

THE EFFECTS OF REGULATORY FOCUS ON IT SUBSTITUTION

Liqiong Deng
jdeng@westga.edu

ABSTRACT

This research draws on the Regulatory Focus (RF) Theory to examine the effects of IT users' regulatory foci on their intention of IT substitution. IT substitution refers to the replacement of one IT with another IT that satisfies identical needs. The decision of IT substitution is likely to evoke considerations of both incumbent and alternative ITs. The RF Theory distinguishes between two motivational orientations – promotion focus and prevention focus, and provides a useful framework to understand IT substitution behaviors. Individuals with a promotion focus are driven by the need for attainment of positive outcomes, and are thereby oriented toward the maximization of gains and advancement. In contrast, individuals with a prevention focus are driven by the need for avoidance of negative outcomes, and hence are oriented toward the minimization of losses and safety. An individual's RF guides his/her information processing and decision making, thereby influencing which information he/she specifically seeks out and retains when making a decision about IT substitution. Accordingly, this research classifies two sets of factors influencing IT substitution intention along the RF perspective. It proposes that the promotion-focused individuals will draw on the advancement-oriented factors (e.g., the relative advantage of alternative IT and the descriptive norm regarding IT substitution) to make IT substitution decisions; while the prevention-focused individuals will rely on the safety-oriented factors (e.g., the satisfaction with incumbent IT, the perceived risk of alternative IT, the perceived effort expectancy of alternative IT, and the injunctive norm regarding IT substitution) to make IT substitution decisions.

Keywords: IT substitution, Promotion Focus, Prevention Focus

INTRODUCTION

In recent years, the topic of IT substitution has increasingly received much attention in IS research due to the pervasive use of IT in all aspects of people's daily life. IT substitution refers to the full or partial replacement of one IT product/service with another IT product/service that satisfies identical needs (Ye, Seo, Desouza, Papagari, & Jha, 2008). The wide proliferation of IT products/services providing similar functionalities has made it easy for users to replace an incumbent IT with an IT substitute. For example, successive generations of IT products/services are clear substitutes for the earlier generations (Steffens & Kaya, 2009). Competing IT products/services, for instance Microsoft Internet Explorer, Mozilla Firefox and Google Chrome, are also close substitutes for each other. IT substitution involves not only software applications, but also hardware products (e.g., mobile devices) and technology services (e.g., social networking websites).

IT substitution goes beyond mere adoption of a new IT and involves termination or reduction in using an incumbent IT (Ye et al., 2008). Traditional IT adoption and acceptance research only focuses on the adoption of a new IT in isolation without explicitly considering the existence of an incumbent IT. In actuality, the decision of IT substitution is likely to evoke consideration of several issues pertaining to both the incumbent IT and the alternative IT, such as the perception and experience of the incumbent IT, the evaluation of comparative characteristics of the substitute IT over the incumbent IT, the potential benefits of replacing the incumbent IT with the new IT, the perceived risk inherent in the new IT, and the efforts required to install and learn the new IT. Prior research on IT substitution also found that IT substitution is determined by the users' perceptions of both the incumbent IT and the substitute IT (Ye et al., 2008).

Since the decision of IT substitution entails the choice of one technology over the other, evaluative conflicts may occur when both technologies are perceived to be favorable/unfavorable. For instance, the recognition of a new IT's desirable benefits may conflict with the evaluation of an existing IT as adequate for the user's current needs. While prior research has provided valuable insights into which perceived characteristics of incumbent IT and substitute IT are critical for IT substitution decisions, however, no insight has been offered on the relative salience of different incumbent and substitute ITs' characteristics to technology users. Recognizing the complex nature of IT substitution, this paper attempts to examine how the effects of incumbent IT's and substitute IT's characteristics on IT substitution intention may differ by individuals from the perspective of Regulatory Focus (RF) Theory (Higgins, 1997, 1998). The RF Theory distinguishes between two major motivational orientations – promotion focus and prevention focus. Individuals with a promotion focus are driven by the need for attainment of positive outcomes, and are thereby oriented toward the maximization of gains, such as advancement and accomplishment. In contrast, individuals with a prevention focus are driven by the need for safety and avoidance of negative outcomes, and hence are oriented toward the minimization of losses and security. IT substitution presents an opportunity for change, which may lead to gains (i.e. the realization of a substitute IT's desirable benefits that an incumbent IT cannot offer) or losses (i.e. substituting a disappointing new IT for a satisfying incumbent IT). The RF Theory has significant implications for IT substitution because an individual's RF guides his/her information processing and decision making, thereby influencing which information he/she specifically seeks out, pays attention to and retains when making a decision about IT substitution. A better understanding of the role of motivational orientations in shaping individuals' perceptions of and attentions to various characteristics of incumbent IT and/or substitute IT will provide important insights into the differentiated influences of incumbent IT's and substitute IT's characteristics on different individuals' intentions of IT substitution. These insights will make it possible to examine the relevant characteristics of both incumbent IT and substitute IT simultaneously and assess their relative weights in determining users' intentions of IT substitution.

THEORETICAL BACKGROUND

Traditional Technology Acceptance Research

IT substitution is primarily driven by adoption of new IT products/services. In the IS research field, a number of theories and research models have been developed or applied to predict and

explain acceptance and adoption of IT innovations. The most prominent theories include the Diffusion of Innovations Theory (DIT), Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), and Unified Theory of Acceptance and Use of Technology (UTAUT).

DIT posits five characteristics of innovation -- relative advantage, compatibility, complexity, trialability, and observability – as important determinants of innovation diffusion (Rogers, 1995). Relative advantage is the degree to which an innovation is perceived to be better than other alternatives (Rogers, 1995). Complexity refers to the degree to which an innovation is perceived as being complex and difficult to use or understand (Rogers, 1995). Compatibility is the degree to which an innovation is perceived as compatible with the existing practices, values, and experiences of potential users (Rogers, 1995). Trialability is the degree to which an innovation can be tried on a limited basis before adoption (Rogers, 1995). Observability refers to the degree to which an innovation provides observable results to potential users (Rogers, 1995). The innovation characteristics of complexity, relative advantage and compatibility have been consistently supported to be significant predictors of information technology adoption behavior (Moore & Benbasat, 1991; Tornatzky & Klein, 1982).

