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The temporal relationships among habit, intention and IS uses

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ABSTRACT

This study raised the following two research questions about the relationships among habit, intention and uses. First, there may have some differences between habit and intention in the effects on uses, especially temporally. Second, the relationship between past and future use may involve more than habit. In order to answer the questions, based on the memory process model, theories in traditional social psychology and path dependency theory, three hypotheses were proposed on the following topics: habit with proximal and distal uses, intention with proximal and distal uses, and proximal-distal uses. Surveying Korean social network service (SNS) users, and analyzing the data via a partial least square analysis, all the hypotheses were shown to be valid. In this study, we found the effects of intention on IS use differ temporally and past use can be considered a determinant for use.

1. Introduction

Under the traditional framework of information technology (IT) acceptance, the roles of intention are considered to be the most fundamental factors for determining the uses of information systems (IS). These roles include an antecedent determinative of adoption or usage, as well as a dependent variable that can function as a surrogate for the use of IT (Gefen, 2003; Gefen, Karahanna, & Straub, 2003; Hsu & Lin, 2008; Lin & Chan, 2009; Mao & Palvia, 2008; Venkatesh, 2006; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000). On the contrary, within the framework of IS continuance, habit is considered one of the most important factors in the activation of IS uses as well as intention (Jasperson, Carter, & Zmud, 2005; Kim, 2009; Kim & Malhotra, 2005; Kim, Malhotra, & Narasimahn, 2005; Limayem & Hirt, 2003; Limayem, Hirt, & Cheung, 2007; Ortiz de Guinea & Markus, 2009; Venkatesh, Thong, & Xu, 2012). Habit leads to automatic use without consciousness while intention is controlled under consciousness (Ouellette & Wood, 1998). By simultaneously considering both intention and habit in previous studies, the uses of IS are shown to be guided and activated by both volitional control and unconscious automaticity, which substantial insights into IS continuance, from both the theoretical and practical perspectives (Kim et al., 2005; Limayem & Hirt, 2003; Limayem et al., 2007; Ortiz de Guinea & Markus, 2009; Venkatesh et al., 2012).

Despite the relevant theoretical and practical contributions, previous studies have not considered the temporal effects of habit and intention in their analyses, whereas the development and influences on the behaviors of both habit and intention are quite closely related with the passage of time. Habits are formulated through the repetition of a behavior over a period of time, and they continuously influence the activation of that behavior for a relatively long time without consciousness (Aarts & Custers, 2009; Ajzen, 2002; Bagozzi, 1981; Fishbein & Ajzen, 2010; Limayem et al., 2007; Ortiz de Guinea & Markus, 2009; Ouellette & Wood, 1998; Verplanken, 2006; Verplanken, Aarts, van Knippenberg, & Moonen, 1998). In contrast, intention may develop as a result of cognitive efforts that would generally not be continued for a long time; moreover, the duration of the influence of intention on behavior may not be particularly long, since these behaviors are largely under cognitive control (Aarts & Custers, 2009; Limayem et al., 2007; Ortiz de Guinea & Markus, 2009; Ouellette & Wood, 1998; Verplanken et al., 1998).

Thus, the effects of habits on IS use may also be temporally stable, and remain unchanged over time regardless of whether or not those habits are challenged. However the effects of intentions may change. For example, bloggers are an excellent example. The bloggers may wish to use their blogs today; they will often use their blogs tomorrow; but they will not consistently maintain their usage intention after six months. On the other hand, bloggers will tend to maintain their intention if they have become habituated to blogging. Therefore, hypotheses regarding intention-use or habit-use relationships should be developed, considering temporal effects.

In addition to habit and intention, the uses of IS may also have temporal relationships. According to the classical theories of psychology, the frequency of past behavior is considered to be one of the principal determinants of present behavior (Ajzen, 2002; Fishbein & Ajzen, 2010; Verplanken, 2006). Since it may be

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interpreted as habit, the frequency of past behavior was adopted as a surrogate variable for measuring the strength of habit. In similar IS studies, some researchers have attempted to elucidate the relationship between past and future uses by using the concept of habit (Kim, 2009; Kim & Malhotra, 2005; Kim et al., 2005). However, many scholars have agreed that habit is more complicated than the mere repetition of past behavior, and habit includes characteristics such as unintentionality, uncontrollability, lack of awareness, and efficiency (Ajzen, 2002; Bargh & Ferguson, 2000; Verplanken, 2006; Verplanken & Orbell, 2003). Thus, past behavioral frequency does not capture a number of facets in habit as a mental construct, although it is not a completely unreasonable operationalization of habit. Even a previous study, Verplanken (2006) demonstrated that a mental construct of habit completely mediated the between past and later behavior.

Nonetheless, in the context of IS, the roles of past use in determining future use may not be limited to components of habit. That is, the use of IS may be an artifact of accumulated past uses; this use may not be consistent with the users' intentions although it is under conscious control. Rather, many users may use IS to avoid the troublesome costs incurred by switching from the current system to another system. For example, many people use a specific e-mail system because searching for other systems may be tiresome to them, and/or their buddies will only send messages to this e-mail address. In terms of economics, this phenomenon, in which the cost of switching from one brand of technology to another is substantial, is referred to as a "lock-in" to a specific IS by path dependency. When a person is "locked in," their future choices will still be hemmed in by selections made in the past (Shapiro & Varian, 1999).

