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Microcomputer Playfulness: An Antecedent to Understanding User Intention to Adopt

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Abstract

This study investigates the relationship between microcomputer playfulness, an individual's intention to adopt an information technology (IT), and their attitude toward adopting an IT. Analysis indicates that microcomputer playfulness is a significant variable in the determination of attitude toward adopting an information technology as well as end-user intention to adopt. The identification of high and low playfulness individuals, and the characteristics they deem important regarding innovations, allow the organization to customize technology introduction, training and implementation processes as to increase the likelihood of successful technology diffusion. The study identifies a significance of microcomputer playfulness as a behavioral input into innovation diffusion theory that has yet to be previously investigated from a technology adoption perspective.

Introduction

The growing use of microcomputers and information technology (IT) has promised rapid increases in the productivity of end-users, but the promise to some extent remains unfulfilled. This unfulfilled promise is due to, among other factors, a lack of understanding of the adoption behavior of the end-user: the unwillingness of many workers to first accept and secondly utilize innovations (Davis, 1989; Moore and Benbasat, 1990). Previous research examining the causes of ineffective computer adoption or use has demonstrated that the major portion of these causes are behavioral rather than technical (Turnage, 1990). While rational reasons may be important to the acceptance of innovations, other research has shown that microcomputer playfulness can also be a contributor to an individual's willingness to try something new. Microcomputer playfulness represents the degree of cognitive spontaneity, creativity, exploration and inventiveness in microcomputer interactions (Webster and Martocchio, 1992). Playfulness exist on multiple levels as a characteristic of individuals of interpersonal interactions and of social systems. This research will focus on playfulness as an individual characteristic (trait), that is, a predisposition to define and engage in activities in a spontaneous, fanciful or non-serious manner to increase enjoyment (Webster & Martocchio, 1992).

The primary purpose of this research is to investigate the relationship between "microcomputer playfulness" in individuals and its effect on their intention to adopt an information technology.

Research Model

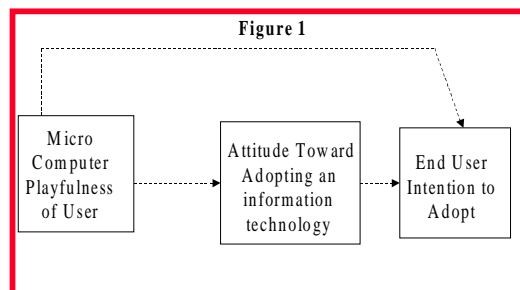
The theoretical model (Figure 1) of this study derives from the discussion of microcomputer

playfulness (Webster & Martocchio 1992), diffusion of innovations framework (Roger's 1983; Moore 1987; Moore and Benbasat 1990, 1991) and the Theory of Reasoned Action (Fishbein and Ajzen 1975). The Theory of Reasoned Action describes how a potential adopter's evaluations of IT relate to his/her attitude toward adopting or rejecting the IT and how this attitude relates to their intentions to adopt or reject the IT.

Hypotheses

The research question will examine the link between playfulness, attitude towards adoption of IT and intent to adopt the technology.

- H1a. Intention to Adopt an IT will be influenced by the end-user's attitude toward adoption of the IT.
- H1b. Intention to Adopt an IT will be influenced by microcomputer playfulness.
- H1c. Attitudes towards adoption of an IT will be influenced by microcomputer playfulness.



Sample and Methodology

Data was gathered from a large organization located in the Atlanta, Georgia area. The organization has about 700 personal computer users out of 1200 employees in the location. It is important to note that the decision about whether to adopt Windows 95 at the time of the study had not been made yet by the organization. In fact they were using the study results as an input into the decision making process. Because of this fact, their decision is more voluntary than mandatory in nature.

Intention to Adopt was measured using four questions. 1) Intention to adopt Windows 95 in my job within the next six months 2) looking forward to the time when I will be able to adopt Windows 95, 3) During the next six months, I plan to experiment with or regularly use Windows 95 in my work, 4) I am excited at the prospect of adopting Windows 95 in my job.

