Exploring Factors Affecting Successful Acceptance of E-Learning: Innovative Technology Solutions in Oman

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Abstract- E-learning is changing the landscape of many educational organizations globally. It has been embraced by many educational organizations in rapidly developing countries such as India, China and Malaysia. Wang (2003) stresses the importance of IT solutions in teaching and learning which is required to develop students' skills by using more contemporary, resourceful and effective methods such as e-learning technology solutions in the universities. Recently, e-learning has become one of the IT tools which have emerged very strongly in the educational sector and specifically in the higher education. Yet, e-learning technology solutions offered by universities suffer from high cost and quality problems, and hence lack of acceptance. As such, this paper examines the factors affecting successful acceptance of e-learning technology solutions offered by colleges and universities in Oman from students' perspective. The findings of this study will enrich the knowledge of students' acceptance of e-learning in the Omani colleges and universities.

Index terms: E-learning, Technology Acceptance Model, Perceived Usefulness, Perceived Ease of Use, Attitude, Behavioural Intentions

I. INTRODUCTION

A strong educational system is important in every country because it can significantly support the economy through knowledgeable and experienced individuals. Changes in the educational system can play a major role in moving the economy forward and hence keeping up with globalization movement. Many approaches to learning development are the result of the rapid growth in internet-based technology and innovations, which is noticeable in several forms of e-learning (Shawaret al., 2007). With this, the traditional methods are often supplemented or replaced. Furthermore, it also aids in terms of making students engaged in their learning with the help of different web technologies.

According to Siritongthawornet al. (2006, p. 139), e-learning is an "innovative approach to education delivery via electronic forms of information that enhance the learner's knowledge, skills, or other performance measures". Other authors (Arbaugh, 2002; Arbaugh & Duray, 2002; Selim, 2007) have gone further to define e-learning as the use of Internet technology by users for the purpose of providing educational services to their learners. E-learning saves several costs related to classroom, course material, labour and travelling expenses (Ruiz, et al., 2006). In addition, e-learning systems provide other benefits such as location convenience and on demand availability for learners globally.

It is noteworthy that the number of internet users worldwide has grown steadily over the years to reach 3 billion in 2014 (www.internetsociety.org/). Analysts have predicted that the market of e-learning around the globe will reach $51.5 billion by 2016 with a growth rate of 7.6% expectedly (www.docebo.com). This means that Universities in Oman need to rethink their educational plans on how to offer efficient educational self-services by improving their electronic learning (e-learning) solutions. E-learning is associated with some fundamental benefits such as, expediency, convenience and simplicity.

In order to provide a learning experience that is flexible and responsive, modern information and communication technologies (ICTs) are required. In the current fast pace work environment, these technologies provide enhanced and continuous practices of professional development. The e-learning acceptance in most Universities globally is becoming very important. Yet, the Omani educational system is still far behind in making significant changes in the use of e-learning. Hence, the cost of delivering educational services is increasing compared to the low quality of delivery. Furthermore, it is important to understand students' acceptance of e-learning and shall be considered one of the major steps in developing and implementing a booming e-learning environment.

E-learning and ICT is gradually being integrated in the higher education system in Oman (Al Musawi. 2007). The efforts of the nation in order to develop a digital society for Oman (Omani Ministry of Information, 2006), e-learning and ICT will be observed to play a significant role in the higher education system of Oman. However, there is an intense pressure on the faculty members, to adopt the e-learning and

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ICT in their instructional processes. Nevertheless, there is limited pragmatic data of the Omani faculty members' ICT adoption.

This reluctance by the Omani educational service providers suggests that decision makers lack the knowledge about the e-learning acceptance in the higher educational sector in Oman. This study will inform decision makers about the Omani colleges and Universities regarding the experience and struggle of e-learning. Insights will be provided to educational institutions regarding the consequences of ignoring this important aspect of information technology in the higher educational system in Oman.

This paper addresses the question: what are the aspects that can potentially affect the acceptance of e-learning in the Omani colleges and universities. This study is expected to contribute significantly in:

- The expansion of in depth understanding of e-learning acceptance in developing countries like Oman.
- Providing solution in the ongoing problem i.e. (disinclination to accept e-learning) in the educational organizations of Oman; and
- Expanding the TRA, TPB, TAM and DIT literature to include two variables previously not considered — perceived Infrastructure and System Quality (PISQ) and Perceived computer and Internet self-efficacy.

II. LITERATURE REVIEW

The e-learning acceptance is defined by many authors (Dillon and Morris, 1996; Clark and Maye, 2011) as an educational service offered through modern electronic channels to support individual learning process or organizational performance goals. This means that understanding e-learning acceptance is very important for the Omani Colleges and Universities and hence changes in plans is required if Omani Universities want to position their educational organization strategically in the global economy.

