TECHNOLOGY PARADOXES, REGULATORY FOCUS AND TRUST

Liqiong Deng, University of West Georgia

ABSTRACT

This research focuses on the paradoxical nature of user experience with information technology (IT) and draws on the Regulatory Focus (RF) theory and desirability-feasibility framework to examine how the diametric anchors of IT paradoxes (fulfills needs / creates needs, new / obsolete, control / chaos, engaging / disengaging, freedom / enslavement, assimilation / isolation, efficiency / inefficiency, competence / incompetence) influence users' perceptions of IT performance ambiguity, their cognitive and emotional trust in IT and continuance intention to use IT. According to the desirability-feasibility framework, this research classifies the IT paradoxes into two categories – the functional desirability paradoxes and the usage feasibility paradoxes. The RF theory distinguishes between two motivational orientations – promotion focus and prevention focus. Individuals with a promotion focus are driven by the need for attainment of positive outcomes, oriented toward the maximization of gains and advancement, and likely to adopt high-level construals focused on the functional desirability of IT. In contrast, individuals with a prevention focus are driven by the need for avoidance of negative outcomes, oriented toward the minimization of losses and safety, and likely to adopt low-level construals concerned with the usage feasibility of IT. Accordingly, this research proposes that individuals' regulatory foci determine the differential effects of the diametric anchors of IT functional desirability paradoxes and usage feasibility paradoxes on users' perceived IT performance ambiguity as well as their cognitive trust and emotional trust in IT, which consequently influence their continued IT use intention.

Keywords: Technology Paradoxes, Promotion Focus, Prevention Focus, Cognitive Trust, Emotional Trust, Continuance Intention

INTRODUCTION

Nowadays, as information technology (IT) has become increasingly prevalent in all aspects of people's daily life, people often find their daily experiences with IT to be ambivalent (Johnson, Bardhi & Dunn, 2008). On the one hand, people enjoy the benefits of new IT; but on the other hand, they are often confused with the complex features of IT. Users' experiences with IT may be paradoxical (Jarvenpaa & Lang, 2005), characterized by conflicting emotions where users are confronted with both positive and negative aspects of technology usage. The notion of technology paradox is not new. In social science, Winner (1994) argues that the same technology that creates positive feelings of intelligence and efficacy can also elicit feelings of stupidity and ineptitude (Winner, 1994). In marketing research, Mick and Fournier describe eight central technology paradoxes – control/chaos, freedom/enslavement, new/obsolete, competence/incompetence, efficiency/inefficiency, fulfills/creates needs, and engaging/disengaging (Mick & Fournier, 1998). In information systems (IS) research, Orlikowski (1991) and Chinn (2001) discuss the paradoxical nature of IT. Jarvenpaa and Lang propose eight paradoxes of mobile technology –

empowerment/enslavement, independence/dependence, fulfills/creates needs, competence/incompetence, planning/improvisation, engaging/disengaging, and public/private (Jarvenpaa & Lang, 2005).

IT paradoxes produce conflicting evaluations of IT, elicit mixed emotions (known as emotional ambivalence) toward IT (Mick & Fournier, 1998), and inhibit users' ability to fully evaluate the performance of IT, thus resulting in perceived performance ambiguity of IT and uncertainty concerning whether IT can be relied on in the future (Johnson, Bardhi & Dunn, 2008). In response to perceived uncertainty and performance ambiguity of IT, users' trust in IT will play a central role in determining users' continuance intention to use IT. Trust involves a leap of faith beyond what is supported by limited available information despite uncertainties or risks (Lewis & Weigert, 1985; Luhmann, 1979). As a result of IT paradoxes, users' inability to fully determine the performance of IT makes it necessary for them to draw on their trusting intention toward IT in assessing their continued IT usage intention (Johnson, Bardhi & Dunn, 2008).

