Mobile Learning in Saudi Arabia - A Review

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Abstract

The aim of this paper is to review the available research studies on the mobile learning in Saudi Arabia. Mobile learning, or m-learning, is a rapidly growing phenomenon across the world and Saudi Arabia is also a participant in this growth. This paper aims to review some of the research studies which have been carried out on the mobile learning in Saudi Arabia. For this paper, specific search terms were used in the Google Scholar search engine and the results were shortlisted according to the year of publication. From the review of the available studies on the subject, it was clear that even though Saudi Arabia may not be at the same pace as the developed nations when it comes to m-learning, the phenomenon is becoming popular in the country and the government is also taking steps to aid it along. Part of the development is also due to the ubiquity of mobile phones amongst the younger generation.

Keywords: Saudi Arabia, Mobile Learning, Education, Review

Introduction

Mobile learning, also known as M-Learning, is a rapidly growing global phenomenon. The ubiquity of mobile phones and electronic devices has aided in this development. Though the developing nations are not at the same pace as the developed ones when it comes to the spread of m-learning, they are gradually catching up.

The government of the Kingdom of Saudi Arabia is very concerned about education in the nation and it holds an extremely important position in the country's planning. As per Allam (2011), the Saudi government had allocated a budget of USD 154.7 billion for education in 2011 (- as cited in Al-Hujran, Al-Lozi, & Al-Debei, 2014).

According to Aldiab, Chowdhury, Kootsookos, & Alam (2015), the number of internet users in Saudi Arabia has increased rapidly from 7.7 million users in 2008, to 21.6 million in 2015. The Saudi government's Ministry of Higher Education has actively focused on e-learning, which is also one of the Saudi e-government initiatives. As per CITC (2010), the Saudi government has invested heavily in e-government initiatives, with the country's IT expenditure amouting to USD 7.2 billion in 2010 (- as cited in Al-Hujran, Al-Lozi, & Al-Debei, 2014). Al-Hujran, Al-Lozi, & Al-Debei (2014) state that the education in Saudi Arabian universities has shifted gradually from traditional learning to distance learning (d-learning) and electronic learning (e-learning), but mobile learning (m-learning) is still a new technology, still in development stage in Saudi Arabia (Al-Hujran, Al-Lozi, & Al-Debei, 2014).

Methodology

In this paper, we will review research studies which have been carried out on the subject of mobile learning in Saudi Arabia which have been carried out so far. Towards this end, search terms such as 'Saudi Arabia mobile learning', 'Saudi Arabia + m-learning', 'mobile penetration + Saudi Arabia' etc. were used in the Google Scholar search engine. The results of these searches were shortlisted as per the year of publication. For the purpose of this paper, only studies

published post 2008 were used in order to examine the phenomenon of mobile learning in Saudi Arabia.

Results and Discussion

According to Badwelan, Drew, & Bahaddad (2016), over the past few years, the interest in mobile learning has increased dramatically in Saudi Arabia, owing, in part, to the rapid advances in mobile technology as well as the available wireless networks. The surge in mobile phones use has not been restricted to the developed world. In Saudi Arabia, for example, internet penetration is 28%, while the mobile penetration is 143% (number of mobile cellular subscriptions per 100 Inhabitants) as reported by the International Telecommunication Union (ITU, 2013 – as cited in Mohammad, Fayyoumi, & AlShathry, 2015).

Definition of Mobile Learning (M-Learning)

According to Kukulska-Hulme (2009), there is no universally accepted definition of mobile learning (as cited in Al-Hujran, Al-Lozi, & Al-Debei, 2014). Mobile learning or m-learning has been defined by various authors. Keegan (2005) defined m-learning as "the stipulation of education and training on PDAs, palmtops, smart phones and mobile phones" (as cited in Altameem, 2011). Trifonova and Ronchetti (2003) defined m-learning as "e-learning carried out by means of mobile computational devices", mainly to PDAs and digital cell phones (as cited in Altameem, 2011). Both Quinn (2000) and Pinkwart, et al. (2003) defined m-learning as "e-learning that uses mobile devices" (as cited in Altameem, 2011).

