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INTENTION TO DELAY: THE CONTEXT OF TECHNOLOGY ADOPTION BASED ON ANDROID

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ABSTRACT

The purpose of this research is to test and analyze about; (1) the positive effect of knowledge (K) toward relative advantage (RA); (2) the negative effect of relative advantage (RA) toward intention to delay (ITD); (3) the positive effect of perceived complexity (C) toward attitude to delay (ATD); (4) the positive effect of attitude to delay (ATD) toward intention to delay (ITD); (5) the positive effect of perceived risk (PR) toward attitude to delay (ATD); and (6) the positive effect of perceived risk (PR) toward intention to delay (ITD).

The survey was conducted to all of android smartphone based user in the Province of DIY. The sampling technique is using non probability sampling. Because researchers cannot know the exact number of this delay population, then the sample size used in this research is 182 respondents. The sample unit in this research is individual. The sample unit was conducted using purposive sampling method. The criteria of the respondents are individuals who have android-based smartphones and they are not yet willing to adopt some android-based transaction applications. The

statistic technique used in this research is Structural Equation Modelling (SEM). The research result explained that all purpose of the research is successfully achieved by researchers.

Keywords: intention to delay, technology adoption, android.

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1. INTRODUCTION

The development of android-based technology has change the paradigm and strategy of marketing. Android-based information system began to be counted in order to increase company profits. Marketers who cannot adapt with this technology may not be able to survive in the competition. On the customer side, the development of android-based application to shop online is exciting news, because they can fulfill their needs with just one application. Yet, unfortunately the new technology that brings a positive impact in consumption is not easily adopted by consumers. Some consumers even refuse, and some consumers still delay to adopt the technology. Horsky (1990; Rogers, 1995; Martin, et al., 2007; Diharto, et al., 2018) found that products with new technology which is capable to offer better solutions than the previous product with similar functions are not always easily accepted by consumers with certain characteristics. Even Holness (2004; Muafi, 2017; Muafi, 2015a; Muhsin et al., 2018; Muafi, 2009) added that the decision of adoption and not adoption of product innovation will always involve the attitude formation toward technological innovation.

This research is focused on the adoption delay of android-based technology, which means the time the individual goes through before he decides to adopt an android-based application in shopping. There is some theory gaps related to this delay. The research result of Featherman (2002) on online shopping shows that the attitude of innovation adoption is related to the intention to adopt. This supports the findings of Li (2001) which stated that the higher the adoption intention of one's innovation, then the higher one's desire for adoption of innovation. Yet, the research from Kaharanna (1993; Muafi, 2015b; Muafi, 2011) stated that positive attitude and intention to adopt are not always followed by positive behavior. There are several factors that cause the relationship of attitude toward behavior become not unidirectional. According to Belk (1975) situational aspect can cause someone who already has a positive attitude towards purchasing a product become discouraged to buy. The support also comes from Fitzimon (2000) which shows that situational factor can cause someone's positive attitude not followed by his behavior.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. Delay to Adoption

Based on the study of some literature about technological innovation adoption, the issue of pro innovation bias which is a research related to successful innovation and acceptable to consumers is still become the main topic of technological innovation adoption studies (Rogers (1995; Hovav and Schuff, 2005; Su, et al., 2007; Au and Yung,2007). The fact is new technology does not guarantee that it can be received by consumers because there are several factors that cause it.

The delay occurs when an individual decide to delay the innovation adoption. Someone who postpone belongs to a non-adopter group. This individual is in an active state, waiting for

the time he consider appropriate to adopt innovation. Ram and Seth (1989) stated that rejection or delay of innovation adoption is not the opposite side of innovation adoption, but it can be the antecedent of adoption. The reason is that the individual usually will take the attitude to delay adoption before they can make the decision to adopt. Product innovation is complex and more sensitive and different in several factors such as characteristics, usability, and connectivity. If the company can have better understanding about non-adopter, then the company can create better strategy to change non-adopter into adopter so that it will increase product value (Joseph, 2005). Gatignon and Robertson (1989; Szmigin and Foxall, 1998), categorized non-adopter into two kinds, which is explicit rejecters and postpones. Explicit rejection is an active process where an individual decides to avoid or resist innovation. Besides, postponement is also an active process where users delay the process of innovation adoption. There is one more category that distinguishes this category, which is related to the passive state that individuals do in facing the innovation. The three categories of non-adopted are illustrated as rejecters, postpones, and individuals experiencing decision inertia. The last group (inertia) can change from rejecting innovation, accepting or running innovation, or sticking with their position.