While prior research has provided valuable insights into the impacts of technology paradoxes on users' emotional, cognitive and behavioral responses (Assigbetse, 2019; Chae & Yeum, 2010; Johnson, Bardhi & Dunn, 2008; Lee, 2016; Mick & Fournier, 1998; Zhuang, Hsu, Brewer & Xiao, 2013), however, no insight has been offered on the relative salience of different diametric anchors of technology paradoxes to users. Recognizing the complex characteristics of IT paradoxes, this paper attempts to explore how the effects of IT paradoxes on perceived IT performance ambiguity, IT trust and IT continuance 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 (Higgins, 1997; 1998). 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 paradoxes involve both positive and negative aspects of technology usage, which may lead to gains and losses. The RF Theory has significant implications for IT paradoxes 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 experiencing IT paradoxes. A better understanding of the role of motivational orientations in shaping individuals' perceptions of and attentions to various diametric anchors of IT paradoxes will provide important insights into the differentiated influences of diametric anchors of IT paradoxes and make it possible to assess their relative weights in determining different individuals' perceived IT performance ambiguity, trust in IT and IT continuance intention.

THEORETICAL BACKGROUND

Paradoxes of Technology

"Paradox maintains that something is both X and not-X at the same time" (Mick & Fournier, 1998, p. 125). The idea of technology paradox has been noted in different disciplines. In marketing literature, Mick and Fournier (1998) indicate that consumers' response to technology is paradoxical and propose eight paradoxes of technology: control/chaos, freedom/enslavement,

new/obsolete, competence/incompetence, efficiency/inefficiency, fulfills/creates needs, assimilation/isolation, and engaging/disengaging (P1-P8 shown in Table 1). They define these paradoxes around the idea that "polar opposite conditions can simultaneously exist, or at least can be potentiated, in the same thing" (Mick & Fournier, 1998, p. 124).

Table 1. Definitions of Technology Paradoxes Proposed by Mick and Fournier (1998)

Technology Paradox	Definition
P1: Control/Chaos	Technology can facilitate regulation or order, and technology can lead to upheaval or disorder.
P2: Freedom/Enslavement	Technology can facilitate independence or fewer restrictions, and technology can lead to dependence or more restrictions.
P3: New/Obsolete	New technologies provide the user with the most recently developed benefits of scientific knowledge, and new technologies are already or soon to be outmoded as they reach the marketplace.
P4: Competence/Incompetence	Technology can facilitate feelings of intelligence or efficacy, and technology can lead to feelings of ignorance and ineptitude.
P5: Efficiency/Inefficiency	Technology can facilitate less effort or time spent in certain activities, and technology can lead to more effort or time in certain activities.
P6: Fulfills/Creates Needs	Technology can facilitate the fulfillment of needs or desires, and technology can lead to development or awareness of needs or desires previously unrealized.
P7: Assimilation/Isolation	Technology can facilitate human togetherness, and technology can lead to human separation.
P8: Engaging/Disengaging	Technology can facilitate involvement, flow, or activity, and technology can lead to disconnection, disruption, or passivity.

Adopted from Mick and Fournier (1998)

Mick and Fournier's eight technology paradoxes can be applied to describe the paradoxical user experience of IT. The control/chaos paradox of IT suggests that IT provides users with a sense of control over the processes or outcomes of user activities, whereas human or technology errors that have immediate negative consequences may lead to feelings of chaos and helplessness. The freedom/enslavement paradox of IT considers that IT enables user activities independent of time and space yet leads to users' dependence on IT for task performance. The new/obsolete paradox

of IT suggests that the new ITs provide the benefits of the latest technological developments while simultaneously approaching obsolescence and constantly being replaced by augmented technologies. The competence/incompetence paradox of IT represents the ability of IT to facilitate feelings of efficacy versus its ability to induce feelings of incompetence. IT enables users to acquire new competencies or improve their existing abilities, yet the technological complexity of IT may also make users feel incompetent and unable to understand how the technology works. The efficiency/inefficiency paradox of IT considers that IT can improve efficiency by reducing the time and effort required to perform certain tasks but IT users may end up spending more time and effort due to their unfamiliarity with the technology or the IT's difficult-to-use features. The fulfills/creates needs paradox of IT occurs when the use of IT not only satisfies user needs but also creates additional needs such as frequent upgrades, additional gadgets, and complex knowledge. The assimilation/isolation paradox of IT refers to the ability to simultaneously facilitate human togetherness and human separation. IT may assimilate people who are apart through electronic channels yet increase isolation between people in close proximity by reducing the necessity of interpersonal interactions. The engaging/disengaging paradox of IT involves the ability of IT to facilitate involvement, flow or activity versus its ability to lead to disconnection, disruption or passivity. For example, IT allows users to engage in a wide variety of virtual communication activities. However, IT can also cause people to become less involved in and disengage from face-to-face activities, leading to detrimental social interactions.

