Students Acceptance of Mobile Learning for Higher Education in Saudi Arabia

Ayman Bassam Nassuora

Prince Sultan College for Tourism & Business, Saudi Arabia

Email: ayman.nassoura@psc.edu.sa

Abstract: Mobile learning is the next step in the development of distance learning. Widespread access to mobile devices and the opportunity to learn regardless of time and place make the mobile learning an important tool for lifelong learning. The research objectives are to examine the possibility of acceptance in mobile learning (m-Learning) and study main factors that affect using m- Learning that focus on higher education students in Saudi Arabia. The researcher used a quantitative approach survey of 80 students. The modified acceptance framework that based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model is adopted to determine the factors that influence the students' intention to use m-Learning. The results from statistical analysis show that the acceptance level of students on m-Learning is in the high level.

Keywords: E-learning, Mobile Learning, Model Development, Research Framework

Introduction

E-learning (E-Learning) is generally defined as learning through electronic devices such as desktop / laptop computers, smart phones, CD / DVD players, etc. ...), which first appeared in the 80's as a competitor to traditional face-to-face (Abuhamdeh, 2010). The development of e-Learning in education continues to grow steadily (Jairak et al., 2009). In developing countries, such as Saudi Arabia, the most important tools of learning at anytime, anywhere concept still focused on a personal computer or PC (Alshumaimeri & Alhassan, 2010; Al-fahad, 2009. Chanchary & Islam, 2011). Due to physical limitations of computer, students cannot access learning materials in a place or a location. In this case, mobile device is becoming popular among teenagers which can be fulfilled in the ubiquitous idea of learning (Habboush et al., 2011). Normally, we call e-Learning with mobile device as mobile learning or m-Learning in short form. In the 90s, a new form of learning was revealed, namely, the mobile learning (M-Learning) (Wains & Mahmood, 2008).

In recently, many researchers have focused on m-Learning and its environment, such as users' acceptance in m Learning (Phuangthong & Malisawan, 2005; Liu, 2009), setting the environment for m-Learning (Chao & Chen, 2009; Brown et al., 2006; Liu, 2008), and the application of m-Learning in developed countries (Paul, 2008). The

adoption of mobile device is not the same in all countries. Therefore, the researchers should investigate this case in a particular country. In Saudi Arabia, m-Learning is not a new word for Saudi Arabia academics, but it is during the initial phase of implementation. Many universities in Saudi Arabia are in the practice of using technology for distance learning. Some universities have already adopted the short message service (SMS) for teaching and learning (Altameem, 2011). Administrators of university should be carefully considered for the high budget in m-Learning. The factors that influence using m-Learning are also another important consideration when deciding to invest or not in m-Learning.

The main purpose of this research was to study students' acceptance of m-Learning for higher education in Saudi Arabia. The rest of this paper was structured as follows. Firstly, this study described literature review about theory and model that could be explained and predicted an acceptance in new technology. Secondly, it described research methods, hypotheses and instrument measurement reliability. Thirdly, it described the results and conclusion shown in the final section. In addition, the researcher hoped that this study will lead to better understanding the acceptance on m-Learning in Saudi Arabia students' context.

M-Learning in Higher Education

M-learning refers to using of mobile and handheld IT devices, such as Personal Digital Assistants (PDAs), mobile telephones, laptops and tablet PC technologies, in teaching and learning (Alsaadat, 2009). As computer and Internet become essential tools for education; technology become more mobile, affordable, effective and easy to use. This offers many opportunities to widen participation and access to ICT, particularly the Internet (InfoDev, 2010). Mobile devices such as phones and PDAs are much more affordable than desktop computers, and therefore represent a less expensive access to the Internet (even if the cost of the connection may be higher) (InfoDev, 2010). The introduction of the Tablet PC can now access mobile Internet with much functionality than desktop computers. Quality Improvement Agency (2008) mentioned out that most mobile devices are useful in the field of education. Here are some of the main advantages:

