



A CONCEPTUAL MODEL OF M-LEARNING ADOPTIONS

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ABSTRACT

The main objective of this study is develop a conceptual model of M-Learning adoptions. There are dimensions of m-learning adoptions that need to be further investigated and understood. There are four main variables from literature review that deem to be important to be classified for m-learning adoptions towards the development of the conceptual model. The variables are (i) perceived Near-term usefulness, (ii) Perceived Ease of Use, (iii) Personal Innovativeness, and (iv) perceived Long-term Usefulness. The second objective of this study is unravel other dimensions that may be feasible for m-learning adoptions. The method involved distributing the open-ended questionnaires survey with 131 postgraduate students from 11th Oct 2014 till 25th Nov 2014. The qualitative data provide better understanding of m-learning adoptions and provide recommendations to improve the m-learning adoptions among postgraduate students.

Keywords: mobile learning, M-Learning adoption, human computer interaction.

INTRODUCTION

In the last few years, the learning process by using the mobile devices has become the focal point of the researchers [1]. This has been motivate by the increase in the number of the mobile devices such as mobile phone, personal data assistants, laptop computer and tablet computers in the last decade [2].

Asian people are buying mobile devices instead of personal computer [3]. There were nearly 70 mobile phone subscriptions per 100 inhabitants in the Asia including Malaysia [3] and it's proved that the mobile technology has growth drastically in Malaysia. "The adoption of electronic learning is not new in today's education system" [4]. The acceptance and continued use of a product, service or idea is identify as adoption [5]. Before consumers are ready to adopt product or service, there is "a process of knowledge, persuasion, decision and confirmation" that will be gone through by the consumers. People will accept new ideas or products in many different ways as some of them "will accept it the first time they see it, but for some others it will take longer time to accept and there are also some people who do not accept it at all." [6].

LITERATURE REVIEW

Learning

Learning is now not restricted to the brick and mortar and internet access environment anymore [7]. The complexity and demanding environment of learning have been supported by the advancement of mobile technology. "With educators as guides or facilitators, in addition to learning resources like books, class notes, journals, learning materials, and communication tools, the learning process will become more interesting and meaningful, and even productive." [7]. The learning preferences are include the learning style, learning strategies and learning characteristics [8]. Learning style is defined as the learners' "preferred styles of learning"; learning strategies is known as "the preferred strategies of learning" and Learning characteristics are related to the learners' personality [8].

M-Learning and e-learning

Even though m-learning is related to e-learning and distance education, it has the different in focal point of context and the use of mobile devices as learning medium [4]. Cobcroft (2006) described that the spontaneously, informality, situationism and the portability of the m-learning have differentiate m-learning from e-learning [9].

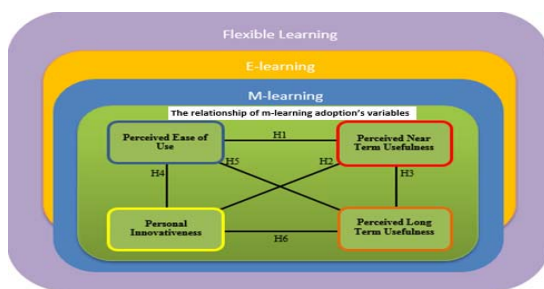
**Table-1.** Type styles similarities and differences between M-learning and E-learning.

M-learning and E-learning	
Similarities	Differences
E-learning is not versus m-learning but both are having the same features and techniques [10].	M-learning has the different in focal point of context and the use of mobile devices as learning medium [4].
E-learning is “refer to the use of information and communications technology (ICT) in learning and teaching” [11].	E-learning is using the wired virtual learning environment. Meanwhile, m-learning is using the wireless virtual learning environment [9].
“Some researchers define M-learning as a direct child of electronic learning” [6].	The spontaneously, informality, situationism and the portability of the m-learning have differentiate m-learning from e-learning [9].

“The word ‘mobile’ describes the portable devices which are used for m-learning” [10]. The portability is the important requirement of the m-learning tools [12] [10]. Apart from that, it should be user-friendly. The m-learning should occurs as an individually study and there must be the availability of the communication between friends, learners and educators as well as the experts [10]. Sharples (2010) defined m-learning as the “process of coming to know through conversations across multiple contexts among people and personal interactive technologies” [12]. Rosman (2008) stated that m-learning is intersect with e-learning as not all of the features are same [13].

