UNIVERSITI PUTRA MALAYSIA

FACTORS PREDICTING MOBILE LEARNING UTILIZATION AMONG UNDERGRADUATES IN A PUBLIC UNIVERSITY, OMAN

SHAIMA' MOHAMMAD ABDALLAH ALTABIB

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By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirement for the Degree of Doctor of Philosophy

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DEDICATION

This doctoral study is dedicated to my late father “Mohammed Abdllah Al-Tabib” may he be rest in peace and be free from all suffering and harm, for passing me the strength, encouragement and love that carried me through my life. To my mum “Andaleeb” who always called me the “professional one”, you gave me the strength and challenge that made me. To all my brothers, sisters and sons thank you for your encouragement and continuous support. I can always count on you to have.

“Always happy life for whom it may concern”

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

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By

May 2017

Chairman : Shaffe Mohd Daud, PhD
Faculty : Educational Studies

Recently, the use of mobile learning has become widespread. Mobile learning refers to the use of mobile or handheld devices such as mobile phones, laptops, smart phones, and tablets in order to support learning at any place and at any time in teaching and learning. Despite the advantages of using mobile learning for learning purposes in enhancing the quality of learning, it is not fully used in higher education in Oman. The review of previous studies shows that despite much research on mobile learning, only a few of the studies have investigated students' utilization level. Hence, the purpose of this study was to identify whether the predictive factors significantly influenced the utilization of mobile learning. Moreover, in determining the level of the utilization of mobile learning, the study also sought to investigate the role of behavioral intention as a mediator as well as gender and field of study as moderators, and finally, to develop a model for the utilization of mobile learning. This study not only tested the Unified Theory of Acceptance and Use of Technology (UTAUT) itself, but also combined some factors from Mobile Learning Acceptance Model (MLAM) and Liew's et al. Model which are both specific models for mobile learning.

This study was based on a quantitative descriptive design with a sample size of 468 undergraduate students in the third-fourth years at Sultan Qaboos University (SQU). The sample was selected based on the proportional stratified and cluster sampling technique. The main instrument used was a questionnaire which was adapted from previous studies and whose content validity was checked by a panel of experts. A pilot study was conducted on 40 students to assist the reliability of the instrument which ranged in value from 0.82 to 0.94 on Cronbach's alpha.

The data were analyzed descriptively using IBM SPSS statistics program and inferentially using the Analysis of Moment Structures (AMOS) program. The descriptive findings indicated that the utilization of mobile learning level was high. The perceived performance expectancy, effort expectancy, behavioral intention, facilitating conditions, and self-management factors level were found to be high, whereas social influence was at a moderate level. Among the 21 hypotheses tested, 11 were supported and 10 were not. The most salient factor influencing the utilization of mobile learning was performance expectancy (β=.27, P=.000), followed by self-management (β=.26, P=.000), behavioral intention (β=.25, P=.000) and facilitating conditions (β=.22, P=.000). Further, the influence of effort expectancy (β=.26, P=.001) and social influence (β=.36, P=.001) were found to be fully mediated by behavioral intention. Gender was a moderator and influenced effort expectancy and self-management significantly, while field of study also significantly moderated the influence of performance expectancy, facilitating conditions and self-management towards the utilization of mobile learning. The results attained from the analyses also produced a model that predicts the utilization of mobile learning among the undergraduates and which explained 50% of perceived the utilization of mobile learning and 26% of behavioral intention towards the utilization of mobile learning. Several implications were also drawn from the findings of this study. The proposed model is a definitive model that synthesizes what is known, and is likely to be a useful model that provides knowledge to guide future research in related fields.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

FAKTOR MERAMAL PENGGUNAAN PEMBELAJARAN MOBILE KALANGAN MAHASISWA DI UNIVERSITI AWAM, OMAN

Oleh

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Sejak kebelakangan ini, penggunaan pembelajaran mobile didapati tersebar luas. Pembelajaran mobile merujuk kepada penggunaan alat-alat mudah alih atau peranti pegang tangan seperti telefon mobile, computer riba, telefon pintar, dan tablet untuk menyokong pembelajaran di mana-mana dan bila-bila masa sahaja dalam mengendalikan pengajaran dan pembelajaran. Namun, disebalik kelebihan dalam penggunaan pembelajaran mobile untuk tujuan memantapkan kualiti pembelajaran, ianya tidak dimanfaatkan sepenuhya dalam bidang pengajian tinggi di negara Oman. Kajian penyelidikan lepas menunujukkan bahawa walaupun terdapat banyak penyelidikan yang menyokong pembelajaran mobile, hanya beberapa kajian sahaja yang meneliti tahap penggunaan dalam kalangan pelajar. Oleh yang demikian, kajian ini bertujuan untuk mengenal pasti samada faktor peramal secara signifikan mempengaruhi penggunaan pembelajaran mobile. Tambahan, dalam menentukan tahap penggunaan pembelajaran mobile, kajian ini juga berusaha untuk menyelidik peranan niat tingkah laku sebagai pengantara, serta jantina dan bidang pengajian sebagai moderator, dan selanjutnya membina suatu model untuk penggunaan pembelajaran mobile. Kajian ini bukan sahaja menguji Teori Bersatu Penerimaan dan Penggunaan Teknologi (TBPPT) tetapi juga menyatukan beberapa faktor daripada Model Penerimaan Pembelajaran Mobile dan Model Liew yang merupakan model khusus untuk pembelajaran mobile.

Kajian ini berdasarkan kerangka deskriptif kuantitatif dengan saiz sampel sebanyak 468 pelajar siswazah tahun ketiga-keempat di Sultan Qaboos University (SQU). Sampel telah dipilih berdasarkan teknik berstrata berkadar dan persampelan kelompok. Instrumen utama yang telah digunakan adalah soal selidik yang telah diubahsuai daripada kajian lepas yang keesahan

kandungannya telah disemak oleh suatu panel pakar. Kajian rintis telah dikendalikan keatas 40 orang pelajar untuk membantu mempertingkatkan kebolehpercayaan instrument tersebut di antara nilai 0.82 dan 0.94 pada Cronbach's alpha.