• Learners can interact with each other and with the practitioner instead of hiding behind large monitors.
• It's much easier to accommodate several mobile devices in a classroom than several desktop computers.
• PDAs or tablets holding notes and e-books are lighter and less bulky than bags full of files, papers and textbooks, or even laptops.
• Handwriting with the stylus pen is more intuitive than using keyboard and mouse.
• It's possible to share assignments and work collaboratively; learners and practitioners can e-mail, cut, copy and paste text, pass the device around a group, or beam the work to each other using the infrared function of a PDA or a wireless network such as Bluetooth.
• Mobile devices can be used anywhere, anytime, including at home, on the train, in hotels - this is invaluable for work-based training.

• These devices engage learners - young people who may have lost interest in education - like mobile phones, gadgets and games devices such as Nintendo DS or Playstation Portable.
• This technology may contribute to combating the digital divide, as this equipment (for example PDAs) is generally cheaper than desktop computers.

Furthermore, findings from studies conducted by Whilst Kennedy et al. (2008a) and Kennedy et al. (2008b), mobile devices allowed users to conduct 9 activities in higher education as the following: a) to send pictures or movies to colleagues, b) to use mobile phone as MP3 player, c) to access information or services on the web, d) to make video calls, e) to take digital photos or movies, f) to send or receive email, g) to use mobile phone as a personal organizer (e.g. diary, address book), h)to send or receive SMS to colleagues, and i) to call the colleagues or others. M-learning provides an opportunity for the new generation of people with better communication and activities without taking into account the place and time. The benefits of m-learning have been broadly discussed in general. The main purpose of this research was to study on student acceptance of m-Learning for higher education in Saudi Arabia.

Model Development

The Unified Theory of Acceptance and Use of Technology (UTAUT) model is one of the most widely used in the field of information and communication technology acceptance modeling which was developed by Venkatesh et al (2003). UTAUT could explain 70% of technology acceptance behavior (Masrom, Hussein, 2008). UTAUT consists of four key concepts that are, Performance Expectancy (perceived usefulness), effort expectancy (perceived ease of use), social factors and facilitating conditions that have a direct influence on intention to use it (Venkatesh et al., 2003). The variables of gender, age, experience and voluntariness of use moderate the key relationships in the model (Venkatesh et al. 2003).This model is shown in Fig. 1.

UTAUT was formulated based on conceptual and empirical similarities across 8 important competing technology acceptance models: Technology Acceptance Model (TAM) (Davis, 1989); Innovation Diffusion Theory (IDT) (Rogers, 1995); Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975); Motivation Model (MM) (Davis et al.,1992); Theory of Planned Behavior (TPB) (Ajzen, 1991); Combined TAM and TPB (Taylor & Todd, 1995); Model of PC Utilization (MPCU) (Thompson et al., 1991); and Social Cognitive Theory (SCT) (Bandura, 1986).

Venkatesh et al. (2003) defined these factors as follows: performance expectancy, which is "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p. 447); effort expectancy, which is "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450); social influence, which is "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p. 451); facilitating conditions, which is "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of

the system" (Venkatesh et al., 2003, p. 453); behavioural intention, which is "the person‟s subjective probability that he or she will perform the behavior in question" (Venkatesh et al., 2003, p. 288).
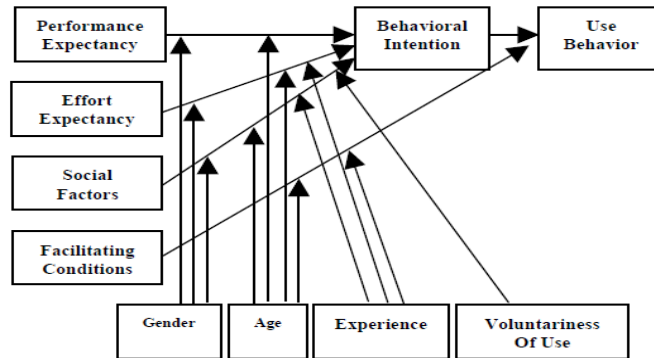

