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Factors influencing higher education students to adopt podcast: An empirical study

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ABSTRACT

Podcast, which is one of the technologies that was developed for personal entertainment or for information usage, has become one of the fastest growing technologies in distance learning over the past several years. Using the Technology Acceptance Model and Diffusion of Innovation Theory as base models, this study investigates the technological, individual, and social aspects that influence the adoption of podcast use in education. Previous research on podcast use in education attempted to study its adoption and diffusion; however, these studies have been rather isolated small case studies than a holistic, integrative research. This study overcomes this limitation by examining the student podcast adoption with survey data collected from 352 students in a higher education institution using a comprehensive model. The hypotheses were confirmed using structural equation modeling analytical procedures and the findings supported the proposed model. Based on the findings, implications for theory and practices are discussed.

1. Introduction

Technology advancement has affected many aspects of peoples' lives and changed the dynamics of technology delivery options over the years, including use in education. Online and mobile learning (m-learning) tools have become widely applied forms of e-learning and/or hybrid learning by educational institutions. Literature on m-learning in the last decade overwhelmingly suggests that podcasting initiatives have been on the rise across many nations (Abdous, Facer, & Yen, 2012; Bennet, 2006; Copley, 2007; Lee, McLoughlin, & Chan, 2008; Vogt, Schaffner, Ribar, & Chavez, 2010). Podcasting is "the process of capturing an audio event, song, speech, or mix of sounds and then posting that digital sound object to a web site or blog in a data structure called an RSS 2.0 envelope (or feed). Using specialized news readers, users can subscribe to a web page containing RSS 2.0 tagged audio files on designated web pages and automatically download these files directly into an audio management program on their personal computer. When a user synchronizes their portable audio device with their personal computer, the podcasts are automatically transferred to that device to be listened to at the time and location most convenient for the user" (Meng, 2005, p. 1). Podcasts usage helps institutions to serve their current students and to target those students who do not have the ability to attend regular classes. A recent report by the Pew Internet and American Life Project suggested that mobile technologies may contribute to reducing the "digital divide" (Smith, 2010). This indicates that m-learning tools can provide under-served communities with the opportunity to access quality education. By adopting the use of podcast and changing it from an entertainment tool to a learning tool, educators are also able to personalize and humanize e-Leaning by including rich media components into online courses in order to engage students in active, meaningful learning environment (Lee, Tan, & Goh, 2004). This paper extends the existing research in podcast by proposing and empirically testing a comprehensive model that explains podcast adoption by students of higher education.

Initiatives on podcast development have the potential to empower students and even involve them in the learning process. Podcasts are helpful tools for students to learn the material independently in a convenient way (Tavales & Skevoulis, 2006). Thus, podcasts can be seen as an essential tool in helping students acquire new skills and improve their academic achievement because they are active

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participants in the fulfillment of the task and they become a conductor of their own knowledge (Cruz & Carvalho, 2007; Lazzari, 2009). It is true that podcasts can help both institutions and students (Heilesen, 2010); however its effectiveness is minimized if students do not adopt the technology. A key to achieve success in the use of podcasts is when students adopt it; otherwise there is no purpose for this new teaching method. In a study, Koole (2009) argue that m-learning tools encompass technological, individual, and social aspects. Thus, in order to achieve success in the student adoption of podcast initiatives, institutions should take these aspects into consideration.

Educational institutions from around the world have been acquiring m-learning technologies to better serve their students. Demand for m-learning products and services has been rapidly increasing (Adkins, 2011). The growth of m-learning tools and specifically podcasts in education attracted many researchers to examine different aspects related to these technologies. For instance, some researchers were mainly interested in examining the benefits of podcasting and how this new method can influence the performance of students (Jarvis & Dickie, 2010; O'Bannon, Lubke, Beard, & Britt, 2011). Shim, Shropshire, Park, Harris, and Campbell (2007) examined student's preferences of media delivery richness of communication media using podcasts and webcasts. The main difference between podcasts and webcasts is that the latter requires users to be connected to the internet while playing or viewing the webcast files (Shim et al., 2007). Shim et al. (2007) found that personalization and usability are two main factors that affect media use. They also found podcasts to be a better communication tool rather than webcasts. Fernandez, Simo, and Sallan (2009) analyzed the use of podcasting to enhance distance students' personal study. They argued that podcasting is a powerful tool to complement traditional educational resources but not a complete substitute for them. Kemp, Mellor, Kotter, and Oosthoek (2012) suggested that student-produced podcasts enhance engagement, competence in e-technologies, creativity, science communication skills and a broader understanding of the instructional content.

