

Exploring the Intention to Use Mobile Learning in Higher Education

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Keywords: Students' Perception, Personal Innovativeness, Mobile Learning.

Abstract: The transition to mobile devices and ubiquitous computing technology in education provides an unprecedented opportunity to help instructors influence ively deliver learning materials to learners anytime and anywhere (Cheng, 2013). The objective of the study is to determine the influence of students' perception and personal innovativeness on students' intention to use mobile learning. It is a quantitative research. The variables of the study are students' perception, personal innovativeness, and intention to use mobile learning. The population of this research are Accounting students in the sixth semester at Universitas Negeri Semarang. The samples of the research are 89 respondents taken by using simple random sampling technique and data are collected by questionnaires. Then, data are analyzed by descriptive analysis and multiple regression analysis with SPSS 21 application. The result of multiple regression analysis showed that simultaneously, social proof (X1) and purchase intention (X2) have significant influence on students' purchasing decision (Y) for 58.1% . Meanwhile, partially, the influence of students' perception (X1) and personal innovativeness (X2) on intention to use mobile learning (Y) are 22% and 25% respectively. Thus, the model of the study is $Y = 2.254 + 0.299X1 + 0.626X2 + e$. The personal innovativeness variable shows a higher influence than the students' perception. It is understandable that personal innovativeness is more likely to trigger concrete behavior to try new things about technology, as Lopez-Nicolas et al. (2008) argues that personal innovativeness in the use of information technology reflects a desire to try new technologies.

1 INTRODUCTION

The rapid development of the digital age today modifies various human activities including teaching and learning techniques in education institutions. Almost everyone today already has a mobile device in his or her hand. In Indonesia, as per January 2018, the population of mobile device users reaches 177.9 million users, with penetration rate reaching 67% (bisnis.co, 2018). It is also used by educators and students in supporting the learning process. The transition to mobile devices and ubiquitous computing technology in education provides an unprecedented opportunity to help instructors deliver learning materials to learners anytime and anywhere (Cheng, 2013).

Then, m-learning is defined as a form of electronic learning (e-learning) which specifically uses mobile devices to deliver the learning content and support (Brown, 2005; Muyinda, 2007; Cheng, 2013). In addition, mobile learning can be seen as a mobile or wireless device application for learning on the go (Park, 2011; Chaka and Irene, 2017). Digital mobile devices such as cell phones, PDAs, and

smartphones are often used for the educational purposes. The use of mobile digital technology is the core of a dynamic and growing research flow known as mobile and ubiquitous learning. The two concepts are highly interconnected (Pimmer, Magdalena, and Urs, 2016).

Mobile technology and applications have grown rapidly and widely developed for m-learning. Today, there are few studies to ascertain whether m-learning has the potential to attract more learners or not. Therefore, a deeper understanding on the factors which influence the learner's intention to use m-learning in a mobile-based interactive learning environment is essential to be done.

Furthermore; Technology Acceptance Model (TAM) is one of the most widely applied models in various domains related to IT acceptance study (Lindsay et al., 2011; Wu, 2011). ; Maditinos et al., 2013; Cheng, 2013), and it can be used as a basis for the research model of this study. To enhance the power of TAM explanation, it must first include the perspective of intrinsic motivation to expand its function (Davis et al., 1992; Lee et al., 1999; Cheng, 2013), and it can then be integrated with innovation

diffusion theory to overcome compatibility (Chen et al., 2002; Wu and Wang, 2005; Tan and Chou, 2008; Tung and Chang, 2008; Ryu et al., 2009; Cheng, 2013). Thus, a hybrid model is developed to explore the learners' intentions for using m-learning. Based on the above explanation, the main purpose of this study is to examine students' perceptions and personal innovativeness on students' intention to use mobile learning.

Most studies on mobile learning show the positive influence. Students begin to accept mobile technology as a new learning tool, the consequences of this acceptance affecting their learning achievements both directly and indirectly (Shin and Minseok, 2015). It is supported by the research results of Nassuora (2013) which shows that the rate of students' enrolment towards mobile learning in Saudi Arabia is quite high. However, empirical evidence supporting the widespread application of learning with mobile learning in higher education settings is limited. (Anissa et al., (2017) showed there is a significant difference of students' skills in producing text between classical class and blended learning (combination of face-to-face and online delivery methods). Hwang and Tsai (2011) report that high-education students are the most frequently researched targets for mobile learning, particularly in meta-analysis. Most of the studies included reported positive learning outcomes. Cheng (2013) reports that Perceived usefulness (PU), perceived ease of use (PEOU), perceived pleasure (PE), and compatibility can play an important role in influencing the learner's intent to use m-learning. The student's perception seems to be quite instrumental in choosing the use of mobile learning. It is supported by research Wong et.al., (2015) which reveals that students prefer to use mobile devices than desktops to access the internet. So the hypothesis is:

H1 Student's perception has a significant influence on students' intention to use mobile learning.