Data kajian telah dianalisis secara deskriptif dengan menggunakan program statistik IBM SPSS serta secara inferensi dengan program Analysis of Moment Structures (AMOS). Dapatan deskriptif menunjukkan bahawa tahap penggunaan pembelajaran mobile tinggi dalam kalangan pelajar. Jangkaan prestasi persepsi, jangkaan usaha, niat tingkah laku, keadaan yang memudahkan, serta tahap faktor pengurusan kendiri didapati tinggi, sementara pengaruh sosial pada tahap sederhana. Di antara 21 hipotesis yang telah diuji, 11 telah disokong dan 10 hipotesis tidak disokong. Faktor yang paling penting yang mempengaruhi penggunaan pembelajaran mobile adalah jangkaan prestasi (β=.27, p=.000), diikuti pengurusan kendiri (β=.26, P=.000), niat tingkah laku (β=.25, P=.000) dan keadaan yang memudahkan (β=.22, P=.000). Sementara itu, pengaruh jangkaan usaha (β=.26, P=.001) dan pengaruh sosial (β=.36, P=.001) didapati telah dimediasi sepenuhnya oleh niat tingkah laku. Faktor gender berperanan sebagai moderator yang mempengaruhi jangkaan usaha dan pengurusan kendiri secara signifikan. Bidang pengajian juga secara signifikan memoderasikan jangkaan prestasi, keadaan yang memudahkan serta pengurusan kendiri ke arah penggunaan pembelajaran mobile. Keputusan yang telah diperoleh daripada analisis-analisis telah menyumbang kepada pembinaan model yang meramalkan penggunaan pembelajaran mobile dalam kalangan pelajar siswazah yang juga menjelaskan 50% daripada pengamatan penggunaan pembelajaran mobile serta 26% daripada niat tingkah laku ke arah penggunaan pembelajaran mobile. Beberapa implikasi juga telah diperoleh daripada dapatan-dapatan kajian ini. Model yang dicadangkan merupakan model definitif yang menyatupadukan apa yang diketahui di samping menjadi model yang berguna yang menyediakan maklumat untuk membimbing penyelidikan akan datang dalam bidang-bidang yang berkaitan.

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To my Co-supervisor, Prof. Dr. Rosnaini and Prof. Dr. Ahmed Fawzi, for all their support and guidance throughout the writing of this thesis, thanks for dedicating their time for advising me.

I certify that a Thesis Examination Committee has met on 3 May 2017 to conduct the final examination of Shaima' Mohammad Abdallah Altabib on her thesis entitled "Factors Predicting Mobile Learning Utilization among Undergraduates in a Public University, Oman" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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Date:

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I hereby confirm that:

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Declaration by Members of Supervisory Committee

This is to confirm that:

- The research conducted and the writing of this thesis was under our supervision;
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Name of Member of Supervisory Committee: Associate Professor Dr. Ahmad Fauzi bin Mohd Ayub

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LIST OF ABBRIVIATIONS

AGFI	Adjusted Goodness of Fit Index
AIC	Akaike Information Correction
AMOS	Analysis of Moment Structure
AVE	Average Variance Extracted
BI	Behavioral Intention
BO	Basic Operation
CBT	Computer Based Training
CC	Communication and Collaboration
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
Chi-sq/df	Relative Chi- square
CI	Creativity and Innovation
CMIN	Minimum Value of the Discrepancy
CMIN/DF	Minimum Value of the Discrepancy Divided by its Degrees of Freedom
CTPS	Critical Thinking and Problem Solving
DC	Digital Citizenship
DF/*df*	Degree of Freedom
DV	Dependent Variable
EE	Effort Expectancy
EFA	Exploratory Factor Analysis
FC	Facilitating Conditions
FoS	Field of Study
GFI	Goodness of Fit Index
IFI	Incremental Fit Index
ISTE	International Society for Technology in Education
IV	Independent Variable
MLAM	Mobile Learning Acceptance Model
MLU	The utilization of mobile learning
NETS.s	National Educational Technology Standards for Students

NFI	Normed Fit Index
P	Level of Significance
PDA	Personal Digital Assistant
PE	Performance Expectancy
PNFI	Parsimony Normal Fit Index
R^2	Squared Multiple Correlation
RIF	Research and Information Fluency
RMSEA	Root Mean Square Error of Approximation
S.E	Standard Error of Regression Wight
SEM	Structural Equation Modeling
SI	Social Influence
SM	Self-Management
SPSS	IBM SPSS Statistical Package for the Social Sciences
SQU	Sultan Qaboos University

CHAPTER 1

INTRODUCTION

1.1 Background

During the last decade, the rapid development of telecommunication technology and the use of information technology tools have gained momentum (Saraubon, Nilsook & Wannapiroon, 2016) and popularity in the field of learning system which increased the opportunities of applying mobile devices in learning environment (Hassan, Alhosban & Hourani, 2016). The preferences towards mobile learning (m-learning) over e-learning is started to take hold in the academic segments and in the near future the primary delivery platform for learning content will be mobile learning (Adkins, 2013). The use of mobile devices in education is shifting the use of e-learning to m-learning despite that e-learning system offers new methods for distance education based on computer and networks technologies. Meanwhile, m-learning can extend e-learning through mobile devices (Al-Aish, Love & Hunaiti, 2012; Al-Matari, Alahad & Balaid, 2014).

The technology usage in higher education provides a variety of opportunities that help students to develop effective collaborative projects (Zaranis, Kologiannakis & Papadakis, 2013; Alzahrani, Alalwan & Sarrab, 2014). Nevertheless, an important point that need to be taken into consideration is that the growth of technology has reached a stage where it can produce new concepts and terms in the domain of education, for example m-learning, ubiquitous learning and web-based learning that did not exist before (Thomas, Singh & Gaffar, 2013; Kim & Yang, 2015). This requires educators and curriculum planners to implement new technologies with curriculum more than before.

The term m-learning refers to the use of mobile and handheld IT devices such as personal digital assistants (PDAs), mobile phones, laptops, smart phones and tablets in order to support learning for any place and at any time teaching and learning (Nassuora, 2013; Oyelere, Suhonen & Sutinen, 2016). According to Baharom and Hussain (2013), the features in m-learning have the ability to support the permanency of data and information, give immediate response and offer exceptional accessibility to students allowing them to benefit in a real-world learning environment.

Nowadays, the development of m-learning in students' progress is considered significant and its role has been recognized crucial as a learning tool (Drigas &

Kokkalia, 2016). However, many researchers have suggested that, m-learning supports and improves the teaching and learning (Sung, Chang & liu, 2016) and it can be applied to a wide range of students without age boundaries (Baharom & Hussain, 2013) Another view shows that, the transfer to m-learning applications may not satisfy students or users in terms of usability or continuous learning (Khechine, Lakhal, Pascot & Bytha, 2014). So, most of the emphasis should be placed on how to facilitate and smoothen students' utilization of m-learning system (Adedoja, Adelore, Egbokhare & Oluleye, 2013; Fakeeh, 2016). This understanding can lead to develop students' expectations, demands, and learning style more than before (Gao, Gutierrez, Rajan, Dreslinski, Mudge & Wu, 2015).