Even though, the acceptance of e-learning worldwide is growing rapidly, colleges and universities in Oman are still reluctant and lack in the complete implementation of e-learning technology solutions. In order to answer the question raised above, four existing research frameworks were explored, namely, the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), and Diffusion of Innovations Theory (DIT).

In the late 1950s, Rogers originated his theory from innovations in agriculture. Since then, various diverse fields including education, has applied this model of diffusion of innovation. Rogers (1995) describes the diffusion of innovations theory as "the process by which an innovation is communicated through certain channels over time among the members of social systems". He suggests five innovation characteristics to measure the rate of diffusion of innovation namely, relative advantage, compatibility, complexity, trialability, and observability. Rogers postulates that the adoption of innovations is influenced by these five perceived characteristics to explain the rate of technology adoption. An innovation is "an idea, practice or object that is perceived as new by the individual' (Rogers, 2003).

The Theory of Reasoned Action was developed by Fishbein and Ajzenin 1975. Subsequently, Ajzen and Fishbein (1980) have refined their model with empirical evidence to support the validity and reliability. They explained that the Behaviour Intention (BI) of an individual is the key determinant of the actual behaviour. Hence, BI mediates their attitude and subjective norm.

Subsequently, Ajzen (1991) noticed some problems with the TRA. Notably, that it was based on the assumption that a person's behaviour was under his/her control. He modified the earlier model and framed it as the Theory of Planned Behaviour. In this new model, he added another construct called Perceived Behavioural Control, and referred to it as an individual's perception of the "…presence or absence of requisite resources and opportunities" (Ajzen and Madden, 1986:457) which is required to perform the specific behaviour.

On the other hand, Davis (1986) developed a theoretical model, namely, TAM, to assess and investigate the effects of system characteristics on user acceptance. In line with TRA, TAM also suggests that the actions of a computer user are more likely to be rational and it uses the information in a systematic manner, to make the decision of acceptance or non-acceptance of the technology. Specifically, three essential determinants of TAM are identified by Davis, namely, perceived usefulness, perceived ease of use and behavioural intention to demonstrate computer technology.

In this study, four factors of e-learning acceptance were identified based on the four above models and similar studies (Davis, 1989; Lim, Hong & Tan, 2008) namely, perceived ease of use (PEOU) and perceived usefulness (PU) and two more factors were introduced from previous studies (Arbaugh, 2002; Arbaugh & Duray, 2002) namely: perceived Infrastructure and System Quality (PISQ) and Perceived computer and Internet self-efficacy (PCIS). These four dimensions were explored from the perspective of students that are the target and will be jointly examined to answer the question: what are the factors that can potentially affect the acceptance of e-learning in the Colleges and Universities in Oman.

In summary, the four variables discussed are expected to provide a better and concise understanding of e-learning acceptance in the educational institutions of Oman. It is noteworthy that several studies (Selim, 2007; Hong et al., 2003; Poon et al., 2004) highlighted the importance of students' and instructors' characteristics, organization's information technology infrastructure and organization's technical support. However, in this study, students' characteristics are the main focus.

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III. METHODOLOGY

In order to achieve the abovementioned objectives, namely, identifying the factors that can potentially affect the acceptance of e-learning in the universities in Oman, a qualitative approach was applied. According to Merriam (2009), qualitative research allows the researcher to understand how people interpret their experiences, how they construct their worlds and what meaning they attribute to their experiences (p. 5). The choice of the qualitative approach is further justified by its ability to generate comprehensive and in depth information compared to brief answers to structured questions (Weischedel et al., 2005).

A total of 30 students from different degree levels in one of the Universities in Oman were interviewed. An undertaken interview can be termed as "A conversation that has a structure and purpose" (Kvale, 1996, p. 6). Semi structured interviews such as internal and public reports are used to gather the facts.

Table 1 shows the details of interview, each participant was given 10 to 15 minutes to contribute with their responses. At the beginning of every interview, the interviewees were given a guarantee of the confidentiality and were also assured that their identities will not be revealed in any publication. Issues related to e-learning were introduced to participants to think and elaborate effectively on their responses. Participants were asked to check all their transcribed interviews for validity and accuracy.

Table I. Details of the Interviews

Levels	Bsc Students	Diploma Students
Participants	16	14
Interview locations	University Campus	University Campus
Dates	22/5/2014	15/6/2014
Times	09:00-12:45	09:00 -12:30
Duration (minute)	3hours and 45 min	3 hours and 30 min
Transcription (words)	3,650	3,150

The elaborated responses were analysed using NVIVO-10 qualitative research software to organize, sort and code any emerging themes as suggested by Strauss and Corbin (1990) and Miles and Huberman (1994). This qualitative analysis enabled the authors to explore major patterns and gain deep understanding of the e-learning acceptance in Oman.