Fig. 1 UTAUT model. Venkatesh et al. (2003)

Research Framework and Hypotheses

After UTAUT model was considered; the researcher selected and adopted UTAUT in this research. This preliminary research based on UTAUT model, used five main factors that gave immediate effect to the intention to use in m- Learning and cut the mediator variables such as gender, age, experience, and voluntariness of use. The condensed model could cover the explanation of m-Learning user in this context. The research framework is shown in Fig. 2.
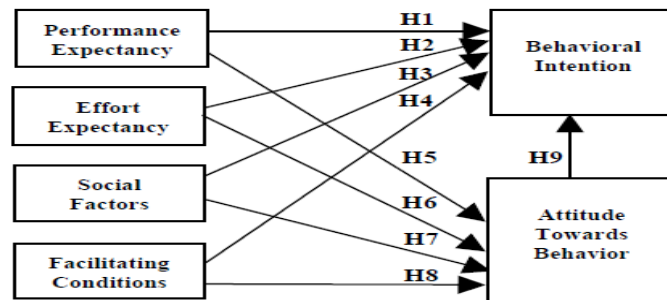

Fig. 2 Research Framework

Research Hypotheses

H1: Performance expectancy will have a positive influence on attitude towards behavior.
H2: Effort expectancy will have a positive influence on attitude towards behavior.
H3: Social factors will have a positive influence on attitude towards behavior.
H4: Facilitating conditions will have a positive influence on attitude towards behavior.
H5: Performance expectancy will have a positive influence on behavior intention to use.
H6: Effort expectancy will have a positive influence on behavior intention to use.
H7: Social factors will have a positive influence on behavior intention to use.
H8: Facilitating conditions will have a positive influence on behavior intention to use.
H9: Attitude towards behavior will have a positive influence on behavior intention to use.

Materials and Methods

In this study, questionnaires were distributed to the students at Al-Faisal University. Al-Faisal university is a private Institution of Higher Education located in Saudi Arabia. 100 questionnaires were distributed to students at Al-Faisal University. The sampling was based on convenience and 80 participants successfully answered with response rate of 80 %. The analysis of the survey results is presented based on a valid response of 80 students of Al-Faisal University. Data collection for this study was undertaken during the month of Oct. 2011. In gathering information pertaining to the study, a questionnaire was used as the main instrument for data collection in this study.

Data Analysis and Research Results

Respondent's Profile and Background Information:

Based on the demographics and other personal background information obtained, out of 80 respondents, 61.2 % were males. 38.8.4% of the respondents were 18-20 years old and 37.5 % were 21-23 years old. Overall students used mobile devices at 100 % and over 47.5% of students indicated that they use Blackberry and over 86.2 have previous experience with using internet via mobile. However, 82.5 %of students had no familiar with m-Learning. Table 1 below gives the respondents' demographic profile.

Analysis Validity and Reliability:

The internal consistency reliability and construct validity using SPSS was assessed by computing the Principal Axis Factoring with Varimax rotations and Cronbach's alpha coefficients range from 0.71 to 0.93 that is shown in Table2.

Hypothesis Testing:

Pearson product-moment correlation provides numerical summary of the direction and the strength of the linear relationship between two variables" (Pallant, 2003, p.100). Pearson correlation coefficients (r) can range from -1 to 1 (Pallant, 2003). The sign out front indicates that if a positive correlation of one variable increases, it is followed by the other and vice versa. Information on the strength of relationship is provided by the size of absolute value. A perfect correlation of 1 or -1 shows that value of one variable can be perfectly determined by knowing value on the other variable (Hair et al., 2006). Besides, a correlation of 0 indicates that there is no relationship between two variables. Knowing value of one of the variables does not assist in predicting the value of the second variable. Based on results depicted in Table 3, it can be said that not all hypothesized relationships were supported. Figure 2 presents the path coefficients for hypothesized model with the supported hypothesis and Squared Multiple Correlations.

