Determine Factors Influencing Mobile Learning Acceptance in Higher Education Institution of Malaysia: Online Based Learning

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Received 22 February 2017; accepted 23 March 2017

Abstract

Mobile learning (M-learning) is considered the next form of e-learning using mobile technologies to facilitate education for lecturers and learners anywhere and anytime. Engaging the M-learning services in the Malaysian higher education could improve the availability of education. People from many lifestyles nowadays use mobile phone for many purposes but mainly to communicate with one another. Thus, mobile technology has become a part of human life components. Then, aims to comprehend and ascertain the factors affecting the acceptance of M-learning among the students in Malaysia in the context of higher education institutions. In other words, to identify the factors that influences the acceptance of M-learning services among students, to identify the most influential variables under each factor that would predict the students' acceptance of M-learning services, and to identify the relationship between compatibility and perceived ease of use on perceived usefulness. Students' perspective is very important to investigate the use behaviour of M-learning in the higher education environment. The proposed research model for students' acceptance of m-learning services is constructed base on literature review. The data will be gathered to encompass ideas and concepts facilitating the student readiness, culture, cost of service, which influence the acceptance of M-learning in the context of Private Universities in Malaysia.

Keywords: (Online Learning, Mobile Learning, student readiness, culture, cost of service)

1. Introduction

Mobile learning or M-learning has recently evolved into a real means of education [1]. This can be evidenced through the growth and impact of groundbreaking technology and implementation of M-learning in the last decade. The growth and development of M-learning has also been in line with the evolution of online world [2] and the rapid development of mobile technology led to the creation of wireless M-learning on mobile devices [3]. Further, in line with the development of means of communication, the process of learning has also changed where it has evolved from the conventional face-to-face method to distance learning and E-learning [4].

M-learning is learning that can potentially happen anytime or anywhere through the use of portable device [5] and this method of learning creates a more personalized learning experience [6]. Additionally, through the use of mobile devices, users would be able to access learning apps in a selection of diverse contexts when interacting with their environment or other users. Not only that, M-learning is increasingly growing and moving from asynchronous to synchronous instructor-to-learner communication and content delivery, owing to the rapid advances in technology. Specifically, asynchronous learning encompasses gaining information without instructor-learner interaction, for instance, viewing an article on a laptop.

On the other hand, synchronous learning comprises of active back and forth instructor-learner interaction, such as, learner participating in online webinar by asking questions or making comments using video conferencing tool or a smartphone. M-learning is not restricted by time-and-space limitation and it has now become a method that allows both educators and students to communicate through a variety of learning tools through the use of mobile gadgets [7].

The uses of mobile devices vary and these include voice and video calls, internet and social networking sites access, sending and receiving emails, capturing and sharing pictures and videos and playing games. Thus, the handheld devices function in one of the three common qualities namely, utility, communication, or fun [8].

In terms of education, specifically the Malaysian higher education environment, the use of M-learning services will improve the availability of education and, as reported by [9] and [10], M-learning will meet the priority of Malaysian education strategy to brand its education. Furthermore, the Ministry of Education Malaysia (2010) has reported a significant increase of international students studying in Malaysia from about 18, 240 students in 2001 to 72, 000 students in 2009 and given the critical importance of mobiles and tablets in the learning context, it is crucial that the country prepares itself to embrace the newly emerging technology i.e., mobile learning. Also, according [11] the Malaysian government has just recently announced that, starting from the year 2013; students shall

no longer be prohibited from bringing their mobile phone to school.

The acceptance of M-learning by students is critical to the successful systems' implementation [12]. Therefore, it is important to understand the factors that affect student intentions to use mobile learning [13]. However, acceptance of M-learning greatly depends upon the personal attitude of students towards this medium. Students context is one of the major factors that affecting behavioural intention to use IT as defined by [14]. The adoption and acceptance of mobile device are not the same in all countries [15]. Moreover, some usage and deployment issues with the mobile devices themselves revealed by student's comments on learning systems [16]. New technological advances in educational environment might cause curiosity, frustration, and anxiety from students [17]. Students might also fear some technical difficulties, which can result in them disliking the new technological advances [18].