A report from the Telecommunication Regulatory Authority (TRA) states that, mobile penetration rate in Oman reached 190.29 % at the end of 2013 which placing Oman among the top five countries in the middle east and 90% of families in Oman owned at least one mobile device (Zafar, 2016). Additionaly, 73% of all mobile devices in use in Oman were smart phones and owned by the younger generations (Adkins, 2013). Moreover, according to Sarrab, Al-Shihi and Al-Manthari (2015), mobile devices are believed to provide a promising, effective and flexible learning as well as change the current learning system to become more interesting, interactive and widely available.

Integrating mobile learning technology into teaching and learning is one of the most important strategies employed by the Omani Ministry of Higher Education (Al-Kanjari, Al-Kindi, Al-kindi & Kraiem, 2015), and the Ministry of Higher Education in Oman has focused on increasing the number of future technology and technically-skilled workers by strengthening the field of study based on practical and technical training (The Ministry of Higher Education, 2014). So, m-learning is the next form of e-learning using mobile technologies to facilitate education for learners and teachers anytime anywhere (Alzaza, 2012). However, higher education sector in Oman has grown and made significant development in the last decade (MOHE, 2014), and there is heavy investment to improve the education infrastructure, provide increased education opportunities with focus on women education to ensure equality and equity (Baporikar & Shah, 2013). At the same time, higher educational standards are essential for any society that seeks to achieve serious progress in its social development (Oman Academic Standard, 2010). And since, the human element which is the engine that drives the economy is the yardstick for measuring social progress; it should be nurtured and trained to ensure the future well-being and prosperity of society (Education in Oman, 2014). This is why Oman lays such importance on education, qualifications and skills (Sarrab et al., 2015).

According to Sarrab and Elgamel (2013), m-learning is a new research area and an emerging tool for Omani education system and takes digital education

to high level and quality. They added that, Oman can be one of the first few countries in the Middle East to adopt this revolutionary technology in mobile learning through portable devices. Other researchers argue that, m-learning is the base of digital learning were the effective combination and wireless network technologies, make knowledge available realizing the real sense of socialization, and lifelong learning (Fiho & Barabosa, 2013). Moreover, the objective of using mobile learning technology is to leverage the power of handheld devices such as mobile tablets, laptops, and mobile smart phones to transform teaching and learning by bringing the world into classroom and extending the classroom to the world (Hashim, Tan & Rashid, 2015), and m-learning brings knowledge and information to students and breakdown the virtual worlds of the classroom allowing students to become the co-creators of their learning environment through collaboration with their own peers and faculty (Baharom, 2013). Therefore, mobile learning has great potential in facilitating education and may also facilitate the development of communication, critical thinking, problem solving, creativity and innovation and other high-level skills among students in higher education (Sung et al., 2016).

1.1.1 Mobile Learning (m-Learning)

Mobile learning is defined as the use of portable mobile devices such as smart phones, laptops, tablets and mobile phones equipped with the internet in the learning process (Alharbi & Drew, 2014; Sarrab et al., 2015; Oyelere et al., 2016). According to Villiers and Harpur (2013), mobile learning is an alternative to traditional education because this kind of learning can be done by anyone at any time and in any location, since mobile devices are connected using the internet and the world wide spread of mobile application. Kurkovsky (2013) stated that, the learning environment may become an attractive option for many students who have increasing commitments to technology. Mobile learning is able to support a variety of learning activities (Oyelere et al., 2016) as well as give an enjoyable learning (Hassan et al., 2016).

In this study, mobile learning stands on its own because it demands unique technological and pedagogical paradigms. Akour (2010) proposed model of mobile learning that defines mobile learning as a learning approach via mobile devices for accessing the educational resources in its connected or disconnected form anytime. Iqbal and Qureshi (2012) addressed that; mobile learning can offer knowledge on variety of multimedia ways (video, SMS, Text, Pictures). Mobile learning has specific qualities of mobile devices such as ease of use, mobility, reliability and accessible applications (Herrington, Herrington & Mantei, 2009). Poong, Yamaguchi and Takada (2013) also suggested that, mobile devices provide students with the opportunity for ownership, the ability to understand without extensive training and a sense of belonging as they interact on the same level as others. So, through the contant of this study, mobile learning refers to the use of mobile devices such as smartphones, tablets and laptops for educational purposes.

1.1.2 Utilization of Mobile Learning

Using modern methods and techniques that is integrated in mobile learning assist to make learning more interesting, widely available, more interactive and flexible (Thomas, Singh, Gaffar, Thakur, Jackman, Thomas, Gajraj, Allen & Tooma, 2014). The utilization of mobile learning is beneficial to facilitate learning, enhance learning (Bohm & Constantine, 2015), and promote flexible learning (Alzaza, 2012; Bissell, 2015) increase engagement (Baharom, 2013; Amhag, 2015). With the use of smart phones and tablets students are able to flexibly customize, make decisions and show responsibility for their own learning and manage learning (Muyinda, Lubega & Lynch, 2010). Hassan et al. (2016) claimed that, using mobile learning increases engagement of students in learning setting, this is due to its portability and mobility characteristics. Also, it can enable students engaging in various collaborative group works and examinations (Amhag, 2015).

According to Kurilovas (2014), the use of mobile technology for learning purposes should focus on how much and how the technology is being used. The International Society for Technology in Education (ISTE) developed the National Education Technology Standards for Students (NETS.s) which provide the benchmark for technology usage in learning (ISTE, 2007). In NETS.s there are six categories about how new technology can be used effectively during educational activities, these categories includes basic operations, research and information fluency, communication and collaboration, digital citizenship, critical thinking and problem solving, finally creativity and innovation.

According to ISTE, basic operation category refers to the use of technology for basic and general tasks such as making call, sending electronic emails and downloading files. While, research and information fluency refers to the use of technology to collect, evaluate and seek information for research purposes. Also, communication and collaboration category refers to the use of technology to communicate, interact and work collaboratively. And, digital citizenship category is the use of technology to gather knowledge on issues related to ethical behavior. Critical thinking and problems solving refers to the use of technology to demonstrate creative thinking, develop alternative solution and critical planning. The last category is creativity and innovation which refers to the use of technology to construct knowledge, develop innovative products and create new ideas.

