in Indonesia.

II. THEORETICAL REVIEW AND HYPOTHESIS DEVELOPMENT

Previous studies on the CUI of online social networks have shown that PU has a positive effect on the CUI of online social networks [11]. Other research on mobile application usage has found that PU has a positive effect on mobile application usage [8],[12]. Previous research that examined the use of Gopay mobile payment in Indonesia, found that PU affected the use of the mobile payment Gopay application. Consumers feel that they have benefited from the use of mobile payments, such as a faster and more productive transaction process that is more efficient [13]. Other research stated that PU affects the use of mobile payments through mediating attitude variables [14][15]. Based on these arguments, the following hypotheses are proposed:

H1. PU has a positive effect on CUI.

Difficulties in operating mobile payments are often obstacles for consumers to use them. Previous research on the effect of PEOU on the CUI mobile banking services found that PEOU had a significant and positive effect on CUI [9]. This shows that the decision of consumers to reuse mobile banking services is influenced by the experience of ease of use. Previous research on the use of Gopay mobile payment found that the reason consumers use the service is because of clear instructions, easy to understand the system, and easy to use [13]. Based on these arguments, the following hypotheses are proposed:

H2. PEOU has a positive effect on CUI.

The credibility of the company is one of the key factors that consumers consider in choosing a company that issues mobile payment services. Previous research on the influence of PC on the CUI mobile money shows that the concept of security which is reflected by the trust variable or often referred to as PC has a positive influence on CUI mobile money services [16]. The study examined the reuse of mobile money in Tanzania with a total sample of 309 people. The conclusion of the study shows that trust (PC) plays a role in every transaction or business related to money. Another study conducted by [13] stated that if the mobile payment used creates a sense of uncertainty and high consequences, consumers will avoid it. Or in other words, the higher the credibility of the

company, the more consumers will feel secure in transactions so that they will be willing to reuse the service. Based on these arguments, the following hypotheses are proposed:

H3. PC has a significant positive effect on CUI.

In a collectivist society, social influences are still relevant to the study. Previous research on the effect of SI on the CUI of online social networks shows that SI has a positive effect on the CUI of online social networks [11]. Based on these arguments, the following hypotheses are proposed:

H4. SI has a significant positive effect on CUI.

Previous studies on CA found that CA influenced CUI of mobile banking services [9]. A study about mobile banking conducted in the city of Bandung, Indonesia, found that the more a person became aware of the mobile banking services provided, the further encourage the intention to reuse these services. Based on the results of the research above, the following hypotheses are proposed:

H5. CA has a positive effect on CUI

The relationship between the observed variables in this study is illustrated in Figure 1. This theoretical model conceptualizes the determinants of continuance usage intention of customers in the context of m-banking. The hypothesis to be verified can be seen in the relationship between latent constructs.

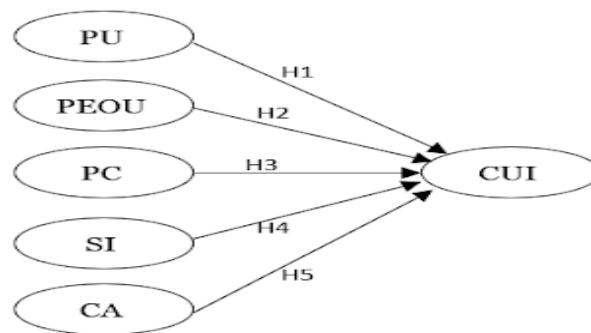


Fig. 1. Research Model

III. METHOD

This research uses a purposive sampling technique where the respondent is chosen according to the required criteria, ie, have used OVO application for at least the last 6 months. For data sufficiency, the minimum number of samples is determined to be 10 times the number of items in research instruments [17]. Thus, the minimum sample that must be recruited is 160. However, data collected in this study was 241 respondents. Data was carried out through a structured questionnaire distributed to respondents online via Google form in November 2019. Scale for data measured using a Likert scale with the weight of the item score 1 for strongly disagree to score 5 for strongly agree. Data analysis is performed using the SmartPLS statistical tool. The research instrument was taken from several previous studies and adapted to the needs of the study. The instrument of PU and CUI variables were taken from the research conducted by [11];[18], PEOU and PC [18], and CA [19]. The questionnaire consists of two parts, the first part contains statements about the demographic characteristics of the respondents that consist: gender, age, occupation, length of adoption of the OVO application, the average usage of the OVO application per month for the last six months. The second part contains statements for hypothesis testing that consists of the determinants of continuance usage intention, namely: PU, PEOU, PC, SI, and CA.