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 non-gain as failure and regulate their attentions, perceptions and behaviors toward maximization of gains. Individuals with a prevention 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). It has been found that the states of eagerness value speed over accuracy and thus promote the reliance on affect-based heuristics that tend to be faster and less effortful, while the states of vigilance emphasize accuracy over speed and thus encourage the reliance on analytical reasoning that tend to be deliberative and accurate (Friedman & Forster, 2001, 2000; Cornwell & Higgins, 2016). In line with this reasoning, it can be suggested that promotion-induced eagerness is associated with the use of intuitive feelings in judgement and decision-making whereas prevention-induced vigilance is related to the use of deliberative reasons in judgement and decision-making (Cornwell & Higgins, 2016).

Regulatory Fit and Desirability-Feasibility Framework

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, Albarracin, Eagly, Brechan, Lindberg, Lee & Merrill, 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, Idson, Camacho & Higgins, 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, Sagristano & Trope, 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.

An examination of the definitions of Mick and Fournier's (1998) technology paradoxes reveals that that some of the paradoxes are concerned with the desirability of using technology while others are associated with the feasibility to use technology. For example, the control/chaos, freedom/enslavement, new/obsolete, fulfills/creates needs, assimilation/isolation and engaging/disengaging paradoxes pertain to the benefits/drawbacks brought by the technology functionalities (Mishra, 2011). The use of a technology can either bring order to and control over user activities or create upheaval (control/chaos); facilitate user independence or promote dependence on technology (freedom/enslavement); realize the benefits of new technologies or cause the fear that the technology is becoming outdated and losing its usability (new/obsolete); provide a solution for an existing problem or make one aware of previously unnoticed needs (fulfills/creates needs); facilitate users' connection with others or lead to users' isolation (assimilation/isolation); facilitate users' engagement in activities or cause disruption in activities (engaging/disengaging). On the other hand, the technology paradoxes of competence/incompetence and efficiency/inefficiency are concerned with the extent to which it is easy or difficult to operate the technology (Mishra, 2011). The competence/incompetence paradox indicates users' superior versus inferior capabilities in performing certain tasks through the use of technology. The paradox of efficiency/inefficiency involves users' perceptions of time and effort spent in performing certain tasks using the technology. Both of these technology paradoxes largely reflect users' abilities to easily and efficiently operate the technology in task performance, which

determines the ease or difficulty to achieve the technology benefits. Thus, this research adopts a desirability-feasibility framework to integrate and classify the diametric anchors of technology paradoxes. The control/chaos, freedom/enslavement, new/obsolete, fulfills/creates needs, assimilation/isolation and engaging/disengaging paradoxes are categorized as the functional desirability paradoxes, and the competence/incompetence and efficiency/inefficiency paradoxes are classified as the usage feasibility paradoxes.

Trust in IT

Trust in IT is an important IS success factor that has received much attention in IS research (McKnight, 2005; McKnight, Choudhury & Kacmar, 2002). Trust in IT reflects one's willingness to depend on or be vulnerable to IT (McKnight, 2005). Research has shown that trust in IT is related to intention to adopt or continue using the technology (Reid & Levy, 2008; Wu, Zhao, Zhu, Tan & Zheng, 2011). IT paradoxes produce conflicting evaluations of IT and perceptions of IT performance ambiguity, and hence result in uncertainty regarding the future usage of IT (Johnson, Bardhi & Dunn, 2008). Thus, trust in IT will play a critical role in determining users' continued IT usage intention when users experience IT paradoxes, because trust involves a certain level of willingness to accept uncertainties and take risks.

