Center for Economic Institutions

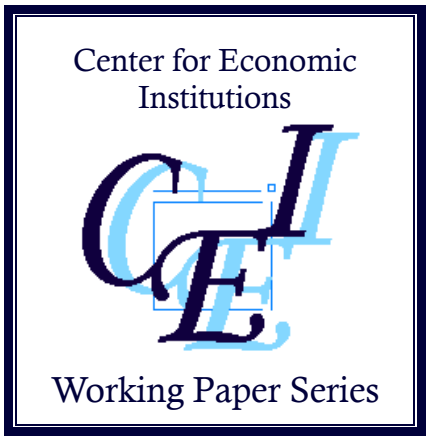
Working Paper Series

No. 2012-2

"To Convert or not to Convert to the Upgraded Version of *de-facto* Standard Software?"

Hee-Dong Yang, Christoph Karon, Sora Kang

August 2012



Institute of Economic Research
Hitotsubashi University
2-1 Naka, Kunitachi, Tokyo, 186-8603 JAPAN
http://cei.ier.hit-u.ac.jp/English/index.html
Tel:+81-42-580-8405/Fax:+81-42-580-8333

To Convert or not to Convert to the Upgraded Version of *de-facto* Standard Software

Hee-Dong Yang[a], Christoph Karon*[b], Sora Kang[c]

[a]Ewha School of Business, Ewha Womans University, 11-1 Daehyun-Dong, Seodaemun-Ku, Seoul 120-750, Korea
[b]University of Applied Sciences Deggendorf, Edlmairstraße 6 and 8, 94469 Deggendorf,Germany
[c]Division of Entrepreneurship, Hoseo University, 268 Anseo-Dong, Cheonan_Si, Choongnam 330-713, South Korea

* Corresponding author: christoph.karon@gmx.de (email), +49 (0) 89 35 38 93 52 (phone)

Abstract

This work extends the innovation diffusion theory to understand the causal relationship among influential factors on the adoption of the upgraded software. Especially, this study focuses on the *de-facto* standard software (e.g., Microsoft Office) that competes against its previous versions. This paper makes three unprecedented contributions. First, we re-categorize the eight factors in innovation diffusion theory into Kano's (1984) three factor framework on customer satisfaction, and develop the causal relationship among these factors. Second, we distinguish two different dependent variables, positive attitude (on behalf of adopting the new version) and negative attitude (for staying put with the old version), and include them together in our research model. Inhibitors and facilitators are well distinguished in our study and their respective causal models are suggested. Our results demonstrate that own experiences through triability and demonstrated results have significant influence on compatibility and ease of use, while social influences caused by visibility and image relate significantly to compatibility, relative advantage, and monetary value. We also find that negative attitude is influence by the lack of compatibility and ease of use, whereas positive attitude is promoted by relative advantage and monetary value.

Keywords: Innovation diffusion theory; *de-facto* Standard, Kano's three factor model on customer satisfaction

Acknowledgement. This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2011-330- H00002).

1. Introduction

Technology adoption is an omnipresent topic in today's fast-changing environment, in which people are able to decide between several innovative devices and services. This study focuses on the adoption (i.e., purchasing) of the upgraded *de-facto* standard software (especially, Microsoft Office). A *de facto* standard is "a custom, convention, product, or system that has achieved a dominant position by public acceptance or market forces (such as early entrance to the market)" (Wikipedia). The examples include AutoCAD, XML, Microsoft Word, and MS-DOS/Windows-based PC. This issue is unexplored but important to the market leader because its software (e.g., Microsoft Office) dominates market and competes against its previous versions. As of 2009, the average market shares of different versions of Microsoft Office were 53% for Microsoft Office 2003, 28% for the version 2007, 10% for the version 2002 (XP), and 9% for the version 2000 (breezetree.com, 2009).

Software companies launch the new version of software not just to beat the competitors but also its own previous version. The purchase of a software upgrade is actually a repeat purchase than a new purchase decision (Roberts, Cater-Steel & Toleman, 2006). Therefore, users can stay with the existent version if the new version does not fit to the expected value according to the *status quo* bias theory (Kim & Kankanhalli, 2009). Good example of failure in upgrading *de facto* standard software is Windows Vista. This software was first released in January 2007, but was installed on only 8.8% of corporate users 18 months after publishing (Article Inspector, 2012). Users of *de facto* standard software may eventually adopt the upgraded version replacing the old one. However, as in the case of Microsoft Vista, user can bypass a new version and decide to stay with the current one waiting for the future version after the new one. In the current intense competition in IT industry, failure in the new version of software can cause critical damage to the market leading software vendor. Our results can help software companies develop the migration strategies to move their customers to the new version replacing old versions.

Rogers (1995) developed five factors for successful innovations: perceived relative advantage, perceived compatibility, perceived complexity, perceived observability, and trialability. Moore and Benbasat (1991) measured their effectiveness in the context of IT innovation with additional factors and proposed the following factors: perceived relative advantage, perceived compatibility, perceived ease of use, perceived result demonstrability, perceived image, perceived visibility, trialability, and perceived voluntariness.

From this list of IT innovation diffusion factors, we made the following adjustments in our study. First, perceived monetary value (PMV) is added to the current work. It is positive when perceptions of quality are greater than perceptions of sacrifice (Hong & Tam, 2006). Actually, Moore and Benbasat (1991) recognized the importance of this construct but dropped it in their study because their research context was the organizational setting. They permitted that cost could be appropriate for the individual level consideration. Numerous studies have included PMV in understanding IS adoption (e.g., Venkatesh, Thong & Xu, 2012) and conversion to new systems (e.g., Kim & Kankanhalli, 2009; Polites & Karahanna, 2012).

Second, we agree with Karahanna, Agarwal & Angst (2006) that innovation diffusion studies have not explored enough the causal relationship among the influential factors and believe that this argument still remains valid unfortunately. We believe that plain list of these innovation diffusion factors has mingled up the characteristics of beliefs and the sources for such beliefs. Some factors are related to the reasons for rejection, while others provide reasons for adoption. Some factors are the sources for such negative or positive perceptions on the technology.

This paper proceeds in the following sequences. In the next section, we take literature review to introduce the theoretical foundation to develop our hypotheses for this study. Research model and hypotheses will follow in the third section, and then research methods about data collection and analysis method will be introduced in the fourth section. Analysis results and their implications will follow in the subsequent two sections.

2. Literature Review

2.1 Adoption of the upgraded de facto standard software

IS studies have not paid enough attention to the conversion to the upgraded version of software nor to the adoption of *de facto* standard software. We could not find enough numbers of studies on *de facto* standard in the discipline of innovation management. Even the majority of these innovation management studies have focused only on how to "be" *de facto* standards rather than how to "convert" successfully to the upcoming version of the same technology. For example, Vare & Seifert (2008) conducted literature review on the strategies and tactics to be *de facto* standard and identified four principle strategies: i.e., market growth, influence on customer perception, competition moderation, and technology development. Each strategy has executed various idiosyncratic tactics such as price war, social networking, alliances, and licensing. Technology development, which is our interest, has usurped the tactics of backwards compatibility, conversion, crossover standard wards, and user-led innovation. Keil (2002) insisted that firms need to utilize the hybrid model of strategies and tactics that initiates the competition between standards with alliances and then executes the competition within standards within alliances.

