Journal of Theoretical and Applied Information Technology
15th July 2019. Vol.97. No 13

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

A STUDY ON SENIOR HIGH SCHOOL STUDENTS' ACCEPTANCE OF MOBILE LEARNING MANAGEMENT SYSTEM

[1]STEFANUS , [2]TUGA MAURITSIUS

[1,2]Information Systems Management Department, BINUS Graduate Program-Master of Information Systems Management, Bina Nusantara University,
Jakarta, Indonesia, 11480.
Email : [1]Stefanus004@binus.ac.id; [2]tuga.mauritsius@binus.ac.id

ABSTRACT

This study investigates senior high school students' acceptance of mobile learning management system (LMS) and the effect of the level of acceptance on the success of the system in the form of perceptions of satisfaction and student. With 300 respondents from students of private school in Indonesia and using the Structural Equation Modeling (SEM) method, the study was conducted by combining the extended Technology Acceptance Model (e-TAM) and Information System Success (ISS) models. The results showed that self efficacy, personal innovativeness, subjective norms, relative advantages and accessibility systems had a significant positive effect on perceived usefulness and perceived ease of use. Perceived usefulness and perceived ease of use give a significant positive effect on the behavioral intention of students to use mobile LMS. Students' behavioral intention has a significant positive effect on learning satisfaction and learning achievement perceived by students. The findings of this study present an understanding of the use of mobile LMS by students in senior secondary education.

Keywords: *Information System Success Model, Mobile Learning Management System, Learning Achievement, Learning Satisfaction, Technology Acceptance Model.*

1. INTRODUCTION

Mobile technology in the last decade has developed very rapidly. This can be seen from the development of mobile devices with increasingly sophisticated specifications, and the development of systems and applications of mobile devices with features that are increasingly intelligent in meeting user needs.

Mobile technology has been used in educational institutions in recent years, and reaches students from the basic level of education to tertiary education [1], [2]. Mobile technology is considered a trend for a new generation of teaching and learning in the world of education, this has attracted so much attention in recent years. Increased affordability and functionality are factors that explain the attractiveness of mobile devices in the world of education [3]. From school to university try to develop and implement new applications and digital content for mobile learning in various fields of science and subject matter [4].

Learning Management System as an instructional tool is a system that integrates an interactive learning environment, learning administration, facilitates learning activities with various methods, until the learning assessment process. Along with the development of mobile technology, LMS has now been accessed by mobile devices in general, specifically our respective smartphones.

Research on mobile learning found generally focuses on its effectiveness as a learning aid, or approach to designing such a system [5]. In addition, there are also studies that focus on mobile learning as a potential type of informal learning [6]. Research on teacher perceptions of the benefits of mobile learning has also been carried out and most teachers feel that mobile learning technology is useful in helping the learning process [7]. Research on the level of teacher perceptions of mobile learning in Indonesia has also been carried out revealing that teachers' knowledge of mobile learning is on average but they have a desire to learn more about mobile learning system [8]. However, research on the level of high school student acceptance of mobile LMS and its effect on student perceptions of the success of the mobile LMS is still scarce.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

The research on the level of student acceptance of mobile LMS and its effect on student perceptions of the success of mobile LMS has been carried out on university students in Korea [1]. However, the results of these studies may not necessarily be applied to the high school students of Indonesia. In addition to the level of student acceptance, the research on the level of success of the use of the mobile LMS is also needed. This information can be used by the school in making the decision on the level of mobile LMS usage at the schoolin the future. In this paper we will address a research question: Are the research model and its results adopted from the work of [1] applied to an Indonesian Senior High School Students?

2. THEORETICAL BACKGROUND

2.1. Mobile Learning Management System

Mobile Learning Management System (Mobile LMS) is a mobile application developed to access the Learning Management System based on Personal Computers that had been developed previously. Mobile LMS can be downloaded to students' mobile devices. With the application, students can view videos, and participate in class activities and access other learning resources via mobile devices [9]. Mobile LMS allows increased resolution and simple screen navigation so as to optimize the student experience in using LMS on mobile devices. There are quite a few mobile LMS available in the market offering either commercial or free access. However we opt to use Moodle Mobile LMS in this study as it is in use by the students of the chosen school.

Moodle was developed by Martin Dougiamas. Moodle stands for Modular Object-Oriented Dynamic Learning Environment. It is a free open source LMS that is very popular among educators today. Moodle was developed to help educators create online courses focusing on the interaction and construction of collaborative content. Moodle LMS is rich in features. Common features of Moodle LMS are a modern look and easy-to-use interface, personalized dashboards, collaborative activities and tools, an all-in-one calendar, easy file settings, a simple and intuitive text editor, notifications and tracking learning progress. Moodle LMS administrative features include manageable website design and layout, secure authentication and mass registration, multilingual capabilities, fast course creation, easy backups, user settings, open standard support, high interoperability, simple plugin management, updates regular security, detailed reports and logs.

