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Social and individual antecedents of m-learning adoption in Iran

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ABSTRACT

The purpose of this paper is to explore the effects of perceived ease of use, perceived usefulness, subjective norm, perceived image, personal innovativeness, individual mobility, absorptive capacity, and self-efficacy on user intention and satisfaction, alongside the mediating effect of usability towards use of m-learning in Iran. Based on the m-learning user data collected through a survey, structural equations modeling (SEM) and path analysis were employed to test the research model. The results revealed that "intention" and "user satisfaction" both predicted the actual use of m-learning. "Subjective norm" and "perceived image" were found to be the most important antecedents of user intention towards use of m-learning. At last, "perceived usefulness" mediated the relationship between ease of use and user intention. The sample consisted of e-learning users of only four public universities in Iran and private universities were not studied. Past studies have seldom examined the proposed antecedents in the context of m-learning based on an integrated model of TAM and ECT in developing countries. Moreover, this paper tries to provide a literature review of recent published studies in the field of m-learning.

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1. Introduction

Mobile devices and laptops provide more benefits in learning contexts rather than conventional and desktop computers (Ozdamli & Uzunboylu, 2014). Mobile learning can be defined as a dynamic learning environment through the use of handheld and palmtop devices in the field of education (Jeong & Hong, 2013; Keengwe & Bhargava, 2013) which supports learners with some special capabilities such as interactivity, strong search, immediacy, physical mobility and situating of educational activities, self-organized and self-directed learning, corporate training, personalized learning, and an effective technique of delivering lesson and gaining knowledge (Bidin & Ziden, 2013; Jeong & Hong, 2013; Martin & Ertzberger, 2013; Viberg & Gronlung, 2013). Mobile devices are indicated to have a positive impact on both teachers and students in that it positively affects the duration of their attention, learning and training tenacity, and their attitudes towards collaboration and interaction (Ozdamli & Uzunboylu, 2014). Past researchers have concluded that anywhere and anytime learning and access to information and communication are facilitated through using mobile devices (Abachi & Muhammad, 2013; Chen & Tseng, 2012; Pena-Ayala, Sossa, & Mendez, 2014). Abachi and Muhammad (2013) note that almost all individuals

involved in m-learning are in favour of using m-technology in educational context for flexible access in terms of time, space, and pace and online collaborative learning it provides; although, they have some concerns about the security and coverage of the system as well. Users' changing preferences towards making benefit from latest technologies (Erkollar & Oberer, 2012). Massive changes in every sector of education and in society due to development and prevalence of high-tech handheld devices and learning with no boundaries (Ozuorcun & Tabak, 2012) together with a collection of previously mentioned features m-learning has brought to the context of learning distinct m-learning from e-learning. M-learning is important in Iran since it provides the universities and organizations with the possibility of widening the scope of their students to those who have not the opportunity to enroll in traditional classes for reasons such as being physically handicapped, employed, and working at home of most Iranian women. In the context of this article, mobile technologies include all those portable and lightweight devices such as PDAs, smart phones, tablets, and laptops which assist situated educational provision. This is in spite of the fact that, as Hassanzadeh, Kanaani, and Elahi (2012) quoted, many Iranian applicants do not have any access to higher education in face-to-face classes; therefore, M-learning systems can emerge as an alternative; what's more, satisfy and compensate the weakness of traditional learning methods. So, if we influentially make the best use of learning opportunities provided by mobile platforms such as m-learning systems, a remarkable result will expect youth and knowledge seekers.

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Knowledge management has undoubtedly been one of the most studied information system research domain in recent years (Lin & Hwang, 2014). As it is growing strategic significance in different sections, organizations have planned forward applying various KM initiatives (Lin, 2014; Yan, Davison, & Mo, 2013). E-learning systems are significantly being paid attention by many institutions to be influential tools in their knowledge management activities (Lin & Hwang, 2014; Tamjidyamcholo, Bin Baba, Mohd Shuib, & Rohani, 2014). In knowledge management, a significant matter appears to be how to push individuals to more engage in knowledge sharing (Zhang, Pablos, & Xu, 2014; Zhang, Pablos, & Zhou, 2013). M-learning, however, as one of the KM initiatives, has provided a dynamic learning environment through which knowledge is being easily gained and shared among users (Jeong & Hong, 2013; Viberg & Gronlung, 2013). While mobile devices are increasingly being used for learning, the need for research on potential factors driving m-learning adoption still is felt (Viberg & Gronlung, 2013), especially in the context of developing countries. Past studies have used information technology adoption theories such as the Technology Acceptance Model (TAM). Innovation Diffusion Theory (IDT) and the Unified Theory of Acceptance and Use of Technology (UTAUT) to explore m-learning users' behavioural patterns. Some of these studies have taken the barriers and the drivers of m-learning adoption into consideration (e.g., Chen & Tseng, 2012; Cheon, Lee, Crook, & Song, 2012; Sung & Mayer, 2012; Viberg & Gronlung, 2013). In this paper, it is attempted to examine a model for predicting individual's actual use of m-learning in Iran. As Li, Duan, Fu, and Alford (2012) note, it is essential to examine the relationship between e-learners' experiences, perceptions, and their behavioural intentions to use IS since system use is an important indicator of the system's success.