Meanwhile, Kim & Pennings (2009) emphasized the importance of communication with market (e.g., celebrity endorsement and advertisement) rather than technical superiority for the sake of *de facto* standard status in case technology cannot render unprecedented and unusual improvement such as tennis racket. Such continuity features in innovation rather than discontinuity is also observed in the evolution of Microsoft Office so that users do not feel awkward and uncomfortable experiences nor perceive substantial switching cost by adoption of new version. Kim & Kankanhalli (2009) pointed out the *status quo* bias of users to stay put with the existent version due to switching cost, risk aversion, and social norms.

As of 2009, Microsoft Office maintained *de facto* standard status in the office suite market. Microsoft Office's global market share has held steady at 94 percent for years (Dailytech, 2010). The next closest competitor, Adobe has a mere 4 percent of the market, while Open Office and Google Docs maintained less than 2 percent (Dailytech, 2010). In Korea, there exists another popular word-processor, *Han-Geul*. This product,

however, sustains the market share around 10% (DongA.com on September 23rd, 2009). So, our study investigates which factors influence on the decision to convert to the new version, Microsoft Office 2007 and how those factors are inter-related and lead to the adoption decision.

2.2 IS Innovation diffusion theory

According to Rogers (1995), diffusion is the process by which an innovation is communicated through certain channels over time among members of social systems. An innovation is an idea, practice, or object that is perceived as new by an individual or another unit of adoption (Brancheau & Wetherbe, 1990).

Innovation diffusion theory has been widely used in the IT/IS context with the perspective of introducing and deploying IT as a process of organizational innovation (Huff & Munro, 1985; McFarlan & McKenney, 1982). Such contexts include the software among IT scholars (Zmud, 1984); spreadsheet usage (Brancheau & Wetherbe, 1990); customer-driven IS (Grover, 1993); database systems (Grover & Tang, 1992); electronic data interchange (EDI) (Ramamurthy & Premkumar, 1995); generic information technologies (Lai & Guynes, 1997); IMT-2000 (Sawng, Cho & Rim, 2000); and the Internet and Web sites (Beatty, Shim & Jones, 2001). Based on innovation diffusion theory, Moore and Benbasat (1991) provided the following eight influential factors on IS adoption: Perceived relative advantage (PRA), Perceived compatibility (PC), Perceived ease of use (PEU), Perceived result demonstrability (PRD), Perceived image (PI), Perceived visibility (PVI), Trialability (TA), and Perceived voluntariness (PVO). The perceived attributes of these factors were used in order to reflect how people observe attributes of an innovation instead of its actual attributes, because different people perceive primary characteristics in a different way (Moore & Benbasat, 1991; p. 194).

PRA is defined as "the degree to which an innovation is perceived as being better than its precursor" (p. 195). It is closely related to the product itself and represents the perceived features and attributes that make the innovation better than the product that was used prior to the innovation being introduced. It is similar to the perceived usefulness (PU) of the technology acceptance model (TAM) (Davis, Bagozzi & Warshaw, 1989). The enhancement in performance, however, is viewed in the context of its precursor, rather than only in its own effectiveness and productivity in our research context.

PC is related to "the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters" (p. 195). This comprehensive factor is multifaceted with four different aspects of compatibility, which relate to the existing work practice, preferred work style, prior experience, and values (Karahanna et al., 2006). However, we decide to use the original items proposed by Moore & Benbasat (1991) to have the same reference sources with other constructs. So, PC is defined in our study as compatibility with existing work practices and with preferred work style as conceptualzied by Moore & Benbasat 1991).

PEU means "the degree to which an individual believes that using a particular system would be free of physical and mental effort" (p. 197). It describes how easy or difficult it is to use the innovation and is similar to perceived complexity (PCX) (Karahanna, Straub & Chervany, 1999). PEU, however, is more affirmative by measuring the ease of use, while PCX is more negative by measuring difficulty of use. PEU has been shown

to have a significant influence on PU but to be an inconsistent predictor for behavioral intention in later stages of use in TAM (Premkumar & Bhattacherjee, 2008).

PRD is defined as "the degree to which the benefits of using the innovation are measurable" (p. 215). It represents that the outcome benefits of using the innovation are well observed and measurable. It was derived from the original factor, perceived observability (PO) to increase validity and reliability.

PI is related to "the degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (p. 195). This factor is therefore linked to the social environment and perceived enhanced social status that results from using the innovation. PI was used as an aspect of PRA in Rogers' original five factors, but got independent afterwards as a separate factor due to its significant differentiation.

PVI is related to the degree to which an innovation is perceived as being visible. It is also related to the social environment and describes the perceived number of others who are already using the innovation. Like PRD, it was derived from the original factor of PO to enhance validity and reliability.

TA is defined as "the degree to which an innovation may be experimented with before adoption" (p. 195). It is connected to the potential user's own experience and the possibility of testing the innovation before adopting it. The trial gives the potential adopter an insight into the system's different possibilities and helps learn its attributes.

PVO means "the degree to which use of the innovation is perceived as being voluntary or of free will" (p. 195). Voluntary choice can enhance the attractiveness of innovation because mandatory use can cause resistance (Belanger et al., 2011). Voluntariness can be based either in the environment (i.e., voluntariness is physical context specific and independent of user perception), or in the user (i.e., voluntariness is subjective and intrinsic) (Wu & Lederer, 2009). The influence of this factor on IS adoption has been investigated in organizational settings where diverse range of mandatoriness exists (e.g., Brown et al., 2002; Karahanna et al., 1999; Venkatesh et al., 2012; Wu & Lederer, 2009). This factor, however, is not included in this study because *de-facto* standard software dominates the market share, which can generate the atmosphere of mandatory use due to the lack of alternative product and the collaboration with other users of this software. We believe that mandatory-use environment is the physical context of *de facto* standard software independent of individual's subjective perception on the degree of voluntariness.

These factors can be reshuffled into different categories. First, PC, PEU and PRA are regarded as *endogenous* variables that make influence on the adoption of the upgraded *de-facto* standard software because only these three factors among Moore & Benbasat's (1991) eight factors were found significantly influential on technology acceptance outcomes (i.e., attitude, intention, and use) in numerous IS adoption studies (Karahanna et al., 2006). We also include PMV as additional *endogenous* variable because this factor was also found significant to the adoption outcomes as noted at introduction. These four factors are actually the beliefs on the intrinsic features of new technology. Second, other four factors (TA, PRD, PI, and PVI) are regarded as *exogenous* variables that are not directly related to the acceptance outcomes but influential on the beliefs mentioned above. These four factors are rather related to potential adopter's experience of and social influence on new technology. This issue will be elaborated further below in the separate section.

2.3 Herzberg's motivation-hygiene theory and Kano's three factor theory on customer satisfaction

Herzberg (1968) showed that "factors involved in producing job satisfaction (and motivation) are separate and distinct from the factors that lead to job dissatisfaction" (p. 56). The opposite of satisfaction is not dissatisfaction, therefore, but it is no satisfaction. In the same way satisfaction is not the contrary of dissatisfaction, but is actually no dissatisfaction.

