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MANAGEMENT | RESEARCH ARTICLE

Regulatory focus and technology acceptance: Perceived ease of use and usefulness as efficacy

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Abstract: The technology acceptance model (TAM) has been widely used to gage IS adoption. Over the years, although research on the replications, extensions, and modifications of TAM has been prolific in adding antecedents and moderators to TAM, scant attention has been devoted to exploring TAM mediators. The current research attempts to deepen the understanding of TAM by delineating the underlying theoretical mechanisms of TAM relationships. In addition, we propose a parsimonious moderator, regulatory focus, to help integrate previously identified moderators, such as organizational, technological, and individual characteristics, that have been noted in prior studies. We report the results of one pilot study and two main studies in support of our proposed model, which serves to simplify and facilitate practical and managerial applications and implementation of TAM in IS strategy.

Subjects: Technology; Social Aspects of Computing & IT; Work & Organizational Psychology

Keywords: TAM; self efficacy; responsiveness; response efficacy; technology adoption; technology acceptance model; regulatory fit; promotion; prevention

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PUBLIC INTEREST STATEMENT

The adoption of technology depends on (1) the perceived ease of use and (2) the perceived usefulness of such technology. Our study focuses on the underlining mechanism that explains the crucial roles of these two factors in the adoption of technology. When people view technology as easy to use (perceived ease of use), they are more confident and competent in adopting the technology (self-efficacy). When people believe that the technology is useful (perceived usefulness), they are more inclined to use the technology (response efficacy). Our study further investigates people's traits that shape their perceptions. Some people are self-driven, eager to learn about new technology; while others are cautious in trying new things. The understanding of traits and personalities that shape individual perceptions allows managers to determine approaches to increase people's use of technology.

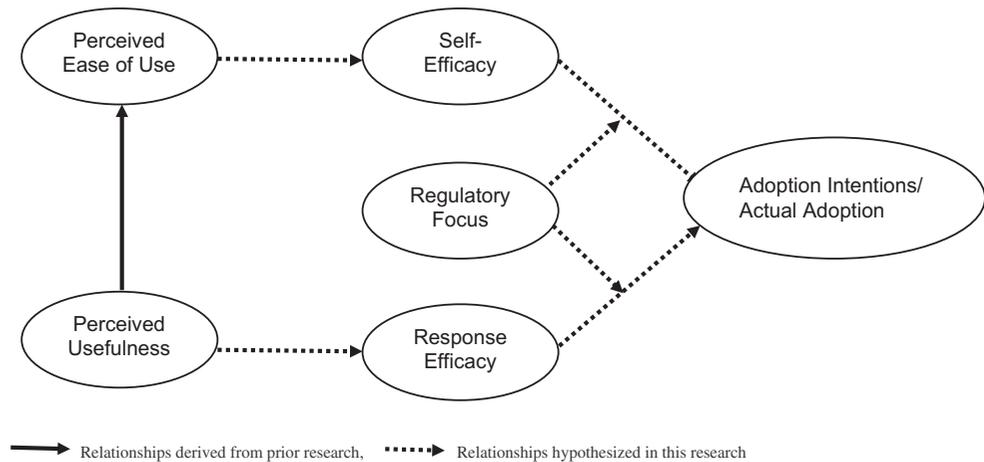
1. Introduction

An information system (IS) that is not embraced by its targeted users will never be a success. With failure rates as high as 40% or more, system adoption maybe the single biggest challenge that IS managers face (Kijsanayotin, Pannarunothaib, & Speedie, 2009). Fortunately, it is now widely acknowledged that user technology acceptance can be utilized to gage and improve IS adoption. Hence, understanding the factors that influence user technology acceptance has become one of the most important areas of IS research. To this end, Davis and his colleagues (1989) have proposed a seminal paradigm termed the technology acceptance model (TAM) (Davis, 1989; Davis et al., 1989). The model posits that the adoption intention or actual adoption of an information system is a function of perceived usefulness and perceived ease of use. According to Davis, perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989, p. 320), whereas perceived usefulness refers to “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p. 320). Interesting insights and implications have been drawn from TAM to guide IS managers in designing IS strategies. For example, Square Inc., a merchant services aggregator and mobile payments company, boasts both the ease of use (e.g. “It’s simple to accept credit cards”) and usefulness (e.g. “Sell more with Square”) of its Square Register service.