Mobile technology is commonly based on the use of portable devices which enable learners to learn anytime anyplace (Masrek, 2015; Thomas et al., 2014). The most popular mobile devices used are smartphones, laptops and

tablets. Using such these devices in educational fields increases the opportunities to change teaching methods and allows students to have a deeper engagement with what they are learning (Al-Kanjari et al., 2015; Sung et al., 2016). Laptops and tablets are very portable as the students can be used in the classroom, computer lap or at home with any wireless internet connections (Elyazgi, Mahrin, Rahim & Imtiaz, 2014). Also, laptops can be accessed internet and carried around much easier comparing with fixed devices (Fakeeh, 2016).

According to Saraubon et al. (2016), smart phones and tablets are becoming powerful tools in the hands for mobile learning. Meanwhile, smart phones, on the other hand, combine the versatility of a conventional mobile phone, PDAs and personal computers into one device (Marrs, 2013). This will motivate students to learn as they are able to access information, communicate and complete learning tasks as well as be entertained simultaneously. However, this usage of mobile devices can help students in collecting the content of their courses more effectively and at any time of the day by downloading many applications onto their mobile devices (Iqbal & Qureshi, 2012).

1.1.3 Omani Higher Education

The progress of Oman has achieved in its education sector is clear for all to see in this age of globalization in which the world is undergoing a knowledge revolution (Shaikh Al-Azawi & Mohd, 2011). The education sector is harnessing modern technologies in offering innovative services to the entire community (Sharma & Chandel, 2013). Higher education sector in Oman has grown and made significant development in the last decade. There is heavy investment to improve the education infrastructure, provide increased education opportunities with focus on women education to ensure equality and equity (Baporikar & Shah, 2013). Oman lays such importance on education, qualifications and skills to achieve serious progress in its social development, at the same time, concerns with the human elements since they are the engine that drive the progress (Education in Oman, 2014). According to Alshmeli (2009), the latest and Post-Basic Education Plan attach greater importance than ever before to scientific subjects, as well as mathematics and languages. He added that, it has also introduced new disciplines to keep abreast of the latest developments in information technology and the labour market's needs for professional skills.

Higher education is the primary consern for preparing the future generation and breed of the country (MOHE, 2016). In this regard, the very survival of any ration aspiring for knowledge society and strong economy depends on a high quality education system that is available to all. Oman's Academic Standards (OAS) recognizes that the higher education providers have the primary responsibility for providing high quality teaching and assessment of students

(OAS, 2010). As such, these standards provide flexibility for the higher education institutions to meet them in the manner they deem best. Oman's Academic Standards focus on students' learning outcomes, placing the students and their potential contribution to society at the heart of higher education. These outcomes are not achieved by chance, but are the result of carefully planned and executed formal programs of study (OAS, 2010). Meanwhile, it is the responsibility of each for higher education institutions to make the learning information clearly available to prospective students by reorganizing the processes around the student (Oman Book, 2014). It is clear that, developing their teaching approach such as engaging modern technology can assess students to access the requirements of their learning (Al-Zeidi, Al-Kinidi & Zuhoor, 2011).

In respect of higher educational institution, a number of private colleges and universities have been established in order to meet the higher education needs of Oman's expanding and growing population (Al-Lamki, 2006). Today, are more than 62 higher education institutions in Oman run by private and public sectors (MOHE, 2014). Higher Education Institutions are owned and governed by a variety of entities, including the Ministry of Higher Education, the Ministry of Man Power, the Ministry of Defences, the Ministry of Health, and the Ministry of Commerce and Industry, other governmental entities, and private owners (MOHE, 2014). Oman's Ministry of Higher Education administers six colleges of applied sciences, and has developed a relatively diverse system of public higher education. This diverse is made up of one public university, Sultan Qaboos University (SQU), which is the only public university. It plays a leading role in Oman's higher education and national development (Oman Book, 2014). SQU is self-administered that funded by the government and has nine colleges: Arts and Social Sciences, Commerce and Economics, Education, Law, and Nursing offer bachelor's and some master's degrees. A bachelor's degree takes about five years, as the first is spent studying English, and the second studying relevant science subjects; the last three years are dedicated to core degree units. The public university is normally visited by Omanis only. Expatriates go - as a general rule - to private universities or study abroad (MOHE, 2014).

According to Mohammad, Ibrahim and Taib (2010), most of the countries have some kinds of internet development programs in the sphere of education, because education is crucial for every country, as it is the route to scientific and technological advancement, cultural, and political development. Thus, educational institution such as colleges and universities must develop strategies for transformations in the new arena. Similarly, Oman needs a strong education to boost its development in various fields. However, meeting administrators, faculty, educators, and students' requirements is one of the main problems of the society and government. Enhancing the learning outcomes among higher education students are the main objectives of Higher

Education Ministry in Oman (Osman, 2010). In fact, the Omani Higher Education Ministry focuses on engaging technology in education field.

1.1.4 Factors Influencing the Utilization of Mobile Learning

Despite the availability of studies on mobile learning, the understanding of utilizing mobile learning in educational environment has not yet matured (Bohm & Constantine, 2015; Cruz, Boughzala, Assar, 2014; Masrek, 2015). Based on the literature, the use of mobile learning can be determined by many factors, such as perceived usefulness of using mobile learning (Akour, 2010; Yan, Minhua & Zhong, 2014), perceived of ease of use mobile learning (Jaime, 2013; Adedoja et al., 2013; Poong et al., 2013) and perceptions of important people toward mobile learning (Marrs, 2013; Thomas et al., 2014), those are factors influencing mobile learning usage in higher education institutions.

There are several factors that contribute to the utilizing mobile learning technology based on the Unified Theory of Acceptance and Use of Technology (UTAUT) which developed by Venkatesh, Morris, Davis and Davis (2003). UTAUT includes four main constructs which are direct determinants of information system usage intention and behavior namely; performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intention (Venkatesh et al., 2003). Meanwhile other factors were investigated in previous models that also influence the use of mobile learning technology such as self-management (Donaldson, 2011; Al-Matari et al, 2014) and field of study (ALzaza, 2012). This study aimed to develop a model to identify the most important factors that influence the use of mobile learning, which are performance expectancy, effort expectancy, social influence, facilitating conditions, self-management and behavioral intentions as a mediator factor, as well as gender and field of study as moderator variables.

Performance expectancy is determined one of the most prominent factor that influence the use of mobile learning and this is supported by many studies (Iqbal & Qureshi, 2012; Alaiad, Zhou & Koru, 2013; Thomas et al., 2014). They concluded that, students who perceived mobile technology as useful in completing their learning activities and capable of helping them improve their performance, will frequently use mobile learning technology.