The difference between satisfaction and dissatisfaction is also the main idea behind hygiene and motivational factors. Hygiene factors are important for "dissatisfaction-avoidance" and motivational factors "cause satisfaction." The existence of hygiene factors does not bring any satisfaction, but they avoid dissatisfaction. The existence of motivational factors does not prevent dissatisfaction, but they provide satisfaction.

Overcoming such gray area factors that function as both hygiene and motivational factors, Kano (1984) proposed a three factor model on customer satisfaction. *Basic factors* are minimum requirement that cause dissatisfaction if not fulfilled but do not lead to customer satisfaction if fulfilled or exceeded. These factors are entirely expected, taken for granted and prerequisite so that they establish a market entry threshold (Mazler, Fuchs & Schubert, 2004). In our context, PC belongs to this category because potential users take the backward compatibility as granted and do not intend to undergo switching costs due to incompatibility. *Excitement factors* are the factors that increase customer satisfaction if delivered but do not cause dissatisfaction if they are not delivered. These factors are totally unexpected and surprise and delight customers. In our study, PMV is an excitement factor because potential users may expect extra-charges and prices for the new version but will be very pleased with unexpectedly low prices. *Performance factors* lead to satisfaction if performance is high and to dissatisfaction if performance is low. These factors are the articulated customers' needs and desires that service providers should be competitive about. In our study, PEU and PRA belong to this category because they have been regarded as two most popular attractiveness for IS adoption (e.g., TAM).

How, then, do users perceive these basic, performance, and excitement factors? As psychologists state, people can perceive them through their own experiences or by listening to others' opinions (Wu & Lederer, 2009).

2.4 People Perceive Factors by their Own Experiences or Social Influence

2.4.1 Own Experiences

People's own experiences are an important aspect for the innovation adoption process. Thoughts, emotions, activities, and evaluations occur during an experience and they are deeply interconnected and feed into one another as the experience unfolds. Afterward, what occurred during the experience may be stored as knowledge or information that may be accessed from memory at a later time (Goode, Dahl & Moreau, 2010; p. 276). Consumer experience is related to knowledge stored in memory and decision-making ability (Rodger et al., 2005; p. 317). Taylor and Todd (1995) introduced a list of studies that found prior experience to "be an important determinant of behavior" (p. 562).

Indeed, experiences with innovations can occur in several ways. Experience could be first-handy (Lee

& Xia, 2011) or second-handy through persuasive messages (Parthasarathy & Bhattacherjee, 1998), whereas the former can refine and articulate the latter (Lee & Xia, 2011). Oh, Ahn & Kim (2003) insisted that compatibility, trialability and observability among innovation diffusion factors relate to the opportunities to create experiences for the technology under consideration. We believe, however, compatibility is the perceived value and belief triggered by potential adopter's experience through trialability and/or perceived result demonstrability.

In some cases, the potential adopter can test the innovation before adoption, which means trialability (TA). The duration of TA can range from short use, which takes just seconds to a long-intended test phase over several years. Independent of the length of the trial, testing the system gives the potential adopter insights into the system's different possibilities and attributes. The important aspect of this factor is the collected experience that the potential adopter gets from both using the previous version and testing the upgraded software.

Perceived result demonstrability (PRD) means the degree to which the potential adopter can observe the results of using the system (i.e., the upgraded software). Tangibility and measurability of outcomes can enhance the attractiveness of technology to potential users. Examples of such results include the planned output of software such as document or feedback from using special feature or functionality of device. Experiences of previous version of *de facto* standard software can help potential users anticipate the reasonable benefits of the new version. PRD can also be recognized through external information without trialability, but trialability refines and articulates the PRD recognized by external information (Lee & Xia, 2011).

So, TA denotes the experiences of the processes and functions of the system, whereas PRD denotes the experiences of the results and consequences of such TA. PRD and TA constitute potential adopter's experiences of the technology as process experiences and result experiences, respectively.

According to four decision rules for determining whether a construct is reflective or formative introduced by Petter, Straub and Rai (2007), both PRD and TA are regarded as the formative indicators for the latent construct, own experiences. PRD and TA define the characteristics of the construct (i.e., own experience) rather than being caused by the latent construct. Both PRD and TA are not interchangeable, nor necessarily co-vary with each other, nor have the same antecedents and consequences because these two constructs were regarded as independent factors for successful innovation (Moore & Benbasat, 1991).

2.4.2 Social influences

Social influence means "the extent to which users believe that 'important others' would approve or disapprove of their performing a given behavior" (Hong & Tam, 2006; p. 167). Social influence is closely related to the idea of subjective norm and is a major factor in the theory of planned behavior. In several studies, social influence significantly determines the intention for IS adoption and perceived usefulness (e.g., Hong & Tam, 2006; Lee & Kozar, 2008; Venkatesh and Morris, 2000).

Perceived visibility (PVI) reflects the potential adopter's awareness of others. PVI is high when the potential adopter notices the upgraded software within his or her social environment. The factor PVI, therefore, is

associated with social influences, because important others that are already using the upgraded software already exert influences on observers.

Perceived image (PI) is related to its possibility to increase adopter's social status. PI is linked to the value and reputation that society assigns to the innovation. The reasons why an innovation is perceived as having high image are multifaceted. It could be associated with the perception of high quality of brand, or society is persuaded by expert feedback or commercials. Therefore, PI is linked to social influences, because using the upgraded software is believed to enhance the image of users within the society he/she is involved with. For the same reasons as in own experiences, both PVI and PI are regarded as formative indicators for the latent construct, social influence, in our study.

3. Research model and Hypotheses

----- Insert Figure 1 about here -----

Both individual difference (e.g., experiences) and social influence factors (e.g., subjective norm) are critical to our understanding of user acceptance of IT because both play significant roles in influencing how users make their decisions about system adoption and use (Venkatesh & Morris 2000; Wu & Lederer, 2009).

Through normal interaction, the potential adopter learns to operate the system and discovers whether the innovation is difficult or easy to handle, valuable for the money invested, if it provides relevant new features, and whether the innovation's attributes are in relation to his working practices. Most of the IS adoption theories presume that users develop beliefs about technology from their own experiences, no matter short or long. Memorized experiences can directly influence on consumption decision-making (Goode, Dahl & Moreau, 2010), whereas many IS studies have relatively focused on the moderating role of experience on IS adoption (e.g., Davis et al., 1989; Taylor & Todd, 1995; Venkatesh & Morris, 2000; Venkatesh, Morris, Davis & Davis, 2003; Venkatesh et al., 2012). In some cases, such personal experiences have stronger effect than social influences on IS adoption (Parthasarathy & Bhattacherjee, 1998). The relationship between these experiences and beliefs are quite complicated. Agarwal & Prasad (1999) found that prior experiences significantly enhanced PEU but not PU. Unified Theory of Acceptance and Use of Tech-nology (UTAUT) model also found that experience is more related to compatibility and PEU rather than performances (Venkatesh et al., 2003). Meanwhile, Oh et al (2003) found that result demonstrability influences only PU. Therefore,

Hypothesis 1: Own experiences through TA and PRD of the upgraded *de-facto* standard software develop into beliefs on the upgraded *de-facto* standard software.

