Generating Intention Of Elementary School Students To Use Smartphone İn Learning

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Abstract: This study aims to determine attributes in the model of Perceived Characteristics of Innovating Theory (PCIT) which can arouse students' intention to use smartphones in learning at elementary school. This research uses quantitative methods, the questionnaire is used as an instrument to obtain data from all respondents and is made using a Likert scale in the form of a survey that must be answered by respondents. Respondents selected in this study were 225 students from seven state primary schools spread across seven provinces in Indonesia consisting of class 4, class 5 and class 6. Multiple regression analysis was used to measure the effect of independent variables on the dependent variables. The results of this study indicate that the relative adventage, visibility, and voluntariness attributes can significantly evoke the intention of elementary school students to use smartphones in learning. Meanwhile, the attributes of compatibility, trialability, ease of use, result demonstrability, and image were not significant in arousing the intention of elementary school students to use smartphones in learning. The results of the study are very useful for schools to make students want to use smartphones as a learning aid.

İndex Terms: Intention, smartphones, elementary school, perceived characteristics of innovating

1. INTRODUCTION

The industrial era 4.0 is dominated by two main movers, Cyber Physical Systems (CPS) and Internet of Things (IoT) (Pereira, A. C. Romero, 2017), while the main characteristics of these two industrial movers are mobile devices such as smartphones (Charith Perera et al., 2014). Smartphones are devices that are connected to the internet by telephone and computing functions, usually equipped with a touch screen and a keyboard (Síthigh 2012:1). Smartphones are also used to conduct social interactions, to operate financial transactions, to increase employees productivity, and to improvean academic teaching (Jones & Chin, 2015). Smartphone users always experience an increase and the smartphone use can be seenas an indicator of technological progress in a region (Ramadiani, Azainil, Haryaka, Agus, & Kridalaksana, 2017). Regarding to smartphone users, children born in the 21st century are more familiar in operating smartphones compared to the previous generation, as for parents having inconsistent movements in operating smartphones (Tsai et al., 2017). One of the causes of many smartphone users in the modern era is because of the many facilities featured in these mobile devices (Hu, 2013).

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Smartphones in this modern era have tremendous appeal that captivates their customers from various circles including the education community. Someone interested in buying a smartphone will be influenced by three strong variables, namely the features available in the smartphone, the brand of the smartphone, and the intention to buy a smartphone (Rahim, Safin, Kheng, Abas, & Ali, 2016). Smartphones can be used in the educational setting through various models (Bakker, Kazantzis, Rickwood, & Rickard, 2016). In addition, smartphones connected to the internet have been used to enrol students in schools, to give online courses, in sharing educational articles / videos, to view tutorial videos, and to read articles (Tecnopreneur, 2017). The correct use of smartphones has supported the 21st century literacy students, namely information literacy, media, and information and communication technologies literacy (Trilling & Fadel, 2009: 7-71). In other fields of education, smartphones strengthens the relationship between teachers and student guardians (Özdamlı & Yıldız, 2014), It can be used as a means of e-learning (Ramadiani et al., 2017). However, in e-learning there is an important thing to consider, namely the integration of tools used with teaching and learning (Alshahrani, 2015). Another benefit of smartphone use in education is for learning English language (Seo & Choi, 2014) and as a means to conduct online courses (Yan et al., 2014). Even in this modern era, social media applications containedin smartphones like WhatsApp for example can be used for teaching and learning everywhere in the world (So, 2016) by conversation groups (Kaya & Bicen, 2016). The applications contained in smartphones in the modern era have interactive and bold characteristics: attractive, open, wide, principled and healthy (Tan, Hsiao, Tseng, & Chan, 2018). As an evidence that smartphone applications are interesting, the phenomenon of the difficulty of students being released from social media applications such as WhatsApp, they check it before and after learning in a school (Oshidary, 2012). Social media really has integrated with the lives of modern society (Tindall & Groenewegen, 2014), integrating with student life of today (Clarke et al., 2015). With the social media, geographical boundaries are no longer an obstacle for people to communicate with each other (Sherrell, 2014). Thus, if smartphone users can overcome the challenges of using smartphones, they will

benefit from the use of the smartphone (Pistilli & Cain, 2016). Therefore every educational institution in the 21st century must create and use new ways of learning, namely focusing on providing knowledge that can be used for work, using artificial intelligence, using digital lifestyles, and learning to do research (Trilling & Fadel, 2009). Data from the research shows that when smartphones are properly used including school students and even elementary school students will certainly provide many benefits. Therefore, the government must encourage schools especially students to start using smartphones to learn in schools that have not been done so far. Consequently, the government must know the attributes that can arouse the intention of elementary school students to use smartphones in learning environments. The attributes that will be tested to arouse the students' intentions are using the attributes contained in the model perceived characteristics of ınnovating theory (PCIT).