According to Altameem (2011), most academicians use a definition of m-learning which views mobile learning as learning connected to a mobile device. Nyiri (2002), (2005), "the mobile phone is evolving towards the dominant medium" (as cited in Altameem, 2011). Altameem (2011) says that the mobile phone is becoming the primary medium through which people conduct their shopping, banking, booking of flights, etc, making it the "single unique instrument of mediating communication not just between people, but also between people and institutions or more generally between people and the world of inanimate objects" (pg. 21). Georgieva and Smrikarov (2005) have written about a general classification of existing mobile learning systems (as cited in Altameem, 2011). Hosseini and Mustajärvi (2003) have described a framework for mobile learning system based on education component (as cited in Altameem, 2011). Hosseini (2005) emphasized that "mobile learning is essentially the evolution of e-learning that completes the missing components of an e-learning solution" (- as cited in Altameem, 2011, pg. 22).

Other authors such as Quinn (2000) have defined m-learning very simply just as "as e-learning through mobile devices". Sharples (2006) defined m-learning as "an extension of e-learning". Traxler (2005) defined m-learning as "any educational provision where the sole or dominant technologies are handheld or palmtop devices" (- as cited in Al-Hujran, Al-Lozi, & Al-Debei, 2014).

The study by Al-Hujran, Al-Lozi, & Al-Debei (2014) talks about how m-learning has been defined not just from a technological perspective, but also from pedagogical perspective. According to O'Malley et al. (2005), m-learning is "any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies" (- as cited in Al-Hujran, Al-Lozi, & Al-Debei, 2014).

According to John Traxler (2005), mobile learning can be defined as, "Mobile learning can perhaps be defined as any educational provision where the sole or dominant technologies are handheld or palmtop devices" (as cited in Narayanasamy & Mohamed, 2013). Hence, any definition of mobile learning should be widened in scope to include "any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies" (Narayanasamy & Mohamed, 2013). M-learning is an emerging form of elearning that offers the opportunity for both teachers and students to interact with educational material and services using mobile devices, independent of time and space. Availability and innovations of mobile technology such as wireless infrastructure, high bandwidth and mobile devices moved e-learning to m-learning era.

According to Alsaadat (2009), m-learning is the use of "mobile and handheld IT devices, such as Personal Digital Assistants (PDAs), mobile telephones, laptops and tablet PC technologies, in teaching and learning" (- as cited in Nassoura, 2013).

Mobile Technologies Vs. Mobile Wireless Technologies

Frequently used for each other, the terms 'mobile technology' and 'mobile wireless technology', the two are actually different because not all mobile technology is wireless, and not all wireless technology is mobile (Cook, Pachler and Bradley, 2008 – as cited in Al-Fahad, 2009). According to Malladi and Agrawal (2002), mobile wireless technologies consist of two aspects: mobility and computing (- as cited in Al-Fahad, 2009), and that mobile computing entails users' continuous access to network resources without limitation of time and location. As per Dubendorf (2003), 'wireless' means transmission of any form of data-text, voice, video or image which is carried out through radio waves, infrared waves or microwaves, rather than use of wires (- as cited in Al-Fahad, 2009). Hence, as per Al-Fahad (2009), mobile wireless technology can be said to be any wireless technology that "uses radio frequency spectrum in any band to facilitate transmission of text data, voice, video, or multimedia services to mobile devices with freedom of time and location limitation".

Saudi Arabia's Education Policy

The education policies in the Kingdom of Saudi Arabia are decided by the Saudi government and a primarily based on Islamic cultural beliefs and regulation (MOE, 2016 – as cited in Alharbi, Alotebi, Masmali, & Alreshidi, 2017). As stated previously, the Saudi government places great importance on education. This has also meant growing impetus to mobile learning in higher learning institutions in the Kingdom.