There are many innovation adoption literatures that use intention to adoption as a proxy for actual adoption behavior and continuity in using an innovation. It will be more important to proxy the intention to adoption as an intention to not to adopt innovation (Ram and Seth, 1989). In the theory of reasoned action model from Fishbein and Ajzen, intention is the intermediate variable that causes the behavior of an attitude or other variables (Wijayani et al., 2017). The research result from Sugandini et. al (2018) which took the setting on the adoption of mangrove conservation showed that attitudes toward adoption has an effect toward intention to adoption.

2.2. Knowledge, Relative Advantage and Intention to Delay

Knowledge is the most important construct for consumer behavior because it has a role in the information retrieval, including learn about new product (Wood and Lynch, 2002), and the process of innovation adoption (Moreau et al., 2001). Surjanti et al. (2018) stated that interest can be grown through knowledge building in an interesr-based curriculum. Knowledge is an accepted understanding of a product so that product knowledge is believed to be an important factor that determines consumer decisions (Raju, et al., 1995). Brucks (1985) suggested that there are a positive effect of knowledge toward behavior. The study from Alba and Hutchinson (1987) on electronic product also concluded that there is positive relationship between knowledge and consumer decision, and also the relationship of knowledge and information retrieval is significantly negative. Sugandini (2013) research result added that knowledge can have an effect of one's perception toward relative advantage of a technology. A good level of knowledge of new technology will increase the perception of relative advantage of the new technology.

Moreover, Rogers (2003) added that relative advantage has an effect to one's decision to adopt or not adopt new technology. Rogers (2003) defined relative advantage as the advantages of an innovation versus the previous idea or the ideas that are unmatchable. The relative advantage concept shows that the adoption rate of new technology will be high if consumers feel the benefit offered by new technology. Moore (1989) did research by taking the setting of the rejection of computer adoption. The result concluded that individuals who have positive beliefs that there is no relative advantage he got from the computer adoption. The individuals will have a high intention to delay. Rogers (2003; Muafi, 2016) stated that the problem is not on the new technology is better objectively than the existing technology, but on the relative advantage which perceived or not perceived by the individuals. As long as the

new technology can replace the existing technology, then the adoption of new technology is more vulnerable to be postponed.

H1: Knowledge has positive effect toward relative advantage

H2: Relative advantage has positive effect toward intention to delay

2.3. Perceived Complexity, Perceived Risk, Attitude and Intention to Delay

Complexity is the degree where innovation is perceived as something difficult to understand and use (Ram, 1987). Innovation complexity includes the complexity of ideas, related to the easiness to be understood and complexity of implementation, related to the easiness to be implemented (Liang, 1987; Muafi, 2015a). The complexity of an innovation includes a complexity to be learned and used, which will have an impact on the adoption rates. There is some specific innovation that could be understood and used by the adopters and there is some that could not. In Davis et al. (1989) research, he explained that individual perceptions of the complexity of new technology correlate with current technology usage and the desire to use them in the future. When consumers know the complexity of new technology and it takes time to learn it, then consumers would not like the new technology (Slyke, et al., 2002). Ram (1987) in his concept about innovation resistance stated that the complexity of an innovation will increase in relation to two things; difficulty in its understanding and difficulty in implementation, which will increase user resistance to adopt the innovation. The more complex an innovation, the slower the innovation is adopted, so that attitudes toward adoption postponement and the intention to delay the adoption of new technology will be increased. This complexity refers to the difficulty perception to be understood and used from an innovation.

