A Study of Perceptions, Usability and Future Adoption of a Web-based Learning Tool

Romina L. Bot, Department of Computer and Information Technology, Purdue University, West Lafayette, IN, USA

Maria del Rosario Uribe, Department of Computer and Information Technology, Purdue University, West Lafayette, IN, USA

Alejandra J. Magana, Department of Computer and Information Technology, Purdue University, West Lafayette, IN, USA

Thomas Mustillo, Department of Computer and Information Technology, Purdue University, West Lafayette, IN, USA

John A. Springer, Department of Computer and Information Technology, Purdue University, West Lafayette, IN, USA

ABSTRACT

Studies of technology acceptance suggest that individuals’ perceptions of usage might be antecedents to predict their adoption. This research study explored students’ and professors’ perceptions regarding a web-based tool for political science education; the ultimate goal was to identify students and professors’ perceived usefulness and usability and thus their intention to adopt the solution as a learning tool. Forty participants answered a survey questionnaire, and quantitative and qualitative approaches were followed to uncover the relationships between usability principles, innovation attributes, and perceptions of usage. The results of the study provide new insight into the factors that may contribute to the acceptance of the learning tool, and ultimately to its actual use.

Keywords: Diffusion of Innovations, Technology Acceptance Model, Usability, User Perceptions, Web-based Learning Tools

INTRODUCTION

The use of information technologies to support learning has rapidly evolved; however, as successfully introducing any information technology innovation is often a difficult task (Prescott, 1995), such innovations must be fully adopted to obtain the expected benefits and performance gains (Agarwal & Prasad, 1998; Davis, Bagozzi, & Warshaw, 1989). Technol-
ogy acceptance have been widely studied as a measure for technology adoption (Lallmahomed et al. 2011, Poelmans et al., 2008), and researchers have generated multiple theories that attempt to explain and predict the manner in which diverse factors impact individuals’ intention to use a specific innovative tool (Raaij & Schepers, 2008, Lallmahomed et al. 2011). Two such theories, the Diffusion of Innovation Theory (DoI) (Rogers, 2003) and the Technology Acceptance Model (TAM) (Davis, 1989), are suitable models for explaining and predicting the user acceptance and adoption of new information systems. A vast amount of research based on these theories supports the idea that user perceptions about usefulness and ease of use are determinants for the acceptance of computational tools (Laderer, Maupin, Sena, & Zhuang, 2000; Lee, Kozar, & Larsen, 2003; Moore & Benbasat, 1991). In addition, several studies indicate that these theories can be applied to the evaluation of future adoption of learning environments and web-based applications with successful results (Corrigan, 2012; Hazen, Sankar, & Jones-Farmer, 2012; Landry, Griffeth, & Hartman, 2006; Park, 2009). When coupled and analyzed together, these two frameworks have the potential to explain the behavioral intention to use a technological tool (Lee, 2011).

On the other hand, the fields of Human Computer Interaction (HCI) and User-Centered Design (UCD) consider usability as a main aspect in the design and development of effective systems (Corry, Frick, & Hansen, 1997; Sinha, Shahi, & Shankar, 2010). According to Palmer (2002, July) usability is crucial for web site success, and prior research has suggested that usable interfaces might affect user perceptions (Laderer et al., 2000; Landry et al., 2006). However, usability principles are not considered in the TAM and DoI frameworks when trying to explain technology intention to use a web learning system (Holden & Rada, 2011).

In this research, we explore not only constructs associated with TAM theory (perceived usefulness and perceived ease of use) and the DoI theory (compatibility, relative advantage, and complexity), but also usability principles (effectiveness, efficiency, error tolerance, engagement, and ease of learning) to evaluate users’ perceptions about a web-based learning tool used in a Political Science course. We jointly used constructs associated with these frameworks to identify details that may contribute to the perceived usefulness and ease of use of the tool, and thus to the behavioral intention to use it in the future.

We evaluated students’ and professors’ intention to use The Global Database of Democracy and Governance as a learning tool. The database stores electoral and institutional data from several countries, and its corresponding web site is composed of a set of electoral reports that display several measures of interest for comparative political scientists. Starting in spring 2013, the tool was used for instructional purposes in a Political Science course at a large Midwestern University. In order to achieve a satisfactory learning experience and to promote a positive attitude toward the use of the database, several improvements were performed with focus on the usable aspects of its web interface. Usability enhancements addressed the following design elements: navigation, response time, content, interactivity, and responsiveness (Palmer, 2002; 2002, July). The present study intends to answer the following research questions:

- How do students and professors perceive the use of a web site as a learning tool under the lenses of technology acceptance, diffusion of innovations and usability?
- How are users’ perceptions of attributes of usability, innovation, and technology acceptance of a web-based learning tool related to one another?
- What are users’ behavioral intentions of future adoption of the web site as a learning tool for comparative political science education?

Overall, this study provides insights on the manner in which a web-based tool can ultimately be adopted by students and instructors as a learning tool for political science educa-
An Investigation into Customers’ Requirements for Electronic Banking: A Case Study of Microfinance Institutions (MFIs) in Kenya
www.igi-global.com/article/an-investigation-into-customers-requirements-for-electronic-banking/176632?camid=4v1a

The Role of Information Communication Technologies Within the Field of Communication for Social Change
Jan Servaes (2011). *Mobile Information Communication Technologies Adoption in Developing Countries: Effects and Implications* (pp. 218-236).
www.igi-global.com/chapter/role-information-communication-technologies-within/46494?camid=4v1a