The centrality of TAM (Davis, 1989) in the IS literature is evidenced by the growing volume of research on the replications, extensions, and modifications of TAM in the past few decades (e.g. Brown, Dennis, & Venkatesh, 2010; McCoy, Galletta, & King, 2007; Turel, Serenko, & Giles, 2011; Venkatesh, Thong, & Xu, 2012). Most of the research has focused on identifying antecedents and moderators of TAM (e.g. Cheng, 2011; Srite & Karahanna, 2006; Wixom & Todd, 2005). Furthermore, much of current research identify factors predicting consumer intention of IS adoption for specific services such as in mobile banking, e-learning system, e-government services, and consumer smartphones (Abbas, Shahid Nawaz, Ahmad, & Ashraf, 2017; Ammar & Ahmed, 2016; Cheng, 2011; Townsend, Demarie, & Hendrickson, 2001; Wang, Lin, & Luarn, 2006). Yet “almost no research has deepened TAM in the sense of explaining perceived usefulness [PU] and perceived ease of use [PEU], reconceptualizing existing variables in the model, or introducing new variables explaining how the existing variables produce the effects they do” (Bagozzi, 2007, p. 244). Currently, there have been limited studies that focused on self-efficacy and its mechanism to the IS adoption.

The current research aims to contribute to the TAM literature by extending the general theory of efficacy appraisal (Bandura, 1982; Milne, Sheeran, & Orbell, 2000) to deepen our understanding of the underlying theoretical mechanisms of TAM relationships. In particular, we distinguish between two types of efficacy that are associated with the two key constructs in TAM: whereas self-efficacy underlies the effect of perceived ease of use on IS adoption, perceived usefulness exerts its effect through response efficacy. Further, we propose that the relative weight of perceived ease of use and perceived usefulness is a function of people’s self-regulatory orientation. In fact, we argue that people’s self-regulatory orientation may account for a wide range of TAM moderators identified in the IS literature (e.g. Gefen & Straub, 2000; Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Moon & Kim, 2001). In the next sections, we first review the TAM literature and then introduce efficacy theory (Witte, 1996) and regulatory focus theory (Higgins, 1997) to formulate our hypotheses. We then present the results of three studies designed to test our hypotheses. The theoretical model proposed in this research is illustrated in Figure 1.

Figure 1. Theoretical model



2. Conceptual background

2.1. TAM literature

Since the seminal contribution of Davis (1989), IS researchers have strived to enhance TAM's explanatory power through model generalization, model comparisons, model extension, and model integration (Hess, Joshi, & McNab, 2010; Hess, McNab, & Basoglu, 2014; Igbaria et al., 1997; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003). Generally speaking, researchers have extended TAM in three primary ways. The first approach involves extending the TAM framework by identifying additional and independent constructs of IS adoption, such as subjective norm, social influence, perceived behavioral control, from related models (e.g. Brown et al., 2010; Hartwick & Barki, 1994; Holden & Rada, 2011; Mathieson, Peacock, & Chin, 2001; Taylor & Todd, 1995). The second approach entails examining antecedents to the two key factors of TAM: perceived ease of use and perceived usefulness (e.g. Agarwal & Prasad, 1999; Ha & Stoel, 2009; Igbaria, Guimaraes, & Davis, 1995; Stern, Royne, Stafford, & Bienstock, 2008; Wixom & Todd, 2005). The third approach involves investigating boundary conditions of TAM by identifying factors that moderate the influence of perceived ease of use and perceived usefulness (e.g. Srite & Karahanna, 2006; Sun & Zhang, 2006; Thong, Hong, & Tam, 2006; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Venkatesh & Morris, 2000; Zhang et al., 2017).