IV. RESULT AND DISCUSSIONS

A. Demographic characteristics

Table 1 shows the statistical description of the respondents. A total of 241 respondents were collected, the majority of the respondents are women (56.8%), aged between 21 and 25 years of old (56.9%). Most of them working as private employees (42.3%), they had used OVO applications for more than 12 months (53.4%) and used OVO applications are less than 10 times a month of use (33.7%).

B. Measurement model

The measurement model uses to test reliability, discriminant validity, and convergent validity. The instrument reliability test in SmartPLS uses composite reliability with the rule of thumb the value of composite reliability must be greater than 0.70 [20]. Based on the test results, the composite reliability value of all research variables is greater than 0.70. This proves that the accuracy, consistency, and accuracy of instruments in measuring constructs are said to be good or high.

The result of the convergent validity test with SmartPLS can be seen from the AVE value and loading factor. Based on the rule of thumb, the value of AVE must be greater than 0.5 and the value of the loading factor must be greater than 0.70 [20]. Table 1 shows the AVE value of each variable is greater than 0.5. Whereas in Table 2 shows the loading factor value of each indicator is greater than 0.70 and the indicator of each variable is highly correlated.

Discriminant validity test results with SmartPLS can be explained from the cross-loading value. The loading factor value of the related variable indicator must be higher than the value of the loading of other variables and the loading factor value of the indicator of each variable must be greater than 0.70. Table 2 shows the results of cross loading where the loading factor value of each variable is greater than 0.70 and is greater than the value of loading other variables. This proves the concept of discriminant validity where indicators of unrelated variables should not be highly correlated or should be low correlated [20].

Table1. Composite Reliability

Variable	Composite reliability	AVE
PU	0.907	0.709
PEOU	0.923	0.802
PC	0.942	0.845
SI	0.910	0.772
CA	0.933	0.823
CUI	0.945	0.813

Table 2. Cross Loading

Indicator	CA	PC	PEOU	PU	SI
CA1	0.842	0.534	0.352	0.614	0.590
CA2	0.937	0.485	0.646	0.702	0.629
CA3	0.939	0.698	0.452	0.584	0.585
PC1	0.559	0.920	0.227	0.244	0.321
PC2	0.491	0.944	0.176	0.238	0.134
PC3	0.648	0.893	0.232	0.469	0.378
PEOU1	0.333	0.205	0.819	0.459	0.138
PEOU2	0.517	0.149	0.942	0.485	0.267

PEOU3	0.568	0.286	0.920	0.547	0.228
PU1	0.543	0.324	0.570	0.848	0.306
PU2	0.603	0.319	0.267	0.844	0.376
PU3	0.540	0.298	0.519	0.840	0.428
PU4	0.650	0.289	0.500	0.837	0.546
SI1	0.536	0.103	0.162	0.499	0.832
SI2	0.741	0.444	0.291	0.473	0.916
SI3	0.384	0.189	0.150	0.337	0.887

C. Structural model

Based on the structural model verification, the R^2 value of the CUI variable is 0.743. This shows that the independent variables PU, PEOU, PC, SI, and CA affect the CUI as a dependent variable by 74.3%. Thus it can be concluded that the model is included in the moderate category or approaching the strong model. Judging from the evaluation of the Q^2 value, the results show that the Q^2 value of the CUI variable is 0.312 ($R^2 > 0$). This shows that the CUI variable has a predictive relevance which is useful for measuring how well the value of observations produced by the model.

