Acceptance Factor of Mobile Learning Application for Adult Learners in Life Long Learning Education

Azizah binti Safe1, Muhammad Rafie Mohd. Arshad2 and Norhaliza binti Idris3
1,3 Department of Information Technology & Communication, Polytechnic of Balik Pulau, Pulau Pinang, Malaysia
2 School of Computer Science, Universiti Sains Malaysia, Pulau Pinang, Malaysia

E-mail: azizah@pbu.edu.my

Abstract. Mobile technology has introduced a new technology that can be used as teaching aids to enrich the teaching and learning process and it have become increasingly a part of education for those who study or teach at the higher learning institution and school levels. The usage mobile technology in learning which also known as mobile learning (m-learning) is one type of learning model allowing learners to obtain learning materials anywhere and anytime using mobile technologies as learning aided tool. Academics and practitioners alike are showing interest in examining its ability to support online learning. However, earlier studies have highlighted the challenges in promoting m-learning adoption. The existing m-learning literature has mainly focused on technology-related factors to examine m-learning adoption. However, few studies have investigated this topic from the users’ motivation perspective and even fewer from an adult learner perspective. Therefore, this study employs the uses and delight theory to provide a better understanding of what motivates m-learning adoption in adult learners. Futher research is needed to examine the determination factors in Malaysia specifically with adequate samples. As suggestion, m-learning needs to be build in such a way to ensure the adoption of usage is higher for adult learner.

KEYWORDS: Mobile learning; M-learning adoption; Lifelong learning, Learning applications, Determination factors

1. Introduction

Previously, communication through telephone provided the ability to talk to someone from a distance. However, the capability of the telephone has expanded to include other features. Nowadays, most of the mobile devices combine the features of traditional telephone, text messaging, a diary or planner, wireless internet connection and personal computer capabilities.

1.1 Evolution of Mobile Learning (M-Learning)

Currently mobile technology has introduced new technology that can be used as learning aids to enrich the teaching and learning process. Mobile devices or smartphone have become increasingly a part of learning material for higher learning institution and also in school levels. The usage of mobile technology in learning which also known as mobile learning (m-learning) is one type of learning model that allowing learners to gain learning materials anywhere and anytime using mobile technologies as aided learning tool. M-learning is a kind of learning model that allows learners to obtain learning materials anywhere and anytime using mobile technologies and the Internet.
M-learning is an innovation that leads the technology of mobile phone usage in education. This learning type allows learning process to be continuous anytime regardless of geographical location [1], [2]. M-learning presents to be a new education medium for helping people to acquire knowledge and skill in a ubiquitous manner. M-learning is not only providing the educational content but also provide the good adaptation to adequate visualization on the small screen of mobile devices. Furthermore, m-learning is flexible and gives freedom feelings to students [3], which allows mobile learners to have access to a wide variety of richly diversified learning resources [4]. M-learning is being the digital support of adaptive, investigative, communicative, collaborative, and productive learning activities in remote locations, proposes a wide variety of environments in which the learners can operate. It is a collection of methods that people learn or stay connected with their learning environments including their classmates, instructors, and instructional resources while going portable. In generally m-learning is considered to increase the performance of learners by making learning accessible and eliminates geographic boundaries and provides collaborating learning environment.

However, this new method is still overwhelmed with some questions among researchers, educators and learners because the learning focus is being distracted by the technology itself [5]. Some of the main discussion argues the ability of m-learning in achieving one of the main objectives in learning process [6], whereby learning should be able to provide a real understanding of what is learned [7].

1.2 Lifelong Learning

Famous words seek knowledge from the cradle until one dies describing the nature of life-long learning. It pictures the various types of education that one has to go through in one’s life: formal education, non-formal education and informal education. Formal education involves structured learning with a planned curriculum, proper classroom and qualified teachers; non-formal education involves being outside formal settings such as on a field trip to a museum; and informal education occurs out of spontaneous situations.

The term of lifelong learning has been interpreted as the training of a workforce capable of adapting to a rapidly changing world [8], [9], [10]. Those researchers mention that the basic idea of lifelong learning is deliberate learning that can and should occur throughout each person’s life. The concept of lifelong learning as life-wide learning that joints its successful endeavor on the potential of distance education via computer-mediated communication [11]. Lifelong learning is often used in relation to adult education or continuing education. Therefore, all forms of education that one receives after one has completed one’s formal education can be classified as part of the process of lifelong learning [10].