It has been suggested that trust is a multidimensional construct, consisting of two dimensions – cognitive trust and emotional trust, as trust decisions usually involve both reasoning and feeling (McAllister, 1995; Komiak & Benbasat, 2006). It is important to distinguish between the cognitive and emotional dimensions of trust, because each dimension involves different antecedents and developmental processes (McAllister, 1995). On the one hand, cognitive trust is developed through the rational evaluation of characteristics of IT, such as functionality, reliability and etc.; and on the other hand, emotional trust is formed based on the feelings of concern and attraction (Komiak & Benbasat, 2006). Cognitive trust in IT is a belief that an IT has the attributes necessary to perform as expected in a given situation in which negative consequences are possible (McKnight, Carter, Thatcher & Clay, 2011). Emotional trust in IT refers to a user's feelings of security and comfort about relying on an IT (Komiak & Benbasat, 2006). Prior research suggests that while cognitive trust serves as a foundation for the development of emotional trust, cognitive trust may no longer be needed once a high level of emotional trust has developed (McAllister, 1995). Thus, although cognitive trust in IT is a critical element in the initial adoption of IT, emotional trust in IT can become more influential in sustaining continued usage of IT (Nah & Davis, 2002).

THEORETICAL FRAMEWORK AND PROPOSITIONS

Drawing on the technology paradox research, the RF theory, and the research on trust in the IS field, this paper proposes a theoretical framework of the effects of IT paradoxes along the RF perspective (Figure 1). The framework classifies the IT paradoxes into two categories – the functional desirability paradoxes and the usage feasibility paradoxes and focuses on their differential effects on users' perceptions of IT performance ambiguity, their cognitive and emotional trust in IT and continuance intention to use IT depending on users' RF orientations. According to the RF theory, I argue that individuals will be sensitive to the factors relevant to their regulatory foci. The diametric anchors of IT functional desirability paradoxes (control/chaos, freedom/enslavement, new/obsolete, fulfills/creates needs, assimilation/isolation, and

engaging/disengaging) give rise to eager stimulation relevant to the promotion focus, whereas the diametric anchors of IT usage feasibility paradoxes (competence/incompetence and efficiency/inefficiency) 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 the diametric anchors of IT functional desirability paradoxes and usage feasibility paradoxes.

Figure 1. Theoretical Framework of the Effects of IT Paradoxes along the RF Perspective
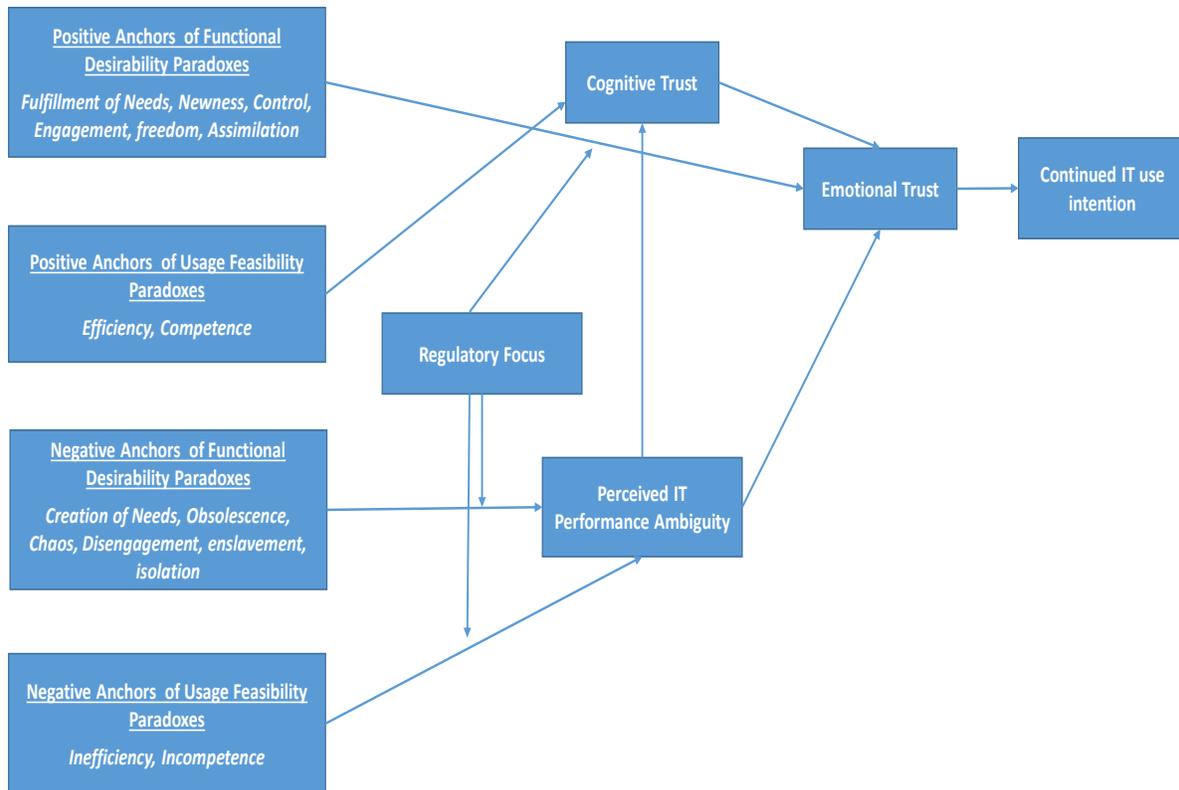
IT paradoxes present users with both positive experiences (control, freedom, newness, fulfillment of needs, assimilation, engagement, competence and efficiency) and negative ones (chaos, enslavement, obsolescence, creation of needs, isolation, disengagement, incompetence and inefficiency). The conflicting experiences constitute stressors that entail ambivalent evaluations of IT. More specifically, on the one hand, the positive anchors of IT paradoxes (control, freedom, newness, fulfillment of needs, assimilation, engagement, competence and efficiency) increase users' trust in IT by demonstrating IT's ability to bring benefits and desired outcomes; and on the other hand, the negative anchors of IT paradoxes (chaos, enslavement, obsolescence, creation of needs, isolation, disengagement, incompetence and inefficiency) can elicit feelings of frustration, stress and anxiety in users and inhibit users' ability to fully evaluate the performance of IT, thus resulting in perceived performance ambiguity of IT (Johnson, Bardhi & Dunn, 2008).