In addition, Moodle LMS also features development and management courses that include direct learning pathways, encourages collaboration, connects with external learning resources, integrates multimedia, group management, organizes learning flows, easily in-line reviews, personal judgments and by classmates, badges integration, display of learning outcomes and assessment rubrics, learning competency settings, security and privacy. The features it offers continue to grow this day [10].

The current version of the software is version 3.5.2, which is being used by the school. Moodle Mobile LMS is the official mobile application from Moodle. Moodle Mobile is an HTML5 web application [11] that is available and accessible on Android and Apple iOS-based devices.

2.2. Study Framework

This study combines two models which are the extended Technology Acceptance Model (e-TAM) Model and the Information System Success Model (ISS). Therefore the model being used in this study is similar with the model implemented in [1]. It is depicted in Figure 1.

The eTAM model was proposed by Shin and Kang [1]. The e-TAM model is the enhancement of TAM which was first introduced by Davis in 1986. TAM is a model adapted from the Theory of Reasoned Action (TRA) adjusted to measure user acceptance of computer technology [2].

The eTAM model proposed here includes two individual factors: self efficacy (SE) and personal personal innovation (PI). The study of influence on beliefs about information technology use [12], investigated the effects of self-efficacy (SE) and personal innovation (PI) on perceived ease (PE) and perceived benefit (PU) among 161 university staff members. The study showed personal innovation (PI) had a significant effect on ease of use (PE) and perceived benefits (PU). In another research [13], TAM was applied to examine the effect of personal innovation (PI) on the intentions of Chinese students learning form mobile devices, the results showed that, personal innovation (PI) positively related to the perception of benefits (PU).

Concerning social factors, in their research Fishbein and Ajzen [14] examine the relationship between subjective norm (SN) or subjective norms, the pressure to carry out certain behaviors, and the motivation of someone to adhere to that pressure.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

From the past, they have focused on SN when trying to show a correlation between behavioral goals. While the first TAM did not consider the influence of SN [15], the TAM model was later extended because the effect of SN on technology acceptance became established [16]. Therefore, researchers now give confidence to SN because of their proven and significant relationship with the intention using mobile learning [17].

This research also considers relative advantage (RA) and system accessibility (SA) as a system factor. RA, which is discovered in Rogers' innovation diffusion theory [18], measures the degree to which an innovation or development has expanded contrasted with its forerunner. Although not considered influential on the initial TAM, it is currently considered a dominant factor that influence technology adoption [19]. In addition, system accessibility (SA) can be considered an important factor that influences behavioral intention (BI). System accessibility (SA) as an organizational factor is one of the variable that influences intention (BI) behavior towards mobile learning, because mobile learning activities need to be facilitated by wireless internet connections [20].

The Information System Success Model was proposed by DeLone and McLean in 1992. Based on the contributions of subsequent studies using this model, and based on changes in the role and management of information systems, they updated the ISS model in 2003 [21]. ISS model is widely used and gives direction in many studies of information systems research and is considered the most suitable model for evaluating the success of information systems [22].

Therefore it is assumed that the current research model (e-TAM & ISS) is very suitable for examining student intentions (Behavioral Intention) in the use of mobile LMS and its impact on learning satisfaction and learning achievement. There are two main constructs on the TAM model, namely Perceived Usefulness and Perceived Ease of Use and external factors such as Self Efficacy, Personal Innovativeness representing individual factors, Subjective Norms representing social factors, and Relative Advantage, System Accessibility represents system factors.

2.3. Hypotheses

Based on the description and literature study described earlier, there are some concepts related to the adoption of the mobile LMS among the students. There are altogether 10 constructs that we adopt from the literature. The following are the descriptions of the concepts:

Self Efficacy: Students' ability to use a mobile LMS to accomplish a learning assignments.

Personal Innovativeness: Willingness to adopt a mobile LMS before others.

Subjective Norm: Perception that those most important to the respondent should use a mobile LMS.

Relative Advantage: Degree to which using a mobile LMS for learning is perceived to be superior to its predecessor.

System Accessibility: Extent to which students are granted free access and use of a mobile LMS.

Perceived Usefullness: Degree to which a student believes using a mobile LMS will enhance his or her learning.

Perceived Ease of Use: Degree to which a student believes using a mobile LMS would be simple and straightforward.

Behavioral Intention: Perceived likelihood that a student will take a class utilizing a mobile LMS in the future or recommend doing so to others.

Learning Satisfaction: Perceived learning satisfaction when using a mobile LMS.

Learning Achievement: Perceived learning achievement when using a mobile LMS.

this study proposes the following hypotheses:

H1-1: Self efficacy is significantly relate to Perceived Usefullness.

H1-2: Self efficacy is significantly relate to Perceived Ease of Use.

H2-1: Personal Innovativeness is significantly relate to Perceived Usefullness.

H2-2: Personal Innovativeness is significantly relate to Perceived Ease of Use.

H3-1: Subjective norm is significantly relate to Perceived Usefullness.