H1-a. Own experiences of the upgraded *de-facto* standard software have significant influence on PC.

H1-b. Own experiences of the upgraded *de-facto* standard software have significant influence on PEU.

H1-c. Own experiences of the upgraded *de-facto* standard software have significant influence on PRA.

H1-d. Own experiences of the upgraded *de-facto* standard software have significant influence on PMV.

We believe that social influence also has comprehensive influence on the basic, performance, and excitement factors because *de facto* standard software appeals to the psychology of compliance and conformity to society (Cialdini & Goldstein, 2004). Potential adopters are motivated to form accurate perceptions of reality and react accordingly, to develop and preserve meaningful social relationships, and to maintain a favorable self-concept because adoption and use of *de facto* standard software are actually social norm. Empirical studies have identified the impact of social influence on PEU (Lu, Yao & Yu, 2005) and also that compatibility with values, which are subject so social influence, influences on the compatibility with existing practices, which is one aspect of compatibility in our study (Karahanna et al., 2006).

The importance of social influences on perceived usefulness, which is similar to PRA, has been empirically demonstrated (Hong and Tam, 2006). Adaptive structuration theory (DeSanctis and Poole, 1994) insisted that users adapt the original features of information systems to their context through consensus with other users. IS users choose certain structures and functions from numerous potentials, and then adapt them to create their own structures of functions. In collaborative systems, such group consensus overrides the influences of individual-level beliefs such as PEU and PU (Kang, Lim, Kim & Yang, 2012).

The social environment verifies the perceived monetary value (PMV) as well to the potential adopters. For most adopters, PMV is an essential factor to convert to the new software (Kim & Kankanhalli, 2009). So, the low monetary value can trigger excitement of the potential adopters who will in turn get involved with instrumental support (i.e., looking for help from colleagues) (Beaudry & Pinsonneault, 2010). Perceived image can help enhance the perceived tradeoff value of brand purchase (Psi, 2005), and the words-of-mouth can help increase of perceived value of community (Trusov, Bucklin & Pauwels, 2011). Therefore, the following hypotheses are derived:

Hypothesis 2: Social influences on the upgraded *de-facto* standard software nurture beliefs the upgraded *de-facto* standard software.

H2-a. Social influences on the upgraded *de-facto* standard software have significant influence on PC.

H2-b. Social influences on the upgraded *de-facto* standard software have significant influence on PEU.

H2-c. Social influences on the upgraded *de-facto* standard software have significant influence on PRA.

H2-d. Social influences on the upgraded *de-facto* standard software have significant influence on PMV.

Compatibility was found to influence PEU and PU (Karahanna et al., 2006). Compatibility is the primary concern in upgrading software; otherwise, users have to suffer from substantial switching costs. However, we argue that PEU does not influence PRA anymore in upgrading software because users are already familiar with interfaces and functions of the previous templates of *de facto* standard software. Relatedly, the influence

of PEU dissipates as users accumulate the use experiences of the systems (Davis et al, 1989; Premkumar & Bhattacherjee, 2008). PRA can promote PMV as *status quo* bias theory insists that the switching benefits have positive effect on the perceived value (Kim & Kankanhalli, 2009). Therefore,

Hypothesis 3: PC, PEU, PRA, and PMV have the causal relationship with each other.

H3-a. PC has positive influence on PEU.

H3-b. PC has positive influence on PRA.

H3-c. PEU does not significantly influence PRA.

H3-d. PRA has positive influence on PMV.

In situations where system use is mandatory, the intention to use a system is mainly determined by the mandate itself, and not by the meaning one has about a system (Brown et al., 2002). The *de-facto* standard software generates the similar atmosphere of mandatory use because users may not have other choice but to use this software. So, behavioral intention cannot be effective determinant of IS success in the context of *de facto* standard software adoption or upgrade. The IS literature addresses the factor attitude an intermediate variable between certain values and the actual behavioral intention (e.g., Davis et al, 1989; Dinev & Hu, 2007). The term "attitude" is defined in the theory of planned behavior as the "degree to which a person has a favorable or unfavorable feeling about a behavior" (Lee & Kozar, 2008; p. 111). A single representation of attitude would be too narrow, however, and ignore important impacts. Negative attitude is generally related to people's dissatisfaction with an innovation, while positive attitude is generally related to people's satisfaction.

Cenfetelli and Schwarz (2011) empirically asserted the existence of inhibitors that foster technology rejection. These inhibitors are more than the antipoles of enablers (e.g., the opposite of usefulness) and are distinct constructs that influence on usage intentions as well as on usage enablers. Wu et al. (2008) found that factors to attract IT users are different from those to retain users, insisting the former as hygiene factors and the latter as motivational factors. Kano's (1984) three factor theory on customer satisfaction stipulates that the dearth of the basic and performance factors in the upgraded software engenders negative attitude toward adopting the upgraded software, whereas the fertility of performance and excitement factors in the upgraded software generates the positive attitude toward adopting the upgraded software. So, PC can influence only on negative attitude because incompatibility aggravates adopter's satisfaction. PMV also has straightforward influence on positive attitude because low price can be surprise and unexpected. According to equity theory (Au, Ngai & Cheng, 2008), technical advancement is not enough alone for the sake of satisfaction, and needs to be compared to the input efforts so that equitable needs are fulfilled.

Two performance factors, PEU and PU, have different implications to potential adopter's attitude. PEU is rather close to the basic factor because "the prospective user expects the target system to be free of effort" (Davis et al., 1989, p. 985). So, violation of such expectation can generate frustration but satisfaction. The empirical finding that PEU does not influence on PU and intention at the mature stage of IS use adds credit to this argument (Davis et al, 1989; Premkumar & Bhattacherjee, 2008). Meanwhile, we believe that the linear relationship between performance factor and satisfaction is well applied to PRA because PRA is the genuine

merit of new technology. Therefore,

Hypothesis 4: PC and PEU make negative influence on negative attitude toward adopting the upgraded *de-facto* standard software.

H4-a. PC makes negative influence on negative attitude toward adopting the upgraded *de-facto* standard software.

H4-b. PEU makes negative influence on negative attitude toward adopting the upgraded *de-facto* standard software.

Hypothesis 5: PRA and PMV make positive influence on positive attitude toward adopting the upgraded *de-facto* standard software.

H5-a: PRA makes positive influence on positive attitude toward adopting the upgraded *de-facto* standard software.

H5-b: PMV makes positive influence on positive attitude toward adopting the upgraded *de-facto* standard software.

Finally, according to Herzberg theory, hygiene factors need to be resolved priori before motivational factors com to effect. Therefore, resolution of the negative attitude can help enhance the positive attitude towards the new version of software.

Hypothesis 6: Negative attitude toward adopting the upgraded *de-facto* standard software has negative influence on positive attitude toward adopting the upgraded *de-facto* standard software.