With regard to users' experience with the negative anchors of IT paradoxes, the negative anchors of IT functional desirability paradoxes (chaos, enslavement, obsolescence, creation of needs,

isolation and disengagement) could be more accessible to individuals with a promotion focus, whereas the negative anchors of IT usage feasibility paradoxes (incompetence and inefficiency) could be more salient to individuals with a prevention focus. The promotion focus propels people to focus on the functional desirability of IT, whereas the prevention focus makes people more worried about the feasibility of using IT and concentrate on the usage feasibility of IT. Therefore, the effects of the negative anchors of IT functional desirability and usage feasibility paradoxes on users' perceptions of IT performance ambiguity may vary depending on their regulatory foci. Perceived performance ambiguity of IT will in turn negatively influence IT users' trust in IT, because being unable to fully determine the performance of IT will undermine IT users' cognitive and emotional trust in IT. Hence, the following hypotheses can be proposed.

> Hypothesis 1: The negative anchors of IT functional desirability paradoxes (chaos, enslavement, obsolescence, creation of needs, isolation and disengagement) have a stronger positive influence on perceived performance ambiguity of IT for promotion-focused users than for prevention-focused users.

> Hypothesis 2: The negative anchors of IT usage feasibility paradoxes (incompetence and inefficiency) have a stronger positive influence on perceived performance ambiguity of IT for prevention-focused users than for promotion-focused users.

> Hypothesis 3: Perceived performance ambiguity of IT will be negatively associated with cognitive trust in IT.

> Hypothesis 4: Perceived performance ambiguity of IT will be negatively associated with emotional trust in IT.

Regulatory fit occurs when an individual's means of goal pursuit aligns with his/her regulatory focus (Higgins, 2000). In case of such alignment, the value of the pursued goal will increase, separate from the goal's worth based on expected benefit and cost outcomes (Higgins, 2006). The positive anchors of IT functional desirability paradoxes (control, freedom, newness, fulfillment of needs, assimilation and engagement) have higher fit for individuals in a promotion focus than they do for those in a prevention focus, because desirable IT functions maintain eagerness but reduce vigilance. The positive anchors of IT usage feasibility paradoxes (competence and efficiency) have higher fit for individuals in a prevention focus than they do for those in a promotion focus, because the ability to easily and efficiently use IT is critical to avoiding failures and ensuring error-free IT usage, and thus serves the need for vigilance rather than eagerness.