TRA is a general theory that attempts to explain any human behavior from the perspective of social psychology. It suggests that a person's certain behavior is determined by his/her behavioral intention to perform the behavior, which in turn is jointly determined by the person's attitude and subjective norm concerning the behavior (Fishbein & Ajzen, 1975). TAM builds on and extends TRA to explain user's adoption behavior of information technology (Davis, 1989). According to TAM, a user's intention to adopt a technology is determined by two salient beliefs about the technology – perceived usefulness and perceived ease of use (Davis, 1989). Perceived usefulness is the extent to which a user believes that using the technology will improve his/her job performance, and perceived ease of use refers to the extent to which a user believes that using the technology will be free of effort (Davis, 1989). Both perceived usefulness and perceived ease of use have been found to directly influence technology adoption intention (Davis, 1989).

UTAUT extends TAM by proposing four factors – performance expectancy, effort expectancy, social influence, and facilitating conditions – as determinants of technology adoption intention and behavior (Venkatesh, Morris, Davis, & Davis, 2003). Similar to TAM's perceived usefulness, performance expectancy is the degree to which a person believes that using the technology will help him/her to enhance job performance (Venkatesh et al., 2003). Effort expectancy, like perceived ease of use in TAM, refers to the degree of ease related to the use of the technology (Venkatesh et al., 2003). Social influence, which captures the concept of subjective norm construct in TRA, is the degree to which an individual perceives that people important to him/her think he/she should use the technology (Venkatesh et al., 2003). Facilitating conditions refer to an individual's perception of organizational and technical infrastructure that exists to support the technology (Venkatesh et al., 2003). The inclusion of social influence in the model explained additional 5-10% variance in technology adoption intention. In addition, a set of moderating factors (i.e. gender, age, experience, and voluntariness of use) are posited to moderate the influences of the four key factors on adoption intention and behavior (Venkatesh et al., 2003).

While UTAUT emphasizes the importance of social influence in technology acceptance, however social influence was found to lack predictability in voluntary IT situations (Schepers & Wetzels, 2007). The weak effect of social influence may be due to the narrow conceptualization of social influence (Rivis & Sheeran, 2003). Some social psychologists have argued that social influence should embody two components: injunctive norms and descriptive norms (Cialdini, Kallgren & Reno, 1991; Cialdini, Reno & Kallgren, 1990; Cialdini & Trost, 1998; Deutsch & Gerard, 1955; Donald & Cooper, 2001; Rivis & Sheeran, 2003). Injunctive norms reflect the perceived approval or disapproval of a course of action by others. Both the subjective norm construct of TRA and the social influence construct of UTAUT are injunctive norms because they are the perceptions of whether others think an individual should perform a targeted behavior (Fishbein & Ajzen, 1975; Venkatesh et al., 2003). Descriptive norms reflect the perception of whether other people actually perform a course of action (Cialdini et al., 1991; Cialdini et al., 1990). Descriptive norms describe what type of behavior is likely to be effective, appropriate or adaptive in a particular context (i.e. “If everybody else is doing it, then it must be a good/sensible thing to do”) (Smith & Louis, 2008). A number of studies distinguished between injunctive and descriptive norms and found their independent effects on behavioral intention improved the explanatory power of the model (Conner & McMillan, 1999; McMillan & Conner, 2003; Warburton & Terry, 2000).

IT Substitution

The traditional technology acceptance and adoption theories however are not sufficient to explain or predict IT substitution because they fail to capture the complexity of IT substitution behavior by assuming a single technology adoption context where competing technologies are not taken into consideration. Ye et al. (2008) define IT substitution as “users’ termination or significant reduction in usage of one IT product while replacing it completely or in large part with an alternative product that satisfies identical needs” (Ye et al., 2008, p. 2117). Prior research on consumer and IT product/service substitution suggests that product/service substitution is influenced by both the incumbent and the alternative (Keaveney, 1995; Roster & Richins, 2009; Ye et al., 2008). Ye et al. (2008) found that user satisfaction and breadth of use of the incumbent IT are negatively associated with IT substitution behavior, while the perceived ease of use, relative advantage, and perceived security of the substitute IT are positively associated with IT substitution behavior.

Since IT substitution involves two competing components of incumbent IT and substitute IT, conflicts may arise between users’ evaluation of incumbent IT and that of alternative IT. For instance, when deciding whether to replace a fully functional incumbent IT with a more advanced new IT, the perceived benefits of the new IT may conflict with the satisfaction with the incumbent IT that is sufficient to meet current needs. Due to the complex nature of IT substitution and the potential evaluative conflicts regarding incumbent IT and substitute IT, there is a need for a more comprehensive framework that provides better explanatory power by taking into account the relative weights of different incumbent IT’s and substitute IT’s characteristics in predicting IT substitution intention. A good understanding of how individuals differ in their perceptions of and attentions to different characteristics of incumbent IT and substitute IT when making decisions about IT substitution will make it possible to assess the relative weights of different characteristics in determining different individuals’ IT substitution intention. The RF

Theory provides a useful framework for understanding the motivational determinants of individual differences in evaluating incumbent IT's and substitute IT's characteristics as well as other relevant information with respect to decision making about IT substitution.

The RF Theory

The RF theory distinguishes between two major motivational orientations – promotion focus and prevention focus – that guide individuals' goal pursuit behaviors (Higgins, 1997; 1998). The promotion focus driven by the need nurturance concerning an ideal self (the kind of person an individual would like to be) and thus are related to attainment of positive outcomes, such as advancement, accomplishment and aspirations. In contrast, the prevention focus are driven by the need for safety concerning an ought self (the kind of person an individual ought to be) and are related to avoidance of negative outcomes and fulfillment of responsibilities, duties, and obligations. Individuals with a promotion focus are sensitive to positive outcomes. They consider gains as success and nongain as failure and regulate their attentions, perceptions and behaviors toward maximization of gains. Individuals with a prevent focus are sensitive to negative outcomes. They regard non-loss as success and loss as failure and regulate their attentions, perceptions and behaviors toward security and minimization of losses (Higgins & Tykocinski 1992; Shah, Higgins & Friedman, 1998). These two distinct motivational orientation states can be either enduring personality characters or situationally induced by environmental cues (Forster, Higgins & Bianco, 2003; Forster, Higgins & Idson, 1998; Shah & Higgins, 1997). Irrespective of being dispositional or situationally induced, individuals' regulatory foci guide their preferences, information processing, decision making, and behaviors (Dholakia, Gopinath, Bagozzi & Nataraajan, 2006; Pham & Avnet, 2004; Sengupta & Zhou, 2007; Vellido, Lisboa & Meehan, 2000).

