FACTORS AFFECTING CONSUMERS' ADOPTION OF ELECTRONIC PAYMENT: AN EMPIRICAL STUDY ON INDONESIAN CUSTOMER

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Abstract
The development of technology has rapidly evolved and has covered a lot of sectors, including financial sectors, which can be seen by the evolution in payment methods such as e-payment. As people's needs keeps on developing, the technology that is available now might not be relevant to fulfil people's needs in the future. This study aims to explore the factors influencing people's intention to adopt electronic payment by examining the correlations of the electronic payment adoption with Perceived Ease of Use, Perceived Usefulness, Perceived Risk, Perceived Trust, Compatibility, and Perceived Cost. Extended Technology Acceptance Model (TAM) by Davis (1985) is used for this study to develop the variables. The data was obtained by distributing online questionnaires using Likert Scale to 100 respondents in Indonesia with purposive sampling method. To explain the relationship between the dependent variable and independent variables, Path Analysis is used to measure the questionnaires. The result of this study finds that perceived cost and compatibility are significantly related to the consumers adoption of electronic payment, with compatibility as the strongest factors that influence consumers adoption of electronic payment. This research aims to be useful for the electronic payment service providers to develop their services for their consumers, especially in the context of Indonesian's market.

Keywords: consumers adoption, electronic payment, path analysis, technology acceptance model, technology development

1. Introduction

The purpose of technology development is to make people's lives more convenient (Osratf, 2014) and solve problems caused by the inefficiency of the previous system. The benefits and advantages that are brought in every new development encourages people to adopt the newer technology. This is also accounting to the adoption of electronic payment as a new method of payment as it answers the problems of the previous conventional payment method. This is supported by several surveys that stated that the number of people that adopt e-payment kept on increasing significantly each year. The Asian Banker (2018) survey stated that the e-payment transaction in Indonesia in 2018 increased by 380% compared to the previous year.

The vast growth of the mobile payment market and the limitations and drawbacks that arise with the use of the traditional and conventional method of payment has paved way for the development of the new and innovative method of payment, which we known as electronic payment (E-payment). However, as it is widely known that technology as well as people's needs keeps on developing, hence, the technology that is being used by the consumer right now might not be relevant to fulfil their needs in the future. Thus, it is necessary to elaborate the relevant factors that influence consumers' intentions to adopt electronic payment system so that the

financial technology companies can know the needs of their consumers to continue developing more personalized products and services for their consumers.

The objective of this research is to identify factors that influence consumers adoption towards electronic payment based on extended Technology Acceptance Model (TAM). The result of this research can be a consideration for the electronic payment service providers to develop their services for their consumers and to reach a broader market.

The topic about electronic payment has been discussed quite a lot these past few years as the technology is evolving in a fast pace. Although it is undeniable that it made transactions easier, there is still a limit regarding consumer's adoption rate towards the acceptance of electronic payment (Lai, 2017). Along with the emergence and broadening use of online transactions, and there is a limit of traditional methods of payments, new methods of online payment have been introduced these past few years to fulfill the needs of people (Hackney, 2010). Electronic payment refers to the use of electronic instruments to transfer funds from one party to another, directly or indirectly Zhang & Dodgson (2007) and there are various types of electronic payments according Morgan (2013), which are mobile wallet, mobile commerce, and mobile acceptance.

To develop and to assess the theoretical model of the factors that influence consumers adoption towards e-payment for this research, Extended TAM is used. Technology Acceptance Model is based on behavioral intention to use and adopt a system as a dependent factor, while perceived ease of use and perceived usefulness are the independent variable constructs (Khan & Woosley, 2011). In this study, TAM that is developed by Davis (1985) is modified and combined with additional constructions that is derived from other theory of innovation adoption that has been validated by previous adoption of e-payment research as a relevant construction that increase the predictive power of TAM. The additional construct variables include compatibility, perceived trust, perceived risk, and cost.

Perceived Ease of Use is defined as the degree to which potential users expect that using the target system would be free of effort (Davis, 1989). In other words, the users do not expect any difficulties in learning and adopting that particular technology or system (Chuttur, 2009), while Perceived Usefulness is defined as a belief that using a particular technology is expected to increase the users productivity (Venkatesh & Davis, 1989). Perceived Risk refers to the amount of risk that is perceived by consumers in determining their purchasing decisions and is also a determinant factor of an individual's behavior to adopt a new technology (Cox and Rich, 1964). Next, according to Chiou (2004), perceived trust has an important role in increasing values that customers' get, as well as customers' satisfaction and loyalty. The definition of compatibility according to Hoffman (2011) is the degree to which an innovation is perceived as consistent with existing values, past experiences, and consumers' needs. Arensberg & Niehoff (1964) stated that the previous innovation of technology strongly impacts compatibility. As for perceived cost, Chiou (2004) defines it as consumers' willingness to pay for the cost that incurred when they choose to adopt a system. Lastly, Surendran (2012) explained that behavioral intention refers to the measurement of a possibility that an individual would adopt and use a technology.