The experience of regulatory fit makes people "feel right" about what they are doing, and thus strengthens their engagement in the goal pursuit process and amplifies their dominant preferences (Camacho, Higgins & Luger, 2003; Higgins, 2006; Higgins, Idson, Freitas, Spiegel & Molden, 2003; Lee & Higgins, 2009). Individuals of promotion regulatory fit make judgments based on feelings rather than reasons (Avnet and Higgins, 2006). Thus, in a promotion regulatory fit state where the positive anchors of IT functional desirability paradoxes align with the promotion focus, IT users tend to have positive feelings toward relying on IT and develop emotional trust in IT. On the contrary, individuals experiencing prevention regulatory fit base their judgments on reasons rather than feelings (Avnet and Higgins, 2006). So, in a prevention regulatory fit state

where the positive anchors of IT usage feasibility paradoxes fit with the prevention focus, IT users are more likely to develop cognitive trust in IT based on good reasons. Although the positive anchors of IT usage feasibility paradoxes may appeal less to the maximal goals activated by a promotion focus oriented toward advancement and achievement than those of IT functional desirability paradoxes, the positive outcomes associated with the competence and efficiency in using IT can still produce positive evaluation of IT, and thus lead promotion-focused IT users to develop cognitive trust in IT. Compared to the positive anchors of IT usage feasibility paradoxes, the positive anchors of the functional desirability paradoxes of IT are less accessible to the prevention-focused individuals with the minimal goal oriented toward security. In addition, trust involves a willingness to accept vulnerability and take risks, which appears largely incompatible with a concern for safety and security activated by a prevention focus. Thus, it seems reasonable to expect that the positive anchors of the functional desirability paradoxes of IT are largely unrelated to IT trust for prevention-focused IT users. Therefore, the following hypotheses are suggested.

> Hypothesis 5: The positive anchors of IT functional desirability paradoxes (control, freedom, newness, fulfillment of needs, assimilation and engagement) will be positively associated with emotional trust in IT in promotion-focused users.

> Hypothesis 6: The positive anchors of IT usage feasibility paradoxes (competence and efficiency) will be positively associated with cognitive trust in IT in prevention-focused users.

> Hypothesis 7: The positive anchors of IT usage feasibility paradoxes (competence and efficiency) will be positively associated with cognitive trust in IT in promotion-focused users.

> Hypothesis 8: The positive anchors of IT functional desirability paradoxes (control, freedom, newness, fulfillment of needs, assimilation and engagement) will be unrelated to cognitive trust or emotional trust in IT in prevention-focused users.

Cognitive trust and emotional trust in IT not only constitute psychological coping responses to the positive anchors of IT paradoxes and the perceived performance ambiguity of IT, but they also mediate the effects of perceived IT performance ambiguity and positive anchors of IT paradoxes on continued IT usage intention. Since trust involves a leap of faith beyond what is supported by available information (Lewis & Weigert, 1985; Luhmann, 1979), it is an especially critical prerequisite to determining continuance intention when people are unable to fully determine the performance of IT. Prior research suggests emotional trust plays an important role beyond cognitive trust in determining people's intention to use IT. Emotional trust was found to fully mediate the impact of cognitive trust on the intention to adopt online recommendation agent and on the re-patronage intention (Komiak & Benbasat, 2006; Wu, Su & Wei, 2016). Thus, the following hypotheses can be proposed.

> Hypothesis 9: Cognitive trust in IT will be positively associated with emotional trust in IT.

Hypothesis 10: Emotional trust in IT will be positively associated with continued intention to use IT.

RESEARCH DESIGN

Sample and Data Collection

To test the proposed research model and its associated propositions, I will use mobile banking services as the target technology. Mobile banking services are considered appropriate for this study because they exemplify consumer-oriented contemporary IT and Mick and Fournier's eight technology paradoxes can operate in the mobile banking environment. Thus, a web-based survey will be conducted to investigate the presence of paradoxes associated with the use of mobile banking services and their effects on the perceived performance ambiguity of mobile banking services and user's cognitive trust, emotional trust and continued usage intention along the perspective of regulatory focus. The participants for this study will be the faculty, staff and students at a southeast university in the USA. To solicit participation, an email invitation will be sent to all faculty, staff and students at the university. 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 has used mobile banking services. The survey website will be designed in such a way that only those who have used mobile banking services 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. The survey will not reveal the research purpose of identifying the presence of technology paradoxes to the participants. Instead, it will merely mention that the study addresses the use of mobile banking services. Respondents will be asked to respond to all survey questions related to the presence of technology paradoxes, regulatory focus, perceived performance ambiguity, cognitive trust, emotional trust, continuance intention to use mobile banking services, and etc.

