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Modeling the continuance usage intention of online learning environments

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ABSTRACT

This study focused on the continuance usage intention toward online learning environments and also proposed and empirically tested an integrated model to better understand the determinants of students' continuance intention to use these environments. For this purpose, variables which may have an effect on the continuance usage intention were examined and an "online continuance usage intention model" was revealed. When the variables of the hypothetical model were determined, Technology Continuance Theory, Information Systems Success Model, Cognitive Model and Information Systems Expectation Confirmation Model have been practiced on. Empirical data from 467 public university students who had used an online learning environment for the first time were tested against the proposed research model by using path analysis. The results indicated that, confirmation of the usage of online learning environments could be explained by information quality, system quality and service quality variables. 63% of the variance of the satisfaction variable was explained by information quality, system quality, service quality, confirmation, utilitarian value, outcome expectations and perceived value. Research results confirmed the propounded constructs of Information Systems Success Model and Information Systems Expectation Confirmation Model. In line with the obtained findings and results, some of the various suggestions were provided for the next studies and implementations.

1. Introduction

Continuous expansion of online learning, with the help of unique and interesting learning platform designs and activities, has led to enhancements in student learning processes. Interaction and communication patterns within these environments are different from face-to-face learning environments (Symeonides & Childs, 2015); students learn in a diverse environment through varied modes of participation. On the other hand, various types of communication styles, such as student–instructor communication, student–student communication and student-communities' communication, are considered about these learning environments (Hung & Chou, 2015; Sharma, Joshi, & Sharma, 2016) and learners have discussions with teachers/instructors and other learners through the use of synchronous and asynchronous communication tools (Gökçearslan & Alper, 2015; Shukor, Tasira, & Van der Meijden, 2015). To understand online behaviour, researchers are concentrated on conventional media behaviour and also new aspects which are applicable to virtual environments (Esteban-Millat, Martínez-López, Huertas-García, Meseguer, & Rodríguez-Ardura, 2014). There are various studies in the literature of this area which emphasise that active student participation in effectively designed online courses is important for the success of these learning environments (Bourelle, Bourelle, Knutson, & Spong, 2016; Harasim, Hiltz, Teles, & Turoff, 1995; Hranstinski, 2009; Mandernach, Gonzales, & Garnett, 2006; Masters & Oberprieler, 2004; McKavanagh, Kanes, Beven, Cunningham, & Choy, 2002; Sutton, 2001). There are also a number of studies on the effectiveness of synchronous or asynchronous tools used in environments where adequate participation and interaction are ensured (Cheng, Paré, Collimore, & Joordens, 2011; Shana, 2009). However, in order to ensure effective participation in online learning environments, students must spend adequate time in the environment, participate actively and interact with both the teacher and the other students. You and Kang (2014) emphasized that unsuccessful online learners do not allocate enough time and effort within these learning environments. To enhance online learning, it is necessary to enhance online learner participation in online learning environments (Hranstinski, 2009). Öncü and Çakır (2011) mentioned that improving cooperation and communication among online learners

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was one of the indicators of successful online learning environments. Furthermore, limitedness of learner participation in online learning environments and failure to obtain expected benefits from the utilisation of such environments have become frequently experienced problems (Hew, Cheung, & Ng, 2009; Hewitt, 2005). In the study conducted by Shaw in 2012, students' participation in online learning environments was classified as *replies with solutions*, *asks questions*, *browses other's solutions and questions* and *no action. No action* students did not interact with others in the environment, while *browses other's solutions and questions* students could effectively use such environments while remaining passive listeners. In other words, these environments are made use of and adopted for a certain period of time, however there is no continuance or sustainability in usage behaviour. Bento and Schuster (2003) classified student participation in online learning environments into four groups: *active learners*, *social participants*, *missing in action* and *witness learners*. Pala and Erdem (2011) talked about *missing in action* as "students who communicate poorly and rarely interact with the content", while stating that *witness learners* were similar to the *missing in action* students but with the single difference of being good readers. No matter what kind of classifications are made, students with low levels of participation should be encouraged for continuance and students should be motivated to make use of these environments. In summary, ensuring continuance usage is a variable that is as important as the participation variable and should therefore be considered for further research. Furthermore, Seddon (1997) and Lee (2010) suggested that ensuring continuance usage would lead to achievement.