On the other hand, students might reject the new technological advances, because of poor "ease of use" [19]. Thus, some factors that affect users' attitudes and behavior intentions are significant for acceptance of new technological advances [20]. Specifically, student readiness, culture, cost of service affect the involvement of learner and faculty in M-learning [21]. These issues are disparity with regard to the perceptions of technology between students and the university, and insufficient knowledge and incorporation of students' acceptance when deciding on technology investment [22].

Consequently, there is a need to re-conceptualize learning for the mobile age, to recognize the essential role of mobility and communication in the process of learning, and to indicate the importance of context in establishing meaning, and the transformative effect of digital networks in supporting virtual communities that transcend barriers of quality and culture. Therefore, the effectiveness of existing models still needs to be enhanced and in this regard, researchers have indicated certain factors must be taken into consideration such as the student readiness, culture, and cost of service factor. This study is essential in bridging the gap to development of services that are more effective and more meaningful in the context of higher education environment could be achieved with the expansion and using of the technology acceptance model (TAM) and the innovation diffusion theory (IDT).

2. Related Studies

Learning can be defined based on many perspectives. Some scholars view learning as a vital process in generating reasonably permanent change and maturity resulting from a person's biological growth and development.

Weinberger (1998) termed learning as long-term change in a person's behaviour, behaviour potential or the capability gained from experience or practice, while Wedge and Kearns (2005) described learning as long-term change in a person's behaviour, behaviour potential or the capability attained from experience or practice and thus, one can perceive learning as a form of wisdom and knowledge. Additionally, learning is also viewed as a flexible procedure that is mainly subject to modifications and changes and arbitrated by technology and knowledge in supporting teacher-learner relationship (Naismith et al., 2004). It is well understood that learning has been a common subject in a vast number of studies. Nevertheless, the subject will not be overlooked in this study. Therefore based on this notion, this paper will present the theories that support M-learning (or vice-versa) in pedagogical forms.

In essence, learning encompasses continuous and permanent change in a person through passage of maturation (biology) or learning (experience) [23]. However, some scholars such as [24] believe that learning has no significant link with biological changes of individual but instead, as stressed by [25], the vital learning aspect is determined by how students gain and benefit from learning experiences of which will eventually lead to long-term changes in their character and behaviour.

Higher education systems have played a significant role in shaping the society and activating the economy. Thus, students are trained and equipped with the necessary means to survive in the working world. As stated by [26] higher education systems have two primary aims namely, 1) educating students, and 2) conducting research. However, the system of education is always subject to the influence of society, economy and business and the method of conduct and delivery of education and research. In a society at present, technology is accountable for shaping and revolutionizing the link between the systems of economy and education [27].

The needs and demands of a society shape the development adaptation of technological evolution and due to influx of technologies and information in the education field today, students have the freedom to determine and manoeuvre their own educational experience. Additionally, students can access information through a variety of learning modes and thus, learning is now more individualised, convenient and attractive, making educational realm more conforming to individualistic lifestyle. Thus, in order for educational system to remain relevant for today's style of learning, there has to be significant infusion and diffusion of technology across educational systems. With this in mind, educational system should be proactive instead of taking a dormant position.

In the context of teaching and learning, mobility, a comparatively new idea, has been considered as an approach that is multi-dimensional in nature. Meanwhile, mobile technology and academic pedagogies can potentially enhance students' experience and can spread to a bigger number of students in various ways compared to the earlier years. Although it is a technological and economic trend, mobility is inevitably entwined into individuals' lives and society and this owes to the fact that mobile devices gives users freedom and a feeling of personal ownership.

Educational systems have been evolving over the years and along the course, a number of issues have been under the scrutiny among scholars and two of the issues that have been the focal points among scholars are such as: 1) the impact of technology-assisted learning that has contributed in the alteration of model that becomes the foundation of the establishment of universities and other academic institutions (such as the establishment of distance learning model as alternative to the conventional model); and 2) how the economy and society have shifted to an information-based economy from an industrial-based society led by the electronic and digital revolution. In order to keep at pace, a form of comprehensive research focusing on the new classroom technology was created. Hence, the switch from e-learning to M-learning has turned into a critical component in the enhancement of educational system and the application of radical changes to it. This chapter will present a brief overview on the systems of education over the last era.