Subsequently, a phenomenological approach to analyse data was adopted, which involves interpreting and reflecting on the data transcripts so as to achieve a holistic understanding of the meaning of the participants' experiences (Alexis and Vydelingum, 2007).

IV. RESULTS

With regard to the perceived usefulness (PU), the interviews suggest that perceived usefulness can influence the e-learning acceptance.Most respondents (60%) stated that they would use e-learning if e-learning services were conveniently available to them. In this regard, respondent 3's statement was typical:

'I strongly believe that the advantage of e-learning occurs when the University offerscourse material and facilities and services through e-learning. If this e-learning services were provided to students, I would not have a problem in using the e-learning system'.

Regarding perceived ease of use (PEU), most respondents (55%) agreed unanimously that ease of using e-learning is very important to them and this concern was associated to the exercise of e-learning systems. Respondent 7 stated that:

'...I believe that the ease of navigating the website related to e-learning is greatly associated with e-learning usage. I mean if the e-learning is easy to use, then I would not have any difficulties in using the e-learning services'

As for perceived infrastructure and system quality (PISQ), from the broad topic and subsequent probing, respondents raised several concerns, mainly the reliability of the system and system response. Most respondents (58%) agreed that most e-learning systems fail due to their lack of response and unreliability. Respondent 8 stated that:

'...I would use e-learning to communicate with my teacher, but these systems always break and are very slow in their response'.

Finally, for the perceived computer and internet self-efficacy (PCIS), most respondents (54%) raised the issue of users' ability to use computer and internet to complete their University tasks. As indicated by one of the respondent:

'...Users' ability is important such as the ability to use computers and internet. I mean if a person was not able to use computers or internet then obviously they will be reluctant to accept the e-learning systems'.

In summary, based on the qualitative analysis of data gathered from the 30 one-on-one interviews,the four dimensions emphasised in the study were found to have a significant effect on the acceptability of e-learning in Omani universities, namely,

- Perceived usefulness (PU) (convenience of available college/university services online).
- Perceived ease of use (PEOU) (easy to navigate the website).
- Perceived infrastructure and system quality (PISQ) (lack of response and unreliability).

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- Perceived computer and internet self-efficacy (PCIS) (the ability to use computers and Internet).

V. DISCUSSIONS AND CONCLUSION

The aim of this study is to explore the factors affecting successful acceptance of e-learning in Oman, through a semi-structured interview with 30 students. Inachieving this stated aim, four dimensions that could have a bearing on e-learning acceptance were jointly investigated, namely, perceived usefulness, perceived ease of use, perceived infrastructure and system quality, and perceived computer and internet self-efficacy.

The findings revealed that the perceptions are joined together to provide a deep understanding of the factors that influence the successful acceptance of e-learning. In general, Oman has been a late follower in terms of adaptation of e-learning. The reason for this can be ascribed with the hindrance in the adaptation of the internet as a whole by most of the governments of the region. As a result, there are limited published researches regarding the settlement, restrictions, barriers and acceptability of e-learning. This study supports the findings of Moore and Benbasat (1991), Davis et al. (1989); Arbaugh, 2002; Arbaugh, J. B., &Duray, R. (2002)as well as the TAM and DIT, especially in perceived usefulness and perceived ease of use. Moreover, the findings of this study could be utilized to solve existing problems in e-learning acceptance in Oman.

Even though there is a great percentage of the society that are still unawareof the technologicalprogression and conception of e-learning, plans are being put in place in order to make such technology usable and acceptable in near future. Furthermore, two significant constructs are considered, i.e. Perceived infrastructure and System Quality and Perceived computer and internet self-efficacy.These new constructs can be considered as an extension to the previous models. In This regard, clear evidence is available for the significance of the new models; however, the findings cannot be fully generalized, mainly because of the limited data availability. Thus, in order to confirm the conclusions, further empirical analysis is required.

The educational institutions that are reluctant in the adoption and acceptance of e-learning will not be able to grasp the benefits theyclaim to bring along. Hence, such colleges and universities will be unable to compete in local and global education industry (Porter, 2011). This shows that e-learning is one of the important tools today in the new economic scenario and shall not be ignored.

This research study was subject to two limitations. Firstly, the university learners were reluctant to participate in the survey. In this regard, great difficulties were encountered in arranging interviews with the University respondents. Secondly and most importantly, the study was restricted to one University only and hence, generalization of the findings is limited.

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