In Saudi Arabia, there are government agencies which have been responsible for bringing about the development of mobile learning. Both the Saudi government and its National Centre for E-Learning and Distance Education are responsible for e-learning and M-learning development in the country, including the financing and the implementation of a number of projects, such as the the Tajsir e-Learning Initiative, the Educational Portal, the Jusur System for the Administration of Electronic Learning (an integrated software system for e-learning projects), the Saudi Repository for Learning Objects and the Qualification and Training Project (a program to train staff in universities in e-learning and M-learning), among others (Yusuf, 2013 – as cited in Badwelan, Drew, & Bahaddad, 2016).

According to Almarwani (2011), due to global economic competition, there has been a significant impact on the development of large-scale ICT educational projects and there has also been a dramatic increase in the adoption of new technologies. The Saudi Ministry of Higher Education launched a national project, "AAFAQ", for developing a comprehensive, long-term plan for university education, to address the challenges facing universities, both current and future. AAFAQ has encouraged the implementation of e-learning and distance education by establishing eight infrastructure projects:

1. The National Centre for E-Learning and Distance Education (NCELDE).
2. The Learning Portal of the National Center of E-learning & Distance Learning.
3. JUSUR, LMS System.
4. MAKNAZ, National Repository for Learning Objects.
5. Excellence Award of e-learning in university.
6. Training Programs to faculty members and technical staff in the Saudi universities in the area of e-learning and its applications.
7. Saudi Digital Library.
8. SANEED, the Saudi Centre for Support and Counselling to all beneficiaries of e-learning.

The variety of governmental infrastructure indicates that the government is going towards ensuring optimal utilization of communications and information technology in education (Almarwani, 2011).

There has been a substantial increase in the number of internet service providers in Saudi Arabia, which corresponds with the increase in the number of imported mobile technological devices purchased. Alongside, the Saudi government has declared that all higher education institutions, whether public or private, need to establish a deanship of eLearning and distance learning. The Saudi Ministry of Education has also created the National Centre of eLearning and Distance Learning in order to support to advancements in this area. The Saudi government also established the Saudi Digital library, which is another one its steps to create a support mechanism aimed at modernizing information systems in Saudi Arabia. The "Saudi Arabia's Vision 2030 and the National Transformation Program 2020" also places importance on national plans to provide a variety of learning methods in the higher education sector, including eLearning (Aldiab, Chowdhury, Kootsookos, & Alam, 2017). Though e-learning is not the same as m-learning, the development of one will definitely mean the development of the other.

Saudi Universities and Mobile Phones

Officially, the Kingdom of Saudi Arabia has announced that the country will use distance learning and towards this aim, it has launched initiatives to establish six infrastructures for higher education and distance education initiative. These include infrastructure which 1) bridges the e-learning educational portal system; 2) bridges management in e-learning; 3) launches an award in university for e-learning excellence, 4) the national repository for learning objects service for e-learning 5) the establishment of Saudi National Center for e-learning, and distance education for university education, and functions circulated e-learning management system in harmony with needs of university education in the Kingdom of Saudi Arabia; and 6) developing the academic and administrative skills and management system, e-learning and distance education, building electronic curriculum contents and forms of digital and print for a number of university courses, and to build the educational portal for e-learning and distance learning and awareness programme for electronic education and distance education (Al-Fahad, 2009).

According to Badwelan, Drew. & Bahaddad (2016), Saudi Arabian universities have made some significant advancements in integrating mobile learning into their curricula. Hence, the higher learning institutions in Saudi Arabia are making efforts to integrate m-learning into their programs. But the pace of technological development is too rapid and hence, there are a number of challenges which still remain. As per Yusuf (2013), one of the leading e-learning institutions in Saudi Arabia, King Fahd University for Petroleum & Minerals (KFUPM), has been working with e-learning technologies since 2003 (- as cited in Badwelan, Drew, & Bahaddad, 2016).