4. Methodology

Our framework was tested for Microsoft Office 2007 with changed layout, interface, and new functions from the previous version. Its precursor was well known by most of people and therefore no explanation or demonstration was needed. Additionally, significant range of people had already had experiences with this service. MS Office 2007 was released in Korea in January 2007. Quite a few people, however, were still using the previous versions of MS Office Suite even since Office 2007 was introduced. Such diversity in adopting the new MS Office Suite 2007 was noticeable enough to merit our study.

Data were collected from students at three Korean universities in Shin-Chon area of Seoul, Korea. Measurement items for factors were taken from existing studies, but were adapted for our context. Indicators for compatibility, ease of use, image, relative advantage, result demonstrability, trialability, and visibility were adopted from Moore and Benbasat (1991). Indicators for monetary value were adopted from Hong and Tam (2006). Negative and positive attitude were adopted from Westbrook and Newman (1978). Each questionnaire item was measured by 5-point Likert scales. The data collection was conducted during the summer semester of 2009. One-hundred-seventeen completed questionnaires were collected.

5. Data analysis

The data analysis was conducted by Smart-PLS and SPSS Statistics. Analysis proceeded through measurement testing and then structural equation modeling testing

5.1. Test for Validity and Reliability

Table 1 displays the correlation, validity and reliability of the factors in our dataset. Measures of formative constructs do not need to co-vary with high correlations because high correlations suggest multicollinearity (Petter et al., 2007). TA and PRD have the moderate level of correlation of 0.414, whereas PI and PVI have insignificant correlation of 0.139. These results show that it is not serious defect to argue own experience (consisting of TA and PRD) and social influence (consisting of PI and PVI) as formative constructs in our model.

----- Insert Table 1 about here -----

Composite reliabilities for all factors ranged between 0.83 and 0.94. They were all greater than the proposed threshold of 0.6 (Tseng et al., 2006). The Cronbach's alphas for all factors ranged between 0.68 and 0.90, matching the threshold of 0.7 (Nunnally, 1978). One small exception was observed for PRD. All listed factors, therefore, satisfied the conditions for reliability. The internal consistency and reliability of all scales were thus proven.

The average variance extracted (AVE) should be greater than 0.5 for the sake of convergent validity (Tseng et al., 2006). All factors had an AVE between 0.62 and 0.84 and were therefore considered valid. Table 1 also shows the relationships between the different factors. The diagonal line represents the squared root AVEs of the factors (Fornell, 1983), which has to be greater than the off-diagonal construct correlations in the corresponding rows and columns for the sake of discriminant validity. All listed factors satisfied this condition. For this reason, we can conclude that each construct shares more variance with its items than with other constructs.

Following Podsakoff, MacKenzie, Lee, and Podsakoff (2003), we tested if our data is affected by common method bias. First, we applied Harman's one-factor test to our data (Podsakoff and Organ 1986). We performed an exploratory factor analysis on all the variables. Results indicated that different items in our study did not load into one common factor, suggesting that common method bias is not a significant threat in our data.

Next, we conducted two separate confirmatory factor analyses on our data (Podsakoff and Organ 1986), one with ten factors and ther other with only one factor. When method variance is significant problem, a single factor model should fit the data as well as a more complex model (McFarlan and Sweeney 1992).

----- Insert Table 2 about here -----

The goodness-of-fit indeces of multi-factor model were compared with those of the one-factor model in table 2. The differences in chi-square values between these two models revealed that the multi-factor model yielded a better fit than the single-factor model ($\chi 2$ =185.4, df=3, $p<0.001$).

5.2. Test of the Research Models

The partial least square (PLS) method was used to test the causal relationships in the research model (Figure 2).

----- Insert Figure 2 about here -----

In our analysis, own experiences through trialability (TA) and perceived result demonstrability (PRD) made significant influences on perceived compatibility (PC) and perceived ease of use (PEU), but did not on perceived relative advantage (PRA) and perceived monetary value (PMV). Therefore, H1-a and H1-b are supported, whereas H1-c and H1-d are not supported.

All the paths from social influences through perceived image (PI) and perceived visibility (PVI) to beliefs were significant except for PEU, thus supporting H2-a, H2-c, and H2-d and not supporting H2-b.

As for the causal relationship among four beliefs, all the four hypotheses (H3-a, H3-b, H3-c and H3-d) were supported.

All the five hypotheses about the attitudes were supported. PC and PEU had significantly negative influences on negative attitude, supporting H4-a and H4-b. So, we can conclude that PC and PEU work as hygiene factors that help reduce negative attitudes toward the upgraded *de-facto* standard software. The paths from PRA and PMV to positive attitude were also significantly positive. These results support H5-a and H5-b, and imply that PRA and PMV function as motivational factors that help increase the positive attitude about the upgraded *de-facto* standard software. And, finally, as Herzberg theory argued, negative attitude had negative influence on positive attitude, supporting Hypothesis 6.

6. Discussion and Conclusions

The main goal of this work was to demonstrate that our categorization and casual relationship among the innovation diffusion factors can bring the insightful stories in understanding the adoption of the upgraded version of *de facto* standard software.

First, Herzberg's two factor theory helps distinguish between the factors that help avoiding dissatisfaction and the factors that result in satisfaction with the new version of *de facto* standard software. We can conclude that own experiences through TA and PRD have significant influence only on the hygiene factors. TA and PRD influenced PC and PEU, which in turn lead to the reduction of negative attitudes. So, personal experiences of trial and understanding possible benefits from new version can help reduce the concerns such as backward compatibility and switching costs and then oppress negative attitude. Meanwhile, PRA and PMV were closely related to the positive attitude towards the upgraded *de-facto* standard software. These two factors need to be provided to the market to entice potential adopters to move away from *status quo* inertia.

Second, compatibility is very important factor in persuading potential adopters to refrain from the negative attitude and adopt the new version of software. It helps enhance the perception of PEU and PRA, which are two major performance factors that characterize the new version. So, it is not just a basic factor that relieves

potential adopters from numerous concerns that inhibit the adoption of new version, but also adds credit to the relative advantage of new technology that eventually develops into the positive attitude. When we recall the market's concerns on the lack of compatibility of Windows Vista (Article Inspector, 2012), this finding deserves special attention to the software companies in launching the new version of *de facto* standard software. In sum, software vendors should ease the market with guaranteed compatibility first before they emphasize the technical advancement. This strategy ultimately helps enhance the attractiveness of new technical features.

Third, PEU does not take critical role in potential adopter's decision making process for new software version. The insignificant path from PEU to PRA is plausible provided that PEU has not made significant influences on PU in mature stage of IS use in previous TAM studies (e.g., Davis et al., 1989; Premkumar & Bhattacherjee, 2008). Market leading company may not risk disrupting potential adopter's familiarity with previous version through the unprecedented functions so that potential adopters should not perceive any switching costs. Such considerate strategy to keep consistent familiarity, however, cannot help potential adopters recognize the extra values of new version. In short, compatibility works as both hygiene and indirect motivation-factors, whereas PEU is confined to the hygiene function.

