Chapter 3.15
User Acceptance of Virtual Technologies

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INTRODUCTION

Driven by market competitiveness enhancement, service improvement, and working effectiveness promotion, more and more organizations have realized their potentials and paid a lot of attentions to them (Chau & Hu, 2002). As estimated, about 50% of new capital investment has been put in information technology (Westland & Clark, 2000). Despite its great potentials, users' acceptance or adoption of these technologies does not live up to the initial expectations (Sun & Zhang, 2004). It is obvious that ITs are useless unless users accept and subsequently use them. Therefore, user technology acceptance becomes a hot topic and much effort has been made in order to obtain a deep understanding of how and why users accept certain technologies. Several models have been proposed in the last 2 decades and subsequent studies tested them (Table 1).

New virtual technologies, especially collaborative technologies, enable some new forms of interaction. For example, members in virtual teams can work simultaneously on a document together as a distributed team, remotely access shared information from anywhere, or record team activities (Majchrzak et al., 2000). Virtual technologies, like other types of technology, have to be accepted and used by users first. However, virtual technologies, while sharing certain characteristics with other technologies, have special features. Therefore, this article is an attempt to identify the structure and factors influence user acceptance of virtual technologies based on existing user technology acceptance models.

In general, the existing technology acceptance models can still be used for virtual technologies. Prior studies have confirmed that users accept virtual technologies in a similar way as other technologies (Moon & Kim, 2001; Yager, 1999;

Table 1. A summary of models of user technology acceptance

Models	Representative Work
Technology Acceptance Model (TAM)	Davis et al., 1989; Davis, 1989; Venkatesh and Davis, 2000
Theory of Planned Behavior (TPB)	Mathieson, 1991; Taylor and Todd, 1995
Motivational Model (MM)	Davis, et al., 1992
Computer Self-Efficacy (CSE)	Compeau and Higgins, 1995a; 1995b
United Theory of Acceptance and Use of Technology (UTAUT)	Venkatesh, et al., 2003

Chen et al., 2002). For example, Moon and Kim (2001) studied the acceptance of the World Wide Web (WWW). According to their study, the results about key factors in extant models are consistent with prior studies, which means that the factors influencing user acceptance of general technologies, although a little different, are also suitable for virtual technologies. Another example is Yager's study (1999), in which many factors, such as usefulness, ease of use that are traditionally considered to be important for technology acceptance in general, are still valid for virtual technologies. Therefore, we can borrow factors from existing models.

However, virtual technologies have their own characteristics. Therefore the factors contributing to user acceptance are likely to be different (Moon & Kim, 2001). So we need to propose new factors pertaining to the new type of technology. For example, playfulness is considered as an additional factor that is especially influential for virtual technologies (Moon & Kim, 2001).

In summary, we can refer to existing models while considering the characteristics of virtual technologies. Actually, it is a highly valid approach (Chen et al., 2002).

DISCUSSION

Reference Models

Table 1 shows a summary of existing models about user technology acceptance. All the listed models are well known in the field of human computer interaction (HCI). In addition, they are all confirmed to be valid in terms of explaining user acceptance.

We can borrow factors of interest from these models or theories (Table 2). All the factors split into three categories: indicators of use acceptance (dependent variables), factors contributing to user acceptance (independent variables), and moderating factors. Figure 1 also shows the basic structure of these factors.

Dependent Variables: Indicators of User Acceptance

First, we have to identify the indicators of user acceptance. Usually, three factors have been used as indicators of user technology acceptance: attitude, behavioral intention, and actual usage (Sun & Zhang, 2005).

Attitude

Attitude is not a very good indicator of user acceptance since in real world many factors besides attitude have impacts on user usage (Sun & Zhang, 2005). For example, a user without a positive attitude toward a technology may still accept and use it because of its high usefulness (Davis, Bagozzi, & Warshaw, 1989).

Attitude usually includes two aspects, affect and cognition. Prior studies usually focus on the cognitive aspect. That may be one of the reasons that the impacts of attitude are inconsistent among

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