Many Saudi universities are using distance learning technologies, with some using Short Message Service (SMS) for teaching and learning. SMS is the "text communication service component of phone, web or mobile communication systems, using standardized communications protocols that allow the exchange of short text messages between fixed line or mobile phone devices" (as cited in Altameem, 2011, pg. 22).

A few years back, King Saud University had initiated a service that offers users (students, staff and employees) with the ability to send text messages directly from a PC to a mobile phone. The service was introduced as majority of university students used mobile phones, and as these phones are being used to provide other services. SMS or 'texting' has become ubiquitous, with its main advantage being its flexibility and the messages can be sent both to individual students or to groups. This service, provided by the King Saud University, is different from the mass marketing approach of an advertising agency. It allows the management of faculties, schools or administrative divisions to provide timely, relevant and targeted information to their students (Altameem, 2011).

Mobile learning in Saudi Arabia has attracted a lot of attention from researchers. Alturki's (2013) research deals with the use of mobile learning at King Saud University ("KSU"), and focuses on both the students and faculty. The study attempted to ensure that KSU is ready to employ mobile learning as part of the education process. The results of the showed that both the students and the faculty were ready to use m-learning as a method of teaching and learning (- as cited Alqahtani & Mohammad, 2015). Al-Fahad (2009) carried out a survey at KSU to measure the attitudes and perception of undergraduate students toward using mobile technology in education. The results of this research study showed that it was possible to improve education by using enhanced methods of m-learning (- as cited in Alqahtani & Mohammad, 2015). The study by Farah and Samiul (2011) reviewed the technological challenges facing m-learning in Saudi Arabia. The results showed that more than 75 per cent of the respondents were positively inclined towards m-learning's flexibility and communication capabilities. Only a few required training in order to take advantage of this new learning environment (Farah & Samiul, 2011 – as cited in Alqahtani & Mohammad, 2015).

Limitations to M-Learning in Saudi Arabia

Despite the progress being made in the field of m-learning in Saudi Arabia, there are factors which pose hurdles in the growth of m-learning in the country.

Authors Chanchary & Islam (2011) identified a number of limitations to adoption of mobile learning in Saudi Arabia, including the limitation in memory size, processing performance, battery life, basic user interface and different platforms (as cited in Badwelan, Drew, & Bahaddad, 2016). The authors opined that Saudi students had positive views about the flexibility and the improved communication options of mobile devices, but many of them also brought up limitations such as the lack of visibility owing to smaller screen sizes, incompatibility of mobile

operating systems (OS) which lead to poor adoption of M-learning compatible on mobile phones for learning (Chanchary & Islam, 2011 – as cited in Badwelan, Drew, & Bahaddad, 2016).

According to Al-Barhamtoshy and Himdi (2013), other possible limitations of M-learning include distraction among mobile learners, fragmented experiences, additional costs and security risks (- as cited in Badwelan, Drew, & Bahaddad, 2016). Additional challenges include the availability of reliable and cheap Internet access from home, as campus IT security in Saudi Arabian universities makes it difficult for students off campus to access the servers on campus (Yusuf, 2013 – as cited in Badwelan, Drew, & Bahaddad, 2016).

Market for Mobile Learning Technology

The mobile application industry is growing quickly. In a market research study conducted by Adkins (2013) in 2012, revenues generated in the Middle East for mobile learning products reached $88.3 million (- as cited in Alqahtani & Mohammad, 2015). In their study on mobile applications being used for learning in Saudi Arabia, Alqahtani & Mohammad (2015) have talked about the mobile app 'Say Quran', which teaches the right way to read and pronounce the verses of the Holy Quran.

Conclusion

It is clear from the research studies reviewed that Saudi Arabia is in the midst of a phenomenal change in its education system, with universities moving gradually towards mobile learning. The country is on its way towards adoption of mobile learning, especially considering the impetus m-learning is getting from the Saudi government, as well as the technological advances which are being embraced by the youth of the country.

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