This study, compared to Hassanzadeh et al. (2012) who use the IS success model to measure e-learning system success, tries to step forward to investigate the students' perceptions on m-learning which appears to be the main contribution of the paper along with the fact that it tries to investigate social drivers such as perceived image and subjective norm and individual drivers such as personal innovativeness, individual mobility, absorptive capacity, and self-efficacy which have rarely been used in the context of m-learning usage.

Hassanzadeh et al. (2012) in their attempts to assess e-learning systems success in Iranian universities, identified technical system quality, educational system quality, content and information quality, service quality, user satisfaction, and intention as influential towards the use of system, system loyalty, and goal achievement. Motaghian, Hassanzadeh, and Karimzadegan Moghadam (2013) in their attempts to assess the influence of IS-oriented, psychological, and behavioural factors on instructors' adoption of web-based learning systems in Iran, identified that perceived usefulness, perceived ease of use, and system quality improve instructors' intentions to use.

In most of the studies carried out in m-learning context, some limited external variables are incorporated, but the present model in this study tries to incorporate a collection of external latent individual and social variables and examine their effects on m-learning adoption based on an integrated model of TAM and Expectation-Confirmation Theory (ECT). Moreover, this study seeks to understand whether individuals' intentions towards m-learning adoption and their actual uses are determined by their satisfactions, and seldom has any study investigated in this way. This paper is focused on Iran as a developing country in the Middle East, which possesses a large population of over 75 million individuals, 42 million of which according to Internetworldsats.com (2012) are internet users, ranking Iran first in the Middle East and fourth in Asia. This study attempts to fill a research gap by addressing the effects perceived ease of use, perceived usefulness, subjective norm, perceived image, personal innovativeness, individual mobility, absorptive capacity, and self-efficacy have on user satisfaction and intention to use m-learning, while investigating indirect effect of perceived ease of use on intention through perceived usefulness. Therefore, the main research objectives are formulated as follows:

Q1. Do the individual and social factors have positive effects on mobile learning adoption in Iran?

Q2. Does learner's intentions and actual use of m-learning is determined by their satisfactions?

The remainder of the paper is structured as follows: we address literature review in the next section. This is followed by the presentation of the research hypotheses, discussion of findings, conclusions, and finally recommendations for future studies.

2. Literature review

The Technology Acceptance Model proposed by Davis & Bagozzi (Bagozzi, Davis, & Warshaw, 1992) appears to be the most widely used innovation adoption model. This model has been used in a variety of studies to explore the factors affecting individual's use of new technology. In fact, TAM is an adaptation of TRA in regard to IS which notes that perceived usefulness and perceived ease of use determine an individual's attitudes towards their intention to use an innovation with the intention serving as a mediator to the actual use of the system. Perceived usefulness is also considered to be affected directly by perceived ease of use. The Expectation-Confirmation Theory (ECT) suggests that consumers would compare the IS perceived performance with their expectations and determine the extent to which their expectations are confirmed. Finally, based on their expectation and confirmation levels, consumers find a satisfaction assessment that affects their behavioural intention (Venkatesh, Thong, Chan, Hu, & Brown, 2011).

2.1. Related theories and studies

On the other hand, there are other related theories that deserve to be mentioned. These are theories such as Theory of Planned Behaviour (TPB) which discusses that adoption behaviour is preceded by behavioural intention which in itself is a function of the individual's attitude, their beliefs about the extent to which they can control a particular behaviour and other external factors. Social Cognitive Theory (SCT) is a framework for understanding, predicting, and changing behaviour which introduces human behaviour as a result of the interaction between personal factors, behaviour, and the environment; Diffusion of Innovation Theory (IDT) which considers adoption of IS as a social construct that gradually develops through the population over time; the Decomposed Theory of Planned Behaviour (DTPB). an extended version of TAM, which models perceived ease of use and perceived usefulness as mediators of behavioural intention in which compatibility serves as an antecedent for both of them, and the Unified Theory of User Acceptance of Technology (UTAUT) which notes that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are the main determinants of consumers' usage intention and behaviour.

Mahat, Ayub, and Wong (2012) discovered the significant effects of three main factors including personal innovativeness, readiness to use, and self-efficacy on students' intentions towards m-learning adoption. Liu, Li, and Carlsson (2010) indicated that perceived near-term/long-term usefulness and personal