Besides perception, personal innovativeness also takes part in the use of mobile learning. Personal innovativeness is reported to moderate the influence s of PU, PEOU, and compatibility on the intent to use m-learning (Cheng, 2013). Individuals with higher levels of personal innovation tend to be more confident in new technologies (Lewis, Agarwal, & Sambamurthy, 2003). Personal innovativeness stifles the impact of one's decision on the perception of mobile adoption. Thus; individuals with innovations are more anticipated to generate more positive thinking for new IT (Lopez-

Nicolas et al., 2008). A different story is reported by Tan, et.al, (2014). They find that personal innovativeness does not affect behavioural intention to use mobile learning. Related to this, the hypothesis is:

H2 Personal innovativeness has a significant influence on intention to use mobile learning.

Then, the antecedent of attitude construction is the belief of attitude. Confidence in attitudes comes from TAM. TAM argues that there is a causal relationship between perceived ease of use, benefit perception, the desire to use the new system, and the intention of using the system (Davis, 1989; Teo, 2009; Cheon et.al., 2012). The study included two such perceptions (i.e. ease of use and usefulness) as a perception of mobile learning usage. Personal innovativeness in the domain of information technology as an individual tendency that, in general, is associated with positive beliefs about the use of technology (Lewis, Agarwal, & Sambamurthy, 2003). Rogers's theory of the diffusion of innovation holds that individual beliefs are increasing about new technologies by synthesizing information from multiple channels, including mass media and interpersonal channels. Individuals with higher personal innovation are expected to develop a more positive belief of target technology (Rogers, 1995). The study also wants to examine the simultaneous influence of students' perception and personal innovativeness on intention to use mobile learning.

H3 Students' perception and personal innovativeness simultaneously influence the intention to use mobile learning.

Based on above description, the study proposed the theoretical framework as presented in Figure 1.

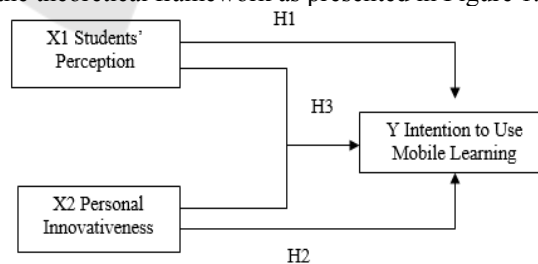


Figure 1. Theoretical Framework

2 METHODS

This research is conducted at the Faculty of Economics, Universitas Negeri Semarang. In the learning, the combination of learning in the classroom and the use of mobile learning began to

be combined in several courses. The population of the study are Accounting students; they are 118 students. It used the simple random sampling which took 89 students as the samples.

It used the primary data using questionnaires. In this questionnaire, the students' perception, personal innovativeness and intention to use mobile learning variables are measured by the likert items (1= "strongly disagree" - 4= "strongly agree"). The items chosen to measure variables adapted from previous researches. Data are then analyzed by descriptive statistics and multiple linear regression tests. In the statistical analysis is supported by the Statistical Package for Social Sciences (SPSS) version 21.0. before being analyzed, the data confirmed its validity and reliability. Tables 1 and 2 show the validity. Furthermore, the data are tested to ensure there is no classical assumptions that accompany it. After that, data are analyzed by using multiple linear regression which will be described below.

3 RESULT AND DISCUSSION

3.1 Reliability Testing

Reliability relates to the consistency of a measure (Heale & Twycross, 2015). A study is said to be reliable if it has Cronbach's alpha > 0.70 (Nunnally, 1994).

Table 1. Reliability Analysis

Variable	No. of Items	No. of the Delete Items	Cronbach's
Students' Perception	9	0	0.872
Personal Innovativeness	4	0	0.854
Intention to Use Mobile Learning	6	0	0.849

Based on the table above, it shows that the students' perception (X1) has a Cronbach's by 0.872. Personal innovativeness has Cronbach's 0.854. And intention to use mobile learning has Cronbach's for 0.849. It means that all the instruments of the study are reliable.

3.2 Construct Validity

Validity is defined as the extent to which a concept is accurately measured in a quantitative study (Heale & Twycross, 2015). Validity is tested

by comparing item scores to total score with correlation analysis. The research instrument is said to be valid if it has significance <0.05. Table 3.2. shows the results of validity testing.