Past studies on E-learning and M-learning has served researcher with a wide range of ideas with regard to the classification of M-learning. For instance, some scholars put emphasis on pedagogy over technology, while others put emphasis on technology in M-learning, whether using the constantly connected (i.e. wireless network) or intermittently connected devices. On the other hand, M-learning systems will be incorporated with social factors by social behaviorists, while some scholars perceive M-learning as a social revolution going in line with the mobile revolution. Thus, based on the views above, M-learning can be described as a system that incorporates pedagogy, technology and social influences, Fig. 1.

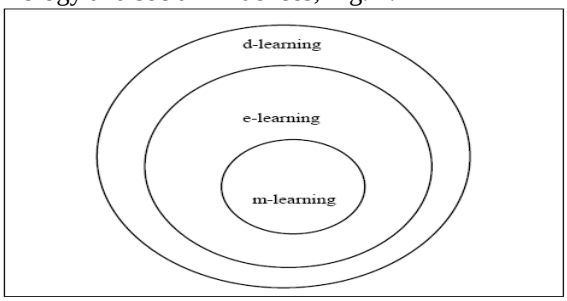

Fig. 1. Set theory perspective of learning paradigms

3. Research Model

Tables As the foundation of the problems of the study, the research framework provides illustration that all ideas, meanings and propositions are related to the research problems. This study proposed that albeit the existence of modern technological advancements, the Technology Acceptance Model (TAM) still holds itself as the primary reference tool in numerous bodies of research since it was first established by [28]. In fact, TAM still maintains its reputation as an efficient mechanism to gauge acceptance. Still, the demand for assessment techniques that fit the process of technology – namely M-learning - evaluation cannot be ignored. Additionally, a more comprehensive study is crucial so that the various environmental influences could be addressed [29]. Also, even though the usage of TAM has seen progression, there are still issues with regard to conducting a more thorough evaluation in creating the method of applying the model in the framework of M-learning as well as its method of measurement.

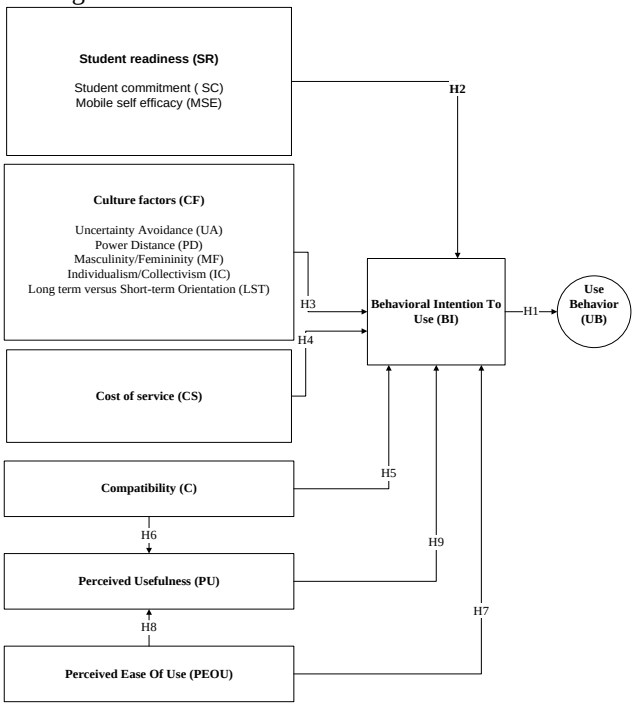

Fig. 2. Research Model

This study intends to set up a hypothetical model that could offer explanation and prediction on student acceptance and usage of M-learning services in the setting of higher education. In the formation of the model, the TAM's and IDT's belief - intention – behaviour relationship will be used. Specifically, this relationship postulates that students' actual of M-learning use is instantaneously controlled by their behavioural intention to use (BI) [30]. As such, the study proposes the following hypothesis:

H1: A student's behavioural intention to use M-learning service has effect on use behaviour of the M-learning services.