Individuals' regulatory foci prompt them to adopt strategies and engage in activities that are consistent with their regulatory orientations. Specifically, individuals utilize an eagerness strategic means to pursue a promotion goal but adopt a vigilance strategic means to fulfill a prevention goal (Crowe & Higgins, 1997). Let us consider a signal detection situation where individuals decide whether an action is worth pursuing (Tanner & Swets, 1954; Trope & Liberman, 1996). There are four possible outcomes of each signal-detection trial: 1) a hit – deciding to take a correct action, 2) a miss – deciding not to take a correct action, 3) a correct rejection – deciding not to take a wrong action, and 4) a false alarm – deciding to take a wrong action. Since a promotion focus is concerned with the pursuit of gains and advancements, it entails the eagerness strategy to ensure hits and avoid misses (i.e., a loss of an opportunity for accomplishment). In contrast, since a prevention focus is concerned with safety and avoidance of failures, it involves the vigilance strategy to seek correct rejections and ensure against false alarms (i.e., making a mistake). In line with this reasoning, Liberman, Idson, Camacho, & Higgins (1999) found that promotion-focused individuals prefer change, while prevention-focused individuals prefer to maintain the status quo. For example, prevention focused individuals are more willing to resume an interrupted task rather than perform a substitute task and are more reluctant to exchange currently possessed objects for alternative objects than promotion-focused individuals (i.e., the endowment effect; Kahneman, Knetsch, & Thaler, 1990; 1991). Liberman et al. (1999) suggested that individuals with a prevention focus feel more obliged to rely on the original alternatives as long as they are satisfactory, whereas individuals

with a promotion focus are more willing to change if they think that the new alternative is an improvement over the original object.

The phenomenon that individuals prefer the means of goal pursuit that match and sustain their regulatory focus is termed as regulatory fit (Higgins, 2000; 2005; 2006). The fit between an individual's means of goal pursuit and regulatory orientation creates a subjective experience of "feeling right" that in turn increases his/her motivational engagement and enhances the perceived value of the goal pursuit (Avnet & Higgins, 2006; Wang & Lee, 2006). Several studies have applied the concept of regulatory fit to examine selective information processing and evaluation (Lee & Aaker, 2004; Pham & Avnet 2004; Pham & Higgins, 2005; Wang & Lee, 2006). Due to human being's limited processing capacity, selectivity of information is often necessary (Payne, Bettman, & Johnson., 1992). Prior research on selective information processing has demonstrated that individuals tend to selectively process and reply on motivation-consistent information (Hart et al., 2009). To the extent that motivational forces influence selective information processes (Hart et al., 2009), regulatory focus plays a key role in directing people's attention to information that fits their regulatory orientation (Wang & Lee, 2006). In other words, people are more likely to selectively pay attention to information that addresses their regulatory concerns. Since people experiencing regulatory fit are more motivated in their goal pursuit activities (Idson, Liberman, & Higgins, 2000), individuals actively seeking information congruent with their regulatory orientations will be more motivated to elaborate on the information pertinent to their respective regulatory focus and, in turn, be more likely to be influenced by that information. More specifically, promotion-focused individuals will selectively pursue and elaborate on information that addresses concerns about growth and advancement, whereas prevention-focused individuals will seek out and elaborate on information that addresses concerns about safety and security (Wang & Lee, 2006).

Prior research on regulatory fit has demonstrated that promotion focus versus prevention focus is associated with change versus stability (Liberman et al., 1999), distant versus proximal temporal perspective (Pennington & Roese, 2003), abstract versus concrete mental representations (Lee, Keller & Sternthal, 2010), and desirability versus feasibility considerations (Liberman & Trope, 1998). The distinction between feasibility and desirability of goal-directed actions corresponds to the distinction between means and ends of actions (Gollwitzer & Moskowitz, 1996; Liberman & Trope, 1998). Specifically, desirability refers to the value of an action's end state reflecting the superordinate why aspects of an action, whereas feasibility refers to the ease or difficulty of reaching an action's end reflecting the subordinate how aspects of an action (Carver & Scheier, 1990, 1999; Liberman & Trope, 1998; Vallacher & Wegner, 1987). Feasibility versus desirability is also an important dimension of level of mental construals (Eyal, Liberman, Trope & Walther, 2004). High-level construals entail developing abstract and global conceptualization, whereas low-level construals involve constructing concrete and local conceptualization (Trope, Liberman & Wakslak, 2007). Therefore, high-level construals represent attitude objects or events in terms of their abstract, essential features (Liberman, Sagristano & Trope, 2002). In contrast, low-level construals represent attitude objects or events in terms of their concrete, incidental features (Liberman et al., 2002). Desirability considerations constitute high-level construals of actions, and feasibility considerations constitute low-level construals of actions, because the why aspects of an action are more abstract and general and better convey the action's meaning than the more specific how details of the action (Vallacher & Wegner, 1987; 1989). Since prevention-