Table 2. Correlation

Items	Pearson Correlation	Sig. (2-tailed)
Students' Perception		
Using mobile learning improves the learning process	.747	.000
Using mobile learning make my study better	.692	.000
Mobile learning is useful for the learning process	.740	.000
Using mobile learning is effortless	.585	.000
Using mobile learning is easy to be understood	.716	.000
Mobile learning is easy to use	.754	.000
Using mobile learning is interesting	.686	.000
The process to use mobile learning make me study happily	.637	.000
I often use mobile learning	.760	.000
Personal Innovativeness		
When I know something new regarding the technology, I will learn how to use it	.816	.000
I am interested to the new technology	.851	.000
I am not worried to try the new technology	.846	.000
I like making experiments with technology	.821	.000
Intention to Use Mobile Learning		
I will use mobile devices to support my study	.809	.000
I will use mobile learning for my study in the future	.832	.000
I will use mobile learning in every occasion that I have	.663	.000
I will install application which support my study	.754	.000
I am ready to receive the learning material from my lecturer through mobile devices	.765	.000
I am ready to do the task or quiz from my lecturer through mobile learning.	.705	.000

Based on the correlation table above, it shows that all the instruments in the study are valid, because they have significance <0.05.

3.3 Regression Analysis among Variables

Table 3. Simultaneous Test Result (F Test)

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	516.011	2	258.005	61.996	.000 ^b
Residual	357.899	86	4.162		
Total	873.910	88			
a. Dependent Variable: IUtotal					
b. Predictors: (Constant), PItotal, SPtotal					

Based on the ANOVA table or F table, they indicate that the calculated F value of 61,996 with a significance of 0.000. Because of the significance $0.000 < 0.05$ then the regression model can be used to predict students' perception (X1) and the personal innovativeness (X2) simultaneously influences intention to use mobile learning.

3.4 Partial Test (t test)

All the variables of this study are significant. The probability of significance of independent variables; students' perception (X1) and personal innovativeness (X2) are more than 0.05.

Table 4. The Result Analysis of Multiple Linear Regression

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.254	1.483		1.520	.132
SPtotal	.299	.061	.413	4.884	.000
PItotal	.626	.117	.451	5.331	.000

The model formed from the analysis is $Y = 2.254 + 0.299X1 + 0.626X2 + e$. It means that:

1. Constant = 2.254, if the independent variables are constant or 0 then the average of intention to use mobile learning is 2.254.
2. Coefficient X1 (Students' Perception) = 0.299, it means that if students' perception variable increased by 1 point while personal innovativeness is 0, it would lead to an increase of intention to use mobile learning for 0,299.

3. Coefficient X2 (Personal Innovativeness) = 0.626, it means that if personal innovativeness increased by 1 point while students' perception variable is 0; it would lead to an increase of intention to use mobile learning for 0,626.

3.5 Coefficient Determination Test (R2)

Table 5. The Result of Simultaneous Determination Coefficient

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.768 ^a	.590	.581	2,04001	2,176
a. Predictors: (Constant), PItotal, SPtotal					
b. Dependent Variable: IUtotal					

Based the Model Summary, the Adjusted R Square is 0,581 (58.1%). It means that 58.1% variable on intention to use mobile learning can be explained by two independent variables, students' perception and personal innovativeness. While the rest (100% -58.1%), i.e. 41.9% are explained by other variables not examined.

Table 6. The Calculation Result Coefficient of Determination of Partial

Model	t	Sig.	Correlations			Collinearity Statistics	
			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	1.520	.132					
SPtotal	4.884	.000	.675	.466	.337	.665	1.504
PItotal	5.331	.000	.691	.498	.368	.665	1.504

From the table above, it can be seen that the partial correlation value of Student Perception (X1) is 0.466, so the influence of Student Perception (X1) on Intention to Use Mobile Learning (Y) is equal to $(0.4662 \times 100\%)$ or 22%. Then, the partial correlation of Personal Innovativeness (X2) is 0.498; the influence of Personal Innovativeness (X2) on Intention to Use Mobile Learning (Y) is $(0.4982 \times 100\%)$ or 25%.

- Then, from the hypotheses, we can state that:
- H1: Student's perception has a significant influence on intention to use mobile learning. The hypothesis is accepted.
 - H2: Personal innovativeness has a significant influence on intention to use mobile learning. The hypothesis is accepted.

H3: Simultaneously, students' perception and personal innovativeness have a significant influence on intention to use mobile learning. The hypothesis is accepted.

