TECHNOLOGY ACCEPTANCE MODEL (TAM) TOWARD "DANA" E-WALLET CUSTOMER

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ABSTRACT: This study aims to determine the effect perceived usefulness and perceived ease of use on “DANA” e-wallet customers. Quantitatively, this study administered questionnaires to 100 graduate students of the Universitas Pendidikan Indonesia, and analyze that in regression analysis. We found that perceived easefulness and perceived ease of use had a positive and significant effect on mobile payment. This study provides empirical evidence about the impact of mobile payment "DANA" e-wallets on the use and adoption of existing payment instruments and contributes to the literature on consumer payment selection.

Keywords: Mobile Payment, e-wallet, DANA, Technology Acceptance Model

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INTRODUCTION

Changes that occur due to the industrial revolution 4.0 in the economic field are the use of internet media as a tool in making transactions making it easier for economic factors there-in. This change also has an impact on consumer behavior, namely the shifting pattern of purchases made from manual to online sales (Halttunen, 2016). Stakeholders widely read this opportunity for behavior change with the emergence of many online transaction media that provided both from online media shopping to digital-based financial services (fintech). This digital-based financial service called Mobile Payment. Those tools will provide convenience and speed in conducting its activities (Teo, Tan, Ooi, Hew, & Yew, 2015).

The use of cellular-based payment instruments done for small-scale payment transactions (micro) with e-commerce systems that can provide benefits for customers when requiring small-scale transaction media (Gokilavani, Kumar, Durgarani, & Mahalakshmi, 2018). Mobile Payment in addition to providing a level of convenience and speed but also provides a sense of comfort and a sense of security in transactions for customers anywhere and anytime (Jose Liebana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2014; Liu, Zhuo, Soman, & Zhao, 2012). The use of e-wallet often offers a variety of advantages ranging from the level of user security, adapting to small-scale transactions that are very easy to operate, and are universal (Punwatkar & Verghese, 2018).

Indonesia has 38 e-wallets that have received official licenses, but there are ten of the most popular today, namely OVO, DOKU, Go-PAY, FUNDS, AJA Link, Jenius, Go Mobile by CIMB, I Pocket, SakuKu, and Paytren. Based on the Price Waterhouse Coopers Survey (PwC) related to Global Consumer Insights, it illustrated that 47% of respondents in Indonesia currently use mobile payments to make a transaction in 2019 (PwC Report, 2019).

One e-wallet that has experienced an increase in application users is “DANA.” DANA, as a newcomer to e-wallet applications in Indonesia, immediately showed its determination to become a pioneer of e-wallet applications in Indonesia. Present in 2018, DANA quickly introduced an open platform service. Based on iPrice Group research data, DANA has relatively stable monthly active users from Q4 2018 to Q2 2019. DANA managed to move up one rank in the second quarter of 2019, replacing LinkAja in the third position. This e-wallet service, a collaboration between Emtek Group and Ant Financial, has also become an official e-wallet application to conduct transactions in Bukalapak e-commerce through Buka Dompet as well as many other partners (Rachmatunnisa, 2019).

This study aims to analyze the effect of perceived usefulness and ease of use on "DANA" mobile payment users. To investigate this research, we used the Technology Acceptance Model (TAM) in determining the acceptance of “DANA” applications as new arrivals. This research will provide input for providers to be able to evaluate the process of receiving Mobile Payment “DANA” technology, and researchers will also provide recommendations from the point of acceptance.
of technology related to potential users based on what considerations affect the use of “DANA” applications.

**THEORETICAL REVIEW**

*Technology Acceptance Model (TAM)*

Technology Acceptance Model (TAM) is one of the most famous models for being able to understand e-commerce from the viewpoint of customers in receiving applications (Kusumah, 2018). Davis (1989) proposed a TAM theory that explains how technology-based beliefs (usefulness and ease of use) influenced computer adoption. TAM’s primary purpose is to create a framework for monitoring the effect of external factors on computer users’ views, behaviors, and objectives, while TAM’s other goal is to clarify and forecast user acceptance of the technology.