Behavioral intention was measured using only question #1 and #3 above out of the four total questions. Microcomputer playfulness was measured utilizing a of

21-adjective items. The respondents were asked to indicate their degree of agreement on seven point likert scales for such adjectives as spontaneous, disciplined, challenged, bored, imaginative, unimaginative, exciting, dull, expressive, self controlled. Each question regarding these adjectives was in the form of "Describe and/or characterize yourself when you interact and/or use the microcomputer."

Attitude toward adopting an information technology is defined as an individual's general feeling of favorableness or unfavorableness for adopting Windows 95. Two measures of attitude were measured, direct attitude and indirect attitude. The study uses a semantic differential technique which is a frequently used method of attitude measurement. For direct attitude, respondents were asked to rate the following statement on a seven point likert scale by a set of three bipolar adjectives. "My adopting Windows 95 in my job within the next six months would be . ." The adjective pairs used were good-bad, positive-negative, and beneficial-harmful.

Indirect attitude was obtained by summing, over all beliefs, the product of items on a belief strength multiplied by the corresponding item on a belief evaluation questionnaire.

Results and Discussion

In a regression runs unless otherwise stated, the number of respondents is 224 (n=224). When a regression was done using only low playfulness individuals (H1b & H1c) n=71.

(Table 1)

| H1a: Intention to adopt an IT will be influenced by the end-user's attitude toward adoption of the IT. | |
|--|----------------------------|
| Independent | Dependent |
| (\bar{x} =.70, t=14.54, p<.00005, R ² = 48.78%) Direct Attitude | ----> Intention to Adopt |
| (\bar{x} =.54, t= 9.58, p<.00005, R ² = 29.23%) Indirect Attitude | ----> Intention to Adopt |
| (\bar{x} =.55, t= 9.82, p<.00005, R ² = 30.29%) Direct Attitude | ----> Behavioral Intention |
| (\bar{x} =.43, t= 7.12, p<.00005, R ² = 18.61%) Indirect Attitude | ----> Behavioral Intention |

| H1b: Intention to adopt an IT will be influenced microcomputer playfulness. | |
|---|----------------------------|
| Independent | Dependent |
| (\bar{x} =.30, t= 4.75, p<.00005, R ² = 9.23%) Playfulness | ----> Intention to Adopt |
| (\bar{x} =.33, t= 5.13, p<.00005, R ² = 10.59%) Playfulness | ----> Behavioral Intention |
| Low Playfulness Individuals only (n=71) | |
| (\bar{x} =.54, t= 5.31, p<.00005, R ² = 29%) Playfulness | ----> Intention to Adopt |
| (\bar{x} =.47, t= 4.47, p<.00005, R ² = 22.45%) Playfulness | ----> Behavioral Intention |
| H1c: Attitudes towards adoption of an IT will be influenced by microcomputer playfulness. | |
| Independent | Dependent |
| (\bar{x} =.15, t= 2.22, p=.0275, R ² = 2.17%) Playfulness | ----> Direct Attitude |
| (\bar{x} =.23, t= 3.56, p=.0004, R ² = 5.45%) Playfulness | ----> Indirect Attitude |
| Low Playfulness Individuals only (n=71) | |
| (\bar{x} =.38, t= 3.42, p=.0011, R ² = 14.46%) Playfulness | ----> Direct Attitude |
| (\bar{x} =.54, t= 5.31, p<.00005, R ² = 28.99%) Playfulness | ----> Indirect Attitude |

Results of the regression for hypothesis H1a show that the direct measure as well as the indirect measure of attitude are significant variables with regard to the dependent variable "intention to adopt". Prior studies have found this relationship to be highly correlated as well (Karahanna, 1993; Davis, 1989; Moore and Benbasat, 1990).

The examination of behavioral intention as the dependent variable using both direct and indirect attitude also reveals significant t values (9.820 and 7.123) and significant p values (p<.00005). (Table 1).

Overall, the four regression results are very important as they confirm the significance of the attitude variable in predicting intention to adopt and behavioral intention. This is a key finding and lends additional support for the usage of the Theory of Reasoned Action.