The results show that students' perception and personal innovativeness can be the determinants of intention to use mobile learning. This result is in line with the results of a study from Lopez-Nicolas et al. (2008) which states that Perceived of usefulness and perceived ease of use have significant influence on the behavioral intention to use mobile learning by 45% and 17%. Individuals with higher levels of personal innovation tend to be more confident in new technologies (Lewis, Agarwal, & Sambamurthy, 2003).

Related to the magnitude of the influence given by each independent variable, the personal innovativeness variable shows a higher influence (25%) than the students' perception (22%). It is understandable that personal innovativeness is more likely to trigger concrete behavior to try new things about technology, as Lopez-Nicolas et al. (2008) argues that personal innovativeness in the use of information technology reflects a desire to try new technologies. Individuals with innovation are more anticipated to generate more positive thinking for new IT.

4 CONCLUSIONS

It can be concluded that simultaneously, the variable of Students' perception (X1) and personal innovativeness (X2) influence the intention to use mobile learning (Y) for 58.1%. Partially, there are two variables affecting intention to use mobile learning, they are Students' Perception (X1) for 22% and Personal Innovativeness (X2) for 25%. Therefore, increasing the personal innovativeness is needed to increase intention to use mobile learning which will impact of one's decision on the perception of mobile adoption..

REFERENCES

- Anissa, R. N., Utami, S., Setiyani, R., Tusyanah, Sholikah, M., & Nurkhin, A. 2017. What's up with whatsapp? The contribution of blended learning through wa group discussion for better english writing in Indonesia. *Advanced Science Letters*, 23(8). <https://doi.org/10.1166/asl.2017.9517>
- Bisnis.co. 2018. User Mobie Device in Indonesia. <http://industri.bisnis.com/read/20180201/101/733037/>
- Chaka, John Gyang. Irene Govender. 2017. Students' perceptions and readiness towards mobile learning in colleges of education: a Nigerian perspective. *South African Journal of Education*. 37(1). 1-12.
- Cheng, Yung-Ming. 2013. Exploring the intention to use mobile learning: the moderating role of personal innovativeness. *Journal of System and Information Technology*. 16(1). 40-61
- Cheon, Jongpil et. al., 2012. An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers and Education*. 59(2012). 1054-1064.
- Heale, R., & Twycross, A. 2015. Validity and reliability in quantitative studies. *Evidence-basednursing.ebnurs-2015*.
- Hwang, Gwo-Jen. Chin-Chung Tsai. 2011. Research trends in mobile and ubiquitous learning: a review of publications in selected journals from 2001 to 2010. *British Journal of Educational Technology*. 42(4). E65-E70.
- Nassuora, Ayman Bassam. 2013. Students Acceptance of Mobile Learning for Higher Education in Saudi Arabia. *International Journal of Learning Management Systems*. 1 (1). 1-9.
- Lewis, William, Ritu Agarwal. V. Sambamurthy. 2003. Sources Of Influence on Beliefs about Information technology use: An Empirical study Of Knowledge Workers. *MIS Quartely*. 27(4). 657-678.
- Lopez-Nicolas, Carolina, et all., 2008. An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information and Management*. 45(2008). 359-364.
- Nunnally, Bernstein, I.H. 1994. *Psychometric Theory*, 3rd Edition. New York : McGraw Hill.
- Rogers, E. M. *Diffusion of Innovations* (4th ed.), Free Press, New York, 1995.
- Mtebe, Joel S. Roope Raisarno. 2014. Investigating students' behavioural intention to adopt and use mobile learning in higher education in East Africa. *International Journal of Education and Development using Information and Communication Technology*. 10(3). 4-20.
- Pimmer, Cristoph. Magdalena Mateescu. Urs Grohbiel 2016. Mobile and ubiquitous learning in higher education settings. A systematic review of empirical studies. *Computers in Human Behavior*. 63 (2016). 490-501.
- Shin, Wong Sug. Minseok Kang. 2015. The Use of a Mobile Learning Management System at an Online University and Its Influence on Learning Satisfaction and Achievement. *International Review of Research in Open and Distributed Learning* 16(3). 110-130.
- Tan, Garry Wei-Han et.al., 2014. Predicting the drivers of behavioral intention to use mobile learning: A hybrid SEM-Neural Networks approach. *Computers in Human Behavior*. 36(2014). 198-213
- Wong, Kenneth et.all., 2015. Investigating Acceptance towards Mobile Learningin Higher Education Students. Springer-Verlag Berlin Heidelberg.