Since data will be collected from a sample of university faculty, staff and students, and users of mobile banking services tend to be younger and more tech-savvy, the results of the proposed study may not be applicable to other populations. However, all participants are users of mobile banking services, and the proposed study is designed to study their psychological and behavioral responses that are considered primitive and instinctive for all human beings, the use of faculty, staff and student sample should not present a serious threat to the validity of this study.

Measures

The survey instrument will be developed by incorporating and adapting existing valid and reliable scales where appropriate. The measurement scales of IT paradoxes will be developed to capture the presence of the technological paradoxes identified by Mick and Fournier (1988), Johnson, Bardhi amd Dunn (2008) and Jarvenpaa and Lang (2005). For each IT paradox, two questions representing the antagonism associated with that paradox will be asked. All the questions related to IT paradoxes will be interspersed in such a way that the opposing evaluations relating to a certain paradox would not be placed together or in close proximity, in order to disguise the purpose of the research. Furthermore, during the data collection process, the word paradox will not be used nor will any other term that may suggest the participants should tell their paradoxical or ambiguous

experiences arising from the use of mobile banking services. The promotion focus and prevention focus will be measured using Lockwood, Jordan and Kunda's (2002) measurement scales. The measurement scale of perceived performance ambiguity of mobile banking services will be adapted from the work of Johnson, Bardhi amd Dunn (Johnson, Bardhi & Dunn, 2008). The cognitive trust and emotional trust in mobile banking services will be measured using Komiak and Benbasat's measurement scales (Komiak & Benbasat, 2006). The measure of continued intention to use mobile banking services will be derived from the prior work on IT continuance (Bhattacherjee & Premkumar, 2004; Thong, Hong & Tam, 2006). Additionally, the participants' age and prior experience with mobile banking services will be measured as control variables.

CONCLUSIONS

This research proposes a theoretical framework of the effects of IT paradoxes along the perspective of regulatory focus. Drawing on the technology paradox research, the regulatory focus theory, and the IT trust research, the framework suggests that IT users' regulatory foci (promotion focus vs. prevention focus) moderate the impacts of IT paradoxes on users' perceived IT performance ambiguity and cognitive and emotional trust in IT, which in turn mediates the relationship between IT paradoxes and people's continued IT usage intention. The major contributions of this paper are as follows. First, this research recognizes the complex nature of IT paradoxes and utilizes the desirability-feasibility framework to categorize the IT paradoxes into the functional desirability paradoxes and the usage feasibility paradoxes. It proposes the differentiated effects of the diametric anchors of IT functional desirability paradoxes and usage feasibility paradoxes along the perspective of regulatory focus. This is the first attempt to investigate the effects of IT paradoxes from a motivational perspective. Second, this research adds to the RF theory (Higgins, 1997) by developing a model of the moderating effects of regulatory foci on the influences of IT paradoxes on users' perceived IT performance ambiguity as well as their cognitive trust and emotional trust in IT, which consequently influence their continued IT use intention. Third, the proposed theoretical framework examines simultaneously the effects of both positive and negative anchors of IT paradoxes and makes it possible to assess their relative weights in determining individuals' intentions of continued IT usage. It also further expands beyond the traditional technology acceptance research in explaining IT continuance intention. Finally, this paper also provides guidance for managers to better predict and influence IT users' perceptions and technology usage behaviors from the experience of IT paradoxes. Understanding the mediating effects of IT trust and the moderating role of regulatory foci in the relationships between IT paradoxes and IT continuance intention will help managers to counter the adverse effects of IT paradoxes by reducing perceptions of IT performance ambiguity and building cognitive and emotional trust in IT. For example, companies may be able to reduce perceived IT performance ambiguity and facilitate IT trust by taking measures (e.g., managing customer expectations, offering online tutorials and help, and etc.) to make consumers better recognize the desirability and feasibility of using IT.

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