M-Readiness Assessment Model Development and Validation: Investigation of Readiness Index and Factors Affecting Readiness

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ABSTRACT

It is important for distance learning institutions to be well prepared before designing and implementing any new technology based learning system to justify the investment and minimize failure risk. It can be achieved by systematically assessing the readiness of all stakeholders. This paper first proposes an m-readiness assessment process and subsequently describes different activities required to develop an m-readiness assessment model. The model was validated and applied to measure m-readiness index of Allama Iqbal Open University (AIOU), Pakistan. Primary data (N=612) were collected. Factor analysis was applied. Extracted factors were confirmed with confirmatory factor analysis. Based on the extracted factors, m-readiness index was calculated. Furthermore, m-readiness index association with age, gender, program of study, income, locality and province were also analyzed by applying one way ANOVA and Kruskal Wallis. The results reveal that there is a significant difference in m-readiness with respect to income, locality, age, gender, program of study and province.

KEYWORDS
Confirmatory Factor Analysis (CFA), Exploratory Factor Analysis (EFA), Instrument Development, Instrument Validation, M-Learning, M-Readiness Assessment Model, M-Readiness Index, Validation Process

1. INTRODUCTION

The programs offered by open and distance educational institutions (ODEIs) are growing at a rapid pace primarily due to the availability and affordability of latest information and communication technologies. Adults, especially those who need higher education but do not have access to the traditional education, are attracted more towards ODEIs. These adult learners are mostly interested in technology based learning such as e-learning, m-learning and blended learning (Newhouse, Williams & Pearson, 2006; Pettit & Kukulska-Hulme, 2007; Ilgaz & Gulbahar, 2015).

A learning technique which uses mobile devices and wireless transmission in the learning process is called mobile learning or m-learning (Naismith, Lonsdale, Vavoula & Sharple, 2004; Yuen & Yuen, 2008; Chang, Sheu & Chan, 2003; Gwo-Jen, Ting-Ting & Yen-Jung, 2007; Mohd & Mohd, 2007; Elmorshidy, 2012; Lorna & Gwo-Jen 2013). M-learning carries many components of e-learning (Horton, 2006), but has some distinct features also. The three key features of mobile devices i.e. portability, anywhere and anytime connectivity (Cochrane & Bateman, 2010), context sensitivity

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differentiates m-learning from e-learning (Sharples, 2000; Klopfer, Squire & Jenkins, 2002; Churchill & Churchill, 2008). These distinctive aspects of mobile devices give unique learning experience to m-learners (Wang & Higgins, 2006; Traxler, 2007, 2008, 2010). M-learning features support four type of learning approaches which are individual learning, situated learning, collaborative learning, and informal learning (Cheon, Sangno, Steven & Jaeki, 2012).

The formal method of teaching has its own importance but m-learning can facilitate the formal learning in higher education (Tin-Yu, I-Shou, Han-Chieh, 2008; Campanella, 2012). Mobile technologies facilitate learners by giving them easy and instant access to information rich digital resources. Mobile learning can also play a supplementary role within formal education (Cheon et al. 2012). The potential benefits of mobile learning include less cost, content ubiquity, flexibility in communication and learning. Furthermore, mobile applications can be used for intra-communication among students and teachers.

Due to high investment required for creating an m-learning environment, it is important for an organization to be well prepared before designing and implementing a new mobile based learning to reduce the failure risk. There are some important factors which highly influence the success of m-learning, which includes availability of technology, institutional support, connectivity and device ownership (Sharples, 2013). Success in m-learning system implementation can be achieved through systematically assessing the m-readiness (i.e. degree of preparedness or capacity of an individual or institution to adopt mobile technology) of an institution, faculty, students and availability of required infrastructure. Kermati et al. (2011) identified that the organizational readiness is the most effective factor in technology based learning system implementation. Some other factors like competencies, access to technology and resources should also be considered for assessing the readiness (Dada, 2006).

The rest of the paper is organized as follow. Section 2 discuss the existing literature. Section 3 proposes m-readiness assessment process and describes different activities required to develop an m-readiness assessment model. It also presents the m-readiness assessment model that was developed through the proposed assessment process. Section 4 presents adopted research methodology, data collection technique and sample size. Section 5 presents analysis (exploratory and confirmatory factor analysis) and results followed by discussion in section 6. Section 7 concludes the paper.

2. LITERATURE REVIEW

There have been a large number of studies to determine the e-learning readiness of different organizations and universities. The model for the e-readiness assessment of institution and perception of students and faculty about e-learning for low bandwidth areas was proposed by Suhail (2014). The proposed model lacks theoretical and empirical validity and reliability.. Factor analysis was used to assess the e-readiness in Nigerian universities with negative results due to low tele-density, connectivity and electricity problems (Eweni, Joseph, Victor & Simeon, 2013). The sample was 153, which is too small for factor analysis and no relation was assessed between the variables. Quantitative and qualitative measures were used to determine the e-readiness and e-satisfaction of students at the University of Ankara with encouraging results (İlgaz & Gulbahar, 2015).

Adyn and Tasci (2005) determined e-learning readiness of organizations in Turkey by applying descriptive statistics. The authors used small sample and did not make any data validation or reliability tests. Furthermore, the data collection instrument was not validated. Leadership, Technology, Organization, People and Environment (STOPE) model with illustrative statistics were used to assess e-learning readiness at organizations (Schreurs, 2012). The major emphasis of the STOPE model was on infrastructure, investment, skill and contents. Lealer and faculty competencies along with expertise and education level are the influential factors towards the diffusion of new technology in organizations (Rogers, 2003) which were not considered.

There are a few studies that focus on determining the m-readiness of students and faculty. Cheon et al. (2012) investigated the students’ intentions to use mobile for learning at higher education level by
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