Effort expectancy is identified as another factor influencing the use of mobile learning and refers to the students' perception of how using the system will be simple and with less effort (El-Gayar, Moran, & Hawkes, 2011; Alharbi & Drew, 2014). Nassuora (2013) and Cruz et al. (2014) showed that students would

likely to use mobile learning, if they find the mobile technology is easy to use being put into use it.

The next factor is social influence towards the use of mobile learning (Nassuora, 2013; Sung, Jeong, Jeong & Shin, 2015). Using mobile learning would be increased when the students have a high intention by their teachers or families (Iqbal & Qureshi, 2012; Masrek, 2015). According to Matha and Madarsha (2013) and Sung et al. (2015), students would likely to use their mobile devices for learning purposes, if they perceive a good view from their faculty, important people or family support.

Furthermore, facilitating conditions is another factor influencing the use of mobile learning technology (Alaiad et al., 2013; Nassuora, 2013). Facilitating conditions refre to an organizational support and technical assistance from the university those are essential in mobile learning environment (Frazier, 2013; Raman, Dan, Khalid, Hussin, Omar & Chani, 2014). Students will use a new technology if they know that they have assistants someone when they have difficulties in utilizing the new technology (Thomas et al., 2013; Attuquayefio & Addo, 2014).

Moreover, self-management of learning is an important factor influencing the use of mobile technology among higher education students (Wang et al., 2009; Huang, 2014; Masrek, 2015). Students who have the abilities of self-management to use mobile learning technology will use mobile learning technology more than those with less self-management abilities. Self-management refers to the students' ability in country and managing their own learning (Al-Matari et al., 2014).

Behavioral intention is also identified as important factor influencing the utilization of mobile learning (Frazier, 2013; Cruz et al., 2014). According to Bere and Rambe (2013) also Math and Madarsha (2013), students will use mobile learning technology continuously when they have positive intention to use it. In UTAUT, behavioral intention is identified as a mediator that means it is believed to be important in mediating the relationship between the independent variables and mobile learning usage which represented the dependent variables (Venkatesh et al., 2003).

Additionally, gender is another factor may also contribute to the utilization of mobile learning. Gender was found as a significant factor in moderating the use of new technology (Frazier, 2013; Sedek, 2014). According to Al-Aamri (2011) and Naqvi (2012), gender was found to be insignificantly affecting the student's intention in using mobile learning for education purposes. However, research

by Yakin and Gencel (2013) found that, there was not much difference in terms of mobile learning usage based on gender.

In terms of field of study, previous studies investigated the role of field of study and found that there are significant differences among the students towards using new technology based on their major study. According to Sharma and Chandel (2013), students of economic studies tend to exhibit a greater tendency to embrace mobile technology from other students of educational field. Previously, study by Alzaza (2012) showed that, the academic differences in the majors of study can be driven by cognitions related to the field of study and play a good role in using new technology.

1.2 Problem Statement

Mobile devices are commonly used among higher education students in Oman and becoming the daily culture of almost every student (Al-Zeidi et al., 2011; Al-Kanjari et al., 2015). Also, the ownership of mobile devices among students in Oman is relatively high (Adkins, 2013). Although, number of studies have conducted in Omani higher education reported that, students have started to use mobile learning outside the classroom for doing their educational work, such as look up words in bilingual dictionaries (Al-Aamri, 2011), or photograph whiteboards, power point and some important documents (Sarrab, Elgamel & Aldabbas, 2012; Hosni, 2013), most of mobile devices usage were for social interactions not for learning purposes (Aldhaheri, 2012). Meanwhile, in Oman the use of technology has investigated based on frequency and volume (Al-Musawi & Abdelraheem, 2004; Al-khanjari, Kutti, & Dorvlo, 2005), but there is still a need to examine how mobile learning is being used.

Despite the fact that, e-learning is supportive system, there are lacks in the availability of e-learning due to; it is limited to the area where a personal computer exists (Al-Kanjari, Al-Kindi, Al-Zidi & Baghdadi, 2014). This limitation was a burden on a lot of users, mainly if they live in rural areas, which is the case of the most SQU students. According to Al-Matari et al. (2014), mobile learning can support e-learning. So, investigating mobile learning can fill these gaps.

There are number of studies have been conducted in Oman on the educational use of ICT (Shaikh et al., 2011), web-based instructions (Al-Lawati, Al-Jumeily, Lunn & Laws, 2011; Osman, 2010), communication medium such as SMS (Udanor & Nwoye, 2016), image (Tagoe & Abakah, 2014) or whatsapp (Bere & Rambe, 2013). Also, recent studies have addressed the usability of mobile services for economic and administrations purposes (Naqvi, 2012). But, little

attention has been given to investigate mobile learning for learning purposes in Oman.

There are many factors that had reported in previous literature influencing mobile learning such as, the main factors of UTAUT theory namely; performance expectancy (Thomas et al., 2014), effort expectancy (Cruz et al., 2014), facilitating conditions (Handal, Nish & Petocz, 2013), social influence (Iqbal & Qureshi, 2012) and behavior intention (Serben, 2014). Hence, there are extremely limited resources about the factors that influence mobile learning in Oman by using UTAUT theory. Thus, investigating such these factors can reduce the knowledge gaps in mobile learning domain.

The influence of performance expectancy towards mobile learning examind in previous such as Raman et al. (2014) which found that, students perceived mobile learning as useful tool for accomplishing their tasks more quickly and easily. Another study by Thomas et al. (2014) perceived using mobile learning was influenced by effort expectancy and perceived easy to operate.

Additionally, several studies revealed that, if students are encouraged by their teachers or families, then they will feel that mobile learning is productive and their intention to use mobile learning technology will be enhanced (Mtebe & Raisamo, 2014; Masrek, 2015). But, some teachers do not encourage the students towards mobile learning (Hosni, 2013) when undergraduates like to use it for learning.

Moreover, lack of technical supports confuce students how to find knowledge (Attuquayefio & Addo, 2014). Handal et al. (2013) suggested that, facilitating conditions were able to influence the use of mobile learning among students in higher education. So, this study tries to highlight the role of facilitating conditions to bridge the gaps in previous models.

The effectiveness of mobile learning was influenced by personal factors such as self-management of learning (Huang, 2014). Liew, Kang, Yoo and You (2013) concluded that, students who has not enough self-managements in using mobile learning often feel afraid to use it. Even though, mobile learning usage was influenced by self-management in various studies (Wang et al., 2009; Liu, 2008), in Oman focusing on self-management towards mobile learning is limited. Therefore, it is considered that should be examined in this study.