Table .1   Respondents' Demographic Profile

Respondents' Profile	Classification	Frequency	%
Gender	Female	31	38.8
	Male	49	61.2
Age	18-20	31	38.8
	21-23	30	37.5
	Above 23	19	23.8
Use Mobile Device	Yes	80	100
	No	0	0
Type of Portable	PDA phone	18	22.5
	Blackberry	38	47.5
	I-Phone	15	18.8
	Smart Phone	8	10
	Net book	1	1.3
Using Internet Connection Via Mobile	Yes	69	86.2
	No	11	13.8
I know m-Learning	Yes	14	17.5
	No	66	82.5

Table .2 Exploratory Factor Loadings & Reliability Test (α)

	Component						Alpha Value
	1	2	3	4	5	6	
Performance Expectancy 1	.691						
Performance Expectancy 2	.584						.91
Performance Expectancy 3	.657						
Effort Expectancy 1		.681					
Effort Expectancy 2		.625					.87
Effort Expectancy 3		.527					
Social Factors 1			.695				
Social Factors 2			.712				.85
Social Factors 3			.814				
Facilitating Conditions 1				.655			
Facilitating Conditions 2				.642			.71
Facilitating Conditions 3				.711			
Attitude towards Behavior 1					.584		
							.81
Attitude towards Behavior 2					.517		
Attitude towards Behavior 3					.746		
Behavioral Intention to use 1						.655	
Behavioral Intention to use 2						.734	.93
Behavioral Intention to use 3						.541	
Cumulative Variance Explained (%) 56.121							
Extraction Method: Principal Axis Factoring							
Rotation Method: Varimax with Kaiser Normalization							
Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.762							

Table .3 Hypotheses Summary

Hypothesis	Supported	Correlation	Reason
Performance Expectancy → Attitude	Not		
Effort Expectancy → Attitude	Not		
Social Factors → Attitude	Yes	.131 (**)	Positive
Facilitating Conditions → Attitude	Yes	.210 (**)	Positive
Performance Expectancy → intention to use	Yes	.112 (**)	Positive
Effort Expectancy → intention to use	Yes	.279 (**)	Positive
Social Factors → intention to use	Not		
Facilitating Conditions → intention to use	Not		
Attitude → intention to use	Yes	.215 (**)	Positive
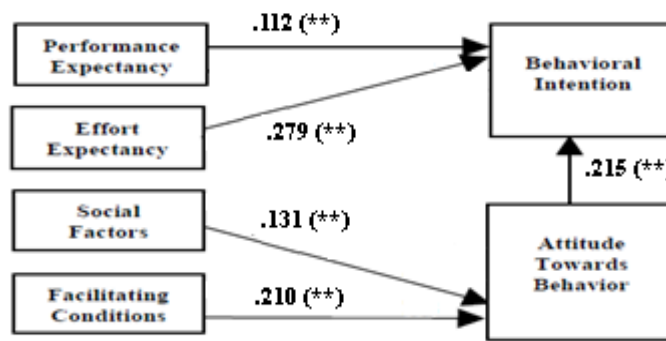
Fig.3 Research Model with Correlation Coefficients (**) and Squared Multiple Correlations(R^2)

Conclusion

The comprehensive study of every aspect about m-learning was still necessary because the m-learning in Saudi Arabia was in the early stage. We could use the results from this preliminary study for supporting research or developing m-Learning technology for students in the future. The objective of this research was to study the acceptance of mobile learning (m-Learning) by focusing on higher education students in Saudi Arabia and also examined factors that had a positive relationship with behavioral intention to use m-Learning based on UTAUT model. Despite the fact that more than half of the students in this study were not familiar with m-Learning, they had a good perception with m-learning and the results showed that the Effort Expectancy and Facilitating Conditions had high level of acceptance.

The survey results confirmed five hypotheses. The results showed that a positive attitude leads to the behavioral intention to use m-Learning. Therefore, the university administration should focus on the design m-Learning system that appropriate with student's perception. Good perception and university policy supporting were two major factors that lead to success m-Learning system.

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