Studies on acceptance, adoption and usage of technological developments start from the point where technology is introduced as an innovation and try to analyse its usage and adoption during this time. However, none of the theories or models in the acceptance and adoption literature could predict the continuance in diverse learning environments. Moreover, the variables that these theories were based on also varied. Although continuance has been explained in certain studies as an extension of the adoption process (Jasperson, Carter, & Zmud, 2005; Karahanna, Straub, & Chervany, 1999; Venkatesh & Davis, 2000), this type of thinking has been widely criticised by recent theories (Bhattacherjee, 2001) and it has been suggested that long-term usage should be predicted and analysed through different constructs. In light of the opinion that a precise continuance may not be obtained in usage of an accepted technology, Bhattacherjee (2001) and Lee (2010) named this situation as "acceptance-discontinuance anomaly" and considered it as a phenomenon that should be investigated.

Studying whether the various dynamics considered in online learning environments design are reflected in the usage of the environment is quite essential in terms of the proportion of time and efforts spent over the results. While there are variables affecting the adoption and usage of a technology, there may also be certain variables which affect its long-term usage. Identification of these variables and testing of a potential model built upon them would fill a gap in the literature of a model or theory for predicting the continuance usage of online learning environments and for designing successful online learning environments. It is clear that these environments can provide expected benefits, but only when continuance usage is ensured. Furthermore, the primary condition for ensuring effective learner participation in online learning environments is continuance usage. With respect to varied levels of interaction and participation, ensuring continuance in students' usage of online learning environments is considered to be essential in terms of maintaining the purposefulness of learning experiences within these environments. Therefore, in the light of the literature and the complex relationship patterns among these variables, it is believed that determining those variables that could affect continuance usage will contribute to more effective online learning environment design and to a certain extent, benefit teachers and students. In this respect, the purpose of this study is to identify the variables that could affect the continuance usage intention of online learning environments and present an "online continuance usage intention model".

1.1. Theoretical framework

1.1.1. Continuance

Certain diffusion and acceptance researchers such as Davis (1989), Venkatesh, Morris, Davis, and Davis (2003) have conducted studies and developed theories about the acceptance, adoption and utilisation of technological innovations for many years. However, none of these theories and models explain continuance usage. Some of the studies in the literature (Doherty, 2011; Handal, Cavanagh, Wood, & Petocz, 2011; Kukulska-Hulme, 2012; Kurt, 2012; Lee, Yoon, & Lee, 2009; Vanderlinde & van Braak, 2011; Wang & Wang, 2009) examined students' and teachers' adoption and acceptance of these environments, however they did not interpret the continuance or come to conclusions about the longitudinal effect of time. Furthermore, the variables on which these theories were based are quite different from the variables considered within the context of recent theories regarding continuance.

Some recent studies have found that in varied learning environments the main focus should be on the continuance usage behaviour rather than short-term usage (Bhattacherjee, 2001; Bhattacherjee, Perols, & Sanford, 2008; Ifinedo, 2006; Jasperson et al., 2005; Terzis, Moridis, & Economides, 2013; Thong, Hong, & Tam, 2006). Studies have also shown that interiorised usage could not be predicted by studies using concepts such as short-term usage, acceptance and adoption (Jasperson et al., 2005; Shih, 2008); and therefore, studies on ensuring continuance usage have gained importance. In the light of this gap in the literature, varied and enhanced theories have been developed with respect to the prediction of continuance usage of technological innovations. Within these theories, the tracking of the usage process does not cease upon understanding usage behaviour and the continuance usage of the technology could be predicted.

Limayem and Cheung (2008), in their study on the continuance usage of internet-based learning technologies, integrated a habit variable into Bhattacherjee's (2001) Information Systems Continuance Model and tested this extended theory with 303 university students. The study concluded that habit, continuance intention, satisfaction and prior behaviour were variables that could affect continuance usage of internet-based learning technologies and the continuance usage variance was predicted at the rate of 23%.

In a study on the continuance of virtual communities (Jin, Cheung, Lee, & Chen, 2007), a research model was constructed based on the Information Systems Continuance Model and Information Adoption Model and tested with 240 students enrolled at a state university in China. According to the findings of the study, satisfaction and information usefulness were the two major variables that could affect continuance intention. It was observed that while the satisfaction variable could be predicted with the information usefulness and source credibility variables, the information usefulness variable could be predicted with the information quality and source credibility variables.

In a study where continuance participation behaviour in Facebook was analysed within a social and behavioural approach (Al-Debei, Al-Lozi, & Papazafeiropoulou, 2013), it was found that continuance participation intention was directly effective on continuance participation behaviour, while attitude and subjective norms were indirectly effective. It was also found that perceived behavioural control had both a direct effect on continuance participation behaviour and an indirect effect on continuance