2. LITERATURE REVIEW

Before the advent of PCIT, the acceptance theory framework had emerged which was called Diffusion of Innovations (DOI). Diffusion is the process when an innovation is communicated through certain channels from time to time among members in the social system and it is a special type of communication related to the spread of message that is a new idea (Rogers, 1983). The DOI offers five attributes that can be used to communicate an innovation into the social system, which includes Relative advantage, Compatibility, Complexity, Observability, Trialability (Rogers, 1983) (Compeau et al., 2007). The PCIT model identifies eight attributes of innovation that can influence adoption, including a) relative advantages, namely the level of an innovation considered better than its predecessor; b) the compatibility, namely the level of an innovation considered consistent with the existing values, according to the needs, and in accordance with the past experience of potential adopters; c) trialability, which is the ease of innovation to be tested; d) ease of use, namely the level of ease of innovation that can be felt by the users; e) visibility, which is the level of observation of an innovation by the users; f) demonstrability result, that is the level of an innovation that can be demonstrated; g) image, that is the level of an innovation that can improve the users' image; and h) voluntariness, namely the level of user volunteerism towards innovation that is being perceived (Moore & Benbasat, 1991).

Problem of Research

The problem in this study is the low number of elementary school students who use smartphones to help in their learning process. Elementary school students only use smartphones only to play which have nothing to do with their learning. Based on this, this research was conducted in order to find aspects that can be used to persuade students to be able to use smartphones to help the learning process and not only be used for play that has nothing to do with their learning process.

Research Focus

This study aims to determine attributes in the model of Perceived Characteristics of Innovating Theory (PCIT) which can arouse students' intention to use smartphones in learning at elementary school.

3. RESEARCH METHOD

This research uses quantitative methods, the questionnaire is used as an instrument to obtain data from all respondents and is made using a Likert scale in the form of a survey that must be answered by respondents. Sampel selected in this study were 225 students from seven state primary schools spread across seven provinces in Indonesia consisting of class 4, class 5 and class 6. This research is aquantitative method using a questionnaire as an instrument. The questionnaire uses a Likert scale, namely number 1 represents strongly disagree, number 2 represents disagree, number 3 represents neutral, number 4 represents agree, and number 5 represents strongly agree (Likert, 1932). The questionnaire uses in the form of a survey that consists of respondents' demographic information and questions that are used to find out the attributes contained in the PCIT model that can arouse the intention of students to use smartphones in learning at school. The selected respondents came from seven public elementary schools in seven provinces of the Special Region of Yogyakarta, Central Java, West Java, Bengkulu, Bangka Belitung, South Sumatra, and East Nusa Tenggara in Indonesia numbering 225 students consisting of grade 4, class 5, and class 6. All the respondents came from schools that forbade their students from using smartphones at schools. Multiple regression analysis is used to measure the effect of independent variables on the dependent variable, while the research model is shown in Figure 1. The following shows the hypotheses proposed in this study.

H1. There is a positive influence from the relative advantage
on the intention to use

H2. There is a positive influence of the compatibility on the intention to use

H3. There is a positive influence of the trialability on the intention to use

H4. There is a positive influence of the ease of use on the intention to use

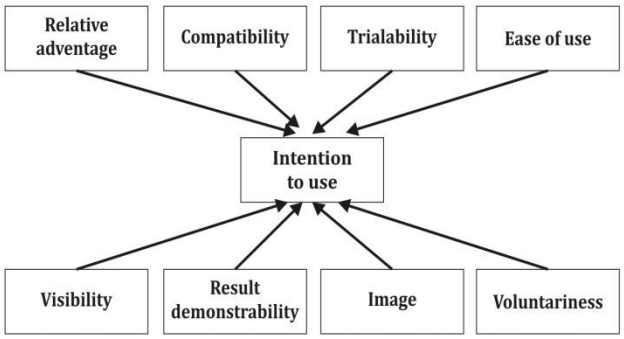
H5. There is a positive influence of the visibility on the intention to use

H6. There is a positive influence of the result demonstrability
on intention to use

H7. There is a positive influence of the image on the intention
to use

H8. There is a positive influence of the volunteerism on the intention to use

Figure 1. *Research Model of The Study*



4. RESULTS

Demographic Information

Based on the data that was successfully excavated, the following data is presented to show the demographic information of the respondents. The results showed that respondents from the class 4 were 66 students (29.33%), the grade 5 was 71 students (31.56%), and the class6 were 88 students (39.11%). A number of219 students (97.33%) said that they had seen a smartphone. Also, 205 students (91.11%) stated that they had used a smartphone, and 183 students (81,33%) said that they had read or seen news from a smartphone (table 1). These findings are in line with the results of the study which states that elementary school students are proficient in using the digital technology they meet (Altan & Karalar, 2018).