The aim of lifelong learning is to improve knowledge, skills and competence with a personal, civic, social or employment-related perspective [12]. The unique characteristic of lifelong learning is the fact that it centres around individuals, such as the learners themselves. In Life long learning, the main of the learning practice is the learner: a person with certain physical characteristics who assumes a number of social roles and who has a number of characteristics that relate to how they practise learning. For the reason that of the lifelong learning it centres on the individual, the use of technology in delivering becomes essential part. The use of technology such as m-learning can provide a flexible learning framework which is often preferred by adult learners [10], [11].

2. Literature Review

First, this literature review will look at the previous studies related to the m-learning in term of the trends of researchs, disciplines and courses which often used m-learning. Second, this literature review will look at the adult learners and their characteristics.

2.1 Previous Research of M-learning

Study related to the m-learning has intensified by various parties whether the academia for education purposes or industrial sector in order to expand, improve or streamline the products and services related to m-learning. Result of the studies conducted, the definition of m-learning is becoming clear whereas in the early 2000s. Most of the researchers said m-learning is an e-learning that use mobile computational devices such as smartphone, android phone, or else from digital cell phone [13]. This
definition means that the evolution of m-learning is related to the tools, devices, or equipment to be used while in terms of learning it is still the same concept as e-learning. M-learning is not only learning through mobile phones or learning over a wireless connection but it is the evolution of e-learning, which completes the missing component of an e-learning solution that most suits for those mobile users in education institutes. However, in general most researchers define m-learning as a learning process that utilize mobile technology in order to be connected to the information anytime and anywhere. Previous researchs of m-learning fall into two broad research directions: evaluating the effectiveness of m-learning, and designing m-learning systems. Figure 1, shows the review of trends from m-learning studies that show the distribution of m-learning studies by research purpose [14].

![Figure 1. Distribution of mobile learning studies by research purpose](image)

The research purposes of most mobile learning studies center on effectiveness, followed by mobile learning system design. Based of the following research [14], the highest topics of the researchs in m-learning is evaluating the effects of mobile learning, 58%, followed by designing a mobile system for learning, 32%. Whereas, the topic of investigating the affective domain during mobile learning and evaluating the influence of learner characteristics in the mobile learning process was only 10% from the distributions. While some of the studies found trends in mobile learning research identified into seven major findings (refer Table 1) that it is particularly significant that most studies of m-learning focused on effectiveness and identify this as a significant new finding [15].

| No. | Trends in M-Learning |
|-----|----------------------|
| 1   | The research purpose of mobile learning studies focused on effectiveness, followed by mobile learning system design. |
| 2   | Surveys and experimental methods were the preferred research methods, regardless of whether the research purpose focused on evaluation or design. |
| 3   | Research outcomes in mobile learning were significantly positive. |
| 4   | Mobile phones and PDAs were the most commonly used device for mobile learning, but these may be replaced in the future by new emerging technologies. |
| 5   | Mobile learning is most prevalent at higher education institutions, followed by elementary schools. |
| 6   | Mobile learning most frequently supports students in the professions and applied sciences, followed by the humanities and formal sciences. |
| 7   | The most highly cited articles fell into categories of mobile learning system design followed by effectiveness. |

Figure 4 shows that m-learning in educational contexts most frequently focus on use in supporting professional subjects and applied sciences (29%), followed by the humanities (20%), and formal sciences (16%). Studies showed mobile learning was often used in computer and language courses [14], [15]. The study found that mobile learning is also widely used in courses related to environmental studies, forestry and health sciences, but considerably less so in other courses such as statistics or law.
Figure 2. Distribution of disciplines and courses