Playfulness and Intention to Adopt

Hypothesis H1b explores the relationship between end-user intention to adopt and microcomputer playfulness. Microcomputer playfulness is significant with regard to intention to adopt. Results reveal that 9.23% of the variation of intention to adopt is explained by microcomputer playfulness. The small R² should not be taken as a sign of explanatory weakness; it is not unusual when only looking at one independent variable explaining a dependent variable that an R-square value might be small. The notable point is to show that microcomputer playfulness is significant (t =4.751, p < .00005) in explaining intention to adopt Windows 95.

Playfulness and Behavioral Intention

Using behavioral intention as the dependent variable the R² (10.59%), t (5.129) and p-values (p < .00005) all increase. This finding and the belief that low playfulness individuals would most want and value a trial period and the ability to experiment with the software led to an additional regression using only the 71 users who were classified as low playfulness individuals. The regression results, and in particular the much higher R² of 22.45%, shows the influence of microcomputer playfulness on behavioral intention for low playfulness individuals. In addition, the microcomputer playfulness variable is significant yielding a t-value of 4.47 and p-value less than .00005. These findings indicate that necessary attention needs to be taken regarding low playfulness individuals. If an organization is able to get low playfulness individuals to "try-out", experiment with on an initial trial basis, then the likelihood of adoption increases. The results displayed could be anticipated as an individual who is low on the playfulness scale would tend to be the most concerned with change whereas the highly playful person might not be very concerned participating in a trial experimentation and "trying-out" the software. From the standpoint of introducing new innovations, training employees, utilization of trial periods, allocation of

resources and potential hiring decisions this finding regarding low playfulness individuals is very important in the diffusion management process. High playfulness (n=153) individuals yielded a t-value of 1.479 and was not significant with a p-value of .1412 and R² of 1.43%.

Playfulness and Attitude

Hypothesis H1c shows that when using either direct or indirect attitude as the dependent variable, microcomputer playfulness is a significant variable with a t-value of 2.219 and 3.577 respectively. Some concern can be expressed regarding the low R² values of 2.17% and 5.45%, but the fact remains that microcomputer playfulness is a statistically significant variable affecting both direct and indirect attitude.

Even more important is the significant increases in R², betas, t-values and p-value when only the 71 individuals classified as low playfulness individuals are examined. An R² of 14.46% (t=3.42, p = .0011) are revealed when using playfulness as the independent variable and direct attitude as the dependant variable. Likewise, when using indirect attitude as the dependent variable the r-square is 28.99% (t=5.31, P < .00005). These findings only substantiates the importance of identifying low playfulness individuals and gives further confidence in the link between microcomputer playfulness and attitude toward adopting Windows 95.

Summary

“For the most part, the IS literature is silent on how users form initial attitudes about technologies and how those attitudes are modified over time” (Melone 1990, p. 77). The ability to identify the pre-adoption criteria affecting attitude remains an important question in IS research since most of the studies to date have examined user’s beliefs about a specific information technology only after they have already adopted and are using the IT. Consequently, results of such studies have actually identified sets of beliefs that hold true for a continued use of the technology. These may not be the beliefs that led to actual adoption. It is believed that microcomputer playfulness helps to shape pre-adoption beliefs, and the statistically significant results support this belief.

A major discovery of the study found that microcomputer playfulness does have a significant effect upon both attitude toward adopting Windows 95 as well as intention to adopt and behavioral intention. This gives strong reason for further research involving levels of playfulness, adoption beliefs, attitudes, intentions and actual use of information technologies.

In past studies utilizing microcomputer playfulness the variable was used as a stand-alone entity with no relevance to the outcome or effect upon other variables. Webster acknowledges that playfulness has potentially

important practical implications for management information systems (Webster and Martocchio, 1992).

A major implication of identifying the influence of microcomputer playfulness on adoption intentions relates to the emerging recognition that playfulness of potential employees becomes a strategic consideration of organizations when considering hiring for technology positions. Although this idea might be controversial in a legal sense, technical and non-technical organizations have for many years “tested” potential employees’ aptitude, logical and cognitive skills to determine which positions were better suited for individuals.

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