Since the low level of behavioral intention can make students face problems in mobile learning, then consequently they will not use it effectively (Fan, Chin, Xian & Jie, 2014). Hence, behavioral intention perceived as important influence in mobile learning (Nassuora, 2013). According to El-Gayer et al. (2011) and Thomas et al. (2014), the presence of behavioral intention as a mediator was also important in assisting the causal paths between factors. So, there is still a need to highlight the mediation influence of behavioral intention in mobile learning.

Gender was identified as a moderator factor in influencing mobile learning (Venkatesh et al., 2003; Wang et al., 2009) and there are significant differences were associatedby gender issues (Alzaza, 2012; Khechine et al., 2014). However, the role of gender was not inclusive since few studies were robustly analyzed gender as a moderator variable; thus this study carried out gender in depth analysis.

In addition, the needs of educational and personal issues in using mobile learning among students from different fields make differences in their concerns of mobile learning (Khechine et al., 2014). On top of that, if students perceive no benefit of mobile learning for their study, then they will feel that it is just for wasting time (Bissell, 2015). Therefore, field of study is investigated as a moderator variable in this study.

Based on the previous discussion, it is found that, there is a need to investigate the factors that influence the use of mobile learning, also identify the usage level of mobile learning among undergraduate students at SQU in Oman in order to bridge the knowledge gaps in mobile learning domain.

1.3 Research Objectives

The main objective:

This study aims to investigate the factors that influence the utilizing of mobile learning among undergraduates' students at SQU in Oman and determine the usage level of mobile learning for specific purposes based on six categories from NETS.s.

Hence, in order to achieve this aim, the following six specific objectives were formulated.

The specific objectives:

1. To determine the level of the utilization of mobile learning, performance expectancy, effort expectancy, facilitating conditions, social influence,

behavioral intention and self-management among the undergraduates at SQU.

2. To determine the influence of performance expectancy, effort expectancy, facilitating conditions, social influence, self-management and behavioral intention towards the utilization of mobile learning among the undergraduates at SQU.

3. To examine the role of behavioral intention as a mediator for the utilization of mobile learning among the undergraduates at SQU.

4. To examine the role of gender as a moderator for the utilization of mobile learning among the undergraduates at SQU.

5. To examine the role of study field as a moderator for the utilization of mobile learning among the undergraduates at SQU.

6. To develop a model that predicts the utilisation of mobile learning among the undergraduates at SQU.

1.4 Research Questions

Seven research questions were addressed for objective one.

RQ1: What is the utilization level of mobile learning among the undergraduates?

RQ2: What is the undergraduates' level of perceived performance expectancy towards the utilization of mobile learning?

RQ3: What is the undergraduates' level of perceived effort expectancy towards the utilization of mobile learning?

RQ4: What are the conditions that the undergraduates perceive as facilitating the utilization of mobile learning?

RQ5: What is the social influence level that the undergraduates perceived as influencing the utilization of mobile learning?

RQ6: What is the undergraduates' behavioral intention level towards utilizing mobile learning?

RQ7: What is the undergraduates' self-management level of utilizing mobile learning?

1.5 Research Hypotheses

A total of 21 hypotheses were formulated based on objectives two, three, four, and five, these are:

Objective Two:

H_1: Performance expectancy has a significant influence on the utilization of mobile learning.

H_2: Effort expectancy has a significant influence on the utilization of mobile learning.

H_3: Facilitating conditions has a significant influence on the utilization of mobile learning.

H_4: Social influence has a significant influence on the utilization of mobile learning.

H_5: Self-management has a significant influence on the utilization of mobile learning.

H_6: Behavioral intention has a significant influence on the utilization of mobile learning.

Objective Three:

H_7: Behavioral intention mediates the influence of performance expectancy on the utilization of mobile learning.

H_8: Behavioral intention mediates the influence of effort expectancy on the utilization of mobile learning.

H_9: Behavioral intention mediates the influence of facilitating conditions on the utilization of mobile learning.

H_{10}: Behavioral intention mediates the influence of social influence on the utilization of mobile learning.

H_{11}: Behavioral intention mediates the influence of self-management on the utilization of mobile learning.

Objective Four:

H_{12}: Gender moderates the influence of performance expectancy on utilization of mobile learning.

H_{13}: Gender moderates the influence of effort expectancy on utilization of mobile learning.

H_{14}: Gender moderates the influence of facilitating conditions on utilization of mobile learning.

H_{15}: Gender moderates the influence of social influence on utilization of mobile learning.

H_{16}: Gender moderates the influence of self-management on utilization of mobile learning.

Objective Five:

H_{17}: Field of study moderates the influence of performance expectancy on utilization of mobile learning.

H_{18}: Field of study moderates the influence of effort expectancy on utilization of mobile learning.

H_{19}: Field of study moderates the influence of facilitating conditions on utilization of mobile learning.

H_{20}: Field of study moderates the influence of social influence on utilization of mobile learning.

H_{21}: Field of study moderates the influence of self-management on utilization of mobile learning.

1.6 Significance of the Research

One of the most important purposes of higher education is supporting the process of teaching and learning with updated information through the use latest technology. These days, most of higher education institutions are equipped with mobile learning to support teaching and learning process (Sarrab et al., 2015). However, as this study focus on the utilization of mobile learning level and factors influencing its usage, the findings provide functional information for administration on how to encourage their students to use the latest technology frequently and gain self-management in their current situations as a preparation for enhance work environment.

Also, investigating the factors that influence the utilization of mobile learning among higher education students is important to build and increase the quality of learning activates when useing mobile learning. Doing so, this type of study will assist researcher to develop a scientific framework for understanding the role of variables on the use of mobile learning and provide an insight view of the utilization level among undergraduates in Oman.

Results of this study will help to ensure the implementation of mobile learning in academic settings according to the students' perceptions and the development of mobile services in universities. A part from that, the results will serve as a guideline for higher educational institutions to develop their services and support and aid them in a competitive environment that encourage students to proceed in their education.

Also, this study can help the higher academic system to eliminate the reasons of failure that refers to ignoring students' needs. The finding will contribute significantly in helping students to be engaged in the use of educational technology through mobile devices which will support their learning anytime and anywhere.