H3-2: Subjective norm is significantly relate to Perceived Ease of Use.

H4-1: Relative advantage is significantly relate to Perceived Usefullness.

H4-2: Relative advantage is significantly relate to Perceived Ease of Use.

H5-1: System accessibility is significantly relate to Perceived Usefullness.

H5-2: System accessibility is significantly relate to Perceived Ease of Use.

H6: Perceived Usefullness is significantly relate to Behavioral Intention.

H7-1: Perceived Ease of Use is significantly relate to Perceived Usefullness.

H7-2: Perceived Ease of Use is significantly relate to Behavioral Intention.

H8-1: Behavioral Intention is significantly relate to Learning Satisfaction.
H8-2: Behavioral Intention is significantly relate to Learning Achievement.
H9: Learning Satisfaction is significantly relate to Learning Achievement.

3. METHOD

3.1. Data Collection

This research was conducted at one of the private schools in Pontianak, West Kalimantan, Indonesia. This High School has 2 majors namely Science and Social Sciences majors. The total of all students in this school is 927 students. The Science Department consists of 21 classes with a total number of 679 students. While the Social Sciences department consists of 6 classes with a total number of 248 students.

The study was conducted on students in Science Department with a total population of 679 students. so the number of samples needed for the 5% error rate was 252 respondents [23]. The sampling technique used is Simple Random Sampling. The survey was conducted online to the population and obtained 300 respondents data. The data is then analyzed. Data analysis was performed using SPSS and AMOS 24 for both validity / reliability and hypotheses testing.

3.2. Questionnaire

This questionnaire (Table 1) was developed based on previous studies. Measurement of each indicators was done using a five-points Likert-type scales. Point 1 means 'Strongly Disagree', point 2 means 'Disagree', point 3 means 'Neutral', point 4 means 'Agree' and point 5 means 'Strongly Agree'.

3.3. Descriptive Analysis

Descriptive analysis (Table 2) is used to provide an overview of respondents' responses to questionnaire related to the research variable. The size used is the mean and standard deviation.

4. RESULT

4.1. Model Fit

To assess the model's goodness-of-fit, the following seven common model-fit measures were adopted: the chi-square ratio (CMIN/DF), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normalized fit index (NFI), comparative fit index (CFI), root mean square resid- ual (RMSR), and root mean square error of approximation (RMSEA).

Table 3: Model Fit Indices

Fit Index	Recommended Value	Obtained Value	Model Fit
CMIN/DF	≤ 3	3.02	No
GFI	≥ 0.90	0.80	No
AGFI	≥ 0.80	0.75	No
NFI	≥ 0.90	0.88	No
CFI	≥ 0.90	0.92	Yes
RMR	≤ 0.10	0.02	Yes
RMSEA	≤ 0.08	0.08	No

The result in Table 3 shows the several model fit indices still have not met their recommended acceptance levels [28];[29], thereby indicating the measurement model has not fit with the data collected. For this reason, a model change is carried out by removing 5 indicators, namely SE1, PI2, SN3, RA4, and LA1. After deleting several indicators, then the measurement is done again and it turns out the measurement results increase so that the model can be fit. The results of the measurement of Goodness of fit and the image of the research model after the changes can be seen in Table 4.

Table 4: Model Fit Indices (Updated)

Fit Index	Recommended Value	Obtained Value	Model Fit
CMIN/DF	≤ 3	1.633	Yes
GFI	≥ 0.90	0.903	Yes
AGFI	≥ 0.80	0.875	Yes
NFI	≥ 0.90	0.945	Yes
CFI	≥ 0.90	0.978	Yes
RMR	≤ 0.10	0.011	Yes
RMSEA	≤ 0.08	0.046	Yes

4.2. Validity and Reliability

By using IBM SPSS 24, it has been tested for validity and reliability, by measuring four things, namely Cronbach's Alpha, Item-Total Corellation, Composite Reliability and Average Variance Extracted (AVE), with Cronbach's Alpha minimum requirements > 0.6, Item-Total Corellation > 0.6, Composite Reliability (CR) > 0.6 and AVE > 0.5 [30],[31]. Tests of validity and reliability were carried out on variable indicators remaining after deletion when measuring fit

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

models. With the results as shown in Table 5, it can be concluded that all the results meet the requirements.

4.3. Path Analysis

Hypothesis testing is done by doing path analysis on AMOS. The following is presented in the path analysis results data on AMOS. AMOS gives the output of the standardized regression weights that become the path coefficient. The path coefficient shows the effect of the relationship between variables. A relationship is called significant at the 95% confidence level if the probability (p-value) ≤ 0.05. Thus, it can be concluded that the hypothesis is accepted if the value of p-value ≤ 0.05, and vice versa the hypothesis is rejected if the p-value > 0.05.

4.4. Discussion

This study examines senior high students' acceptance of mobile LMS and its impact on learning achievement using an eTAM and ISS model. Structural Equation Modeling method was used to test the structure of individual, social, and system factors. Whethe these factors affect the level of acceptance of mobile learning, and how its acceptance influenced learning satisfaction and learning achievement. Some implications come from the results, which are discussed below.