Davis (1989) states that Perceived Usefulness (PU) is the extent to which a person believes that using a system will improve its performance. Turner, Kitchenham, Brereton, Charters, & Budgen (2010) also explained that Perceived Usefulness measurement indicators are increasing productivity, making work more productive, and accelerating work. Consumers can feel perceived usefulness when the technology adopted can be used anywhere and anytime (Wang & Li, 2016). Davis (1989) defines Ease of Use felt by users to the extent that they believe that utilizing the system will free complicated efforts. Manjunath & Nagabhushanam (2017) state that Perceived Ease of Use’s indicators are clear and easily understood. Perceived Ease of Use has dimensions such as ease of doing installments, ease of learning the interface (Priyono, 2017), and ease of obtaining from the comparison of cash payment systems to third party e-payment systems (Wang & Li, 2016).

**Perceived Usefulness and Mobile Payment**

Perceived Usefulness is the subjective probability that technology can improve the way consumers complete their goals. In the context of our research, Perceived Usefulness will increase consumers' desire to use a Mobile Payment system. According to TAM, the Perceived Usefulness is the extent to which a person believes that adopting a particular system will increase the effectiveness and performance of his work (Davis, 1993). Various studies have shown that the Perceived Usefulness has a direct relationship with the attitude of its use (Munoz-Leiva, Hernández-Méndez, & Sánchez-Fernández, 2012; Shin, 2012), as well as the benefits for using (Liébana-Cabanillas, Muñoz-Leiva, Ibáñez-Zapata, & Rey-Pino, 2012, 2014; Pai & Huang, 2011). In the context of this study, we assume that the Perceived Usefulness of the payment system will affect consumers in using Mobile Payments as a payment system. The Perceived Usefulness of the payment system will also directly affect consumers using based on the principles of TAM. Based on previous thinking, we propose the following hypothesis:

**H1**: Perceived Usefulness has a positive and significant effect on Mobile Payment.
Ease of Use and Mobile Payment

Perceived Ease of Use refers to an individual's perception that using a particular system is straightforward (Davis, 1989). It is one of the most influential aspects regarding the decision to adopt new technology. The issue of Ease of Use has double impacts (Davis, Bagozzi, & Warshaw, 1989); firstly, an effect on attitude, due to self-efficacy and instrumentality, secondly by its usefulness. The Perceived Ease of Use relationship on Perceived Usefulness came from various studies (Liébana-Cabanillas et al., 2012; Munoz-Leiva et al., 2012). The relationship between Ease of Use, ease of access to use is present (Hernández, 2010). Thus, we propose the following hypothesis:

H₂: Perceived Ease of Use has a positive and significant effect on Mobile Payment.

H₃: Perceived Usefulness and Perceived Ease of Use have a positive and significant effect on Mobile Payment.

Figure 2: Research Framework

METHODOLOGY

This study's design uses a descriptive and inferential statistics approach. The population in this study was all Postgraduate students at the Universitas Pendidikan Indonesia. The number of samples determined by researchers is 100 students who use the DANA application. This study is determined using the quota sample and multiple regression analysis. The Quota Sampling method is a sampling method based on probability as a representation of the data collection method (Saunders, Lewis, & Thornhill, 2012). The adoption of quota sampling ensures that the sample groups represent characteristics that have been determined based on the population chosen by the researchers according to previous studies by (Kusumah & Christianingrum, 2018). The reason for using the sampling quota is that the researcher can choose samples freely according to the specified characteristics (users of the “DANA” application and have been used to make transactions). In addition to using a questionnaire, the authors also use the interview method to strengthen the results of the questionnaire obtained.
The following is a table that defines operational variables used in this study consisting of variables, constructs, and indicator constructs.

**Table 1**  
**Variable, Construct, and Indicator**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Construct</th>
<th>Indicator</th>
</tr>
</thead>
</table>
| **Perceived usefulness** | TAM | DANA makes it easier to do transactions.  
DANA increases productivity in transactions.  
DANA increases the effectiveness of transactions.  
DANA is useful in making transactions.  
DANA provide more benefits in transactions. |
| **Perceived ease of use** | TAM | DANA can be learned easily.  
DANA easy to get.  
DANA is clear and easy to understand.  
DANA easy to use in the transaction.  
DANA can be accessed anywhere. |
| **mobility** | Mobile Payment | DANA can be used anytime.  
DANA can be used anywhere.  
DANA can be used anytime when traveling. |
| **Reachability** | Mobile Payment | DANA can be accessed using a cellphone.  
I can make a payment transaction  
DANA outside the partner-owned by DANA, especially e-wallet. |
| **Compatibility** | Mobile Payment | DANA can adjust to existing technology.  
DANA can adjust to daily activities. |
| **Convenience** | Mobile Payment | DANA convenient to use because users often use mobile phones.  
DANA is convenient to use in a variety of conditions.  
DANA convenient to use because it is not difficult to use. |

Data Analysis Techniques used in the research is the quantitative approach and descriptive analysis techniques. To test the hypothesis of this study, the Multiple Linear Regression applied using SPSS v.25.

