A Path Analysis of the Impact of Application-Specific Perceptions of Computer Self-Efficacy and Anxiety on Technology Acceptance

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ABSTRACT

Perceptions of computer self-efficacy (CSE) and computer anxiety are valuable predictors of various computer-related behaviors, including acceptance and utilization of information systems (IS). Although both factors are purported to have general and application-specific components, little research has focused on the application or system-specific component, especially in IS acceptance contexts. Thus, little is known about the effects of application-specific beliefs on IS acceptance or how such effects compare with the effects of more general CSE and computer anxiety beliefs. Accordingly, a research model comprising application CSE, application anxiety, perceived ease of use, perceived usefulness, attitude, and intention was proposed and tested via path analysis. The results demonstrated that the direct impacts of application CSE and application anxiety on perceived ease of use and perceived usefulness were almost equal, but in opposite directions. However, the indirect effect of application CSE on attitude and intention was stronger than that of application anxiety.

Keywords: Application-Specific Beliefs, Computer Anxiety, Computer Self-Efficacy, Information Systems, Information Systems Acceptance

INTRODUCTION

Much research aimed at understanding factors contributing to or hindering acceptance and utilization of information systems (IS) has accumulated over the past three decades. Among the myriad of the examined variables, computer self-efficacy (CSE) (Compeau et al., 1999; Hu et al., 2003) and computer anxiety (Brown et al., 2004; Igbaria & Chakrabarti, 1990; Venkatesh, 2000) have been found to be valuable predictors of users’ acceptance and utilization of various computer systems. However, while CSE (Johnson, 2005; Marakas, Yi, & Johnson, 1998) and computer anxiety (Brown et al., 2004) are hypothesized to have general (application-
independent) and more specific (application-dependent) components, this distinction has not been adequately addressed in past research. Thus, the effects of application-specific CSE and anxiety on IS acceptance remain vague and poorly understood and it is unknown whether such effects differ from the effects of the more general and broader constructs of CSE and computer anxiety. Therefore, this study aims to fill this void and provide better understanding of the impact of CSE and computer anxiety at the application level on users' decision to accept and use an IS.

The distinction between general and application-specific computer beliefs is vital for several reasons. First, beliefs at the general level (e.g., CSE and anxiety) represent trait-oriented beliefs that are difficult to change, whereas beliefs at the application level are considered state-oriented and treatable beliefs. Second, this distinction is more consistent with the theoretical basis of the two constructs. Social cognitive theory (SCT) suggests that self-efficacy is a malleable construct that operates at a general and task-specific level (Bandura, 1986; Gist, 1987) and, similarly, the theory of reasoned action (TRA) (Ajzen, 1991) posits that the prediction of a behavior can be greatly improved when the antecedents and the behavior are associated with the same task or object. Finally, the differentiation allows assessments of such beliefs to exclude evaluations of cross-domain efficacies and anxieties that may facilitate or hinder successful performance of a behavior (Marakas et al., 1998). Moreover, reviews of IS acceptance studies indicate that the mixed results reported in the literature can be attributed to the lack of task specificity when evaluating IS acceptance and suggest that more attention should be given to specific tasks and applications in studying IS acceptance (e.g., Lee, Kozar, & Larsen, 2003).

Based on the aforementioned limitations, the present study attempts to achieve two main objectives. First, it extends previous research by examining CSE and computer anxiety at the application level rather than the general level. The second objective is to combine both factors in a single research model as external factors to TAM and examine their direct and indirect effects on systems acceptance. In summary, this study empirically tests relationships among the following variables: application CSE, application computer anxiety, perceived ease of use, perceived usefulness, attitude, and behavioral intention.

**RESEARCH BACKGROUND AND HYPOTHESES**

The technology acceptance model (TAM) (Davis, 1989; Davis et al., 1989) provides a theoretical basis for studying IS acceptance. TAM models IS acceptance and use as a function of users' beliefs about perceived ease of use and perceived usefulness of the target system. Reviews and meta-analytic studies of TAM provide ample support for TAM's ability to explain and predict technology acceptance and utilization (King & He, 2006; Legris et al., 2003; Ma & Liu, 2004; Mahmood et al., 2001). Although TAM captures the impact of external factors on IS acceptance through their direct effects on perceptions of ease of use and usefulness (Davis, Bagozzi, & Warshaw, 1989), external factors effecting TAM have not been adequately examined in past research (Hsu & Lu, 2004; Taylor & Todd, 1995). As was pointed out earlier, the literature indicates that additional research is needed to investigate which and how external variables influence TAM's core variables and subsequent acceptance behavior (Lee et al., 2003).

Figure 1 presents the proposed research model underlying the current study. As the research model suggests, application CSE is posited to have direct positive effects on perceived usefulness and perceived ease of use. Application anxiety is hypothesized to have negative effects on perceived ease of use, perceived usefulness, and application CSE. The external variables (i.e., CSE and anxiety) are explained in more detail below.
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