First, the findings of the previous study [1], the research model used using eTAM and ISS models had a good fit with the data collected, however, the model fit measures used was Chi-Square, CFI, TLI and RMSEA. In this study, seven common model-fit measures were used and the results show the model still not fit with the data collected. For this reason, it is necessary to remove the indicators SE1, PI2, SN3, RA4, and LA1. After deletion, the model is assessed to be fit by meeting the minimum fit indices standard. This is very likely to occur because of various factors such as different respondents, differences in conditions and perceptions cause the data received is also different and causes the model not to be fit with the data collected.

Second, the factors self efficacy, personal innovativeness, subjective norms, relative advantage and system accessibility positively significant to perceived ease of use. Self efficacy and personal innovativeness positively significant influences perceived ease of use. That shows the notion that learners' self efficacy and personal innovativeness positively influence technology use. This implies that intrinsic personal factors such as self efficacy and personal innovativeness positively impact mobile LMS use in previous study [1],[12]. Furthermore, the finding that relative advantage and system accessibility have positive effect on perceived ease of use slighty different with prior studies that adopted a TAM [20] that only system accessibility has positive impact on perceived ease of use. It demonstrates the importance of systems that compatibility between mobile device with the LMSs, high-speed wireless Internet access, and a user-friendly design that simplify searching for information and learning content using mobile devices. Subjective norm also significantly influences perceived ease of use like the study in [32], [33], this is different from previous research [1],[17],[19] that found subjective norm and relative advantage to indirectly influence behavioral intention by way of perceived usefullness. Accordingly, to enhance perceived ease of use, school must consider ways to support individual factors such as self efficacy and personal innovativeness, as well as social factor as subjective norm, and system factors as relative advantage and system accessibility that allow learners to easily access mobile LMS. For example, schools could providing students with mobile LMS orientation and detailed instructional manuals, teachers who explain the ease of use of mobile LMS, and pay attention to the system can continue to run well so that it can be accessed easily.

Third, the results revealed that self efficacy, personal innovativeness, subjective norms, relative advantage and system accessibility have a significant positive influence on perceived usefullness. Self efficacy, personal innovativeness and system accessibility positively significant on PU. The study in [31],[34],[35],[36] agreed that self efficacy, personal innovativeness and system accessibility significantly influence on perceived usefullness. Student familiarity with mobile technology makes students tend to have higher expectations for using mobile LMS in learning because they feel confident in their ability to use the system and are able to overcome the difficulties that arise so they tend to assume that mobile LMS is easy to use. The result of this study [37], [38], and [39], subjective norm and relative advantage exhibited a significant and positive influence on perceived usefullness. There is a correlation between students' desire to remain current with societal changes engendered in technological development while integrating modern technology into their learning activities. Based on the

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

perception that rapidly embracing technology can help one's survival in society, students may adopt a positive attitude toward mobile LMS. The influence of relative advantage on perceived usefullness also coincides with [19], who resumed that learners expecting mobile LMS to outperform preexisting technology perceive its usefulness. Students realize the importance of mobile LMS as supporting teaching and learning activities in the classroom, which makes learning more effective and easy, and has a positive impact on the use of the mobile LMS.

Fourth, perceived usefullness and perceived ease of use positively significant and directly influences behavioral intention, the finding was slightly different with [1],[20],[36],[39],[40], who confirms that perceived ease of use indirectly affects behavioral intention through perceived usefulness. This findings confirms that students perceived the system usefulness, and perceived the system ease of use then they will use it. Fifth, behavioral intention to use mobile LMS significantly impact to learning satisfaction, a result consistent with [1] who found that the use of information systems generate learner satisfaction. This indicates that mobile LMS enhance students learning satisfaction, and that students positively accept it; in turn, this acceptance is seen in their learning satisfaction. The acceptance of mobile LMS promotes successful learning, all factors that influence the level of student acceptance need to be considered. Sixth, the results highlight behavioral intention and learning satisfaction's role in students perceived learning achievment in a mobile LMS environment, which is in agreement with [1] confirms that information systems likely promote students learning achievement. Behavioral intention also show a significance on learning achievement indirectly from learning satisfaction, its demonstrating that the intention to adopt mobile LMSs influences learning satisfaction, which subsequently leads to perceived learning achievement. This signify, to some extent, that mobile LMS acceptance influences students learning achievement both directly and indirectly.

5. CONCLUSION

This study presents a senior high school students' acceptance of Mobile Learning Management System. The students have a good acceptance of mobile LMS in the school. Factors such as self efficacy, personal innovativeness, subjective norms, relative advantages, and accessibility systems have a positive and significant effect on perceived usefullness and perceived ease of use. perceived usefullness and perceived ease of use have an effect on behavioral intention. High school students in Indonesia have a good level of acceptance of mobile LMS and have an impact on learning satisfaction and their learning achievement like the prior study [1].

