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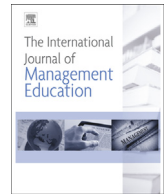
Research notes

Acceptance and usage of a mobile information system in higher education: An empirical study with structural equation modeling

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ABSTRACT

Along with the rapid development of information and communication technologies (ICTSs), an astonishing number of mobile commerce applications have become available. Hence, the aim of this study is to investigate the use and acceptance of the Mobile Education Information System of Sakarya University (SABIS), a comprehensive information technology platform developed and implemented by Sakarya University Information Systems Department. Data were obtained from Sakarya University undergraduate students via a paper based survey to test the "Mobile Services Acceptance Model" using Structural Equation Model. Findings from 227 management undergraduate students indicated that the trust is important factor for predicting intention to use, yet the personal characteristics, perceived ease of use, and perceived usefulness do not have a meaningful effect on user intentions to adopt mobile SABIS. Results also showed a strong exogenous role of context and a positive strong relationship among perceived ease of use, perceived usefulness and trust to intentions to use in our theoretical framework.

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1. Introduction

In our lives today, information and communication technologies (ICTs) have become much more indispensable and humanity has changed to keep pace with change. Although developing a new technology is a crucial process on its own, appreciation and usage of technology are also critical. Information technology usage has been a key dependent variable in Management Information Systems (MIS) research for many years, yet the factors affecting the usage and acceptance intentions of users are still questioned (Akbar, 2013; Bogart & Wichadee, 2015; Davis, 1989, 1993; Hew, Lee, Ooi, & Wei, 2015; Karahanna, Straub, & Chervany, 1999; Moore & Benbasat, 1996; Oye, Iahad, & Ab.Rahim, 2014; Park, 2009; Taylor & Todd, 1995; Venkatesh, Thong, & Xu, 2012). New technologies also provide new opportunities and adoption and acceptance of these new promising technologies have become a significant problem for both practitioners and academicians. Hence, it is an important issue to understand which factors contribute to users' intentions to use new mobile services.

The basic challenge is to understand how and why people adopt or do not adopt mobile services. Sarker and Wells (2003) claimed that there is not a clear understanding of the motivations and circumstances, which guide consumers to adopt and

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use mobile devices. In most cases, the successful diffusion of new mobile service is partially determined by willingness of users to adopt these services (Gao, Krogstie, & Siau, 2011). While there are some other factors like reference prices of the services offered (Blechar, Constantiou, & Damsgaard, 2006), standards, infrastructure and content (Barnes, 2002), compatibility, individual mobility and subjective norms (Schierz, Schilke, & Wirtz, 2010) seem to be affecting more to the users' intentions. Researchers are forced to investigate the determinants of user acceptance, because of enhancing applications, continuous emergence of new services and devices, existing competition, and inevitable developments in technology. Only a few studies addressed the acceptance of mobile services, while there has been a great deal of research on mobile services development (Conti, Militello, Sorbello, & Vitabile, 2009; Julien & Roman, 2006; Safar, Sawwan, Taha, & Al-Fadhli, 2009) and mobile and wireless networks (Durresi & Denko, 2009; You & Hara, 2010). Few studies have investigated the potential factors affecting the user adoption of mobile services (Gao et al., 2011). In this context, Gao, Krogstie, and Gransæther (2008) offered a new mobile services acceptance model by using existing technology acceptance framework by integrating new theoretical constructs. The new constructs offered in their study are namely personal initiative and characteristics, trust and context. Their model also includes traditional constructs like perceived ease of use, perceived usefulness, and intention to use. Their model based on Technology Acceptance Model (TAM) and it is augmented with other factors.

This study is among the first to study mobile services acceptance in higher education in a developing country context. The main objective of this work is to achieve a better understanding of factors influencing the adoption of mobile applications. In this study, a mobile services acceptance model (Gao et al., 2008) based on Technology Acceptance Theory is used to investigate the degree of acceptance and adoption of Sakarya University Information System's (SABIS) among the undergraduate management students. Sakarya University is the only higher education institution in Turkey that has won the "Continuity of Excellence Prize and European Foundation for Quality Management (EFQM)" and the first university with a "Quality Management Certification ISO 9001:2001" in the country.

Approximately 86,000 students study at Sakarya University as vocational school students, undergraduate and graduate students, and in distance education. The university has its own education management information system (EMIS) called SABIS. Detailed information of SABIS will be discussed in the next section in terms of how it could enhance student learning and instructor teaching capacity.

The paper is organized accordingly; a research background with a brief overview of general technology acceptance models is presented first. Detailed information about mobile application adoption and usage in the universities is presented next, followed by research model and hypotheses, methodology, theory testing and results, implications, limitations, conclusions, and recommendations.

2. Literature review

2.1. Technology acceptance models and mobile services acceptance model

User adoption of technology and critical factors are included in several areas of research, including marketing (Carlsson, Carlsson, Hyvönen, Puhakainen, & Walden, 2006; Schierz et al., 2010; Wang & Li, 2012), mobile services usage (Kargin & Basoglu, 2007; Yang, 2010; Zhou, 2011), and instant messaging (Hsu, Lu, & Hsu, 2007; Lu, Deng, & Wang, 2010). Various technology acceptance models and theories have been suggested in the literature. For an understanding of the existing work in this subject, a review of some related and underlying models are discussed below.

Several theoretical models have been developed to test the users' acceptance behavior. Among them, the Technology Acceptance Model (TAM) (Davis, 1989), an extension of the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), is widely applied and empirically tested in MIS research. TAM is one of the most widely used models due to its understandability and simplicity (Legris, Ingham, & Collerette, 2003). TAM predicts user acceptance of a technology based upon estimation of three core constructs: perceived usefulness (PU), perceived ease of use (PeU), and behavioral intention (BI); however, the major constructs of TAM cannot fully reflect the specific influences of technological and usage-context factors that may influence users' acceptance.

As a consequence, two other models have been incorporated. The first is the Extended Technology Acceptance Model (TAM2) (Venkatesh & Davis, 2000) which includes social influence processes (subjective norm, voluntarism, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and PeU). The second is Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003) based on studies of eight prominent information system adoption models including TAM. However, gathering the eight different models together has increased the UTAUT's complexity.

Innovation Diffusion Theory (IDT) is another well-known theory proposed by Rogers (1995). In recent decades, IDT has been widely used by information system researchers to predict the implementation of new technological innovations and how certain variables interact with one another. Previous research (Taylor & Todd, 1995) identifies the similarity between the constructs of TAM and IDT. Two constructs in IDT (relative advantage and complexity) seem to be the same as perceived usefulness and perceived ease of use in TAM, respectively. However, little research has been done on applying IDT to the domain of mobile services (Gao et al., 2011).

In this study, the Mobile Services Acceptance Model was used to determine the factors that affect the adoption and the usage of a Turkish education management information system on a mobile platform. While our research model is based on TAM (perceived ease of use, perceived usefulness), it consists of additional constructs, such as trust, context, personal