The Impact of Prior System Beliefs on User Perceptions towards a New System: A Study on E-Learning Systems

Research-in-Progress

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ABSTRACT
Understanding why people accept or reject new information systems is an important IS research topic. Successful IT implementation is crucial to an organization's competitiveness but is often challenged by user resistance to accepting new systems. Most existing IT adoption studies focus on assessing the new system itself, while the majority of IT switching studies focus on examining and comparing different types of switching costs. However, little research has leveraged both perspectives to investigate the impact of users' beliefs about the prior system on their perception towards the new system. By combining the two perspectives, this research in progress proposes an integrated framework including a comprehensive set of IT adoption and switching cost factors. We plan to empirically examine this framework in an e-learning context for two reasons. First, research on e-learning system switch is rare. Second, an ongoing e-learning system transition at the authors' institution provides an ideal empirical setting.

Keywords
IS adoption, prior system impact, switching cost, e-learning system transition

INTRODUCTION
Successful implementation of information technology (IT) is crucial to an organization's competitiveness (Applegate and Elam 1992; Ferneley and Sobreperez 2006). It can play an important role in achieving technology-enabled cost savings and process improvement, and improving organizations’ agility in global competition (Ives and Learmonth 1984). In general, new technologies offer more and potentially better functions with a greater number of features. Taking operating systems for example, Linux and the MS Windows operating systems represented new technologies capable of replacing the MS DOS operating system and providing enhanced functionality. This leads, over time, to the replacement of MS-DOS OSs by the newer and more fully featured Linux and Windows OSs.

However, it is not always true that people like to choose new, appealing, and possibly more effective systems. Instead, they may choose to retain an existing system, even though the new alternative offers more features with better functionality and improved usability. This could be attributed to people's propensity to avoid changes. Pogue (2006) reported that 85% of Internet users continued using MS Internet Explorer although other Internet browser software such as Firefox and Opera provided additional useful features free of charge. This example illustrates the potential influence of users’ perceptions or beliefs about a familiar system on their assessment of, and intention to use, a new system.

Previous research on system switch mainly focuses on the switching cost perspective. Detailed types of switching costs have been identified and compared (Kim 2011; Kim and Perera 2008). Switching costs have been examined in various contexts, such as Web browsers (Kim et al. 2008; Ye, Seo, Desouza, Sangareddy and Jha 2008), enterprise systems (Kim 2011), email systems (Kim, Shin and Lee 2006), marketing (Lee, Chung and Lee 2011), IT outsourcing (Whitten, Chakrabarty and Wakefield 2010), etc. However, little research has leveraged both the IT adoption and switching cost perspectives to specifically investigate the impact of users’ beliefs about the prior system on their perception towards the new system. Further, few studies have examined the system transition scenario of e-learning systems. To bridge the gaps, this research in progress aims to answer the following questions:
RQ1: How can IT adoption and switching cost perspectives be combined to systematically examine the impact of the user’s prior system beliefs on his/her perceptions towards a new system?

RQ2: What are the important factors that will influence users’ perceptions about a new system in the e-learning context?

RELATED LITERATURE AND THE RESEARCH FRAMEWORK
In this section, we present the theoretical background of the study (theories related to IT adoption and switching cost), summarize existing research on system switching, and describe the proposed research framework.

IT Adoption Theories
Information systems play an increasingly important role as they can provide effective search and convenient access to relevant information and documents to end users. By providing a large collection of data sources together with analysis and decision making support, an information system provides an integrated access for people to find information (documents) relevant to their interests in an effective and efficient manner (Adeoti-Adekeye 1997).

Most IT adoption studies focus on examining the success of information systems in various contexts. For example, Bailey and Pearson (1983) identified 39 different factors that could influence user satisfaction and developed a measurement scale accordingly. DeLone and McLean (1992) conducted a comprehensive survey of 180 research articles published in leading IS journals, and proposed an IS success model. Their model leveraged related literature including communication theory (Shannon and Weaver 1949) and information influence theory (Mason 1978). The model has six dimensions fundamental to IS success, including: system quality, information quality, system usage, user satisfaction, individual impact, and organizational impact. Examples of other well-known theories related to user acceptance or system usage are the technology acceptance model (TAM; Davis 1989) and the unified theory of acceptance and use of technology (UTAUT; Venkatesh Morris Davis and Davis 2003).