While this study has significant implications for providing guidelines for supporting mobile LMS, the generalizability of its results are limited because the research location is only in a private school in Indonesia secondary education. Consequently, the results of the study may be different and cannot be equated with other education systems, and similar studies should be conducted in different location or different educational contexts. Second, the learning achievement only reflected student perception rather than actual data. If a comparison of learning outcomes before and after using a mobile LMS is carried out, it will strengthen the results of the study. Furthermore, not all factors that might influence students' intentions in using mobile LMS are included in this research model. Subsequent research can add other variables from various existing theories, such as perceived enjoyment, learning content, facilitating conditions and others into the research model to better understand student acceptance behavior towards mobile LMS. SEM method can give different results if additional variables are made. Finally, respondents who are students are very likely to experience bias, students may give good data because they are reluctant with the teacher. In-depth student interviews could confirm the study's results by strengthening their perception and satisfaction of mobile LMS.

REFERENCES:

[1] W. S. Shin and M. Kang, "The use of a mobile learning management system at an online university and its effect on learning satisfaction and achievement," *Int. Rev. Res. Open Distance Learn.*, vol. 16, no. 3, pp. 110–130, 2015.

[2] A. Dhir, N. M. Gahwaji, and G. Nyman, "The role of the iPad in the hands of the learner," *J. Univers. Comput. Sci.*, vol. 19, no. 5, pp. 706–727, 2013.

[3] S. Kinash, J. Brand, and T. Mathew, "Challenging mobile learning discourse through research: Student perceptions of Blackboard Mobile Learn and ipads," *Australas. J. Educ. Technol.*, vol. 28, no. 4, pp. 639–655, 2012.

[4] Y. A. Zhang, *Characteristics of mobile teaching and learning*. 2015.

[5] W. H. Wu, Y. C. Jim Wu, C. Y. Chen, H. Y. Kao, C. H. Lin, and S. H. Huang, "Review of trends from mobile learning studies: A meta-analysis," *Computers and Education*. 2012.

[6] A. C. Jones, E. Scanlon, and G. Clough, "Mobile learning: Two case studies of supporting inquiry learning in informal and semiformal settings," *Comput. Educ.*, vol. 61, no. 1, pp. 21–32, 2013.

[7] M. G. Domingo and A. B. Garganté, "Exploring the use of educational technology in primary education: Teachers' perception of mobile technology learning impacts and applications' use in the classroom," *Comput. Human Behav.*, 2016.

[8] I. K. Yusri, R. Goodwin, and C. Mooney, "Teachers and Mobile Learning Perception: Towards a Conceptual Model of Mobile Learning for Training," *Procedia - Soc. Behav. Sci.*, 2015.

[9] I. Han and W. S. Shin, "The use of a mobile learning management system and academic achievement of online students," *Comput. Educ.*, 2016.

[10] J. Dinaro, "Using Moodle to Enhance Online Classrooms and Professional Development," *Distance Learn.*, vol. 8, no. 4, pp. 41–45, 2011.

[11] M. Aberdour, *Moodle for Mobile Learning*. Birmingham - Mumbai: PACKT Publishing, 2013.

[12] W. Lewis, R. Agarwal, and V. Sambamurthy, "Sources of influence on beliefs about information technology use: An empirical study of knowledge," *MIS Q.*, vol. 27, no. 4, pp. 657–678, 2003.

[13] Y. Liu, H. Li, and C. Carlsson, "Factors driving the adoption of m-learning: An empirical study," *Comput. Educ.*, 2010.

[14] M. Fishbein and I. Ajzen, "Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research," *Read. MA AddisonWesley*, no. August, p. 480, 1975.

[15] F. D. Davis, "Perceived Usefulness , Perceived Ease Of Use , And User Acceptance," *MIS Q.*, vol. 13, no. 3, pp. 319–339, 1989.

[16] V. Venkatesh and F. D. Davis, "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Manage. Sci.*, vol. 46, no. 2, pp. 186–204, 2000.

[17] J. Cheon, S. Lee, S. M. Crooks, and J. Song, "An investigation of mobile learning readiness in higher education based on the theory of planned behavior," *Comput. Educ.*, 2012.

[18] E. M. Rogers, *Diffusion of Innovations*, vol. 27. 2003.

[19] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User Acceptance of Information Technology: Toward a Unified View," *J. Chem. Inf. Model.*, vol. 53, no. 9, pp. 1689–1699, 2013.

[20] S. Park, S.Y.; Nam, M.; Cha, "University students' behavioral intention to use mobile learning: Evaluating the technology acceptance model," *Br. J. Educ. Technol.*, vol. 43, no. 4, pp. 592–605, 2012.

[21] W. . Delone and E. r. Mclean, "the Delone and Mclean model of information sys- tems success: A ten-year update," *J. Manag. Inf. Syst.*, vol. 19, no. 4, p. 9–30., 2003.

