



Influence of Computer Attitude and Self-Efficacy on IT Usage Behavior

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Based on an augmented Technology Acceptance Model (TAM), this paper examines the influence of computer attitude and self-efficacy on IT usage behavior. Computer attitude and self-efficacy were explicitly incorporated in the research model as external variables affecting perceived usefulness and perceived ease of use, the two key factors influencing the IT usage behavior in the original TAM. Data collected from 360 business students were tested against the model using LISREL. The results show that computer attitude has a significant, positive effect on perceived usefulness and perceived ease of use. Computer self-efficacy, on the other hand, has a relatively small, but negative, effect on perceived usefulness and no significant effect on perceived ease of use. The addition of computer attitude and self-efficacy into the TAM greatly improves the explanatory power of the model on the variance of perceived usefulness, which is again found to be a significant factor affecting the behavioral intention of using an IS/IT. Implications of the findings for research and practice are discussed.

INTRODUCTION

As organizations continue their investment in information technology (IT), investigating the nature and the key factors affecting the usage behavior of IT is surely important for both research and practice. The Technology Acceptance Model (TAM) developed by Davis (1986) is one of the most influential research models in studying the determinants of IT usage. In short, TAM postulates that IT usage is determined by a behavioral intention to use a system, which is jointly determined by a person's attitude toward using the system and its perceived usefulness. This attitude is in turn jointly determined by perceived usefulness and perceived ease of use. Finally, perceived usefulness is influenced by perceived ease of use and some external variables.

Although TAM has been empirically tested quite considerably (Adams et al., 1992; Davis, 1989; Davis et al., 1989; Davis, 1993; Hendrickson et al., 1994; Igarria and Iivari, 1995; Keil et al., 1995; Lu and Gustafson, 1994; Mathieson 1991; Segars and Grover, 1993; Szajna, 1996; Taylor and Todd, 1995a), very few studies have looked into the "external variables" in the model. One of these few studies is Hubona and Kennick's (1996) study, which investigated the influence of three demographic variables, modeled as external variables and including age, level of education and employment category, on IT usage behavior. Moderate support was found for the impact of these external variables on perceived ease of

use, but not on perceived usefulness. Another study is by Taylor and Todd (1995b), who examined the role of prior experience on IT usage. Their results suggest that there are some significant differences in the relative influence of the determinants of IT usage depending on experience.

While demographic variables, such as those examined by Hubona and Kennick (1996) and by Taylor and Todd (1995b), may be an important category of external variables in TAM, another category of external variables, mainly belief and attitudinal constructs, may also be very important in studying the possible impact of external variables on IT usage behavior. One such study is by Igarria and Iivari (1995). In it, the authors introduced an extended TAM that explicitly incorporated computer self-efficacy as a factor affecting perceived ease of use, perceived usefulness, and IT usage, among others. A significant relationship was found between computer self-efficacy and perceived ease of use but none was found between perceived usefulness and IT usage.

Computer self-efficacy is certainly not the only external factor affecting perceived ease of use and/or perceived usefulness. Other factors may also have impacts on the two variables. The primary objective of this study is to extend our knowledge of possible external variables affecting perceived ease of use and perceived usefulness by examining the possible impact of two factors, namely computer attitude and self-efficacy on IT usage behavior. Using the post-implemen-

tion version of TAM (Davis et al., 1989) as the “core” model, the augmented TAM was tested against data collected from 360 students studying business administration in a university. The results from the empirical test provide implications for both IS researchers and practitioners. For IS researchers, the study responds to the call by Davis (1993) for “future research to consider the role of additional variables within TAM” (p.483) and demonstrates a possible extension of TAM. For IS practitioners, the findings of the study provide valuable insights into the understanding of not only the factors affecting the usage behavior of IT, but also the tasks needed to be done for an IS/IT to be used effectively in an organization.

This paper is structured as follows. First, prior studies investigating the possible influence of computer attitude and self-efficacy on IT usage behavior are reviewed. Based on this review and the post-implementation version of TAM suggested by Davis et al. (1989), an augmented TAM is proposed and described. Details of the empirical study are then presented, followed by a discussion of the results. The paper concludes with limitations and implications.