A conceptual model of M-learning adoptions

The first objective of this study is to develop a conceptual model of m-learning adoption. Thus, in order to meet this objective, the conceptual model of m-learning adoption was developed as per illustrated in Figure-1 below adapted from various literature reviews.

**Figure-1.** A conceptual model of M-Learning adoption model.

Each of the segments are explained in the following sections, starting from the inner to the outer segments; consisting of the first, second, third and fourth segments.

First segments

The first segment of the conceptual model is to represent The Relationship of m-learning adoption's

variables, which is enclosed within the M-learning segment. This first segment is consisting of the four (4) variables: Perceived Near-term Usefulness, Perceived Ease of Use, Personal Innovativeness, and Perceived Long-term Usefulness. These four variables were tested and verified in a study done by Liu *et al.* (2010) [14]. Thus, this study is using these four (4) variables as the data measurement through the close-ended questionnaires.

In order to meet the objective: to determine the relationship of m-learning adoption's variables, thus, the lines shown in Figure-1 are used to link all of these four (4) variables, to represent the possible relationship between all of the variables. Therefore, the cross relationship between all of the variables such as Perceived Near-Term Usefulness, Perceived Ease of Use, Personal Innovativeness, and Perceived Long-Term Usefulness are determined and represented as H1, H2, H3, H4, H5, and H6.

Second segment

Although the applications of m-learning are seen as an evolution of e-learning, m-learning is a characterized technology and has its own terminology. For instance, while the terms multimedia, interactive, hyperlinked, media-rich environment are among the terminology of e-learning; terms like spontaneous, intimate, situated, connected, informal, lightweight are among the terminology of m-learning [15].

Third segment

The third segment is the e-learning, whereby its only intersect with m-learning. The spontaneously, informality, situationism and the portability of the m-learning have differentiate m-learning from e-learning [9]. M-learning is the extended version of e-learning [16], thus, m-learning shouldn't be the subset of e-learning.

Fourth segment

The outer segment is the flexible learning whereby all of the 3 inner segments are enclosed within it. The flexible learning consisting e-learning and m-learning,



whereby it's provide an option in types of learning activities [13].

Research method

The method involved distributing the open-ended questionnaires survey with 131 postgraduate students from

11th Oct 2014 till 25th Nov 2014. The study focuses on postgraduate in FSKM, UiTM students that had been using any m-learning application.

Qualitative analysis

Table-2. Descriptive statistics.

Measure	Items	Frequencies	Percentage
Age	Below 25 years	51	38.9
	26 to 35 years	64	48.9
	36 to 45 years	16	12.2
Working experience	No working experience	32	24.4
	1 to 2 Years	27	20.6
	3 to 4 Years	19	14.5
	5 to 6 Years	16	12.2
	7 to 8 Years	14	10.7
	9 to 10 Years	10	7.6
	More than 11 years	13	9.9

The general descriptive statistics is shown in Table-2. The respondents were asked to complete the open-ended questionnaires in the survey. There are two questions that had been analyzed as shown in Table-3.

Table-3. Open-Ended Questionnaires.

Questions	Purpose
How to improve m-learning?	To get the recommendation list to improve the m-learning adoption.
Why are you using m-learning?	To discover the new possible variables of m-learning adoption.

Recommendations to improve the m-learning adoptions

Based on Table-3, the respondents were responded to the question "How to improve m-learning?" which included suggestions on how to improve the adoption of the m-learning. This is to meet the third objective of this study: To propose recommendations to improve the m-learning adoption. This is to align the recommendations with the finding of the strongest variable, Perceived Long-term Usefulness being identified. The answers are grouped as per following:

- Lecturers to enforce the use of m-learning whereby the continuous assessment is to be done via m-learning activities.
- Increase the coverage of wireless in campus.
- Lecturers to promote m-learning to students through seminar and campaign.

- Create mobile apps and mobile friendly websites for m-learning contents.
- Lecturer to provide students with the guideline on how the grading and assessment are to be done via m-learning.
- Improve the user interface design of m-learning web-based site to ease the m-learning process.
- Lite website for faster access.
- Let the students to engage with m-learning and report their findings in regular basis.