[22] A. Y. Alsabawy, A. Cater-Steel, and J. Soar, "IT infrastructure services as a requirement for e-learning system success," *Comput. Educ.*, vol. 69, pp. 431–451, 2013.

[23] Sugiyono, *Metode Penelitian Bisnis*. Bandung: Alfabeta, 2014.

[24] J. Van Braak, "Factors influencing the use of computer mediated communication by teachers in secondary schools," *Comput. Educ.*, vol. 36, no. 1, pp. 41–57, 2001.

[25] G. C. Moore and I. Benbasat, "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Inf. Syst. J.*, vol. 2, no. 3, pp. 192–222, 1991.

[26] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "Summary for Policymakers," in *Climate Change 2013 - The Physical Science Basis*, vol. 27, no. 3, Intergovernmental Panel on Climate Change, Ed. Cambridge: Cambridge University Press, 2003, pp. 1–30.

[27] P. Sun, R. J. Tsai, G. Finger, and Y. Chen, "What drives a successful e-Learning ? An empirical investigation of the critical factors influencing learner satisfaction," vol. 50, pp. 1183–1202, 2008.

[28] B. M. Byrne, *Structural Equation Modeling With AMOS: basic concepts, applications, and programming.*, 3rd ed. New York: Routledge, 2001.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

[29] R. B. Kline, *Principles and practice of structural equation modeling*, 4th ed. New York: The Guilford Press, 2015.

[30] U. Sekaran and R. Bougie, *Research Methods for Business: a skill-building approach*, 7th ed. Chichester, West Sussex, United Kingdom: John Wiley & Sons, 2016.

[31] E. Pramana, "Determinants Of The Adoption Of Mobile Learning Systems Among University Students In Indonesia," *J. Inf. Technol. Educ.*, vol. 17, 2018.

[32] S. S. Binyamin, M. J. Rutter, and S. Smith, "The Influence of Computer Self-efficacy and Subjective Norms on the Students' Use of Learning Management Systems at King Abdulaziz University," *Int. J. Inf. Educ. Technol.*, vol. 8, no. 10, pp. 693–699, 2018.

[33] H. Motaghian, A. Hassanzadeh, and D. K. Moghadam, "Factors affecting university instructors' adoption of web-based learning systems: Case study of Iran," *Comput. Educ.*, vol. 61, no. 1, pp. 158–167, 2013.

[34] C. B. Hodges, "Self-Efficacy in Instructional Technology Contexts," pp. 57–74, 2018.

[35] L. Huang, "Acceptance of mobile learning in classroom instruction among college English teachers in China using an extended TAM," *Proc. - 6th Int. Conf. Educ. Innov. Through Technol. EITT 2017*, vol. 2018–March, pp. 283–287, 2018.

[36] M. A. Almaiah, M. A. Jalil, and M. Man, "Extending the TAM to examine the effects of quality features on mobile learning acceptance," *J. Comput. Educ.*, vol. 3, no. 4, pp. 453–485, 2016.

[37] P. Legris, J. Ingham, and P. Collerette, "Why do people use information technology? A critical review of the technology acceptance model," *Inf. Manag.*, vol. 40, no. 3, pp. 191–204, 2003.

[38] S. Y. Park, "An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning," *J. Educ. Technol. Soc.*, vol. 12, no. 3, pp. 150–162, 2009.

[39] R. Huang, C. Hsiao, T. Tang, and T. Lien, "Exploring the Moderating Role of Perceived Flexibility Advantages in Mobile Learning Continuance Intention (MLCI)," *Int. Rev. Res. Open Distance Learn.*, vol. 15, no. 3, pp. 140–157, 2014.

[40] H. Mohammadi, "Investigating users' perspectives on e-learning: An integration of TAM and IS success model," *Comput. Human Behav.*, vol. 45, pp. 359–374, 2015.

Journal of Theoretical and Applied Information Technology
15th July 2019. Vol.97. No 13