From the above discussions, this study raised the following two research questions about the relationships among habit, intention and uses. First, there may have some differences between habit and intention in the effects on uses, especially temporally. Second, the relationship between past and future use may involve more than habit.

The principal objective of this study was to explore and analyze the temporal relationships among intention, habit, and the uses of IS. More specifically, we analyzed the effects of habit and intention on proximal and distal uses: proximal uses are short-term and transitory uses, while distal uses are long-term and lingering uses (Bagozzi, 1981; Kim, 2009). To achieve this objective, we adopted the memory process model proposed by Atkins and Schiffrin (1968), which has been previously validated in a number of neuroscience studies (Kim, 2009); we also adopted theories from traditional social psychology such as attitude-behavior theories and habit theories. In addition to analyzing the effects of habit and intention, we analyzed the temporal relationship of uses (the relationship between proximal and distal uses) using the theory of path dependency (Arthur, 1989; Liebowitz & Margolis, 1995; Shapiro & Varian, 1999). On the basis of these theoretical backgrounds, three hypotheses were proposed: habit with proximal and distal uses, intention with proximal and distal uses, and proximal-distal uses. To validate the proposed hypotheses, we surveyed Korean university student users of "Cyworld," one of the most influential social network services (SNS) in South Korea; the data were analyzed via partial least square analysis to evaluate the implications of this study.

2. Research model and hypotheses

2.1. Research model

This study proposes a research framework (see Fig. 1), in which both intention and habit are adopted as antecedents of two uses:

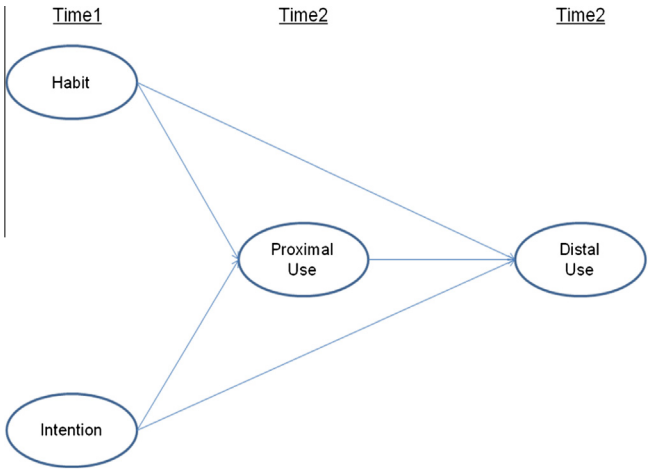

Fig. 1. Research framework.

proximal and distal uses. In the context of IS, similar to the field of psychology, the relationships among habit, intention, and use have been quite controversial, although both intention and habit have been considered major drivers of use (Bhattacherjee, Limayem, & Cheung, 2012; Limayem et al., 2007; Ortiz de Guinea & Markus, 2009; Venkatesh et al., 2012). Some studies have adopted habit as an antecedent of intention (Barnes, 2011; Gefen, 2003; Hong, Thong, Chasalow, & Dhillon, 2011; Ray & Seo, 2013), and other studies have considered habit to be a moderator of intention and use (Guo & Barnes, 2011; Kim et al., 2005; Limayem et al., 2007; Moody & Siponen, 2013). Those studies focused on the relationships between habit and intention. On the contrary, other studies attempted to adapt both habit and intention as the antecedents of IS use; they focused on the roles of habit and intention in the use of IS rather than their relationships (Kim & Malhotra, 2005; Limayem & Hirt, 2003).

In this study, our focus corresponds to the effects on the IS uses rather than the relationships between habits and intentions; thus, we adopted the latter approach as shown in Fig. 1. In particular, this approach may be somewhat consistent with Triandis' theoretical framework (1979), one of the classical frameworks used to explain human behavior, in which the probability of an act's occurrence is a function of the sum of habits plus intentions.

2.2. Hypothesis—the relationships between habit and uses

Habits are defined as learned sequences of acts that have become automatic responses given specific cues for the acquisition of certain goals or end-states, which may guide routine behaviors that are performed without consciousness and be formulated through the satisfactory repetition of an action (Barnes, 2011; Limayem et al., 2007; Ouellette & Wood, 1998; Triandis, 1980; Verplanken, 2006; Verplanken & Orbell, 2003).

In the memory process model, habit is associated with implicit memory, which is a type of long-term memory that involves its relatively persistent storage function (Kim, 2009). Whereas explicit memory, which is another type of long-term memory, involves facts and experiences that can be consciously known and declared, implicit memory occurs independently of conscious recollection (including skills and operant conditioned responses) and can thus be automatically and unconsciously executed without any conscious awareness of the act itself (Myers, 2007; Schacter, 1987). Thus, knowledge regarding how our actions are executed—that is, procedural knowledge—is stored in implicit memory (Custers & Veling, 2009). According to clinical neurology research, implicit