There may be substantial resistance to acceptance of new systems, even when they provide substantial advantages aimed at improving users’ task performance compared with the prior system, and this resistance may range from passive non-use (Schmitt and Kozar 1978) to physical sabotages (Dickson Simmons and Anderson 1974). Even changes perceived by users as beneficial can encounter resistance (Hirschheim and Newman 1988) as people may fear job loss, diminished status, or reduced power or control. They may deeply believe in the status quo due to their comfort with and loyalty to the current system. Thus, the current system becomes the anchor of their perceptions of future systems. Changes from the anchor could make them feel uncomfortable or even nervous about the new system. However, when assessing the success and acceptance of a new system, most existing IT adoption models focus on the new system itself without specifically considering users’ prior system perception as potential influencing factors. In this research in progress, we aim to address this gap by combining both IT adoption and switching cost perspectives into an integrated research framework. The theoretical concept of switching cost is presented in the following sub-section.

Switching Cost Factors
In the presence of an anchoring system, people may resist or be reluctant to switch to a new system even though it offers more features, better functionality, and improved usability. Such resistance might stem from potential costs associated with the change to the new system. Two major types of switching costs have been identified: economic expenditures and intangible costs (Whitten and Wakefield 2006). Economic expenditures refer to the monetary costs of setting up and implementing a new system. Intangible costs are concerned with the psychological or relational costs.

Switching costs can be further classified into uncertainty cost, emotional cost, learning/training cost, implementation cost, reduced performance, and sunk cost (Kim 2011; Kim et al. 2008). Uncertainty occurs when the performance level of an alternative system is unknown (Guiltinan 1989; Jones, Mothersbaugh and Beatty 2002; Lam, Shankar and Murthy 2004). Previous research has shown that heterogeneity impacts uncertainty costs, meaning that the more heterogeneous an alternative system is, the more significant the uncertainty costs are (Zeithaml, Parasuraman and Berry 1985). Emotional costs refer to the psychological or emotional discomfort associated with the switch from the prior system to an alternative, which can be attributed to the individual’s loyalty to the prior system (Guiltinan 1989). Learning/training costs are the costs associated with assisting people to learn how to use the new system (Burnham, Frels and Mahajan 2003; Jones et al. 2002; Klemperer 1987). Implementation costs may include the direct monetary expenses in acquiring, setting up, and fine-tuning a new system, and can be measured by time, effort, and money (Burnham et al. 2003; Jones et al. 2002; Spekman and Strauss 1986; Whitten et al. 2006). Reduced performance costs refer to the loss of tangible or intangible benefits when switching to a new system (Gwinner, Gremler and Bitner 1998; Jones et al. 2002). Sunk costs involve the non-recoverable expenditures of
time, effort, and/or money invested in establishing and maintaining the prior system (Guiltinan 1989; Jones et al. 2002). Previous research has shown sunk costs to have significant impacts on the escalation of information systems projects (Keil et al. 2000).

Existing Research on System Switching

System switching scenarios have been examined in various contexts based on the switching cost perspective, including Web browsers (Kim et al. 2008; Ye et al. 2008), enterprise systems (Kim 2011), email systems (Kim et al. 2006), marketing (Lee et al. 2011), IT outsourcing (Whitten et al. 2010), etc. In addition, different types of switching costs have been identified and compared (Kim 2011; Kim et al. 2008).

For example, Kim and Perera (2008) examined the influence of six types of switching costs on user resistance to change in the context of Web browsers, and found that lost performance costs and emotional costs could significantly influence user resistance to change to a new Web browser. In another study, guided by the status quo bias theory, Kim and Kankanhalli (2009) investigated the switchover to a new enterprise system, and found that both switching costs and switching benefits could significantly influence the perceived value which, in turn, influenced user resistance to change. Whitten, Chakrabarty, and Wakefield (2010) studied the relationship between the switching cost and IT outsourcing strategy. They found that organizations tended to continue outsourcing when the switching cost was high and preferred backsourcing (i.e., pulling the previously outsourced functions back in-house) when the switching cost was low.

When investigating switching costs, a few studies have considered IT adoption factors as well, but with a limited set of factors. For example, Chen and Hitt (2003) measured the determinants of system switching using the online brokerage industry, and found that system usage and system quality were associated with reduced switching. Zhang, Lee, Cheung and Chen (2009) studied bloggers’ switching behavior and identified three factors that could significantly influence intention to switch; they are satisfaction, sunk costs, and attractive alternatives. Although both switching cost and IT adoption factors were considered in those studies, to the best of our knowledge, none of them has considered or integrated a comprehensive set of factors from both perspectives. In addition, few studies have specifically considered the causal relationships from the IT adoption factors on the prior system to those on the new system. Further, research on e-learning system switches is rare.