H3: Perceived complexity has a positive effect toward delay

H4: Attitude toward delays has a positive effect toward intention to delay

2.4. Perceived Risk and Intention to Delay

Perceived risk is defined as consumer perception about uncertainty and negative consequences that may be accepted of purchasing a product/service (Allen, 1993). The higher the perception, the greater the consumer is involved with a product (Engel, et al., 1995). In the context of e-commerce adoption, Pavlou (2003) stated that perceived risk will reduce the intention to use internet to have transaction and have negative effect on the behavior of online transaction. When consumers have high perceived risk of a product, they will avoid purchasing perceived high risk product by delaying the purchase or minimize the risks through information retrieval and alternative evaluation before a purchase decision is made. This condition cause a complex decision making process, so information about products is needed to help evaluate the existing brand of a product. Hogart et al. (1980) added that one would have the intention to delay the adoption of new product when they are uncertain with the consequences from their activities and avoid uncertainty and worries toward failure that can create perceived risk and increase rejection or delay the adoption of innovation. From the perspective of innovation adoption resistance, the new attributes that exists on new product innovation such as technological complexity, expensive pricing, and all that looks new with the side that is unpredictable to the consumer can create disruption to the existing consumers' routines (Sheth, 1968, Ram and Sheth, 1989; Waddell and Cowan, 2003). This can lead to conflicts with the previous beliefs of consumers and it will have an impact on the adoption rejection. This statement is supported by Zinkhan and Karande (1991); Mitchell et al. (1999) which explained that when consumers encounter new technology risks, they will be faced with the desired or unwanted consequences dilemma for its risky adoption and decision.

H5: Perceived risk has a positive effect toward attitude to delay

H6: Perceived risk has a positive effect toward intention to delay

3. RESEARCH METHOD

This study embraces a positivism paradigm that sees reality as something single, real, divisible, and emphasizes in the occurrence of causality relationship which tests are conducted on a free basis of value (Lutz, 1989). This positivism paradigm is focus on the cause of consumer decision making, so that the research result are directed to the purpose of marketing practice. This research is using survey because it considers several factors that explain the existence of the phenomenon being studied (Lutz, 1989; Simonson, et al., 2001). The data that is used in this research is primary data conducted from in-depth personal interview and questionnaires. This research is using six point Likert-type scale with scale from 1 which denotes a very negative evaluation to scale 6 which describes a very positive rating. The population of this research are all android-based smartphone user in the Province of DIY. The sampling technique is using non probability sampling, because researcher cannot know the exact number of this delay population. The number of parameters analyzed in this research is 12 parameters. The minimum sample is 120 respondents. The amount of sample used in this research is 182 respondents. The sample unit of this research is individual. The sample unit was taken using purposive sampling (Cooper and Schindler, 2003). The respondent criteria are individuals who have android-based smartphone and they are not ready to adopt some android-based transaction applications. The statistic technique used in this research is two step approaches to Structural Equation Model (SEM). Two step approaches to SEM is conducted through two stages, the first is measurement model test and the second is structural model test (Susilowati and Sugandini, 2018). The validity and reliability test shows that all items of questionnaires and variables are valid and reliable.

Meanwhile, the test of multicollinearity symptoms between each independent variables showed no multicollinearity symptoms that damaged the model, which seen from the determinant of sample covariance matrix value of 2.6909e-006 and this number is far from zero. Therefore, it can be concluded that there is no multicollinearity or singularity in this data, so the assumption is fulfilled. As for the outlier data test is done using two ways, the first is detection toward univariate outliers which is done by observing *z score* value, all case that have *z score*value $\geq\pm$ 3,0 mean it is outlier. Based on the data collected, there is no respondent data that affected by outliers. The data that can be used is only from 182 respondents. Detection toward multivariate outliers was performed using the Mahalanobis Distance criteria at the level of $p < 0{,}001$. The Mahalanobis Distance was evaluated using χ^2on the independent degrees as the number of variables used in the research. If the case has the Mahalanobis Distance more than the *chi-square* value at the significance level of 0,001, then multivariate outliers is occur. The value of $\chi^2_{0.01}$with the number of 22 variables is 40.29. From the result of Mahalanobis analysis, obtained the highest value of 35.587. Thus, there are no multivariate outliers that occur. While the evaluation toward goodness of model shows that all criteria used in the research are mostly indicate the good result, which means that the model is good and in accordance with the data as in Figure 1.