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

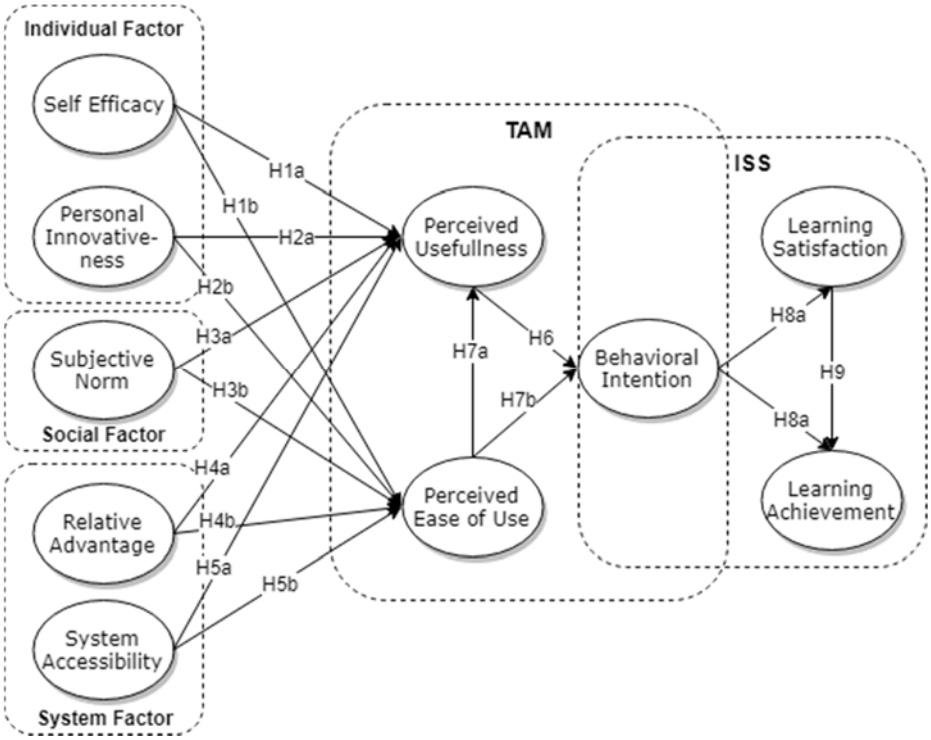

Figure 1: The Study Framework

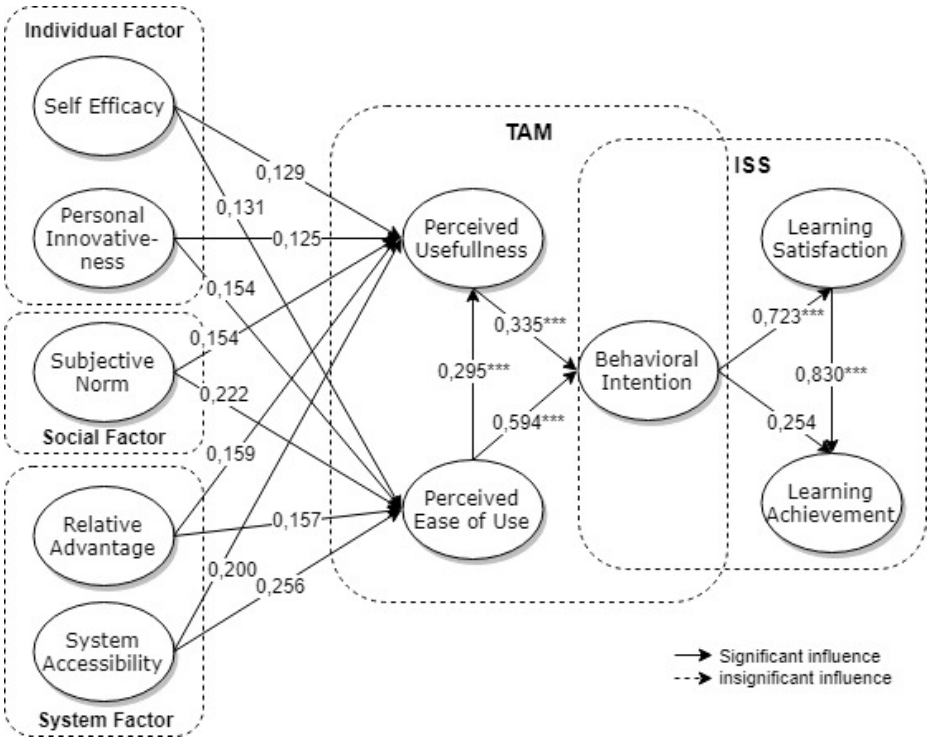

Figure 2: Path Analysis Diagram of the model

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table 1: Variables and Indicators

Variables	Survey items	Reference
Self Efficacy (SE)	SE1: I am confident about using a mobile device for my courses. SE2: Using a mobile device for my courses would not challenge me. SE3: I would be comfortable to use a mobile device in my courses.	[1];[17]
Personal Innovativeness (PI)	PI1: I believe the need for the introduction of new technologies in my learning practice PI2: I have realised that the introduction of technological innovation represents an added value to my learning practice PI3: Among my colleagues, I am usually the first to try new information technology.	[1]; [13]; [24]
Subjective Norm (SN)	SN1: Mobile learning through mobile LMS is significantly meaning as a student. SN2: It is necessary to perform the mobile LMS according to recent social needs. SN3: I need to experience Mobile LMS for my future learning.	[1];[20]
Relative Advantage (RA)	RA1: Using mobile LMS enhances my effectiveness on my study. RA2: Overall, I find using mobile LMS to be advantageous in my learning. RA3: Using mobile LMS improves the quality of my study. RA4: Using mobile LMS makes it easier to do my learning activites.	[1];[25]; [26]
System Accessibility (SA)	SA1: I can easily get information or contents for using mobile LMS. SA2: Mobile devices have good compatibility with mobile LMS. SA3: It is easy to access internet and search for mobile LMS.	[1];[20]
Perceived Usefullness (PU)	PU1: I think using mobile LMS can increase the effectiveness of my study. PU2: I think using mobile LMS can increase the efficiency of my study. PU3: Mobile LMS is usefull for my studies.	[1];[13]
Perceived Ease of Use (PE)	PE1: I think learning to use mobile LMS is very simple. PE2: It would be easy for me to become skillful at using mobile LMS. PE3: I think using mobile LMS is easy.	[1];[13]
Behavioral Intention (BI)	BI1: I predict I would use a mobile device for my courses. BI2: I plan to use a mobile device if a course has mobile LMS functions. BI3: I intend to adopt a mobile LMS for school courses.	[1];[17]
Learning Satisfaction (LS)	LS1: I am satisfied with my decision to take this course via mobile LMS. LS2: If I had an opportunity to take another course via mobile LMS, I would gladly do so. LS3: I was very satisfied with the course via mobile LMS	[1];[27]
Learning Achivement (LA)	LA1: Mobile LMS help me to organize my study at school. LA2: My learning achievement increase after using mobile LMS. LA3: Mobile LMS improve my learning quality.	[1];[27]