2.2 Adult Learners and Their Characteristics

The word ‘adult’ can refer to ‘a stage in a life cycle’. In other words, biologically, a person is first a child and then a youth before reaching the adult stage. The term ‘adult’ can also refer to the social role given to a person who plays a fully independent or responsible role in society. Malcolm Knowles (1913-1997) was an American educator who theorized adult education. He brought the term andragogy into use as a term associated with adult education. According Malcolm Knowles, andragogy is the art and science of adult learning, thus andragogy refers to any form of adult learning [16]. Knowles has
proposed a more systematic approach to defining the term “adult”, in which understanding what an adult is means considering both social and psychological aspects [16], [17]. Generally, to Knowles, a person is an adult if he or she is capable of performing the social roles typically assigned by his or her culture, such as parent, spouse, worker, or responsible citizen. Psychologically, one is considered an adult when he or she is capable of making decisions and taking full responsibility of the outcomes of those decisions. In other words, adult learners essentially responsible for his or her own life. Dr. Knowles gave adult learners 5 characteristics [16], [17], [18]:

1. Self-concept: As a person matures his self concept moves from one of being a dependent personality toward one of being a self-directed human being.
2. Experience: As a person matures he accumulates a growing reservoir of experience that becomes an increasing resource for learning.
3. Readiness to learn. As a person matures his readiness to learn becomes oriented increasingly to the developmental tasks of his social roles.
4. Orientation to learning. As a person matures his time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem centredness.
5. Motivation to learn: As a person matures the motivation to learn is internal.

3. Research Model and Finding

In this study, four (4) research papers which have same topic on adoption of M-learning for adult learners have been reviewed. The paper are; 1. Adult learners’ intention to adopt mobile learning: A motivational perspective by Kamarul, Tan and Rashid (2015), 2. Toward a learner-centered system for adult learning by Hermans, Kalz and Koper (2013), 3. Research on Mobile Learning in Adult Education by Liu and et al. (2013) and 4. Adult Learners and Mobile Learning: A Case Study by Faizah (2012). From the listed research paper above, we observed some of the issues and finding from several perspectives views.

3.1 Finding Issues

There are several finding issues are highlighted from the surveys as shown in Table 2.

| Research purposes | Study | Participants | Methods | Finding |
|-------------------|-------|--------------|---------|---------|
| Adult learners’ intention to adopt mobile learning: A motivational perspective. | Kamarul, Tan and Rashid (2015) | Adult University students | Web Survey | This study suggested that adult learners’ intention to adopt m-learning is influenced by cognitive, affective and social needs through attitude. |
Toward a learner-centered system for adult learning

Hermans, Kalz and Koper (2013)  
Adult University students  
Experimental Research

A model of an e-learning system that integrates the concepts of Virtual Learning Environment, Personal Learning Environments, and Social Network Sites for the adult learner. It puts the learner in control of his/her learning supported by a personal context (personalized workspace) for managing the learning process [20].

Research on Mobile Learning in Adult Education

Liu and et al. (2013)  
-  
Literature Research

The literature on mobile learning with adult learners has provided preliminary evidence that can inform issues with use of mobile devices to enhance teaching, learning, and training [21].

Adult Learners and Mobile Learning: A Case Study by Faizah

Faizah (2012)  
Lecturers  
Case Study (Thematic Analysis)

M-Learning has great potential, and the participants have all claimed to be implementing it. However, the quality of their implementation was heavily impacted by their understanding of M-Learning and the needs of adult learners [18].
4. Conclusion

The important reason for this study is there have been no extensive studies that have been done on m-learning acceptance for adult learners in Malaysia. Therefore, this study endeavors to address these issues. It also is to contribute the body of knowledge in the fields of m-learning and technology acceptance in lifelong education in Malaysia by providing information needed to the academicians and mobile application developer in Malaysia. It is important and necessary to promote academically the new technology to users in Malaysia. It also will help Malaysia academicians to understand the users’ view towards the utilization of m-learning as well as to understand the variety of factors that can influence their intention and acceptance. With information on how to use m-learning by identifying the factors as realized by the learners, it is expected that the finding from this research will be applicable and helpful. Hopefully this research will give a contribution, suggestions and guideline to the application developer in the industry to produce the most suitable framework features of mobile application.