This study uses a level of confidence 95% ($\alpha=0.05$) with $N=241$, t-table shows infinite (∞)=1.96. The hypothesis is stated significant if the path has a p-value of less than 0.05 and has a positive β (Hair et al., 2014). Based on the result shows that H1($\beta=+0,012$, p-value<0.05), H2($\beta=+0,207$, p-value<0.05), H3($\beta=+0,068$, p-value<0.05), H4($\beta=+0,265$, p-value<0.05) and H5($\beta=+0,491$, p-value<0.05) are supported. These mean that PU, PEOU, PC, SI, and CA affect positively and significantly on CUI.

The following is Table 3 which shows a summary of the study results using the SmartPLS statistical model.

Table 3. Summary of Path Coefficients and Hypothesis Testing Results

Hypothesis	Path coefficient	β -coefficient	t-statistic	p-value	Result
H1	PE \rightarrow CUI	0.012	3.066	0.002	Significant
H2	PEOU \rightarrow CUI	0.207	2.342	0.020	Significant
H3	PC \rightarrow CUI	0.068	2.915	0.004	Significant
H4	SI \rightarrow CUI	0.265	3.530	0.000	Significant
H5	CA \rightarrow CUI	0.491	2.938	0.003	Significant

D. Discussion

PU has a positive and significant effect on CUI (H1 is supported). This shows that the benefits perceived by users of OVO applications such as helping to complete payment transactions more quickly, the ability to make transactions with applications within 24 hours/day as well as the increased effectiveness of payment transactions can prove to increase the CUI of OVO applications. The result of this study is not in line with the study conducted by [9]. Their study found that PU did not have a significant effect on CUI.

PEOU has a positive effect significantly on CUI (H2 is supported). This shows that the display of the OVO application that is easy to understand and easy to use by its users can increase CUI the OVO mobile payment application. This study is in line with research conducted by [9] where PEOU has a significant effect on CUI. The findings of this study opposite with studies conducted by [21]. Their study of mobile learning management systems found that PEOU did not influence CUI. Other factors that are not included in the model, such as the type of participant and the learning environment can be a cause of no relationship between PEOU and CUI.

PC has a positive effect on CUI significantly (H3 supported). This shows that OVO mobile payment application users believe that their data and transaction data will be well protected. This affects OVO users to improve CUI. This study is in line with the study conducted by [16] where PC has a positive and significant effect on CUI. SI has a positive and significant effect on CUI (H4 supported). This shows that the influence of closed people around the user influences CUI OVO mobile payment application. This study is in line with research conducted by [11]. This study found the opposite of a study conducted by [22] about the continuance usage intention of GoJek application service. Their study found that SI does not affect CUI [11]. CA has a significant positive effect on CUI (H5 supported). This shows that CA affects CUI of OVO mobile payment application. This study is in line with studies conducted by [9] which stated that consumer awareness of the importance of the product contributed significantly to the intention to reuse the product.

V. Conclusions and managerial implications

PU, PEOU, PC, SI, CA have an important role in determining CUI for OVO mobile payment application users. This shows that an application must be user friendly and useful. The usefulness of the OVO mobile payment application in assisting the activities of its users in the field of financial transactions has a role in determining the application CUI. Besides, the clear display and instructions of the OVO mobile payment application are also one of the determinants of CUI. Thus, the company needs to develop a simple and good appearance of the application while providing the right benefits to consumers.

Besides, OVO mobile payment application users will also continue to use the application if, during use, sensitive user data is maintained properly. Thus the PC becomes one of the important factors that need to be considered by the application development company so that users increasingly trust the company's credibility.

The presence of people who have influence or who are considered close to users also contributes to the improvement of CUI. Marketing managers can influence customers through social organizations, sports, music, special events in certain groups. The last factor influencing CUI is CA. Base on these study findings, application development companies need to pay attention to things that can increase user awareness of products owned by OVO applications to maintain and increase the intention to continue using OVO mobile payment application.

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