4. RESEARCH RESULT

4.1. Evaluation toward Model using Two Step Approach to SEM

The test result with the structural equation model using AMOS program can be seen on Figure 1.

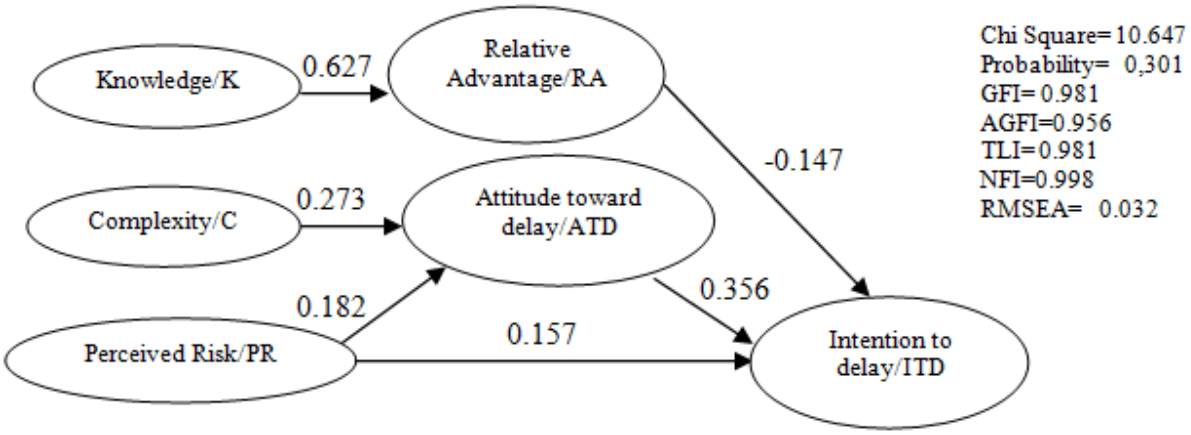

Figure 1 The Result of Structural Equation Modeling of Intention to Delay

To test the hypothesis of causal relationship among knowledge, relative advantage, complexity, perceived risk, attitude toward delay, and intention to delay, it can be seen from the path coefficient that shows the relationship among those variables. The relationship can be seen on Table 1.

Table 1 Test of the Hypothesized Relationships among Variables.

	Relationship	Expected direction	The Actual Direction	Path coefficients	CR	Criteria
H1	Relative advantage ← Knowledge	+	+	0.627	10.819	Accepted
H2	Intention to delay ← Relative advantage	-	-	-0.147	-2.209	Accepted
H3	Attitude to delay ← Complexity	+	+	0.273	3.895	Accepted
H4	Intention to delay ← Attitude todelay	+	+	0.356	5.243	Accepted
H5	Attitude todelay←Perceived Risk	+	+	0.182	2.594	Accepted
H6	Intention to delay←Perceived Risk	+	+	0.157	2.308	Accepted

The hypothesis test (alternative) was done by comparing probability (p) value which is significant when the p value is ≤ 0.05. By using those criteria, it can be known that all paths are significant, so all 6 proposed hypothesis can be accepted.