INFLUENCE OF COMPUTER ATTITUDE AND SELF-EFFICACY

Computer Attitude

Although not specifically examined within the TAM framework, there have been quite a few studies investigating the relationship between computer attitude and IT use. The theoretical frameworks/models used in many of these studies are largely based on Fishbein and Ajzen’s (1975) theory of reasoned action, which postulates that beliefs about an object lead to an attitude about it and this attitude leads to behavioral intentions regarding the object. Finally, these intentions affect the actual behaviors toward the object of target. Attitude, defined by Ajzen and Fishbein (1980), is “an index of the degree to which a person likes or dislikes about the object” (p.28). Based on this beliefs-attitudes-intentions paradigm, it has been hypothesized that computer attitudes affect users’ behavioral intentions, which affect users’ actual usage of computers (Rainer and Miller, 1996). Significant relationships have been found between computer attitudes and user satisfaction with IS/IT, perceived quality of an IS/IT, perceived performance, and system usage in a number of empirical studies (Compeau and Higgins, 1995; Rainer and Miller, 1996; Thompson et al., 1991; 1994). While these studies have examined the role of computer attitude on IT use, TAM was not used as their “core” research model.

Some of the prior studies of TAM have examined the role of attitude on IT usage behavior. In these studies, for example, in Taylor and Todd (1995a, 1995b), researchers looked at the variable as attitudes toward a specific IS/IT, rather than as attitudes toward computers in general. The attitude variable was considered as a factor that influences the behavioral intention to use and is affected by perceived usefulness and

perceived ease of use. In others words, attitude was not treated as an external variable to TAM. A weak support of the relationship between the attitudes toward a specific IS/IT and behavioral intention was found (Taylor and Todd, 1995b).

Attitude toward computers is a “broad and general” concept. Kay (1993) commented that with respect to measuring attitudes toward computers, it would be best to be as specific as possible about the content of the attitude object. It may be inappropriate, or even wrong, to use a general attitude measure to examine its direct relationship with a specific behavior. This comment may explain the results of a review of 54 studies investigating the relationship between attitude and behavior (Ajzen and Fishbein, 1977). In that review, it was found that 25 studies failed to show significant relationships between the two variables, and most of the remaining studies did not report a correlation greater than 0.40. The authors recommended that an attitude measure should be specific in terms of the target and context of the behavior being assessed. Ajzen (1988) also noted that global attitudes toward an attitude object are largely unrelated to specific actions or behaviors toward the object.

Although it may be true that hypothesizing that there is a direct relationship between general computer attitudes and specific behaviors toward an IS/IT is not appropriate, it does not preclude from the possible existence of an inter-relationship between the two variables, via a third or fourth variable. A plausible way to resolve the problem of “general attitude measures to examine specific behaviors” is therefore to add a mediating variable between attitude and behavior or behavioral intention. Drawing from the results of prior studies of TAM, it seems plausible to put perceived usefulness and perceived ease of use, the two key variables in TAM, as the mediating variables, between computer attitude and behavior intention to use a specific IS/IT. In other words, it can be postulated that computer attitudes in general affect the perceived usefulness and the perceived ease of use of a specific IS/IT, which, in turn, affect the behavioral intention of using that IS/IT.

Computer self-efficacy

Computer self-efficacy is a variable that has been recently proposed and examined as an additional explanatory variable of an individual’s use of IS/IT (e.g., Compeau and Higgins, 1995; and Igarria and Iivari, 1995). Based on the social cognitive theory developed by Bandura (1986), self-efficacy can be defined as the belief that one has the capability to perform a particular behavior. Bandura suggests that perceived self-efficacy plays an important role in affecting motivation and behavior (Igarria and Iivari, 1995). The individuals’ perceived abilities to attain the standards they have been pursuing have an impact on individual cognitive and behavioral reactions. Therefore, individuals may be more likely to undertake behaviors they believe will result in valued outcomes than those they see as having unfavorable conse-

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