Fourth, social influences have such comprehensive influences on beliefs about the upgraded software as we had expected. The only insignificant influence of social influence was on PEU, which result is plausible as we already reviewed above that potential adopters expect the similar familiarity between the current and new version. The significant path from social influence to PMV is repeatedly verified in our study as in recent IS adoption studies. This factor is missing in the original innovation diffusion theories, but may well be considered together with other influential factors for innovation diffusion. Social influence also has indirect influence on PMV through PRA so that potential adopters are susceptible and amenable to others' opinions in understanding technical and monetary values of new and advanced systems. PRA and PMV may not be captured enough by personal experiences so that people prefer to buy the market reactions and advices to these concerns. In sum, social influence is the primary trigger for motivational factors about the new version of *de facto* standard software.

As with other studies, this work has some limitations. The first limitation is the demographic distribution in our sample. This empirical study was conducted on Korean university students who have similar demographic profiles. This is why we did not control any demographic variables such as gender, family background, age, and use experiences. In the future studies, more diverse samples from different age group, profession, software use experiences, regions and countries can be included and controlled.

Our research model could be tested for the upgraded hardware devices as well. This model can also be tested for different software environment where severe competition exists among rival software products.

Finally, our work showed a possible way to categorize the different factors of innovation diffusion theory. This is nevertheless just one of many other possible ways. For example, subjective norm is the representative construct of social influence, whereas it is not included in our study. Only the environmental-voluntariness is considered in our study without concern on user-perceived voluntariness. Future works should find new and

creative ways to relate these unconsidered factors to increase the explanatory power of the innovation diffusion theory.

References

[1] Agarwal, R. & Prasad, J. (1999) Are Individual Differences Germane to the Acceptance of New Information Technologies. Decision Sciences, 30(2), 361-391.

[2] Article Inspector. 2012. Five reasons for the failure of Vista. *http://articleinspector.com/computers/microsoft-windows/48-five-reasons-for-the-failure-of-vista.html*.

[3] Au, N., Ngai, E.W.T. & Cheng, T.C.E. (2008) Extending the Understanding of End User Information Systems Satisfaction Formation: An Equitable Needs Fulfillment Model Approach. *MIS Quarterly*, 32(1), 43-66.

[4] Beatty, R. C., Shim, J. P., & Jones, M. C. (2001) Factors Influencing Corporate Web Site Adoption: A Time-Based Assessment. *Information and Management*, 38(6), 337-354.

[5] Beaudry, A. and Pinsonneault, A. (2010) The Other Side of Acceptance: Studying the Direct and Indirect Effects of Emotions on Information Technology Use. *MIS Quarterly*, 34(4), 689-710.

[6] Belanger, F., Collignon, S., Enget, K. & Negangard, E. (2011) User Resistance to the Implementation of a Mandatory Security Enhancement. *IFIP WG8.11/WG11.13* (http://ifip.byu.edu/2011).

[7] Brancheau, J. C. & Wetherbe, J. C. (1990) The adoption of spreadsheet software: Testing innovation diffusion theory in the context of end-user computing. *Information Systems Research*, 1(2), *115-143.*

[8] Breezetree.com (2009) Microsoft Office Market Share by Version – 2008 Data. *http://www.breezetree.com/blog/index.php/microsoft-office-market-share-by-version-2008-data/*.

[9] Brown, S.A., Massey, A.P., Montoya-Weiss, M.M. & Burkman, J.R. (2002) Do I Really Have to? User Acceptance of Mandated Technology. *European Journal of Information Systems*, 11(4), 283-295.

[10] Cenfetelli, R.T. and Schwarz, A. (2011) Identifying and Testing the Inhibitors of Technology Usage Intentions. *Information Systems Research*, 22(4), 808-823.

[11] Cialdini, R.B. & Goldstein, N.J. (2004) Social Influence: Compliance and Conformity. *Annual Review of Psychology*, 55, 591-621.

[12] Dailytech. (2010) http://www.dailytech.com/Office+2010+to+Launch+Today+Microsoft+Owns+94+Percent+of+the+Market/article18360.htm

[13] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989) User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003.

[14] DeSanctis, G. & Poole, M. S. (1994) Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization Science*, 5(2), 121–147.

[15] Dinev, T. & Hu, Q. (2007) The Centrality of Awareness in the Formation of User Behavioral Intention toward Protective Information Technologies. *Journal of the Association for Information Systems*, 8(7), 386-408.

[16] Fornell, C. (1983) Issues in the application of covariance structure analysis: a comment. *Journal of Consumer Research*, 9(4), 443-448.

[17] Goode, M.R., Dahl, D.W. & Moreau, C.P. (2010) The Effect of Experiential Analogies on Consumer Perceptions and Attitudes. *Journal of Marketing Research*, 47(2), 274-286.

[18] Grover, V. (1993) An Empirically Derived Model for the Adoption of Customer-Based Inter-organizational Systems. *Decision Science*, 24(3), 603-640.

[19] Grover, V. & Teng, J. T. C. (1992) An Examination of DBMS Adoption and Success in American Organizations. *Information & Management*, 23(5), 239–248.

[20] Herzberg, F. (1968) One more time: How do you motivate employees? *Harvard Business Review*, 46(1), 53-62.

[21] Hong, S. & Tam, K. (2006) Understanding the Adoption of Multipurpose Information Appliances: The Case of Mobile Data Services. *Information Systems Research*, 17(2), 162-179.

[22] Huff, S. L. & Munro, M. C. (1985) Information Technology Assessment and Adoption: A Field Study. *MIS Quarterly*, 8(4), 327-339.

[23] Kang, S., Lim, K.H., Kim M.S. & Yang, H-D. (2012) A Multilevel Analysis of the Effect of Group Appropriation on Collaborative Technologies Use and Performance. *Information Systems Research*, 23(1), 214-230.

[24] Kano, N. (1984) Attractive Quality and Must be Quality. *Hinshitsu (Quality)*, 14(2), 147-156 (IN Japanese).

[25] Karahanna, E., Agarwal, R. & Angst, C.M. (2006) Reconceptualizing Compatibility Beliefs in Technology Acceptance Research. *MIS Quarterly*, 30(4), 781-804.

[26] Karahanna, E., Straub, D. W., & Chervany, N. L. (1999) Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. *MIS Quarterly*, 23(2), 183-213.

[27] Keil, T. (2002) De-facto Standardization through Alliances-Lessons from Bluetooth. *Telecommunications Policy*, 26, 205-213.

[28] Kim, H-W. & Kankanhalli, A. (2009) Investigating User Resistance to Information Systems Implementation: A Status Quo Bias Perspective. *MIS Quarterly*, 33(3), 567-582.

[29] Kim, H.E. & Pennings, J.M. (2009) Innovation and Strategic Renewal in Mature Markets: A Study of the Tennis Racket Industry. *Organization Science*, 20(2), 368-383.

[30] Lai, V. S. & Guynes, J. L. (1997) An Assessment of the Influence of Organizational Characteristics on Information Technology Adoption Decision: A Discriminative Approach. *IEEE Transactions on Engineering Management*, 44(2), 146-157.

[31] Lee, Y. & Kozar, K. A. (2008) An empirical investigation of anti-spyware software adoption: A multi theoretical perspective. *Information & Management*, 45(2), 109-119.

[32] Lee, G. & Xia, W. (2011) A Longitudinal Experimental Study on the Interaction Effects of Persuasion Quality, User Training, and First-Hand Use on User Perceptions of New Information Technology. *Information & Management*, 48(7), 288-295.