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table 2: Descriptive Analysis of Variables and Indicators

Construct /Item	Mean	StDev	Construct /Item	Mean	StDev
SE1	4.40	0.66	PU1	4.50	0.58
SE2	4.42	0.64	PU2	4.49	0.63
SE3	4.37	0.67	PU3	4.52	0.60
SE	4.40	0.62	PU	4.50	0.55
PI1	4.51	0.58	PE1	4.36	0.71
PI2	4.50	0.58	PE2	4.40	0.67
PI3	4.51	0.56	PE3	4.37	0.68
PI	4.51	0.54	PE	4.38	0.64
SN1	4.32	0.64	BI1	4.29	0.68
SN2	4.36	0.60	BI2	4.37	0.66
SN3	4.44	0.65	BI3	4.31	0.65
SN	4.37	0.55	BI	4.32	0.61
RA1	4.38	0.64	LS1	4.52	0.51
RA2	4.39	0.65	LS2	4.49	0.53
RA3	4.39	0.64	LS3	4.48	0.51
RA4	4.41	0.62	LS	4.50	0.41
RA	4.39	0.61	LA1	4.52	0.51
SA1	4.47	0.60	LA2	4.49	0.51
SA2	4.48	0.58	LA3	4.53	0.50
SA3	4.50	0.56	LA	4.51	0.38
SA	4.48	0.54			

Table 5: Validity and Reliability

Construct	Items	Internal reliability		Convergent validtiy		
		Cronbach's alpha	Item-Total Correlation	Factor loading	CR	AVE
Self Efficacy	SE2	0.96	0.85	0.95	0.96	0.92
	SE3		0.50	0.97		
Personal Innovativeness	PI1	0.94	0.89	0.94	0.94	0.89
	PI3		0.89	0.95		
Subjective Norm	SN1	0.90	0.81	0.90	0.90	0.81
	SN2		0.81	0.91		
Relative Advantage	RA1	0.97	0.916	0.95	0.97	0.91
	RA2		0.903	0.93		
	RA3		0.963	0.99		
System Accessibility	SA1	0.93	0.87	0.92	0.93	0.82
	SA2		0.89	0.94		
	SA3		0.81	0.85		
Perceived Usefullness	PU1	0.89	0.81	0.87	0.89	0.73
	PU2		0.79	0.87		
	PU3		0.77	0.83		

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Perceived Ease of Use	PE1	0.92	0.87	0.92	0.92	0.79
	PE2		0.78	0.84		
	PE3		0.84	0.90		
Behavioral Intention	BI1	0.91	0.85	0.92	0.91	0.77
	BI2		0.82	0.89		
	BI3		0.77	0.83		
Learning Satisfaction	LS1	0.78	0.61	0.73	0.78	0.54
	LS2		0.62	0.72		
	LS3		0.61	0.74		
Learning Achievement	LA2	0.65	0.49	0.71	0.65	0.48
	LA3		0.49	0.68		

Table 6: Path Coefficient

Hypotheses	Path	Estimate	P	Remarks
H1-1	SE→PU	0.129	0.013	Supported
H1-2	SE→PE	0.131	0.040	Supported
H2-1	PI→PU	0.125	0.015	Supported
H2-2	PI→PE	0.154	0.014	Supported
H3-1	SN→PU	0.154	0.011	Supported
H3-2	SN→PE	0.222	0.002	Supported
H4-1	RA→PU	0.159	0.004	Supported
H4-2	RA→PE	0.157	0.021	Supported
H5-1	SA→PU	0.200	0.002	Supported
H5-2	SA→PE	0.256	0.001	Supported
H6	PU→BI	0.335	***	Supported
H7-1	PE→PU	0.295	***	Supported
H7-2	PE→BI	0.594	***	Supported
H8-1	BI→LS	0.723	***	Supported
H8-2	BI→LA	0.254	0.005	Supported
H9	LS→LA	0.830	***	Supported