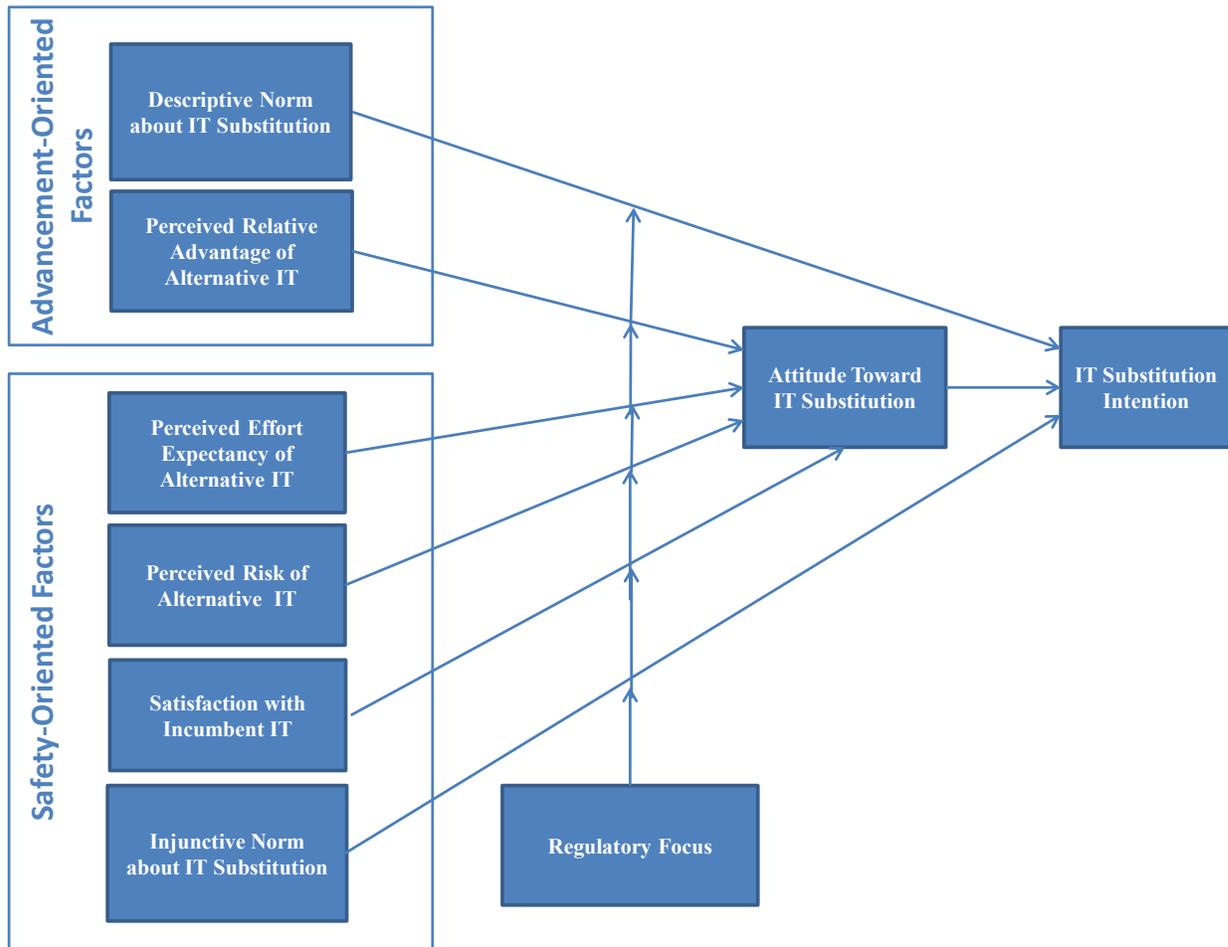
focused individuals vigilantly steer away from negative outcomes and losses, they would be more detail-oriented and use low-level construals to learn about all available information, especially the details that may jeopardize the success of the action. Hence, the feasibility concerns that reflect the “how aspects” of actions would be more prominent to promotion-focused people. They would focus on the local details of the means in considerations and adopt concrete processing of action alternatives by which they can increase the chance to avoid negative outcomes. For promotion-focused individuals who eagerly strive to gain desirable outcomes and benefits, the desirability concerns reflecting the “why aspects” of actions would be more salient. They tend to go beyond the scrutiny of local details pertaining to the means and use high-level construals to engage in broader, more abstract consideration of the general value of the end state and why it should be attained.

IT substitution presents users with the chance for obtaining benefits from a more advanced new IT or the risk of making a wrong decision by replacing a satisfactory incumbent IT with a malfunctioning substitute IT. Since promotion-focused individuals are motivated to attain benefits and prevention-focused individuals seek to avoid losses, users’ regulatory foci will influence their IT substitution decisions that are differentially associated with achievement of benefits and avoidance of risks. Accordingly, in the situation of IT substitution, a user will be selectively sensitive to and pay attention to the factors that are congruent with his/her regulatory focus motivation. Therefore, an individual’s regulatory focus will determine which characteristics of incumbent IT and substitute IT he/she is sensitive to, pays attention to, and places emphasis on when making a decision about IT substitution.

RESEARCH MODEL AND HYPOTHESES

Drawing on the traditional technology acceptance theories, IT substitution research, and the RF theory, this paper proposes a research model of two sets of factors influencing IT substitution attitude and intention along the RF perspective (Figure 1). This model focuses on the effects of perceived characteristics of both incumbent and alternative ITs (perceived relative advantages of alternative IT, perceived effort expectancy of alternative IT, perceived risks of alternative IT, and satisfaction with incumbent IT), attitude toward IT substitution, social influence regarding IT substitution (descriptive norm and injunctive norm about IT substitution), and IT users’ RF orientations. According to the RF theory, I argue that individuals will be sensitive to the factors relevant to their regulatory foci. The advancement-oriented factors (perceived relative advantages of alternative IT and descriptive norm about IT substitution) give rise to eager stimulation relevant to the promotion focus, whereas the safety-oriented factors (perceived effort expectancy of alternative IT, perceived risks of alternative IT, satisfaction with incumbent IT, and injunctive norm about IT substitution) induce vigilant simulation relevant to the prevention focus. To the extent that regulatory focus acts as a filter for individuals to process information selectively, promotion focused individuals and prevention focused individuals would respond differently to advancement-oriented factors and safety-oriented factors.

Figure 1. Research Model of Factors Influencing IT Substitution Intention



Fishbein and Ajzen’s TRA (1975) holds that an individual’s intention to perform a behavior is determined by his/her attitude toward performing a behavior. Accordingly, an individual’s intention of substituting a new IT for an incumbent IT is determined by his/her attitude toward IT substitution. Here, attitude refers to the extent to which an individual has an overall favorable or unfavorable evaluation of IT substitution. In line with Fishbein and Ajzen’s TRA (1975), attitude toward IT substitution will have a positive influence on intention of IT substitution, as stated in the following hypothesis.