The recommendations to improve the m-learning adoption are such as (1) to accommodate the strongest variable of m-learning which is Perceived Long-term usefulness, whereby lecturer should enforce the use of m-learning in his subject and the continuous assessment is to be done via m-learning. This will makes students aware that he or she should use m-learning in order to achieve his or her target of good result. The future target that he or she has set when using m-learning is the Perceived Long-term Usefulness, whereby he or she would wish to get the good result in that subject as well as to graduate with the flying color result. This recommendation should include the answers from the above list such as (a) "Lecturers to enforce the use of m-learning whereby the continuous assessment is to be done via m-learning activities, (c) Lecturers to promote m-learning to students through seminar and campaign, and (h) Let the students to engage with m-learning and report their findings in regular basis.

The second recommendation is (2) to accommodate the Perceived Near-term Usefulness as it is related to the Perceived Long-term. Based on the result of H3, there is the strong relationship between Perceived Long-term Usefulness and Perceived Near-term Usefulness; therefore, the Perceived Near-term usefulness



should be accommodated too to ensure that both of these variables are aligned and able to improve the adoption of m-learning. This should include the answer of (e) *Lecturer to provide students with the guideline on how the grading and assessment are to be done via m-learning.* This will develop the satisfaction and confidence of student that m-learning would improve the efficiency and effectiveness in his study.

The third recommendation is to improve the accessibility and usability of m-learning. This recommendation is derived from the answers (b) *"increase the coverage of wireless in campus"* and (g) *"Lite website for faster access"* for the accessibility. Then, the usability is from answers (d) *"Create mobile apps and mobile friendly websites for m-learning contents"*, and (f) *"Improve the user interface design of m-learning web-based site to ease the m-learning process."* In order to support the above two recommendations (1) and (2), there is the need to improve the accessibility and usability of m-learning because the students will be struggled to use m-learning if the m-learning is not accessible and usable to use. The mechanism or the platform of m-learning is very important to accommodate the lifelong learning.

The new possible variables of m-learning adoptions

Based on this study, the new possible variables of m-learning adoption have been identified from one of the question: *"Why are you using m-learning?"* Three (3) new possible variables are such as simplicity, up-to-date and fast information, and collaborative. Table IV shows the frequency of the responses for these three (3) new possible variables. The total of 53 out of 131 respondents are response with the variables which are not classified under the main construct of existing variables such as Perceived Near-term Usefulness (PNTU), Perceived Ease of Use (PEOU), Personal Innovativeness (PI), and Perceived Long-term Usefulness (PLTU).

Table-4. New Possible Variable of M-Learning Adoptions.

New variables	Frequency
Simplicity	23 out of 131
Up-to-date and fast information	20 out of 131
Collaborative	10 out of 131
Total	53 out of 131

Simplicity

Based on Table-4, 'simplicity' has been determined as new possible variables of m-learning adoption. The sample of answer that categorized under simplicity are such as *"M-learning is simple to use"* from respondent number 9, *"I'm using m-learning because it is simple and easy to understand"* from respondent number 122 and *"The content of m-learning is simple"* from respondent number 84. The rule of m-learning is to "Keep

it Simple" [17, 18]. This has contributed to the high degree of simplicity because the devices used in m-learning are portable with small screens. Thus, the simplicity is also identified as the variable to adopt the m-learning.

Up-to-date information and fast information

The second additional possible variable is the up-to-date and fast information, and the sample of responses are such as *"I'm using m-learning because the notes provided by lecturer via m-learning is up-to-date if compare to the book"* from respondent number 20, *"All materials in m-learning are updated and I can get them very fast via m-learning"* from respondent number 33, and *"M-learning is the fastest way to get information whenever I need them and the information is up-to-date"* from respondent number 65. Up-to-date and fast information is a new possible variable of m-learning adoption, whereby the respondents are having the sense of confidence towards the information gained via m-learning because usually the information is reflecting the latest information or changes and it is also the fastest way to get information. This will develop the positive feeling towards the adoption of m-learning.

Collaborative

The third additional possible variable is the collaborative, with the sample of responses such as *"I'm using m-learning to discuss within my team members. M-learning is very collaborative"* from respondent number 71, *"M-learning has allowed me and my team to collaborate the information between each other. We can have the brainstorming together even we are at the different location"* from respondent number 86, and *"I can have the discussion with my lecturer and also my friends from home. We can share our notes too"* from respondent number 127.

The collaborative is determined as *"a situation of two or more people learn or attempt to learn something together"* [19]. M-learning has allow respondents to collaborate via online more easily. Thus, the collaborative should be count in as a variable of m-learning adoption.