References
[1] Brown, K., Campbell, S., C., and Ling, R. (2011). Mobile Phones Bridging the Digital Divide for Teens in the US: Future Internet.
[2] Tina Lim, Mansor Fadzil, and Norziati Mansor (2011). Mobile Learning via SMS at Open University Malaysia: Equitable, Effective, and Sustainable. Mobile Learning via SMS at OUM. The International Review of Research in Open and Distance Education Learning, Vol 12, No 2 (Feb 2011).Open University Malaysia, Malaysia
[3] Low, L. & O'Connell, M. (2006), 'Learner-centric design of digital mobile learning'. Paper presented at Learning on the Move, Brisbane, Australia. Retrieved 25 October 2006 from https://olt.qut.edu.au/udf/OLT2006/gen/static/papers/Low_OLT2006_paper.pdf
[4] Yi, C. C., Liao, W. P., Huang, C. F. & Hwang, I. H. (2009). Acceptance of mobile learning: a respecification and validation of information system success. In Proceeding of World Academy of Science, Engineering and Technology
[5] Göth, C., Frohberg, D., and Schwabe, G. (2006). The Focus Problem in Mobile Learning: IEE International Workshop.

[6] Baggio, B., and Beldarrain, Y. (2011). Anonymity and Learning in Digitally Mediated Communications: Authenticity and Trust in Cyber Education: IGI Global

[7] Huitt, W. (2011). Bloom et al.'s Taxonomy of the Cognitive Domain. Educational Psychology Interactive. Valdosta, GA: Valdosta State University. Retrieved on 11 January 2012: http://www.edpsycinteractive.org/topics/cogsys/bloom.html [pdf]

[8] Sharples, M. (2010). A Theory of Learning for the Mobile Age. : Nottingham University

[9] Knapper, Christopher K., and Cropley, Arthur, J. 2000. Lifelong Learning in Higher Education. 3rd ed. London: Kogan Page. 238 pp

[10] Nordin, Norazah & Embi, Mohamed & Yunus, Melor. (2010). Mobile Learning Framework for Lifelong Learning. Procedia - Social and Behavioral Sciences. 7. 130-138. 10.1016/j.sbspro.2010.10.019.

[11] Rozhan Idrus, R., & Hanafi Atan (2007). Lifelong and lifelong distances education in Abdul Razak, N., Kamarul Kabilan, M. and Silong, A. D. (eds) Online Lifelong Learning in Malaysia: research and practice (pp. 1–8). Serdang: Universiti Putra Malaysia Press.

[12] Hamidah Yamat, Ahmad Ismail & Aliza Alias. (2007). English Language Skills for Lifelong Learning: A Question of Acquisition or Learning? in Proceedings of International Conference on Lifelong Learning, Bangi: Faculty of Education, University Kebangsaan Malaysia Press.

[13] Baggio, B., and Beldarrain, Y. (2011). Anonymity and Learning in Digitally Mediated Communications: Authenticity and Trust in Cyber Education: IGI Global

[14] Hwang, G. J., & Tsai, C. C. (2011). Research trend in mobile and ubiquitous learning: a review of publications in selected journal from 2001 to 2010. British Journal of Education Technology, 42(4), E65–E70.

[15] Wu, Wen-Hsiung & Wu, Yen-Chun & Chen, Chun-Yu & Kao, Hao-Yun & Lin, Che-Hung & Huang, Sih-Han. (2012). Review of trends from mobile learning studies: A meta-analysis. Computers & Education. 59. 817–827. 10.1016/j.compedu.2012.03.016.

[16] Kearsley, G. (2010). Andragogy (M.Knowles). The theory into practice database. Retrieved from http://tip.psychology.org

[17] Faizah, AM. & Hazadiah, MD. (2009). Catering for adult learners through the transformation of Higher Education. Bulletin of Higher Education Research, 14.

[18] Faizah, AM. (2004). Adult learners’ characteristics and their academic reading strategies: a case study. Unpublished Doctoral Thesis. Bangi, Malaysia: Universiti Kebangsaan Malaysia.

[19] Kamarul, FH., Tan, FB., and Rashid, A (2015). Adult learners’ intention to adopt mobile learning: A motivational perspective. British Journal of Educational Technology, Vol 46 No 2 2015.

[20] Henry Hermans, Marco Kalz, Rob Koper, (2013) "Toward a learner-centered system for adult learning", Campus-Wide Information Systems, Vol. 31 Issue: 1, pp.2-13, https://doi.org/10.1108/CWIS-07-2013-0029

[21] Liu, M., Geurtz, R., Karam, A., Navarrete, C. and Scordino, R. (2013), Research on Mobile Learning in Adult Education. In W. Kinuthia & S. Marshall (Eds.) On the Move: Mobile Learning for Development, Charlotte, NC: Information Age Publishing.