The third approach in particular has attracted strong interest, as the ever-changing nature of the end users and their environment presents many challenges and opportunities in furthering our understanding of TAM. In a recent meta-analysis, Wu and Lederer (2009) identify two major categories of TAM moderators: (1) individual difference moderators, such as age, gender, prior experience (e.g. Sun & Zhang, 2006; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000); and (2) situational influence moderators, such as voluntariness, subjective norms, task definition (Moon & Kim, 2001; Wu & Lederer, 2009; Wu & Liu, 2007). To illustrate, Gefen and Straub (1997) investigated the effect of gender on IS acceptance and found that men reported higher perceived ease of using email, whereas women perceived greater usefulness of the technology. In another paper Gefen and Straub (2000) showed that perceived ease of use significantly impacts e-commerce when the reason to visit the website is to search for information, whereas perceived usefulness plays a more important role when the reason to visit the website is to purchase products. Ridings and Gefen (2000) provide evidence that system characteristics may also moderate TAM relationships. When applying TAM in a situation where both old and new IS are used simultaneously, new IS adoption is facilitated by perceived usefulness of the new IS but suppressed by perceived usefulness of the old IS. Further, perceived ease of use enhances the perceived usefulness effect on IS adoption.

In this research we propose a new moderator of TAM—self-regulatory focus—that may affect the relative weighting of perceived ease of use vs. perceived usefulness on technology acceptance as a chronic individual dispositional difference or as a situational context that temporarily make salient a particular motivational orientation. To understand how one’s regulatory orientation may affect TAM, we first discuss efficacy theory and its theoretical linkage to TAM.

2.2. Efficacy theory and TAM

Efficacy theory (Witte, 1996; see also Maloney, Lapinski, & Witte, 2011) posits that people’s intention to engage in a recommended action or their actual action, such as IS adoption, is the outcome of an efficacy appraisal process, whereby they gage the efficacy of performing the action. If people perceive that they have adequate efficacy to act, they will respond in accordance with the recommendation; and, if the efficacy appraisal concludes that they do not have sufficient efficacy, they will not engage in the recommended behavior. As such, perceived efficacy has a direct impact on people’s intentions and actions. Further, these perceptions maybe affected by other exogenous variables, such as perceived ease of use and perceived usefulness.

The efficacy literature further suggests two dimensions of perceived efficacy—self-efficacy (or personal efficacy) and response efficacy (or outcome efficacy)—as direct determinants of intent (Witte, 1994). Self-efficacy refers to the degree to which an individual believes in his or her ability to perform the recommended act, such as IS adoption. By contrast, response efficacy refers to the degree to which an individual believes a recommended action is effective toward attaining a specific goal (Witte, 1992). Indeed, “people can give up trying because they seriously doubt that they can do what is required [personal efficacy]” or “because they expect their effort to produce no results due to the unresponsiveness, negative bias, or punitiveness of the environment [outcome expectancies]” (Bandura, 1982, 140).

Thus, the two dimensions of efficacy have a strong theoretical linkage to the two key constructs of TAM—perceived ease of use and perceived usefulness. In particular, the construct of self-efficacy has long been associated with perceived ease of use in the IS adoption literature (Pavlou & Fygenson, 2006; Polites & Karahanna 2012); and psychology research has intimated that the perceived usefulness belief is associated with the response efficacy appraisal (Milne et al., 2000). Taken together, it is reasonable to argue that perceived ease of use will lead an individual to believe in his or her ability to carry out successfully the IS adoption (i.e. self-efficacy); whereas perceived usefulness will enhance an individual’s confidence in the IS’s ability to perform the necessary functions (i.e. response efficacy). Hence, we formally posit the theoretical relationships between self-/response efficacy and perceived ease of use/usefulness:

H1: Perceptions of ease of use will lead to higher self-efficacy.

H2: Perceptions of usefulness will lead to higher response efficacy.