Hypothesis 1: Attitude toward IT substitution positively influences intention of IT substitution.

According to Fishbein and Ajzen’s TRA (1975), the social influence an individual perceives on whether he/she should perform the behavior is also an important determinant of the individual’s behavioral intention. Due to the narrow conceptualization of social influence in TRA, this paper distinguishes between injunctive norms and descriptive norms. Prior research has emphasized the importance of distinguishing between descriptive and injunctive social norms (Cialdini & Trost, 1998; Deutsch & Gerard, 1955), arguing that it is “crucial to discriminate between the is

(descriptive) and the ought (injunctive) meaning of social norms because each refers to a separate source of human motivation” (Cialdini et al., 1990, p. 1015). Injunctive norms represent the individual’s perception that IT substitution is expected by people who are important to him/her. And descriptive norms refer to the individual’s perception of whether other people similar to himself/herself actually replace the incumbent IT with the alternative IT. Descriptive norms can make people focus on why others perform a behavior, which leads to thoughts regarding personal benefits (if most people are doing this, it must be good) and social benefits (if I do what others do, I will fit in) (Melnyk, Van Herpen, Fischer & Van Trijp, 2011). Describing others’ behaviors, descriptive norms can motivate people by demonstrating the benefits that following others are likely to bring (Cialdini et al., 1990; Melnyk, Van Herpen, Fischer & Van Trijp, 2013; Prislin & Wood, 2005). Since descriptive norms are perceived as a way to obtain benefits and accomplish desired ideals (Cialdini, 2006), they fit well with advancement-oriented goals and desires that are salient under promotion focus. Injunctive norms, in contrast, refer to what people should do in a given situation and thus are “the influence to conform to the positive expectations of others” (Deutsch & Gerard, 1955, p. 629). Rather than being concerned with the achievement of personal ambitions, injunctive norms are based on the avoidance of perceived sanctions associated with norm violations (Cialdini & Trost, 1998). Injunctive norms motivate people to fulfill their obligations or avoid punishments (Hornsey, Majkut, Terry, & McKimmie, 2003), and hence are congruent with the avoidance and safety-oriented goals under prevention focus.

Likewise, the perceived characteristics of both incumbent and alternative ITs can also be differentiated into advancement-oriented factors and safety-oriented factors according to their compatibility with promotion focus vs. prevention focus. Prior research suggests the perceived characteristics of technology innovation play a significant role in technology adoption and diffusion (Davis, 1989; Fishbein & Ajzen, 1975; Rogers, 1995; Venkatesh, et al., 2003). More specifically, according to Fishbein and Ajzen’s TRA and Davis’ TAM, attitude toward new IT adoption is a function of salient beliefs about certain IT attributes. The perception of relative advantages offered by a new technology has been found to determine the technology adoption (Rogers, 1995; Venkatesh, et al., 2003). Here, relative advantage refers to the extent to which a new IT product/service is perceived to be better than the incumbent IT product/service it supersedes. In order for a new technology to be widely adopted, the technology has to be perceived to offer advantages relative to the existing comparable technologies it intends to replace. This is especially true for IT substitution, in which one’s attitude depends on the perception of a new IT’s additional benefits and values compared with an incumbent IT. The perceived relative advantage of alternative IT is an advancement-oriented factor reflecting the benefits of IT substitution and addressing the desirability concerns of IT substitution prominent under promotion focus.

Another important determinant of new technology adoption is perceived effort expectancy of technology, which refers to the expected amount of effort required in using the new technology (Venkatesh, et al., 2003). It reflects the degree of ease associated with the use of the technology (Venkatesh, et al., 2003) and embodies the concepts of perceived ease of use in TAM (Davis, 1989) and perceived complexity in DIT (Rogers, 1995). Perceived effort expectancy is especially critical during the initial stage of IT substitution, when the complexity of initial installation of an alternative IT or perceived difficulty in learning or using an alternative IT may significantly

increase the perception of required effort in adopting the alternative IT and cause unfavorable attitude toward replacing the incumbent IT with the alternative IT. Thus, it is reasonable to expect that the higher the effort required in using an alternative IT to replace an incumbent IT, the less favorable the attitude toward IT substitution; and vice versa. The perceived effort expectancy of alternative IT can be considered a safety-oriented factor closely related to the feasibility concerns of IT substitution that are salient under prevention focus.

The perceived risk of alternative IT is also a critical factor influencing attitude toward IT substitution. The adoption of a new IT is by nature risk laden. Uncertainty about the outcome of adopting a new IT can be problematic for users. Risk is “the product of a harmful consequence of an activity or event and the probability of its occurrence” (Włodarczyk & Tennyson, 2003, p. 179). The degree to which an individual perceives risk or uncertainty in a new IT will influence his/her adoption of the new IT to replace the incumbent IT. If the new IT fails to deliver its expected outcome, it will result in a loss to the user (financial, performance, psychological, physical, social, and convenience) (Pires, Stanton, & Eckford, 2004). For instance, financial risk refers to the potential monetary loss that users may encounter after switching to a new IT. Performance risk is the likelihood that the new IT does not perform as expected. Physical risk is related to safety problems arising from using the new IT, especially those directly related to health and security. Psychological risk is the possibility that the new IT will be consistent with the user’s self-image. Social risk refers to the perceptions of significant others towards the new IT. Convenience risk represents the additive problematic inconveniences which the users will encounter when they switch to the new IT. The perceived risk of alternative IT, similar to the perceived effort expectancy of alternative IT, is also a safety-oriented factor concerned with feasibility considerations of IT substitution prominent under prevention focus.