**RESULTS**

The first test is the validity and reliability tests. The validity test was from the values of \( r \text{ count} > r \text{ table} \) of 0.1996 (sig 2 tailed, df = n-2). The reliability test used Cronbach alpha > 0.7 (Ghozali, 2019). Based on the calculations performed, the validity and reliability of the test results in this study can be shown in Table 2 as follows:
The next step is testing the conformance of the classical assumptions. They are:

### Table 3
#### Multicollinearity Test

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Model (Constant)</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>.257</td>
<td>3.888</td>
<td></td>
</tr>
<tr>
<td>X2</td>
<td>.257</td>
<td>3.888</td>
<td></td>
</tr>
</tbody>
</table>

Source: output SPSS

The standard is if the multicollinearity value for each independent variable is between 0-1 and the VIF value for each independent variable is between 1-10, there is no multicollinearity problem, or there is no relationship between each independent variable. Conveniently, the data passed the stated threshold as in table 3. The next test is the heteroscedasticity test. The following are the results of the Glejser Test for heteroscedasticity.
Table 4
Heteroscedasticity Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>.934</td>
</tr>
<tr>
<td>X1</td>
<td>.057</td>
</tr>
<tr>
<td>X2</td>
<td>.049</td>
</tr>
</tbody>
</table>

a. DependentVariable:ABS_RES
Source: Output SPSS

The table above is a heteroscedasticity test with the Glejser test considering the meaning value of all independent variables > 0.05, so there are no heteroscedasticity problems with the regression model. The subsequent analysis is multiple linear regression such as t-test, F-test, beta value, and coefficient of determination.

Table 5
Multiple Linear Regression Result

<table>
<thead>
<tr>
<th>Coefficientsa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Unstandardized Coefficients</td>
</tr>
<tr>
<td>Model</td>
</tr>
<tr>
<td>1 (Constant)</td>
</tr>
<tr>
<td>X1</td>
</tr>
<tr>
<td>X2</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Y
Source: Output SPSS

From the data above we get the multiple regression equation as follows:

Y = 5.974+ 0.593X1 + 0.376X2 ............. (1st Equation)

The constant value of 5974 obtained from equation one revealed that if the perceived usefulness variable and the perceived ease of use variable are equal to zero, then the mobile payment increased by 5.974. The variable coefficient of perceived usefulness of the beta variable has a positive value of 0.593; these values prove the relationship between perceived usefulness and mobile payment, which means that every increase in the perceived usefulness will cause an increase in the Mobile Payment use and vice versa. The beta coefficient of the Perceived Ease of Use variable has a positive value of 0.376, indicating the relationship between Perceived Ease of Use and Mobile Payment, which means an increase of the Perceived Ease of Use variable will cause an increase in the Mobile Payment variable and vice versa.
The next step is to observe the extent of the influence of individual independent variables on the dependent variable. If \( t \) count > 1.96 of 0.05 standardized error, conclusively, the variable has a significant effect over the mention \( y \) variable. On the other hand, if the \( t \)-count < \( t \) table, it can be said that the variable does not have a significant effect. More details can be shown in the following table.

### Table 6
#### T-test Result

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td></td>
<td>4.638</td>
<td>.000</td>
</tr>
<tr>
<td>X1</td>
<td></td>
<td>8.489</td>
<td>.000</td>
</tr>
<tr>
<td>X2</td>
<td></td>
<td>5.383</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Dependent Variable: \( Y \)
Source: Output SPSS

Based on the results in table 6, sig value test calculations for \( X_1 \) is 0.000 under value 0.05 with a level of significance. Thus it can be said that the perceived usefulness variable has a significant effect on the mobile payment variable. The sig value for \( X_2 \) is 0.000 smaller than the 0.05 significance level. Thus it can be concluded that the perceived ease of use variable significantly influences the mobile payment activities of customers.