This study intends to investigate student acceptance of M-learning services by examining the student's intention to use and the use behaviour of the M-learning services. This notion is chosen because this study is interested in looking at acceptance as well as its level, and to achieve this, both data of use behaviour and the intention to use will be evaluated. Another reason for using these data is that, the data of use behaviour provides good indication of use continuation in the future, and this is important in the context of M-learning. As indicated by [31], online service utilization means continuance in service adoption and for this reason, this study employs both intention to use and behaviour usage gauge student acceptance of M-learning.

The model of this study extends TAM and IDT's concept of belief through the inclusion of three more constructs namely, student readiness, culture, cost of

service. Then, model proposes that the student readiness, culture, cost of service, compatibility, perceived usefulness and perceived ease of use shape the attitude of a student with regard to M-learning. As such, this study develops the hypotheses below:

H2: A student's readiness of M-learning service has a direct effect on behavioural intention to use the M-learning service.

H3: A student's culture of M-learning service has a direct effect on behavioural intention to use the M-learning service.

H4: The cost of service of M-learning service has a direct effect on behavioural intention to use the M-learning service.

H5: The compatibility has a direct effect on perceived usefulness of the M-learning service.

H6. The compatibility has a direct effect on behavioural intention to use the M-learning service.

H7: A student's perceived Ease of Use of M-learning service has a direct effect on behavioural intention to use the M-learning service.

H8: A student's perceived ease of use of M-learning service has a direct effect on perceived usefulness of the M-learning service (PEOU → PU).

H9: A student's perceived usefulness of M-learning service has a direct effect on behavioural intention to use the M-learning service (PU → BI).

All hypotheses are interrelated and they are the building blocks of the model proposed by this study. The model proposed by the study is called Mobile Learning Acceptance Model and it is illustrated in Fig. 2.

4. Population And Sampling Method

Authors in [32] are indicated that research population generally entails large collection of individuals or objects being the primary focus of a scientific query. Additionally, it is important to note that research is conducted to benefit the population itself. Testing every individual in the population could generate accurate results however, the size of the population could be too large that testing each individual would be costly and time consuming. Therefore, as indicated by [33], relying on sample techniques would be more practical. Here, the size of the sample would be determined and it depends on the factors such as the degree of accuracy required, the number of variables present in the study and the statistical tools used.

5. Sampling Frame

This study has selected all undergraduate and postgraduate students from six deferent universities in Malaysia enrolled in the 2017/2018 academic year as the target population. Specially, six universities are selected which are the Al-Madinah International University (MEDIU), Open University Malaysia (OUM), UNITAR International University , Wawasan Open University , International Centre For Education In Islamic Finance (INCIEF) and GlobalNxt University The details are presented in Table 1.

Table. 1
Distribution of the two Islamic Universities in Malaysia

University	City
Al-Madinah International University (MEDIU)	Selangor
Open University Malaysia (OUM)	Kuala Lumpur
UNITAR International University	Kuala Lumpur
Wawasan Open University	Penang
International Centre For Education In Islamic Finance (INCIEF)	Kuala Lumpur
GlobalNxt University	Kuala Lumpur

As members of the population are homogenous, this study applied the cluster with Probabilities Proportional to Size (PPS). Six Private universities have been selected in the study and the universities are the cluster. The selection of universities is the first step of sample selection and the number of undergraduate and postgraduate students from each selected university is shown in Table. 2.

Table. 2
Number of Students from each University Sources: (Malaysia Educational Statistics, 2014)

University	Population of Students
Al-Madinah International University (MEDIU)	2648
Open University Malaysia (OUM)	79,000
UNITAR International University	9,000
Wawasan Open University	19,000
International Centre For Education In Islamic Finance (INCIEF)	2000
GlobalNxt University	9000
Total	**120.648**

Secondly, proportionate random sampling was used to determine the number of students that formed the sample scope for the current study (Table 3.5). The number of students from the l-Madinah International University (MEDIU) the number with about 2.20 % , Open University

Malaysia (OUM) 65.50 %, UNITAR International University 7.45 %, Wawasan Open University 15.75% , International Centre For Education In Islamic Finance (INCIEF) 1.65% and GlobalNxt University 7.45%.