Moreover, the findings of this study will enrich the theoretical knowledge of the utilization of mobile learning among higher education in Oman. In the domain of utilization a new technology, it is important to address the successful implementation of the system. Therefore, educational policy makers and planners will able to reformulate and improve mobile learning at any scale or level to attain successful implementation of learning via mobile devices to assure better utilization of these technologies. Indeed, results will also assist in developing and supporting strategies meant for increasing the usage level of mobile learning among students in Oman higher education institutions, which will enable the students to collaborate socialize, learn and have fun, maximizing the benefits of integrating their mobile devices with their learning. Also, these technologies can help students in managing their studying time by providing helpful environment requirements. It is hoped that the findings will benefit the overall educational system which may lead and motivate practical mobile learning implementation in higher learning and in the education system as a whole. Additionally, this effort will help Omani Ministry of |Higher Education to achieve its goals, especially in establishing a scientific and progressive society with the utilization of the latest technology.

In addition to the previous, this study may also intend to open doors for future related to this area, for example, it can develop progressive thinking about some requirements which can be more attractive for educational institutions in marketing, manufacturing and training to extend their businesses, as well as helping them in solving the issue that academic institutions, business and mobile programs intended to promote students' expectations and other issues which can be considered as challenging for mobile learning applications designers. Finally, the finding of this study can advise and guide mobile learning practitioners and designers in creating and designing learning activities that match students' perceptions and performance.

1.7 Limitation of the Research

The limitations of this study are in terms of population, mobile learning devices, and research design. The population of this study was limited to participants of undergraduates in the government university at SQU which is the only government university in Oman. Based on the ranking of Omani universities (2016), SQU has the first rank among all the higher educational institutions in Oman (refer to Appendix G). Also, SQU as a government university plays a leading role in the future of the higher education; because the government already has funded this university to implement mobile learning system (MOHE, 2014).

The selected population of this study was limited only to the third-fourth year's full-time undergraduates from four faculties at SQU. The participants' background, experience and life style may have been different from part-timers, postgraduates, or undergraduates of first and second years. This is because it assumed that, the undergraduates already have good experience in using mobile technology for learning and have sufficient exposure in handling and working with a wide array of technologies including mobile devices, hardware and software in their courses during their two or three years ago. According to Moran, Hawkes & El-Gayar (2010), the systematic usage can be measured after more than two years of use. During the third and fourth years studying in university, the students are believed already to gain experience in use of mobile technology in learning purposes (Al-Aamri, 2011). He also concluded that, the majority of higher education students have enough experience in using mobile for one or two years which influenced their usage of mobile learning for educational purposes.

Additionally, this study was limited in the capability to generalize the findings of the types of mobile devices focused in this study only focused on the use of smart phones, tablets and laptops. There are still other mobile devices that are known for mobile learning namely MP3 players, iPods, and Personal Digital Assistants (PDAs). However, the literature review has shown that, these devices were mostly used for personal, social and entertainment purposes and not much for educational purposes. According to Adkins (2013), 73% of all phones in use in 2013 in Oman were smartphones and the popularity of these devices is among younger generation in colleges and universities. Moreover, smart phones, laptops and tablets are the handheld IT devices which using in mobile learning (Al-Matari et al., 2014). Tablets and laptops are very portable as the students can be used in the classrooms and computer laps with any wireless connections (Elyazgi et al., 2014). Furthermore, tablets, laptops and smart phones are contains a proper systems to interact actively and successfully (Serrab & Elgamel, 2013). Indeed Marrs (2013) stated that, smart phones combine the visibility of a conventional PDAs mobile phones and personal computers into one device.

In this study too, the data was collected through questionnaires which relied on the perceptions of the higher education students. In fact, this study would not be able to assume that the answers of respondents were accurate. However, the primary assumption is the participant's understand all the items of the questionnaires and responded truthfully. There are many variables which many have an influence on the utilization of mobile learning, for example, mobility, ease of use, usefulness, intrinsic value, utility value, self-management, playfulness, previous experience, innovativeness and others (Momani & Abualkishik, 2014; Masrek, 2015). However this study was aimed on investigating the influence of the factors (performance expectancy, effort expectancy, facilitating condition, social influence, self-management, and behavioral intention) on the utilization of mobile learning. Moreover, the investigation of mobile learning usage were only focusing on the use of mobile learning for specific purposes as suggested by NETS.s such as, basic operation, communication and collaboration, research and information fluency, digital citizenship, critical thinking and problem solving and creativity and innovation and not particularly for learning purposes.

Data from this study was obtained only from undergraduates students in higher education and may not be applicable to students at other levels, such as primary and secondary schools as well as teachers or instructors. The results of this study may also not be generalized to all undergraduates' population in other higher institutions in Oman in terms of accessible population, due to time, energy and financial constraints. It was only limited to the third and fourth years of undergraduates in SQU that selected for this study. Therefore, the generalization of this study can only be applied to studies that have similar characteristics with this research and may need considerations when it is applied in other setting environment or circumstances. Although, there are many several limitations, it is hoped that the results of this study will be significant for further research and justification.

1.8 Definition of Terms

The key terms that used in the present study were conceptually and operationally defined in order to give a clear comprehension and direction.

1.8.1 Mobile Learning

Mobile learning refers to a learning technique with the help of mobile technology through using mobile devices in order to facilitate learning in flexible process (Sarrab et al., 2015). The popularity of mobile learning is from the availability and portability features mobile technology (Tagoe & Abakah, 2014). In this study, mobile learning refers to a learning tool that provides anytime and

anywhere access to educational resources for learning purposes empowered by mobile technology via mobile devices in its connected or disconnected.

1.8.2 Mobile Devices

Mobile devices refer to the handheld computing devices which have an operating system and can run mobile applications (Amhag, 2015). In this study, mobile devices refer to the three of the most latest and popular mobile devices namely, laptops, smartphones and tablets which are equipped with an internet access. In Oman, these three devices indicated high rate among the 18-29 ages; due to their features and mobility issues and its penetration rate is above 200% based on the last report from Trade Arab News Service (Adkins, 2013).

1.8.3 Utilization Level of Mobile Learning

Utilization refers to the act of using processes and resources for learning (Seels & Richey, 1994). Utilization of technology is occurred by tring to use technology (Sahin, 2006). In this study, utilization of mobile learning refers to a systematic use of resources for learning purposes and providing learners with specific materials. This term was measured based on six categories were developed by the National Education Technology Standards for Students NETS.s which provides the benchmark for technology usage in learning (ISTE, 2007). In this regard, the six purposes of how mobile learning can be used effectively are:

1. Basic operations purposes which refer to the use of mobile learning for common use, such as making calls, sending emails, and capturing videos or pictures and were measured by 6 items in section B of the questionnaire which were adapted from Sedek (2014).