Below is the theoretical framework for this research:
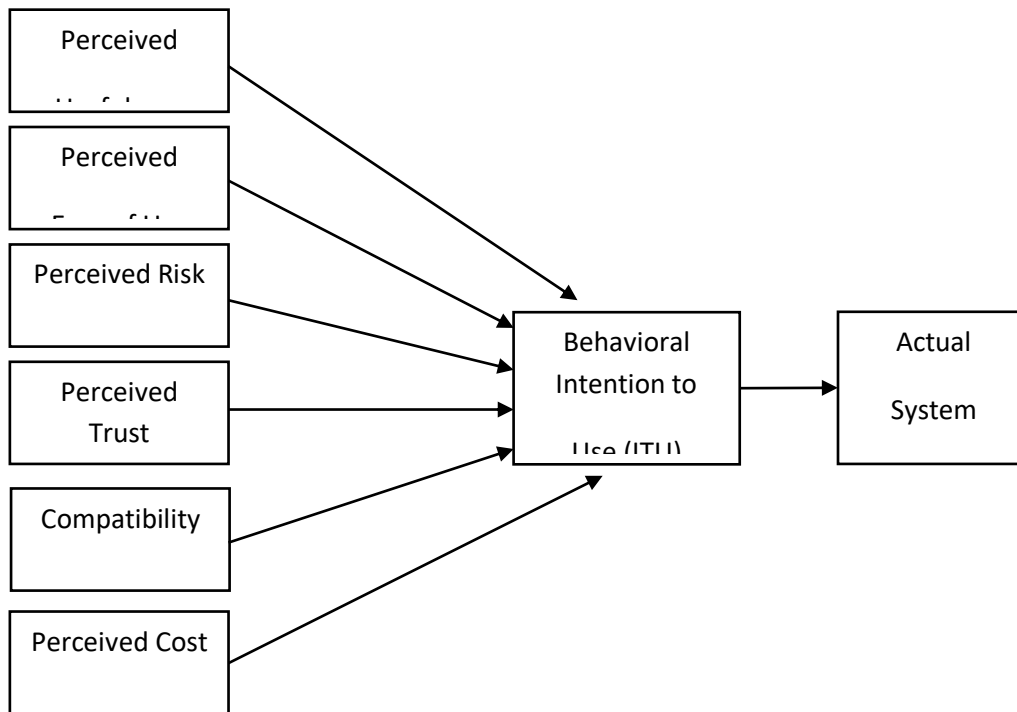
According to the theoretical framework above, the hypothesis development for this research are as follow:

H1: Perceived usefulness (PU) positively influences people behavioral intention to use (ITU) E-payment

H2a: Perceived ease of use positively influences people behavioral intention to use (ITU) electronic payment (E-payment)

H2b: Perceived ease of use (PEOU) positively influences perceived usefulness (PU)

H3: Perceived risk positively influences people behavioral intention to use (ITU) electronic payment (E-payment)

H4: Perceived trust positively influences people behavioral intention to use (ITU) electronic payment (E-payment)

H5: Compatibility positively influences people behavioral intention to use (ITU) electronic payment (E-payment)

H6: Perceived cost positively influences people behavioral intention to use electronic payment (E-payment)

H7: Behavioral intention to use positively influences actual system use of electronic payment (E-payment)

2. Method

The targeted respondents for this research are Generation Z who are currently resided in Bandung with the age ranges between 15 years old until 29 years old who have made transactions using electronic payment method, while the number of sample for this research is determined using Slovin Formula with 10% margin of error. The total of the respondents for this research are 100 respondents. The data for this research are obtained by distributing online questionnaires to 100 respondents that fulfil the requirements. Likert Scale (Likert, 1932) is used for the questionnaires with the scale from one to five. The data that have been gathered are calculated with SmartPLS 3.0 application and is assessed with Partial Least Square Structural Equation Model (PLS-SEM) method. This research also conducted a two-stage analysis which consists of outer model or measurement model analysis and inner model or structural model analysis.

The outer model analysis aims to measure the validity and reliability of each of the items in the research questionnaires to identify the validity of the measurement model to ensure that the data are appropriate and can be used for further analysis. To examine whether the data is reliable or not, first, indicator reliability test is conducted by analyzing the values of the outer loadings and to be consider accepted, the value should be above 0.4. Then, internal consistency reliability test is done by evaluating the value of the composite reliability that should be above 0.6 to be considered as acceptable. The validity of the data is measured by conducting the convergent validity test and discriminant validity test. Convergent validity test evaluates the value of the AVE. The value of AVE should be above 0.5 to be considered as valid, while the discriminant validity test is conducted through two types of cross loadings examinations, which consist of Fornell-Larcker Criterion Analysis and cross loadings examination among indicators.