[33] Lu, J., Yao, J.E. & Yu, C-S. (2005) Personal Innovativeness, Social Influences and Adoption of Wireless Internet Services via Mobile Technology. *Journal of Strategic Information Systems*, 14(3), 245-268.

[34] Mazler, K., Fuchs, M. & Schubert, A.K. (2004) Employee Satisfaction: Does Kano's Model Apply? *Total Quality Management*, 15(9-10), 1179-1198.

[35] McFarlan, F. W. & McKenney, J. L. (1982) The Information Archipelago Gaps and Bridges. *Harvard Business Review*, 60(5), 109-119.

[36] McFarlan, D. & Sweeney, P. (1992). Distributive and Procedural Justice as Predictors of Satisfaction with Personal and Organizational Outcomes. *Academy of Management Journal* , 35(3), 626 - 637

[37] Moore, G. C. & Benbasat, I. (1991) Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*, 2(3), 192-222.

[38] Nunnally, J. C. (1978) *Psychometric theory (2nd edition)*. McGraw-Hill (New York).

[39] Oh.S., Ahn, J. & Kim, B. (2003) Adoption of Broadband Internet in Korea: The Role of Experience in Building Attributes. *Journal of Information Technology*, 18(4), 267-280.

[40] Parthasarathy, M. & Bhattacherjee, A. (1998) Understanding Post-Adoption Behavior in the Context of Online Services. *Information Systems Research*, 9(4), 362-379.

[41] Petter, S., Straub, D. & Rai, A. (2007) Specifying Formative Constructs in Information Systems Research. *MIS Quarterly*, 31(4), 623-656.

[42] Podsakoff, P. M., & Organ, D.W. (1986) Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531-544.

[43] Podsakoff, P. M., S. B. MacKenzie, J. Lee, & Podsakoff, N.P. (2003) Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.

[44] Polites, G.L. & Karahanna, E. (2012) Shackled to the Status Quo: The Inhibiting Effects of Incumbent System Habit, Switching Costs, and Inertia on New System Acceptance. *MIS Quarterly*, 36(1), 21-42.

[45] Premkumar, G. & Bhattacherjee, A. (2008) Explaining information technology usage: A test of competing models. *Omega*, 36(1), 64-75.

[46] Psi, S. (2005) Utility, Cultural Symbolism and Emotion: A Comprehensive Model of Brand Purchase Value. *International Journal of Research in Marketing*, 22(3), 277-291.

[47] Ramamurthy, K. & Premkumar, G. (1995) Determinants and Outcomes of Electronic Data Interchange diffusion. *IEEE Transactions on Engineering Management*, 42(4), 332-351.

[48] Robert, D., Cater-Steel, A. and Toleman, P.M. (2006) Factors Influencing the Decisions of SMEs to Purchase Software Package Upgrades. *17th Australian Conference on Information Systems*, 6-8 December 2006, Adelaide.

[49] Rogers, E. M. (1995) *Diffusion of Innovations(4th edition)*. The Free Press (New York).

[50] Sawng, Y. W., Cho, K. H., & Rim, M. H. (2000) Forecast for IMT-2000 - Subscriptions with Growth and Substitution Phenomena. *Proceedings of an International Communications Conference for Marketing, Forecasting, and Demand Analysis.*

[51] Taylor, S. & Todd, P. (1995) Assessing IT Usage: The Role of Prior Experience. *MIS Quarterly*, 19(4), 561-570.

[52] Trusov, M., Bucklin, R.E. & Pauwels, K. (2011) Effects of Word-of-Mouth versus Traditional Marketing: Findings from an Internet Social Networking Site. *Journal of Marketing*, 73(5), 90-102.

[53] Tseng, W., Dörnyei, Z., & Schmitt, N. (2006) A New Approach to Assessing Strategic Learning: The Case of Self-Regulation in Vocabulary Acquisition. *Applied Linguistics*, 27(1), 78-102.

[54] Vare, A.X. & Seifert, R.W. (2008) Contextual and Tactical Changes in Standards Wards: What Consequences for "Winners"? *International Journal of Innovation and Technology Management*, 5(4), 447-474.

[55] Venkatesh, V. & Morris, M.G. (2000) Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115-139.

[56] Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. (2003) User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425-478.

[57] Venkatesth, V., Thong, J.Y.L. & Xu, X. (2012) Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, 36(1), 157-178.

[58] Westbrook, R.A. & Newman, J.W. (1978) An Analysis of Shopper Dissatisfaction for Major Household Appliances. *Journal of Marketing Research*,, 15(3), 456-466.

[59] Wu, L., Chuang, Y., & Chen, P. (2008) Motivation for using search engines: A two-factor model. *Journal of the American Society for Information Science & Technology*, 59(11), 1829-1840.

[60] Wu, J. & Lederer, A. (2009) A Meta-analysis of the Role of Environment-based Voluntariness in Information Technology Acceptance. *MIS Quarterly*, 33(2), 419-432.

[61] Zmud, R. W. (1984) An Examination of Push-pull theory applied to process innovation in knowledge work. *Management Science*, 30(6), 727-738.

Table 1. Correlation matrix, reliability and validity for factors

Positive Attitude	Negative Attitude	Image	Result Demonstrability	Monetary Value	Relative Advantage	Visibility	Compatibility	Ease of Use	Triala bility		Mean	Std. Dev.	Composite Reliability	Cronbach Alpha
.355**	-.340**	.17	.414**	.05	.18	.313**	.385**	.527**	**.82**	**Trialability**	3.38	0.74	0.86	0.74
.547**	-.519**	.195*	.508**	.215*	.309**	.201*	.555**	**.80**		**Ease of Use**	3.53	0.71	0.85	0.73
.625**	-.502**	.311**	.442**	.189*	.573**	.274**	**.84**			**Compatibility**	3.77	0.69	0.88	0.80
.256**	-.380**	.14	.274**	.13	.298**	**.83**				**Visibility**	4.13	0.71	0.87	0.78
.651**	-.499**	.368**	.386**	.323**	**.89**					**Relative Advantage**	3.78	0.74	0.92	0.85
.336**	-.08	.363**	.251**	**.82**						**Monetary Value**	2.99	0.83	0.86	0.75
.423**	-.377**	.288**	**.79**							**Result Demonstrability**	3.63	0.67	0.83	0.68
.374**	-.187*	**.83**								**Image**	3.31	0.84	0.87	0.77
-.625**	**.85**									**Negative Attitude**	2.15	0.69	0.89	0.81
.91										**Positive Attitude**	3.70	0.77	0.94	0.90

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Diagonal = Squared Root AVE

Table 2. Common Method Bias Testing

Models	Multi-factor model	Single-factor model
goodness-of-fit	$\chi 2$=533.9, df=360; RMSEA=0.053; TLI=0.87; CFI=0.90	$\chi 2$=719.3, df=363; RMSEA=0.082; TLI =0.73; CFI=0.79