2. Research and information fluency purposes which refer to the use of mobile learning for gathering and seeking information from a variety of sources for research purposes and were measured by 5 items in section B of the questionnaire which were adapted from Sedek (2014).

3. Communication and collaboration purposes which refer to the use of mobile learning for collaborating with others to support learning or contribute to the learning of others and were measured by 6 items in section B of the questionnaire which were adapted from Sedek (2014).

4. Digital citizenship category which refers to the use of mobile learning for gaining information on issues about ethical behavior, technology, and learning, for example copyright infringement, and plagiarism and were measured by 5 items in section B of the questionnaire which were adapted from Sedek (2014).

5. Critical thinking and problem solving purposes which refer to the use of mobile learning for solving problems and using critical thinking skills for planning and conducting learning activities and were measured by 5 items in section B of the questionnaire which were adapted from Sedek (2014).

6. Creativity and innovation purposes which refer to the use of mobile learning for demonstrating creative thinking, constructing data and developing innovative learning products and were measured by 4 items in section B of the questionnaire which were adapted from Sedek (2014).

The utilization level of mobile learning was measured the overall of 31 items in section B of the questionnaire which were adapted from Sedek (2014) and was categorized as low, moderate and high.

1.8.4 Performance Expectancy

Performance expectancy refers to the students' perception of system usefulness and its ability in helping students to access information quickly and accomplish their academic tasks effectively (Cabanban, 2013; Masrek, 2015). In this study, performance expectancy refers to the degree to which the students perceive that using mobile learning is useful and can assist them to complete their learning activities quickly and effectively. Performance expectancy was measured in section C of the questionnaire by 4 items which were adopted from Venkatesh et al. (2003).

1.8.5 Effort Expectancy

Effort expectancy refers to the individuals' expectations of using system without much effort and is easy to use (Venkatesh et al., 2003; Masrek, 2015). In this study, effort expectancy refers to using mobile learning is easy and free of efforts. Effort expectancy was measured in section C of the questionnaire by 6 items which were adopted from Venkatesh et al. (2003).

1.8.6 Facilitating Conditions

Facilitating conditions refer to availability of resources to support adoption and usage of mobile learning at a given institutions (Mtebe & Raisamo, 2014). Facilitating conditions can be provided by technical and organizational facilities on mobile learning (Alaiad et al., 2013; Cabanban, 2013). In this study, facilitating conditions refer to the degree of which students perceive that an

organizational support and technical infrastructure exist in university to support their usage of mobile learning. This term was measured in section C of the questionnaire by 4 items which were adopted from Venkatesh et al. (2003).

1.8.7 Social Influence

Social influence refers to the degree to which the users perceive that important others believe will view them as a result of having used the technology (Venkatesh et al., 2003; Attiuquayefio & Addo, 2014). In this study, social influences refer to the degree of which students perceive the perceptions of other people such as their families, teachers and peers can influence their usage of mobile learning. This term was measured in section C of the questionnaire by 5 items which were adopted from Venkatesh et al. (2003).

1.8.8 Behavioral Intention

Behavioral intention refers to the students' perception on intention to use system of new technology (Venkatesh et al., 2003; Mtebe & Raisamo, 2014). In this study, behavioral intention refers to what extent the students perceive that they intend to use mobile learning effectively in a near future and was hypothesized as a mediator between independent factors and the utilization of mobile learning as dependent variable. Behavioral intention was measured in section C of the questionnaire by 5 items which were adopted from Venkatesh et al. (2003).

1.8.9 Self-Management

Self-Management refers to the ability of person's development of competence and skills to manage his or her own learning when using mobile learning technology (Wang et al., 2009; Donaldson, 2011). In this study, self-management refers to the degree of which the students have the abilities to control and manage their learning activities by using mobile learning. Self-Management was measured in section C of the questionnaire by 4 items which were adopted from Wang et al. (2009).

1.8.10 Gender

In this study, gender refers to two categories: male and female of undergraduates' students at SQU. Hence, gender was expected to moderate

the factors' influences toward mobile learning, it was measured as moderator variable. The data were obtained as male or female in section A of the questionnaire.

1.8.11 Field of Study

In this study, field of study identifies as two categories namely: pure science field and applied science field. Hence, it was expected that, there are some differences in using mobile learning in terms of study fields among the students at SQU. Field of study was measured as a moderader variable and was obtained as pure science or applied science fields in section A of the questionnaire.

1.9 Summary

This chapter illustrated the background of this study which focused on present literature that supports the use of mobile learning tool. The explanation of mobile learning was discussed in general then the use of mobile learning technology. Also, this chapter highlighted the benefits of using mobile learning technology and the engagement of technologies in higher education institutions in Oman from using e-learning till mobile learning. The definition of the utilization of mobile learning was based on the most popular portable devices which ownership among undergraduates, namely laptops, smartphones and tablets.

This chapter also included a brief discussion about higher education system and institutions in Oman. Several factors that able to influence the utilization of mobile learning were highlighted in this study namely, performance, effort expectancy, facilitating conditions, social influence, self-management, and behavioral intention. Besides, gender and field of study where presented as moderator variables in this study. From the literature review and based on the problems being studied, it appeared that there is a need to conduct this study to identify the factors that influence the utilization of mobile learning among undergraduates. Also, there is a need to determine the usage level of mobile learning technology for specific purposes based on the standards of NEST's. from these standards six categories were adopted namely; i) basic operations, ii) research and information fluency, iii) communication and collaboration, iv) critical thinking and problem solving, v) digital citizenship, and vi) creativity and innovation.

This chapter included the six main objectives which were formulated to achieve the purpose of this study. The research objectives are to determine i) the utilization level of mobile learning and the selected factors, ii) whether the selected factors influence the utilization of mobile learning, iii) the role of

behavioral intention as a mediator, iv) the role of gender as a moderator variable, v) the role of field of study as a moderator variable and vi) develop a predictive model on the factors influencing the utilization of mobile learning. In this study, seven research questions were formulated to achieve objective one as well as 21 hypotheses to measure the research objectives from two till five. Finally, all the research questions and hypotheses together lead to the development of a predictive model proposed.

Finally, in this chapter, the significant of study and the possible limitation were also addressed. At the end of this chapter, the relevant terms used were defined conceptually and operationally in order to give a clear comprehension and direction in conducting this study. Following this chapter is chapter two which will discuss the related literature.

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