Despite the growing body of literature, there is still a lack of research on students' adoption of podcasts, consequently there is room for new studies that help both practitioners and researchers to understand the factors leading to student podcast adoption. The investigation of the adoption and diffusion of podcasts by students has been very scarce in the literature; limited to specific case studies (Kemp et al., 2012) or groups of small number of participants (Fernandez et al., 2009; Hill, Nelson, France, & Woodland, 2012). Almost all of the current studies are limited by small sample size preventing generalization of their findings to overall factors on podcast adoption. To overcome these limitations, a comprehensive model that explains the adoption of this phenomenon as well as data from a larger sample of students are needed to explore the potential of this technology as an educational tool. This paper bridges this gap in the literature by proposing a comprehensive model that explains podcast adoption and empirically testing it using data collected from 352 students.

Drawing from the literature related to podcast, e-learning and mobile learning, and based on theoretical models such as the diffusion of innovation theory "DoI" (Rogers, 1983), and technology acceptance model "TAM" (Davis, Bagozzi, & Warshaw, 1989), this study examines the effect of technological, individual, and social factors on podcast adoption by students. Specifically, this study seeks to answer two main research questions: (1) what are the factors leading higher education students to adopt podcast? And (2) how do these factors influence podcast adoption? By answering these questions, this study makes the following contributions:

- Expand the existing literature by identifying a list of important dimensions that influence podcast adoption by students.
- Develop a conceptual comprehensive model of podcast adoption.
- The research model is empirically tested using a large sample size in a higher education institution enabling validation of effects of the previously mentioned factors on podcast adoption in a relatively robust way.

Studying the factors impacting student podcast adoption can help educational institutions which are planning to adopt this technology in their system, as well as it enriches the literature. IT developers and instructional designers may find the study useful since it highlights important factors that impact podcast adoption. By taking these factors into consideration, they can develop strategies that enhance the podcasts in order to make them more accepted by students. Additionally, researchers can make use of the model as a basis for research development and later try to build on top of it so as to enrich the body of knowledge in this area.

In the next section is presented a brief literature and theoretical framework upon which the study relies, followed by the research model and a set of research hypotheses. Next is discussed the methodology used to test the proposed model and hypotheses followed by a discussion of the results and the analysis of the study. Finally, conclusions and implications are presented, indicating limitations for this study and proposed areas for future research.

2. Literature and theoretical framework

The theoretical foundation for most technology adoption research is found in the diffusion of innovation (DoI) literature (Rogers, 1983) which explains the process of technology diffusion and the factors influencing technology adoption decisions. In his theory, Rogers explains how, why and at what rate new ideas and technologies spread through cultural systems. Diffusion is defined as the adoption of an innovation as it is transferred through communication channels within a social system (Rogers, 1995). The key elements of diffusion include innovation, communication channels, time and a social system. Innovation means "an idea, practice or object that is perceived as new by an individual or other unit of adoption" (Rogers, 1983, p. 11). Communication channels tell of the "means by which messages get from one individual to another" (Rogers, 1983, p. 18). The innovation-decision period is "the length of time required to pass through the innovation-decision process" (Rogers, 1983, p. 17) while the rate of innovation specifies "the relative speed with which an innovation is adopted by members of a social system" (Rogers, 1983, p. 22). Finally, Rogers defined a social system to be a "set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (Rogers, 1983, p. 24). Each of these four elements plays an important role in the diffusion of an innovation.

According to DoI theory, an innovation will be adopted slowly at first then increases its diffusion speed as more and more people adopt it. Thus, individuals can be classified into five adopter categories based on their innovativeness. These categories are: innovators, early adopters, early majority, late majority, and laggards. In addition to the characteristics of adopters, there are different characteristics of