***Table 1**. Demografy information*

Variable	Frequency	Percentage (%)
1. Class		
Class 4	66	29,33
Class 5	71	31,56
Class 6	88	39,11
2. Students who have seen smartphones	219	97,33
3. Student who have used smartphones	205	91,11
4. Students who used to read or see news from smartphones	183	81,33

Multiple Regression Analysis

The results from the multiple regression analysis of the research data are shown in the table 1. The number of independent variables in the model is more than two so as to see whether the independent variables in the model are able to predict the variance using the value of Adjusted R Square. Based on the results of the multiple regression analysis, the Adjusted R Square value for the relationship in the model is 0.337% which indicates that 33.7% of the variance can be predicted by the independent variables combined on the dependent variable. The resulting F value is 15,209 with a value of P = 0,000 which indicates that the model used is significant. With these results, it can be stated that relative advantage attributes, compatibility, trialability, ease of use, visibility, result demonstrability, image, and voluntariness together can predict students' intention to use smartphones in classroom learning. Partially, the relative advantage of independent variables have β = 0.220 and P = 0.006 (P <0.05); compatibility has the value of β = 0.169 and P = 0.068 (P> 0.05); trialability has the value of β = 0.066 and P = 0.473 (P> 0.05); ease of use has the value of β = 0.035 and P = 0.700 (P> 0.05); visibility has the value of β = 0.190 and P 0.011 (P <0.05); the demonstration result has the value of β = -0.124 and P = 0.149 (P> 0.05); image has the value of β = -0.101 and P = 0.156 (P> 0.05); voluntariness has the value of β = 0.296 and P = 0,000 (P <0.05). Based on these results, the relative advantage, visibility, and voluntariness attributes are attributes that have a positive and significant effect on students' intention to use smartphones in learning at school. While compatibility attributes, trialability, ease of use, demonstrability results, and image are not significant in predicting students' intention to use smartphones in learning. Therefore, hypotheses 1, 5 and 8 are accepted, while hypotheses 2, 3, 4, 6, and 7 are rejected.

***Table 2.** Result of regression analysis*

Model	Standardized coefficients		Adjusted R Square	F	Sig
	Beta	Sig			
(Constant)		0,000	0,337	15,209	0,000
Relative adventage	0,220	0,006			
Compatibility	0,169	0,068			
Trialability	0,066	0,473			
Ease of use	0,035	0,700			
Visibility	0,190	0,011			
Result demonstrability	-0,124	0,149			
Image	-0,101	0,156			
Voluntariness	0,296	0,000			

5. DİSCUSSİON

The results showed that if the government of Indonesia or the principal of the elementary school want the elementary school students to have the intention to use a smartphone in learning at schools, then what should be done is, a) the government or the headmaster should convey the relative benefits that students will achieve through the use of smartphones in learning; b) the government or the headmaster should inform that smartphones are sophisticated tools that really exist and students really can see them clearly; c) the government or the principal must maintain a growth while increasing the voluntary level of students to use smartphones in learning at school. Meanwhile, the elementary school students do not need compatibility or the level of innovation is considered consistent with the existing values, trialability or ease of innovation to be tested, ease of use or ease of innovation that can be felt by users, demonstrability or the level of innovation that can be shown or can be demonstrated, and the image or level of an innovation can improve the user's image in order to foster an intention in him to use the samartphone in a learning environment. Based on these

findings, the government or the elementary school principals should not be bored to communicating about smartphone technology to the community of elementary school students to be used as teachingand learning tools at school (Alshahrani, 2015). The use of smartphones in learning will provide many benefits to students, especially as students have been in a period filled with artificial intelligent technology. If smartphone is really used by students in learning, then the policy-makers must properly formulate a policy about the use of smartphones for elementary school students so that the students can avoid the adverse effects that can be caused such as low academic achievement (Durak, 2018). At the same time,they are able to make a profit from using smartphones correctly. This is important because technology is a double-edged knife, when given to children without care, they can endanger themselves, but if taught how to use it properly, they can use it effectively for profit (Altan & Karalar, 2018). The use of smartphones in the classroom by students also depends on the teacher or the instructor.When students are motivated in a classroom setting, they will use smartphone as a channel to participate, access subject matter, learn more about the topics of the discussion, or write notes. But when the teacher or the instructor fails to make a lesson content that is acceptable, understandable, or interesting, students turn on their smartphones as a source of interference (Green, 2019). Therefore, the teacher or the instructor must be prepared to change the method of teaching if the students are already using smartphones in learning, because applying permanently a technology in school will create new corporations (Paakkari, Rautio, & Valasmo, 2019).

6. CONCLUSİON

The results of this study indicate that the relative adventage, visibility, and voluntariness attributes can significantly evoke the intention of elementary school students to use smartphones in learning. Meanwhile, the attributes of compatibility, trialability, ease of use, result demonstrability, and image were not significant in arousing the intention of elementary school students to use smartphones in learning. The results of the study are very useful for schools to make students want to use smartphones as a learning aid.

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