Table 3.
Proportion of Universities Students Sample with the Corresponding Percentage

University	Population of Students	% of Sampling
Al-Madinah International University (MEDIU)	2,648	2.20
Open University Malaysia (OUM)	79,000	65.50
UNITAR International University	9,000	7.45
Wawasan Open University	19,000	15.75
International Centre For Education In Islamic Finance (INCIEF)	2,000	1.65
GlobalNxt University	9,000	7.45
Total	**120.648**	**100%**

6. Sample Size

Proportion Sampling entails a process of deciding on the participants for the purpose of a study by way that they exemplify the whole population that they belong to [34]. As indicated by [35], determining a sufficient sample size of which will represent appropriate quantity of the whole population is crucial, and a population of more than or equal to 120,648 would require a sample of at least 384 [36]. Thus, based on the aforementioned, it is appropriate to select a sample of at least 384 students based on the size of the target population of the research. In addition, this study employs the proportionate random sampling in order to determine the number of students who made up the study's sample scope, as shown in Table 3.6.

The systematic sampling design involves drawing every nth element in the population starting with randomly chosen element between 1 and n. In this study, the researcher chose a random sample by which 384 respondents were systematically identified from the six universities in Malaysia as represented in Table 4. The list of students from each university was used to ensure randomness.

Table 4.
The Sample Distribution on each University based on its Percentage from entire Population

University	Percentage from Target Population	Population of Students	Allocated Sample	Systematic Random Sampling
Al-Madinah International University (MEDIU)	2.20	2,648	9	0
Open University Malaysia (OUM)	65.50	79,000	251	0
UNITAR International University	7.45	9,000	28	0
Wawasan Open University	15.75	19,000	61	0
International Centre For Education In Islamic Finance (INCIEF)	1.65	2,000	7	0
GlobalNxt University	7.45	9,000	28	0
Total	**100%**	**120.648**	**384**	**0**

7. Analysis Techniques

T-test is a measure used to ascertain if the mean scores between the two sets of variables indicates difference that is statistically significant with regard to their level of acceptance pertaining to the implementation of m-learning. In this study, the first assumption that was investigated is the homogeneity of variance, and this is done by applying the Levene's test to ascertain variance's equality. Then, if there is violation on the assumptions of equal variances, the t-value reported for equal variances not assumed is chosen. Then, in order to ascertain if any differences exist in the level of acceptance of m-learning among demographic variables with more than two categories, one way analysis of variance (ANOVA) is applied.

It should be noted that, since ANOVA test operates on the premise that all variances are equal, researcher performed the Levene's test for homogeneity of variance prior to performing the ANOVA tests to certify that there is no violation on the assumptions of homogeneity of variance. In addition to that, one way ANOVA is an appropriate tool to test the same hypothesis when comparison is made between two or more groups. Specifically, the hypotheses for the mean comparison are:
H0: The population means for all the groups are the same.
HA: The population means for at least two groups are different. Table 4 illustrates the primary data analysis methods that are employed in this study.

Table 4.
The data analysis techniques used in the research

Research Questions	Analysis Techniques

1. What are the factors that could influence the acceptance of m-learning among the students?	Pearson product-moment Correlation & Multiple regression analysis
2. Which variables from each external factor have the most influence on the acceptance of m-learning among the students?	Stepwise regression analysis
3. What is the relationship between compatibility and perceived ease of use on perceived usefulness	Pearson product-moment Correlation & Multiple regression analysis

This topic of research design and methodology are highlighted in this chapter. In addition to that, the chapter discusses the subject of pilot study as a procedure to refine the research instrument based on reliability analysis results, together with content validity of the construct. Finally, the chapter outlines the description of data collection procedure as well as the data analysis techniques applied in this study.

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