User satisfaction with incumbent IT also influences attitude toward replacing the incumbent IT with the alternative IT. In behavioral IS research, user satisfaction construct has been a central construct of interest, employed by IS researchers and practitioners to measure user attitude about system, evaluate IS effectiveness, and predict user behavior or behavioral intention (Melone, 1990). IS research on user satisfaction suggests that user satisfaction is an important measure of information systems success (Delone & McLean, 1992; Ives & Olson, 1984). As an evaluative response to the use experience of IT products/services and disconfirmation of performance expectations (Bhattacharjee, 2001a; Thong, Hong & TAM, 2006), satisfaction with IT products/services influences subsequent use behaviors with the products/services. According to Fishbein and Ajzen’s TRA (1975), satisfaction indicates positive attitude, which will result in increased positive behavioral intentions or behaviors. Therefore, it is expected that satisfied IT users are more likely to continue their use of that IT product/service (Thong et al., 2006). User satisfaction has been consistently supported to be an important factor influencing user’s intention to continue using IT products/services (Bhattacharjee, 2001a; Bhattacharjee, 2001b; Flavian et al., 2006; Thong et al., 2006). Therefore, satisfaction with the incumbent IT is likely to lead to continued use of the incumbent IT and negatively influence attitude toward IT substitution. Prevention-focused individuals who are concerned with avoiding errors of false alarms and ensuring correct rejections would consider a satisfactory incumbent IT a relatively safe choice and favor the incumbent IT over the alternative IT. In contrast, regardless of whether promotion-focused individuals are satisfied with the incumbent IT, if the alternative IT has the potential to offer an advantage over the incumbent IT, they are likely to substitute the alternative IT for the

incumbent IT. Therefore, satisfaction with incumbent IT is a safety-oriented factor addressing the safety and security concerns of prevention-focused individuals.

When individuals consider social influences and evaluate attributes of both incumbent and alternative ITs with regard to IT substitution decision, the advancement-oriented factors could be more accessible to individuals with a promotion focus, whereas the safety-oriented factors could be more salient to individuals with a prevention focus. The promotion focus propels people to focus on the descriptive norms about IT substitution and the perceived relative advantage of alternative IT, whereas the prevention focus makes people more worried about the perceived risk and effort expectancy of alternative IT and concentrate on the injunctive norms about IT substitution and their satisfaction with incumbent IT. Therefore, the following hypotheses can be proposed.

Hypothesis 2: Descriptive norms about IT substitution have a stronger positive influence on intention of IT substitution for promotion-focused individuals than for prevention-focused individuals.

Hypothesis 3: Perceived relative advantage of alternative IT has a stronger positive influence on attitude toward IT substitution for promotion-focused individuals than for prevention-focused individuals.

Hypothesis 4: Injunctive norms about IT substitution have a stronger positive influence on intention of IT substitution for prevention-focused individuals than for promotion-focused individuals.

Hypothesis 5: Perceived effort expectancy of alternative IT has a stronger negative influence on attitude toward IT substitution for prevention-focused individuals than for promotion-focused individuals.

Hypothesis 6: Perceived risk of alternative IT has a stronger negative influence on attitude toward IT substitution for prevention-focused individuals than for promotion-focused individuals.

Hypothesis 7: Satisfaction with incumbent IT has a stronger negative influence on attitude toward IT substitution for prevention-focused individuals than for promotion-focused individuals.

RESEARCH DESIGN

Sample and Data Collection

To test the proposed research model and its associated hypotheses, a web-based survey will be conducted to collect data from people who are considering replacing an IT. To solicit participation, an email invitation will be sent to all registered students, faculty and staff members at a southeast university in the USA. Interested participants may click on the link in the email invitation to be directed to the survey website. A screening question will be included at the

beginning of the survey to determine whether the respondent is currently considering replacing an IT. The survey website will be designed in such a way that only those who are considering replacing an IT will be able to proceed with the survey. To encourage participation, prizes (Amazon.com Gift Cards) will be provided by means of a lucky draw. Respondents will be asked to describe the alternative IT and the incumbent IT they are considering replacing and to respond to all survey questions related to their intentions to substitute the alternative IT for the incumbent IT.

Measures

The survey instrument will be developed by incorporating and adapting existing valid and reliable scales where appropriate. The promotion focus and prevention focus will be measured using Lockwood, Jordan and Kunda's (2002) measurement scales. The measurement scales of perceived relative advantage, perceived effort expectancy, and perceived risk of alternative IT will be adopted from the work of Moore and Benbasat (1991) and Shimp and Bearden (1982). Flavian, Guinaliu, and Gurrea's (2006) measurement scale of satisfaction will be used to measure the satisfaction with incumbent IT. The measures of descriptive norms and injunctive norms about IT substitution will be borrowed from the work of Rimal and Real (Rimal & Real, 2003) and Venkatesh et al. (2003). The measures of attitude toward IT substitution and intention of IT substitution will be derived from the prior work on technology acceptance (Davis, Bagozzi & Warshaw, 1989; Venkatesh et al., 2003). Finally, the participants' voluntariness of IT substitution will be measured as a control variable to assess the extent to which they perceive the decision of IT substitution to be non-mandatory. Since individuals are likely to engage in IT substitution in a mandatory IT substitution context (e.g., in the case of an administrative decision mandating substitution of a new business IT for an incumbent business IT at workplace) regardless of their personal attitudes toward IT substitution, it is necessary to statistically partial out the confounding effect of the participants' voluntariness of IT substitution on their intention of IT substitution.

CONCLUSIONS

This paper explores and models the important factors affecting the intention of IT substitution. The major contributions of this paper are as follows. First, this research recognizes the complex nature of IT substitution and classifies two sets of factors influencing IT substitution attitude and intention along the RF respective. It proposes the differentiated effects of these two sets of factors on different individuals' intentions of IT substitution. This is the first attempt to investigate the antecedents of IT substitution intention from a motivational perspective. Second, this research adds to the RF theory (Higgins, 1997) by developing a model of the moderating effects of regulatory focus on the influences of normative factors and incumbent and alternative ITs' characteristics on IT substitution intention. Third, the proposed research model examines simultaneously the effects of relevant characteristics of both incumbent and alternative ITs and makes it possible to assess their relative weights in determining individuals' intentions of IT substitution. It also further expands beyond the traditional technology adoption research in explaining IT substitution intention. Finally, this paper provides guidance for implementing intervention measures to help in IT substitution.