CONCLUSIONS

The main objective of this study is to develop a conceptual model of M-Learning adoptions. There are dimensions of m-learning adoptions that need to be further investigated and understood. There are four main variables from literature review that deem to be important to be classified for m-learning adoptions towards the development of the conceptual model. The variables are (i) Perceived Near-term usefulness, (ii) Perceived Ease of Use, (iii) Personal Innovativeness, and (iv) Perceived Long-term Usefulness. The second objective of this study is unravel other dimensions that may be feasible for m-learning adoptions. The method involved distributing the open-ended questionnaires survey with 131 postgraduate students from 11th Oct 2014 till 25th Nov 2014. The



qualitative data provide better understanding of m-learning adoptions and provide recommendations to improve the m-learning adoptions among postgraduate students. Apart from that, three (3) new possible variables of m-learning adoption such as simplicity, up-to-date and faster information, and collaborative have been identified in this study. Apparently, more confirmatory study is also required on the new possible variables that can lead to the adoption of m-learning.

REFERENCES

- [1] T. A. Koszalka and G. S. Ntloedibe-Kuswani. 2010. Literature on the safe and disruptive learning potential of mobile technologies. *Distance Education*. 31(2): 139-157.
- [2] Y.-S. Wali, M.-C. Wu and H.-Y. Wang. 2009. Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Education Technology*. 40(1): 92-118.
- [3] H. J. So. 2012. Turning on mobile learning in Asia: Illustrative initiatives and policy implications. Policy focus: UNESCO working paper series on mobile learning. 1, 1-32.
- [4] N. M. N. Mohammad, M. N., Mamat and P. M. Isa, P. M. 2012. M-learning in Malaysia: Challenges and Strategies. *Procedia-Social and Behavioral Sciences*. 67, 393-401.
- [5] S. N. Baraghani. 2007. Factors influencing the adoption of internet banking. *Lucrare de disertatie*, Lulea University of Technology. 1653-0187.
- [6] M. Mirabolghasemi, N. A. Iahad and E. Yadegaridehkordi E. 2011. Investigating the dynamic relationships among the indicators of the Community of Inquiry model in blended learning. In: *Research and Innovation in Information Systems (ICRIIS)*, 2011 International Conference on (pp. 1-5). IEEE.
- [7] S. Hussin, M. R. Manap, Z. Amir and P. Krish. 2012. Mobile learning readiness among Malaysian students at higher learning institutes. *Asian Social Science*. 8(12): 276.
- [8] J. Y. K. Yau and M. Joy. 2011. A context-aware personalised m-learning application based on m-learning preferences. *International Journal of Mobile Learning and Organisation*. 5(1): 1-14.
- [9] R. Cobcroft. 2006. Literature review into mobile learning in the university context (Doctoral dissertation, Queensland University of Technology).
- [10] N. C. Ozuorcun and F. Tabak. 2012. Is M-learning versus E-learning or are they supporting each other. *Procedia-Social and Behavioral Sciences*. 46: 299-305.
- [11] G. Salmon. 2005. Flying not flapping: a strategic framework for e-learning and pedagogical innovation in higher education institutions. *ALT-J: Research in Learning Technology*. 13(3): 201-218.
- [12] M. Sharples. 2000. The design of Personal Mobile Technologies for Lifelong Learning in Computers and Education. 34: 177-93.
- [13] P. Rosman. 2008. M-learning-as a paradigm of new forms in education. *E+ M Ekonomie a Management*. 1, 119-125.
- [14] Y. Liu, H. Li and C. Carlsson C. 2010. Factors driving the adoption of m-learning: An empirical study. *Computers and Education*. 55(3): 1211-1219.
- [15] A. T. Korucu and A. Alkan. 2011. Differences between m-learning (mobile learning) and e-learning, basic terminology and usage of m-learning in education. *Procedia-Social and Behavioral Sciences*. 15, 1925-1930.
- [16] R. S. Shariffudin, C. H. Julia-Guan, T. Dayang, N. Mislan and M. F. Lee. 2012. Mobile Learning Environments for Diverse Learners in Higher Education. *International Journal of Future Computer and Communication*. 1(1): 32-35.
- [17] A. Kukulska-Hulme and J. Traxler J. 2005. *Mobile Learning: A Handbook for Educators and Trainers*. London: Routledge.
- [18] D. Parsons, H. Ryu and M. Cranshaw M. 2007. A design requirements framework for mobile learning environments. *Journal of Computers*. 2(4): 1-8.
- [19] P. Dillenbourg. 1999. What do you mean by collaborative learning? *Collaborative-learning: Cognitive and Computational Approaches*. 1-19.