The structural model analysis needs to be done to evaluate the hypothesized relationship between the latent variables. There are three stages of testing for the inner model analysis, which consists of the measurement of the coefficient of determination, T-test, and path coefficients. The three stages of testing are conducted through a bootstrapping process, which evaluates the significance of the statistical result of the model. The coefficient of determination test aims to measure the predictive accuracy for the research framework model. The rule of thumb regarding the acceptable R^2 value are as follow: a value of 0.67 or higher is considered as strong, 0.33 or higher is considered as moderate, and the value lower than 0.19 is considered as weak. T-Test is conducted to test the hypothesis relationship, to be considered acceptable, the T-value should be above 1.984. Lastly, the path coefficient test is conducted to identify how much influences that the independent variables have on the dependent variable.

3. Results

The results of the indicator reliability test and internal consistency reliability test shows that the outer loadings and the composite reliability of the variables are all above 0.7, which indicates that the indicators are reliable and can be used for further testing. Furthermore, the convergent

validity test and discriminant validity test results also shows that the AVE value are above 0.6, and the square root value of each AVE are higher compared to the correlations of the other constructs. Therefore, it can be assumed that the validity tests are well-established and further testing can be proceeded.

Continuing to the inner model analysis, the coefficient of determination test result shows that the R square values are above 0.4, which means that all of the independent variable's ability to explain the correlations within the inner models are considered as moderate. While the T-test results indicates that four hypotheses out of eight hypotheses are accepted. Lastly, the result of the path coefficient test shows that the compatibility's path coefficient value is the highest among the other variables that affect the behavioral intention to use variable with a value of 0.597, followed by perceived cost variable with the path coefficient value of 0.070.

The hypothesis testing results are as follow:

Hypothesis		T-Statistics	Path Coefficient (β)	Information	
No	Path			Result	Conclusion
H1	PU → BI	0.673	0.057	Not Significant	Not Accepted
H2a	PEOU → BI	0.627	0.042	Not Significant	Not Accepted
H2b	PEOU → PU	11.066	0.699	Positive Significant	Accepted
H3	PR → BI	0.104	-0.028	Not Significant	Not Accepted
H4	PT → BI	0.177	0.068	Not Significant	Not Accepted
H5	C → BI	2.177	0.597	Positive Significant	Accepted
H6	PC → BI	2.548	0.070	Positive Significant	Accepted
H7	BI → AU	23.827	0.814	Positive Significant	Accepted

H1: Perceived usefulness does not significantly influence people behavioral intention to use electronic payment

Surprisingly, in contrast with the results from most previous studies, this research found no correlations between the two variables. Although this results warrants a further research, it can be assumed that this findings are expected due to the limited sample size and the demographic characteristics of the respondents that are aged between 15 to 29 years old and are living in Bandung. This is possible because the young generation are more exposed towards new technologies and innovations, they might find the electronic payment method does not bring

significant beneficial impacts for them and they are not satisfied with the technology. In addition, the usage of electronic payment method requires external factors like internet connection, in which the limited connection in the area might be a possible factor that resulted in these findings. As the perceived usefulness variable indicates that this technology simplifies and bring conveniences to the users in their payment process, so due to the external factors that are mentioned above, it is possible that the respondents faced more drawbacks than the advantages in using the technology. Further research with greater sample size and area is suggested to further confirms these findings.

H2a: Perceived ease of use does not significantly influence people behavioral intention to use electronic payment

Unlike the previous studies, this research found no evidence of a statistical correlation between the perceived ease of use variable and people behavioral intention to use the electronic payment. Though, according to previous research by Shatskikh (2013) about consumer acceptance of electronic payment, this result is expected if we consider the demographic characteristics of the respondents in which the majority are young generation aged between 15 years old to 29 years old. The young generation generally are more familiar with new technology so the ease of use of this new technology is not a drawback. It is also possible that the recent electronic payment technology has been adapted to the level of average users. Therefore, the perceived ease of use variable is not considered as an obstacle according to the respondents' perspectives.

H2b: Perceived Ease of Use positively influences Perceived Usefulness

The perceived ease of use variable in this research refers to the difficulties level in adopting or learning to use the electronic payment method. The findings in this research indicates that the perceived ease of use variable significantly influences the perceived usefulness variable. This result is consistent to the majority of previous research by Lee (2009) and Chin et al. (2015), in which it is stated in the research that the lower the difficulties in using the electronic payment system, the more useful they feel electronic payment is.