REFERENCES

- Avnet, T., & Higgins, E. T. (2006). How regulatory fit affects value in consumer choices and opinions. *Journal of Marketing Research*, 43, 1–10.
- Bhattacharjee, A. (2001a). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, 25(3), 351-370.
- Bhattacharjee, A. (2001b). An empirical analysis of the antecedents of electronic commerce service continuance. *Decision Support Systems*, 32, 201-214.
- Carver, C. S., & Scheier, M. F. (1990). Principles of self-regulation. In E. T. Higgins, and R. M. Sorrentino (Eds.). *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 3–52). New York, NY: Guilford Press.
- Carver, C. S., & Scheier, M. F. (1999). Themes and issues in the self-regulation of behavior. In R. S. Wyer (Ed.), *Advances in social cognition* (Vol. 12, pp. 1–106). Mahwah, NJ: Erlbaum.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct. *Advances in Experimental Social Psychology*, 24, 201–234.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58, 1015–1026.
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity, and compliance. In D. T. Gilbert, and S. T. Fiske (Eds.). *The handbook of social psychology* (4th ed., pp. 151-192). Boston, MA: McGraw-Hill.
- Cialdini, R. B. (2006). *Influence: The psychology of persuasion*. New York: Collins Business Essentials.
- Conner, M., & McMillan, B. (1999). Interaction effects in the theory of planned behavior: Studying cannabis use. *British Journal of Social Psychology*, 38, 195-222.
- Crowe, E., & Higgins, E. T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision-making. *Organizational Behavior & Human Decision Processes*, 69, 117-132.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 318–330.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 35, 982-1003.

- Delone, W. H., & Mclean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3, 60-95.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology*, 51, 629-636.
- Dholakia, U. M., Gopinath, M., Bagozzi, R. P., & Natarajan, R. (2006). The role of self-regulatory focus in the experience and self-control of desire for temptations. *Journal of Consumer Psychology*, 16(2), 163-175.
- Donald, I., & Cooper, S. R. (2001). A facet approach to extending the normative component of the theory of reasoned action. *British Journal of Social Psychology*, 40, 599–621.
- Eyal, T., Liberman, N., Trope, Y., & Walther, E. (2004). The pros and cons of temporally near and distant action. *Journal of Personality and Social Psychology*, 86(6), 781– 95.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: an introduction to theory and research*. Reading, MA: Addison-Wesley.
- Flavian, C., Guinaliu, M., & Gurrea, R. (2006). The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management*, 43, 1-14.
- Förster, J., Higgins, E. T., & Bianco, A. T. (2003). Speed/accuracy decisions in task performance: Built-in trade-off or separate strategic concerns? *Organizational Behavior and Human Decision Processes*, 90, 148 - 164.
- Förster, J., Higgins, E. T., & Idson, L. C. (1998). Approach and avoidance strength during goal attainment: Regulatory focus and the “goal looms larger” effect. *Journal of Personality & Social Psychology*, 75, 1115-1131.
- Gollwitzer, P. M., & Moskowitz, G. B. (1996). Goal effects on action and cognition. In E. T. Higgins, and A. W. Kruglanski (Eds.). *Social psychology. Handbook of basic principles* (pp. 361-399). New York, NY: The Guilford Press.
- Keaveney, S. M. (1995). Customer switching behavior in service industries: An exploratory study. *Journal of Marketing*, 59, 71–82.
- Hart, W., Albarracin, D., Eagly, A. H., Brechan, I., Lindberg, M., Lee, K., & Merrill. L. (2009). Feeling validated versus being correct: A meta-analysis of selective exposure to information. *Psychological Bulletin*, 135(4), 555-588.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52, 1280-1300.
- Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 1-46). San Diego, CA: Academic Press.

- Higgins, E. T. (2000). Making a good decision: Value from fit. *American Psychologist*, *55*, 1217-1230.
- Higgins, E. T. (2005). Value from regulatory fit. *Current Directions in Psychological Science*, *14*, 209-213.
- Higgins, E. T. (2006). Value from hedonic experience and engagement. *Psychological Review*, *113*, 439-460.
- Higgins, E. T., & Tykocinski, O. (1992). Self-discrepancies and biographical memory: Personality and cognition at the level of psychological situation. *Personality & Social Psychology Bulletin*, *18*, 527-535.
- Hornsey, M. J., Majkut, L., Terry, D. J., & McKimmie, B. M. (2003). On being loud and proud: Nonconformity and counter-conformity to group norms. *British Journal of Social Psychology*, *42*, 319–335.
- Idson, L. C., Liberman, N., & Higgins, E. T. (2000). Distinguishing gains from nonlosses and losses from nongains: A regulatory focus perspective on hedonic intensity. *Journal of Experimental Social Psychology*, *36*(3), 252-274.
- Ives, B., & Olson, M. H. (1984). User involvement and MIS success: A review of research. *Management Science*, *30*(5), 586 - 603.
- Kahneman, D., Knetsch, J. L., & Thaler, R. (1990). Experimental Tests of the Endowment Effect and the Coase Theorem. *Journal of Political Economy*, *98*, 1325-1348.
- Kahneman, D., Knetsch, J. L., & Thaler, R. (1991). Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias. *Journal of Economic Perspectives*, *5*(1): 193-206.
- Lee, A. Y., & Aaker, J. L. (2004). Bringing the frame into focus: The influence of regulatory fit on processing fluency and persuasion. *Journal of Personality and Social Psychology*, *86*, 205–218.
- Lee, A. Y., Keller, P. M., & Sternthal, B. (2010). Value from regulatory construal fit: The persuasive impact of fit between consumer goals and message concreteness. *Journal of Consumer Research*, *36*, 735– 47.
- Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of Temporal Construal Theory. *Journal of Personality and Social Psychology*, *75*, 5–18.
- Liberman, N., Idson, L. C., Camacho, C. J., & Higgins, E. T. (1999). Promotion and prevention choices between stability and change. *Journal of Personality and Social Psychology*, *77*, 1135-1145.

- Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, 38, 523–34.
- Lockwood, P., Jordan, C. H., & Kunda, Z. (2002). Motivation by positive or negative role models: Regulatory focus determines who will best inspire us. *Journal of Personality and Social Psychology*, 83, 854–864.
- Melnyk, V., Van Herpen, E., Fischer, A. R. H., & Van Trijp, H. C. M. (2011). To think or not to think: The effect of cognitive deliberation on the influence of injunctive versus descriptive social norms. *Psychology & Marketing*, 28, 709–729.
- Melnyk, V., Van Herpen, E., Fischer, A. R. H., & Van Trijp, H. C. M. (2013). Regulatory fit effects for injunctive versus descriptive social norms: Evidence from the promotion of sustainable products. *Marketing Letters*, 24, 191–203.
- Melone, N. P. (1990). A theoretical assessment of the user-satisfaction construct in information systems research. *Management Science*, 36(1), 79-92.
- McMillan, B., & Conner, M. (2003). Using the theory of planned behaviour to understand alcohol and tobacco use in students. *Psychology, Health, and Medicine*, 8, 317–328.
- 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.
- Payne, J. W., Bettman, J. R., & Johnson, E. J. (1992). Behavioral decision research: A constructive processing perspective. *Annual Review of Psychology*, 43, 87-131.
- Pennington, G. L., & Roese N. J. (2003). Regulatory focus and temporal distance. *Journal of Experimental Social Psychology*, 39, 563–76.
- Pham, M., & Avnet, T. (2004). Ideals and Oughts and the Reliance on Affect versus Substance in Persuasion. *Journal of Consumer Research*, 30(4), 503-518.
- Pham, M. T., & Higgins, E. T. (2005). Promotion and prevention in consumer decision making: State of the art and theoretical propositions. In S. Ratneshwar, and D. G. MICK (Eds.). *Inside consumption: consumer motives, goals and desires* (pp. 8-43). London and New York: Routledge.
- Pires, G., Stanton, J., & Eckford, A. (2004). Influences on the perceived risk of purchasing online. *Journal of Consumer Behavior*, 4, 118-131.
- Prislin, R., & Wood, W. (2005). Social influence in attitudes and attitude change. In D. Albarracín, B. T. Johnson, and M. P. Zanna (Eds.). *The handbook of attitudes* (pp. 671–706). Mahwah, NJ: Lawrence Erlbaum Associates.

- Rimal, R. N., & Real, K. (2003). How behaviors are influenced by perceived norms: A test of the theory of normative social behavior. *Communication Research*, 32(3): 389–414.
- Rivis, A., & Sheeran, P. (2003). Social influences and the theory of planned behavior: Evidence for a direct relationship between prototypes and young people's exercise behavior. *Psychology and Health*, 18, 567-583.
- Rogers, E. M. (1995). *Diffusion of innovations*. New York, NY: The Free Press.
- Roster, C. A., & Richins, M. L. (2009). Ambivalence and attitudes in consumer replacement decisions. *Journal of Consumer Psychology*, 19, 48-61.
- Schepers, J., & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: investigating subjective norm and moderation effect. *Information and Management*, 44(1), 90-103.
- Sengupta, J., & Zhou, R. (2007). Understanding impulsive eaters' choice behaviors: The motivational influences of regulatory focus. *Journal of Marketing Research*, 44(2), 297–308.
- Shah J., & Higgins, E. T. (1997). Expectancy X value effects: Regulatory focus as determinant of magnitude and direction. *Journal of Personality and Social Psychology*, 73, 447–458.
- Shah, J., Higgins, E. T., & Friedman, R. S. (1998). Performance incentives and means: How regulatory focus influences goal attainment. *Journal of Personality and Social Psychology*, 74, 285–293.
- Shimp, T. A., & Bearden, W. O. (1982). Warranty and other extrinsic cue effects on consumers' risk perceptions. *Journal of Consumer Research*, 9, 39-46.
- Smith, J. R., & Louis, W. R. (2008). Do as we say and as we do: The interplay of descriptive and injunctive group norms in the attitude-behavior relationship. *British Journal of Social Psychology*, 47, 647-666.
- Steffens, P. R., & Kaya, M. (2009). Drivers of technology substitution: successive generations of high tech products. In L Gillin (Eds.), *Proceedings of the 6th AGSE International Entrepreneurship Research Exchange* (pp. 965-966). Swinburne University of Technology, University of Adelaide, Adelaide, S. Aust.
- Tanner, W. P., & Swets, J. A. (1954). A decision-making theory of visual detection. *Psychological Review*, 61, 401-409.
- Thong, J. Y. L., Hong, S., & TAM, K. Y. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. *International Journal of Human-Computer Studies*, 64, 799-810.

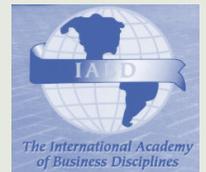
- Tornatzky, L. G., & Klein, K. J. (1982). Innovation characteristics and innovation adoption implementation: a meta-analysis of findings. *IEEE Transactions on Engineering Management*, 29(1), 28-44.
- Trope, Y., & Liberman, A. (1996). Social hypothesis testing: Cognitive and motivational mechanisms. In E. T. Higgins and A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 239–270). New York, NY: Guilford.
- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology*, 17(2), 83–95.
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they are doing? Action identification and human behavior. *Psychological Review*, 94, 3–15.
- Vallacher, R. R., & Wegner, D. M. (1989). Levels of personal agency: Individual variation in action identification. *Journal of Personality and Social Psychology*, 57, 660–671.
- Vellido, A., Lisboa, P. J. G., & Meehan, K. (2000). Quantitative characterization and prediction of on-line purchasing behavior: A latent variable approach. *International Journal of Electronic Commerce*, 4(4), 83-10
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of IT: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.
- Wang, J., & Lee, A. Y. (2006). The role of regulatory focus in preference construction. *Journal of Marketing Research*, 43, 28–38.
- Warburton, J., & Terry, D. J. (2000). Volunteer decision making by older people: A test of a revised theory of planned behavior. *Basic and Applied Social Psychology*, 22, 245–257.
- Wlodarczyk, T. L., & Tennyson, J. (2003). Social and economic effects from attitudes towards risk. *Impact Assessment and Project Appraisal*, 21(3), 179-185.
- Ye, C., Seo, D., Desouza, K., Papagari, S., & Jha, S. (2008). Influences of IT substitutes and user experience on post-adoption user switching: an empirical investigation. *Journal of the American Society for Information Science and Technology*, 59(13), 2115-2132.

QRBD

QUARTERLY REVIEW OF BUSINESS DISCIPLINES

May 2015

Volume 2
Number 1



A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES
SPONSORED BY UNIVERSITY OF NORTH FLORIDA
ISSN 2334-0169 (print)
ISSN 2329-5163 (online)