### Table 7
#### F-test Result

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1373.518</td>
<td>2</td>
<td>686.759</td>
<td>349.520</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>190.592</td>
<td>97</td>
<td>1.965</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1564.110</td>
<td>99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: \( Y \)
b. Predictors: (Constant), \( X_2, X_1 \)
Source: Output SPSS

Based on the results shown in table 7, they reveal that the indicated significance value is 0.000 or less than 0.05. It can be concluded that the perceived usefulness variable and the Perceived Ease of Use variable simultaneously or together have a significant effect on the Mobile Payment variable.

### Table 8
#### Determination Coefficients Result

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.937a</td>
<td>.878</td>
<td>.876</td>
<td>1.402</td>
</tr>
</tbody>
</table>

Source: SPSS
Based on the test results shown in table 8, it can be shown that the coefficient of determination (Adjusted R Square) is 0.876 or 87.6%. It showed that the mobile payment can be explained 87.6% by the perceived ease of use variable and the perceived usefulness variable, while the remaining 12.4% can be explained by other factors.

**DISCUSSION**

**Perceived Usefulness on Mobile Payment**

Based on the results of statistical tests conducted that perceived usefulness has a positive and significant effect on Mobile Payment. These results agree with the research conducted by (Kim, Mirusmonov, & Lee, 2010; Weng, Yang, Ho, & Su, 2018). The use of many DANA applications provides many benefits for users in conducting transactions. One of the benefits that many users feel are the benefits in the form of promos given by providers through applications provided to users (Liébana Cabanillas, de Luna, & Montoro Ríosa, 2017), so the higher the perceived usefulness, the higher the use of Mobile Payment (Yan & Pan, 2014; Amelia, 2019).

In addition to the benefits obtained by users of the DANA application, it also receives a comfortable (Ting, Yacob, Liew, & Ming, 2016) feeling that gives attraction to the use of the DANA application. The comfort felt when making a transaction without having to move. The users of the DANA application can also use anywhere and at any time by taking into account the availability of merchants who use DANA as a transaction tool. With the use of the DANA application, can also affect the efficiency and time savings in the form of trimming transaction time so that it can speed up the service process and transactions carried out (Seetharaman, Kumar, Palaniappan, & Weber, 2017). DANA application provides excellent benefits in conducting operations because many affiliated with many merchants (de Luna, Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2019) that offer various advantages in its use.

**Perceived Ease of Use on Mobile Payment**

Based on the results of research conducted on the variable, perceived ease of use has a positive and significant effect on the use of mobile payment. This research is in line with research by (Liébana Cabanillas, de Luna, & Montoro Ríosa, 2017; Anthony & Wong, 2018). In this study, it proves that consumer behavior towards the use of DANA applications is increasingly affecting the Mobile Payment.

Perceived ease of use considers the benefits of ease of use of technology adopted by users (Seetharaman et al., 2017). If the operation of features is delicate, it will have an impact on reducing the use of the application. Benefits and Ease of use (Alaeddin, Rana, Zainudin, & Kamarudin, 2018) are shown by the ease of getting requests, the ease of installing apps, the flexibility in learning and cellular users of DANA applications. A user interface that has an attractive design and is easy to use will increase the perceived system benefits and increase the chance of adopting the application (Aydin, 2016).
Conclusion

The statistical test results in this study perceived usefulness have a positive and significant effect on Mobile Payment. The ease of use of the DANA application and the convenience and can be used anywhere dramatically affects the use of the application. With the use of the DANA application, can also affect the efficiency and time savings in the form of trimming transaction time so that it can speed up the service process and transactions carried out. DANA application provides excellent benefits in conducting transactions because many affiliated with many merchants that offer various advantages in its use. The test results in this study indicate that the Perceived Ease of Use has a positive and significant effect on the use of Mobile Payment. It comes by the ease of getting the application, the ease of installing the application, the flexibility in learning and using apps that can be accessed on cellular users of the DANA application.

Further Study

This research still has many limitations in which the sample used is only limited to UPI institutions, namely postgraduate students. Results obtained may still have differences when done outside the institution. Also, it is necessary to conduct interviews and in-depth observations to get more information from respondents. The research method suggested is not only the TAM but other theoretically available approaches, or adding different characteristics of research variables.

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