ABSTRACT

Building on technology acceptance model, a model of conscientiousness, self-efficacy, perceived ease of use and usefulness of technology, and satisfaction with online/hybrid learning systems was tested. Findings indicate that self-efficacy fully mediates the relationship between conscientiousness and perceived ease of use; perceived ease of use fully mediates the relationship between self-efficacy and student satisfaction, and between self-efficacy and perceived usefulness; perceived usefulness partially mediates the relationship between perceived ease of use and student satisfaction.

KEYWORDS: Conscientiousness; Self-efficacy; Technology acceptance; Online learning

INTRODUCTION

As part of the technology acceptance model (Davis, 1989; Martins & Kellermanns, 2004) perceived ease of use is defined as how easy the user believes the technology is to use while perceived usefulness refers to the user’s belief that the technology will improve his or her performance. This paper applies the technology acceptance model to online learning and explores the antecedents to perceived ease of use and usefulness of new technologies by learners’ generalized self-efficacy and personality differences.

LITERATURE REVIEW

Conscientiousness, Generalized Self-efficacy, and Perceived Ease of Use

Research defines conscientiousness as being reliable, persistent, and hardworking (Barrick, Mount, & Judge, 2001) establishing a positive connection to self-efficacy (Judge et al., 2007). Generalized self-efficacy is one’s belief in one’s ability to perform tasks in general (e.g., Chen, Gully, & Eden, 2001) and is a motivational trait associated strongly with self-esteem, locus of control, and emotional stability (Judge, Bono, & Locke, 2000). Generalized self-efficacy indicates a learning goal orientation (Chen, Gully, Whiteman, & Kilcullen, 2000), and so, it is plausible to expect that individuals high in generalized self-efficacy are more likely to plan and set goals, as well as have more positive outcome expectations. Being goal-driven and consistency in pursuit of these goals will tend to influence positively one’s beliefs about ability to
accomplish tasks. Evidence suggests that e-learning self-efficacy predicts both perceived usefulness and perceived ease of use of e-learning systems in higher education settings (Park, 2009). Individuals who are high in self-efficacy are likely to perceive new tasks in e-learning contexts as easier to accomplish and this affects behavioral intention to use the system through perceived ease of use (Grandon, Alshare, & Kwan, 2005). As learners are self-motivated and interested in task accomplishment, their perceptions of new technology will tend to strengthen due to perceived utility value of new technology in enhancing performance.

**Generalized Self-Efficacy, Perceived Ease of Use, Satisfaction, and Perceived Usefulness**

Prior research established the link between perceived ease of use and perceived student satisfaction with technology. Extant research has further shown that the greater the perceived ease of use, the more positive the attitude is toward new technology indicating greater intention to use the system (e.g., Lee, Cheung, & Chen, 2005; Park, 2009). Users who perceive learning technologies to be easier to use and contributing to their performance positively are more likely to be satisfied with them. When learners perceive that their use of a system is relatively easy or rather free of extra effort, they are also more likely to believe that using the system will improve their performance. Lee (2008) and Martins and Kellermanns (2004) found evidence in support of this prediction. Other research (e.g., Teo, 2009) also links perceived ease of use with perceived usefulness.

**Perceived Ease of Use, Perceived Usefulness, and Satisfaction**

Perceived ease of use is positively related to perceived usefulness (e.g., Lee at al., 2005). Further, the greater the perceived usefulness of new technology, the more positive the attitude is toward the new technology (e.g., Park, 2009). Lee and Lee (2008) show that perceived usefulness predicts learner satisfaction with the e-learning environment. In summary, as users perceive the system to contribute to their performance positively, they are more likely to be satisfied with it.

**METHODS**

**Sample, Procedure, and Measures**

Upper level, undergraduate, business administration students participated in the study.

The ten item measure of conscientiousness from the International Personality Item Pool (IPIP) available free of charge at [http://www.ori.org](http://www.ori.org) was used. Internal consistency estimate for this variable was .81.

Chen et al.’s (2001) validated scale of general self-efficacy to measure generalized self-efficacy was used. The Cronbach’s alpha reliability for this measure was .88.

Perceived ease of use contained 4 items on a 1-7 Likert scale of “strongly disagree” to “strongly agree”. This measure was adapted from Lee’s (2008) scales of the technology acceptance model. Cronbach’s alpha for perceived ease of use was .85.

Perceived usefulness measures the extent to which participants perceive the online learning management system – Blackboard and Angel to be helpful in their online/hybrid course performance. This measure was adapted from Lee’s (2008) scales of the technology acceptance model. Cronbach’s alpha for perceived usefulness was .96.
A 12 item measure was adapted from Arbaugh’s (2000) scale of student satisfaction with virtual classrooms. Internal consistency estimate for this variable was .95.

RESULTS AND DISCUSSION

Structural equation modeling was used to test all paths. Structural paths of conscientiousness to self-efficacy and self-efficacy to perceived ease of use were statistically significant and indicated a full mediation. The structural path from self-efficacy to perceived ease of use and the path from perceived ease of use to perceived satisfaction were both statistically significant. This was a full mediation. The path from perceived ease of use to perceived usefulness was also significant and since the self-efficacy and perceived usefulness relationship was insignificant, this was full mediation.

The path from perceived ease of use to perceived usefulness was statistically significant; also the path from perceived usefulness to perceived satisfaction was significant. Yet, the indirect effect of perceived ease of use to perceived satisfaction remained significant after controlling for perceived usefulness. Thus, the mediation effect of perceived usefulness was a partial mediation.

Self-efficacy emerged as the process through which conscientiousness exerts its influence on how students view online learning systems with respect to ease of use. Students who rank higher on conscientiousness seem to have a stronger belief in their ability to accomplish tasks, and high levels of self-efficacy leads to perceptions of e-learning systems as easier to use.

Student self-efficacy affects student satisfaction through student perceptions of easiness to use. Since this was a full mediation effect, it means that unless students perceived the system as easy to use, even if they were high on self-efficacy, they would not be accepting of the system. Even though some of the influence of perceived ease of use on satisfaction goes through perceived usefulness, perceived ease of use still has an independent impact on satisfaction. This means that students do not necessarily have to perceive benefits for their course performance to like and accept an e-learning system.

Future research can explore comfort with computers as a potential antecedent to perceived ease of use of e-learning technologies. Learners who are comfortable with computers may more readily view new technologies as easy to use. Future research should also consider personality variables other than conscientiousness that might impact acceptance and adoption of e-learning technologies and satisfaction with e-learning systems.

REFERENCES