Research Framework

Based on the above discussion, we propose an integrated research framework as shown in Figure 1. This framework includes a relatively comprehensive set of switching cost factors and IT adoption factors for both the prior and new systems, with the aim of specifically examining the impact of prior system beliefs on perceptions towards the new system. We adopt the user perception factors from the DeLone and McLean (1992) model and UTAUT (Venkatesh Morris Davis and Davis 2003) as those factors are widely accepted as key factors on IT adoption and success. Different types of switching cost are considered in the framework. We would expect that prior system beliefs could influence a user’s perceptions on switching cost, and that both user perceptions of the prior system and switching costs would in turn influence a user’s perceptions toward the new system. We plan to examine the mediating effect (which could be either fully mediating or partially mediating) of different types of switching costs on the relationship between prior system beliefs and new system perceptions.
RESEARCH METHOD AND PLAN

Study Site
The study site we plan to use is a major public university in the western part of the United States. The university is in the middle of adopting a new e-learning system - Blackboard Learn, to replace its previous version - Blackboard Vista. The two systems provide similar functions to assist students’ learning activities with certain improvements claimed in the new system. The overall design and user interface of the two systems differ significantly. Because of the comparability of the two systems and the ongoing system transition across the whole university, we believe that this site and these systems provide an ideal offsetting for this research in progress.

Research Method
A focused survey will be designed and conducted to examine the proposed research framework. For the two research systems, Blackboard Vista is the prior system while Blackboard Learn is the new system being adopted. Survey questions will be used to examine how users’ beliefs about Blackboard Vista will influence their perceptions on the use of Blackboard Learn.

To obtain a comprehensive understanding from various user groups, anyone who has the experience of using both systems will be invited to participate in the study. Potential participants can be students, instructors, and university staff. Participation in the study is voluntary. Upon agreement to participate, a survey will be sent out using questionnaire instruments whose questions are drawn, synthesized, and extended from previous studies focused upon both the IT adoption and switching cost theories of user acceptance. The survey instrument will use the 7-Likert scale. Participants will also be encouraged to provide additional written comments to share their experience and ideas about this system transition.

Research Status

Research Phase 1
The goal of phase one is to fine-turn the proposed research framework to create a testable research model with specific causal relationships. We are currently working on this phase.

Research Phase 2
The goal of phase two is to conduct data collection. Survey instruments will be developed and tailored to the context of the study site. Different groups of participants will be invited to provide their opinions towards the system transition.

Research Phase 3
The goal of phase three is to conduct data analysis once the data collection step in phase two is done. We plan to recruit over a hundred subjects who have used both the previous and new e-learning systems. Over time, we also plan to conduct longitudinal studies to compare with future students who only have the chance to use the new e-learning system. By doing this, it allows us to further examine the existence and significance of prior system usage impact. For data analysis, component-based structural equation modeling (SEM) techniques will be used. Specifically, the partial least squares (PLS) method will be adopted (Chin 1998). To test reliability, the weights (for formative items) and loadings (for reflective items) will be produced, and their t-values will be calculated. The internal consistency and validity will be further tested using average variance extracted (AVE), and the correlations between the reflective constructs in the model. The variance inflation factor (VIF) test will be conducted for formative indicators in the model.

CONCLUSION
Information systems have offered a unique opportunity for modern businesses to gain competitive advantages. When adopting a new system, users’ perceptions of the prior system may significantly affect their willingness to accept a new system. However, existing research mainly focuses on either assessing the new system itself (from the IT adoption perspective) or measuring different types of switching costs in the transition process (from the switching cost perspective). Only a few studies have combined both perspectives, and none of them has systematically integrated a comprehensive set of factors from both perspectives into one research framework. In addition, little research has been focused on e-learning system switches. In this research in progress, we aim to address these gaps by developing an integrated research framework and testing it in the e-learning context. We believe the study will have a significant theoretical contribution to the IS area, as it aims to combine two separate theoretical perspectives, IT adoption and switching cost, into a more comprehensive view in
order to better understand how previous usage experience could influence current system belief. The study could also provide new insights to IS in education, as it can help educators better understand learners’ system usage behavior.

For practical implications, we expect the findings of this study to provide implications to system developers, IS researchers, and organizations. When designing and/or adopting a new system, they’d better consider users’ experience (if any) of the previous system – that is the system being replaced by the new one. They should not only focus on introducing new and advanced features provided by the new system but also take into account any possible influence of users’ belief brought by the previous system. In addition, by empirically examining the system switching scenario (i.e., from Blackboard Vista to Blackboard Learn in the study context), the analysis results are expected to bring in-depth insights for various organizations including education institutions.

REFERENCES