Figure 1. Research Model

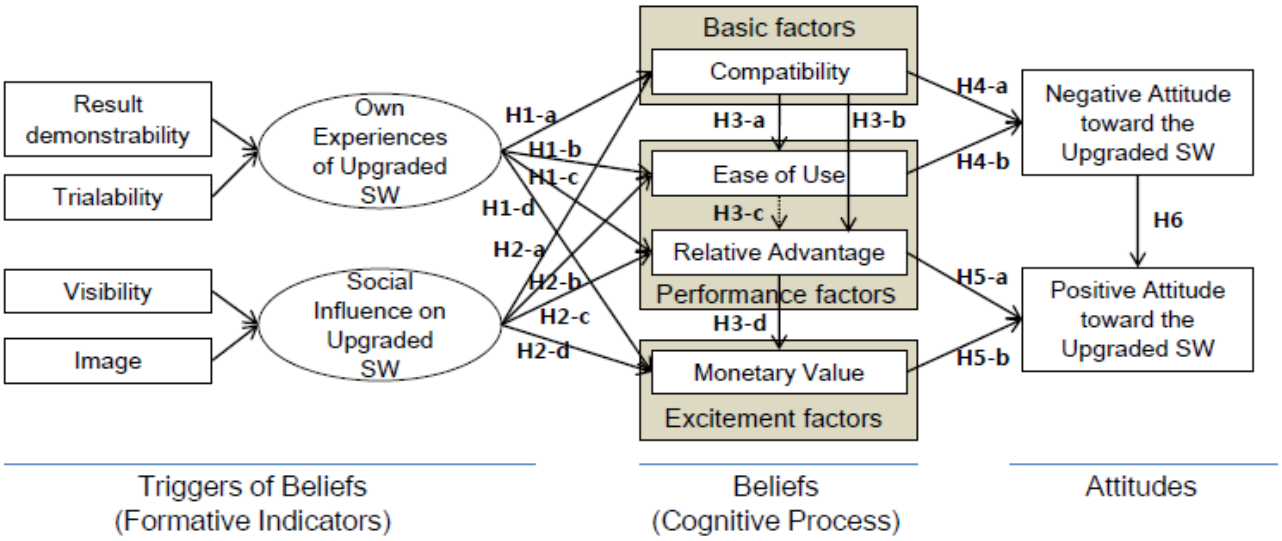
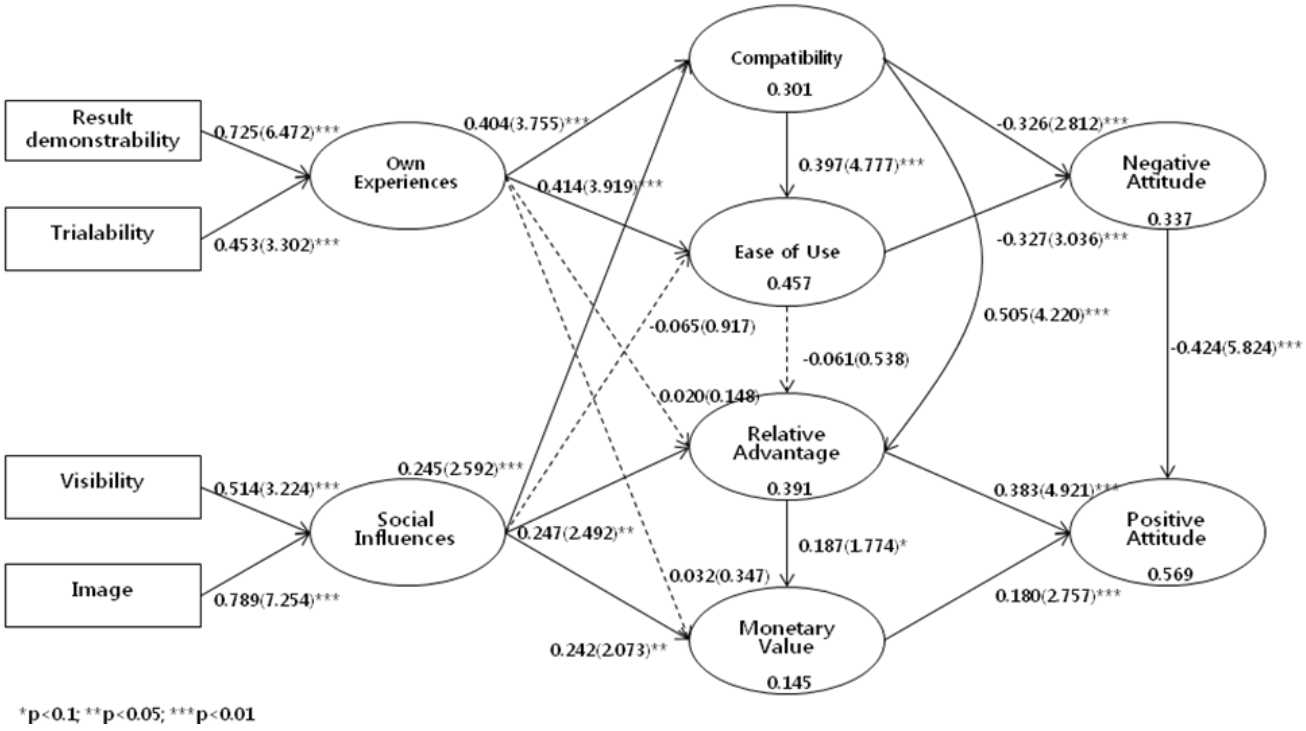


Figure 2. Analysis Results



Appendix. Questionnaire

TA (Trialability)

1. I was able to use several functions of this software.
2. I was permitted to use this software on a trial basis long enough to see what it could do.
3. I've had a great deal of opportunity to try this software.

PEU (Perceived Ease of Use)

4. I believe that it would be easy to get this software to do what I want it to do.
5. Overall, I believe that this software is easy to use.
6. Learning to operate this software would be easy for me.

PC (Perceived Compatibility)

7. Using this software would be compatible with all aspects of my work.
8. I think that using this software would fit well with the way I work.
9. Using this software would be compatible with my needs to work.

PVI (Perceived Visibility)

10. I have seen other people using this software.
11. It is easy for me to observe others using this software.
12. This software is visible for me in my referent group.

PRA (Perceived Relative Advantage)

13. Using this software would enable me to accomplish tasks more quickly.
14. Using this software would improve the quality of the work I do.
15. Using this software would improve my performance on my tasks.

PMV (Perceived Monetary Value)

16. I expect that the software would be reasonably priced.
17. The software would offer a good value for the money.
18. I think that the worth of the software would justify its price.

PRD (Perceived Result Demonstrability)

19. I would have no difficulty telling others about the things I could do with this software.
20. I believe I could show others the output of my work when I use this software.
21. I am able to see the results of my work when I use this software.

PI (Perceived Image)

22. People who use this software have a higher competence than those who do not.
23. Using this software is an indicator of an advanced level in the computer competence.
24. Because of my use of this software, others see me as a more valuable person.

Positive Attitude

25. This software meets my needs.
26. I am generally pleased with using the software.
27. I am satisfied with using the software.

Negative Attitude

28. Overall, I am dissatisfied with the software.
29. I don't like to use this software.
30. I am doubtful if the software is meeting my desires.