H3: Perceived Risk does not significantly influence people behavioral intention to use electronic payment

The result of this research found no statistical significance correlation between perceived risk and people behavioral intention to use electronic payment. This findings is consistent with the previous studies by Pavlou (2003), in which it is stated that since the younger generation, which is the subject of this research, are more technology-literate and are comfortable with internet-based and online transaction, thus this characteristic is likely to reduce the perceived risk level. Another possibility is that since the users are now more accustomed of using online payment method and that it has become a habit for them that the feelings of insecurity and uncertainty of a possible harm that might be caused when they use the electronic payment method are no longer being a concern for them in adopting the payment method.

H4: Perceived Trust does not significantly influence people behavioral intention to use electronic payment

This result is in line with the previous research by Yousafzai et al. (2003). In the research, it is explained that this is due to the result of the past experiences of the users in which they are familiar with giving out their information and saw it as a customary when using a payment method. Moreover, the research also stated that it is also possible that the users have passed the early stage of the adoption process and are no longer phased by a basic online data gathering.

H5: Compatibility positively influences people behavioral intention to use electronic payment

Compatibility is the factor that significantly influences people behavioral intention to use electronic payment method the most. This findings is in line with the result of the previous study by Lu et al. (2010), in which they stated in their research that the compatibility variable has a significance importance in the young generation, which is the demographic characteristics of this research's respondents, as the young generation tend to adopt the technology that resonates with their existing lifestyle or behavioral patterns.

H6: Perceived Cost positively influences people behavioral intention to use electronic payment

This result is consistent with previous studies about electronic payment by Li et al. (2007) and Anil et al. (2003). Taking these findings into account, this result is expected due to the several fees that are charged to the customers when they are using electronic payment method. Like in most countries, internet connection is required to use the electronic payment method, in which the cost of it are not considerably cheap. In addition, there is service fees that are charged to the users during every top-up. Moreover, this findings also supports the H1 hypothesis that are rejected as one of the item questionnaires for the perceived cost variable is whether the cost that the users pay to use this technology does not worth the value that it gives for them. Thus, this indicates that the cost they pay are not worth the benefits that this payment method gives to them.

H7: Behavioral intention to use positively influences actual system use of electronic payment

Behavioral intention to use represents the users' willingness to use the electronic payment method, while actual system use indicates the actual adoption of the electronic payment method by the users. Taking this result into account, the users' willingness to use the electronic payment method should have a significant positive relationship with the actual usage of the payment method, in which when the users are willing to use the system because they sense a positive experiences, it will increase their actual adoption rate of the electronic payment method. This findings is in line with the previous research by Li et al. (2007), in which it is explained that the users' intention to use the electronic payment method that are influenced by the several precedents variables that are mentioned above leads to the actual adoption or usage of the electronic payment method.

4. Discussion

This research is expected to be beneficial for the electronic payment service providers as it identifies the factors that are relevant and has influences on consumers adoption of e-payment as it is important for the service providers to clearly understand the preferences of their consumers to be considered in the decision-making process. The results indicate that the electronic payment providers should pay more attention to two factors, which are compatibility and perceived cost as they have the most influence on the consumers' adoption of e-payment. This result can be regarded as a guideline to increase the market penetration of e-payment adoption. As the result indicates a strong influence of compatibility, this can be a consideration for the marketing team to advertise e-payment so that the consumers found the technology to be suitable to their lifestyles and behavioral patterns. Moreover, the findings of this research also show a significant correlation between perceived cost and the adoption e-payment. This result suggested the e-payment providers to pay close attention to the additional value that they provide to their users as the perceived cost in this research represent the worth of the value of this technology with the cost they must pay to be able to use the payment method. The service providers should enhance the value of the payment method to convince consumers to shift towards the electronic payment method because as an alternative payment method, consumers will not consider shifting if they find that the values are not significant enough. As the results of this research implies, the contextual factors like compatibility of the technology with the consumers' current lifestyles and the cost of using the technology have more influences on the consumers adoption of the payment method rather than the technical factors like perceived trust and perceived risk.

As this research offers contributions for the service providers, it also has several limitations that should be considered and can be improved in the future research. First, it is suggested to cover a larger scope of sample and the area of the research. The limitation of the sample that only covers people aged between 15 years old to 29 years old that are living in Bandung cannot be considered as a representation of the whole population and country as it does not capture the older population and people who live outside Bandung. Therefore, future research may cover a larger sample of Indonesia population. The area of future studies may explore different and several cities in Indonesia.

Furthermore, other than the number of sample and area of the research, future research may also identify a larger number or different independent variables as there are other factors or variables that potentially influence people adoption in the electronic payment system that are not included in this research. For instances, future studies may evaluate the influence of consumers' previous experiences or the subjective norm towards their intention to adopt the electronic payment method.

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