5. DISCUSSION

This research gives a theoretical contribution about delay model in the setting of information technology which affected by relative advantage, attitude to delay, and perceived risk. This research result is also can show the relationship between knowledge with relative advantage, complexity with attitude to delay, and also perceived risk with attitude. As for the consumer knowledge about android-based application, the research result shows that the consumer knowledge is relatively low, because many consumers still do not understand about android-based application so they cannot perceive the relative advantage of this technology. This perceived relative advantage also has an effect toward high intention to delay. This is because consumers are not convinced about the relative advantage of android-based application, so they still feel hesitate to adopt it. This hesitation directs consumer behavior to delay. This research finding is in line with Wood and Lynch (2002; Moreau et al., 2001) which stated that technology knowledge is believed to be an important factor that determines consumer decision (Raju, et al., 1995; Muafi, 2015a; Muafi, 2017; Muafi, 2012). Furtherly, Rogers (2003; Muafi, 2017) showed that relative advantage affect one's decision to adopt or not

adopt new technology. Consumers' perceived complexity for android-based application is relatively high. This means that consumers feel that learning using android-based application is difficult and it is uneasy for them to get information about this technology and understand how this technology works. This high complexity affects consumers attitudes to delay the adoption of this technology. Consumers feel quite comfortable with delaying the adoption of these application, even they feel that delaying adoption becomes a good idea. Consequently, the consumers intention to delay the adoption of technology becomes high.

This research finding supports the innovation resistance model from Ram (1987). Ram (1987; Liang, 1987) also stated that the complexity of innovation has an impact toward the adoption rate. High complexity will increase user resistance and the innovation will be adopted slowly, so that attitudes toward adoption delay are increased and the intention to delay the adoption of new technology will also increase. This finding is also in line with Davis et al. (1989) which explained that individual perception toward the complexity of new technology correlate with the use of technology. Consumers who know the complexity of new technology and understand that it takes time to learn about it do not like the new technology (Slyke, et al., 2002).

As for the perceived risk, this research result explained that android-based technology application is perceived risk by consumers. Risk that arises is related to the risk of smartphone performance they owned. Consumers perceived that this technology application makes wasteful battery power, slowing the smartphone performance, and wasteful data quota. This high perceived risk causes consumers prefer to delay the adoption of android-based technology, which makes the intention to adopt this android-based application becomes high.

This research supports the research result of Allen (1993) which explained that the higher the perceived risk is, the greater the consumer is involved with a product (Engel.,et al. 1995), reduce the intention to use internet to have transaction and have negative impact on online transaction behavior(Pavlou, 2003), and increase the rejection or delay of innovation adoption (Hogart et al, 1980). This also explained by (Sheth, 1968, Ram and Sheth, 1989; Waddell and Cowan, 2003) that someone will have the intention to delay the adoption of new technology when they are uncertain with the arising consequences, avoid uncertainty, and fear of failure. This condition can cause conflict with the previous belief of the consumer and it will affect the rejection of adoption (Zinkhan and Karande, 1991; Mitchell et al., 1999).

6. THEORY AND MANAGERIAL IMPLICATION

Not all technological innovations can be easily adopted by the users. This research result is expected to reduce the pro innovation bias that exist in the previous innovation adoption research. This research categorized non adopter into two which is the adoption rejection and adoption delay. Adoption rejection is an active process where an individual decides to avoid or resist the innovation. While adoption delay is an active process where an individual delays the process of innovation adoption.

The concept of pro innovation bias shows that reserarch related to innovation is always shows the success of an innovatve product that can be accepted by consumers. The aspect of pro innovation bias also can cause not deep understanding about the failure of innovation product introduced by marketers even by government, because the existing research ignores the innovation rejection.This research proposed the innovation adoption delay model that is a form of active rejection of consumers over innovative product. Delay is a condition where someone is not yet willing to adopt a product/innovation. Adoption delay is in a non-adopter group. An innovation delay will wait for the right time to adopt an innovation. There is one

decision that should be considered for innovation adoption decision, which is the decision to delay the adoption of innovation.

The businessmen can make the right strategy by learn and analyze the delay behavior of consumers or public so that they can make strategic and targeted decision. Businessman is also can improve the satisfaction and quality of relationship with their consumers so that their loyalty will increase (Sugandini et al., 2017b; Muafi, 2012). Government is also need to examine the aspects of behavioral delays in order to make appropriate target policies so that it can be useful for the industry and society itself (Sugandini, et al., 2017a).

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