Our view is that self-efficacy and response efficacy jointly shape user decisions on technology acceptance. Consider an individual’s decision as to whether or not to adopt a new IS. First, the individual will assess his or her ability to carry out the recommended behavior (Maddux & Rogers, 1983; Witte, 1992). Even if he or she believes the advocated action to be effective, the individual will still need to consider his or her ability to install and run successfully the new IS. Systems that are perceived to be useful and able to perform all the business functions (i.e. high in response efficacy) may still get rejected if the user believes that his or her self-efficacy is not high enough to harness the system. The story of the DSK keyboard (David, 1985) highlights the fact that, by not promoting the perceived ease of use to nurture an adequate level of self-efficacy among the end users, a new product that promises to be superior to the existing version (i.e. the QWERTY keyboard) may ultimately fail. Thus, self-efficacy is an important consideration in IS adoption and maybe enhanced via information designed to improve the end user’s internal control over the computing environment (Abbas et al., 2017; Holden & Rada, 2011; Hsia, Chang, & Tseng, 2014; Mun & Hwang, 2003; Rogers,

1983; Vijayasarathy, 2004). For example, Hsia et al. (2014) noted the effects of computer self-efficacy on perceived ease of use and behavioral intention to use among employees in high-tech firms in Taiwan.

Once individuals feel confident about their ability, they will then cognitively appraise the efficacy of a response and form cognitions regarding the effectiveness of a recommended behavior (Witte, 1992). These cognitions will ultimately determine the manner in which they choose to perform the recommended behavior (Rogers, 1983). Users may believe they have the ability to use the system (i.e. high self-efficacy) but choose not to because they are uncertain about the response efficacy of the system under investigation—although response efficacy maybe enhanced via information designed to increase outcome expectancies or beliefs about the effectiveness of the advocated behavior (Rogers, 1983). To illustrate, Zhang et al. (2017) explored user acceptance of mobile health services from both self-efficacy and response efficacy. The authors found both are crucial to the individual's acceptance of the technology. Another example is the empirical study of the relationship between fear appeals and information security behavior. The study demonstrated that threat perception could be altered and mitigated through the high level of response efficacy (Johnston & Warkentin, 2010).

We draw on efficacy theory to propose that self-efficacy and response efficacy underlie the effects of perceived ease of use and perceived usefulness on IS adoption, as predicted by TAM. To the extent that perceived ease of use influences perceived usefulness (Davis, 1989; Davis et al., 1989), we further propose that self-efficacy should facilitate response efficacy. Thus, we offer the following hypotheses:

H3: Perceptions of ease of use will positively influence perceptions of usefulness.

H4: Self-efficacy will have a positive effect on end user adoption intentions and actual adoption of the recommended system.

H5: Response efficacy will have a positive effect on end user adoption intentions and actual adoption of the recommended system.

While self-efficacy and response efficacy are both hypothesized to influence end users' adoption of a system, we further propose that the relative weights of the two types of efficacy are influenced by the users' self-regulatory motivations.

2.3. Regulatory focus theory

Regulatory focus theory (Higgins, 1997, 2000) outlines the ways in which people enact goals and experience associated emotions related to attaining positive or thwarting negative outcomes. Extending regulatory focus theory to IS adoption, users who are more promotion-focused would “center on the realization of positive goals and desire end states and view the decision with eagerness” (Keller, 2006, p. 109). These users are more sensitive to errors of omission than errors of commission (Crowe & Higgins, 1997); hence, they would be more willing to take chances in fulfilling their goals. In contrast, users who are more prevention-focused would “center on preserving an absence of unwanted occurrences and maintenance of the status quo” (Keller, 2006, p. 109). These users are more sensitive to errors of commission; hence, they would be more vigilant in their decision-making processes in order to limit the chances of making mistakes.

Extant literature provides mounting evidence supporting regulatory focus as an important construct that could potentially account for extant TAM moderators at both the individual and situational levels. To illustrate, prior research has established the linkages between regulatory focus and certain individual moderators such as gender (Sassenberg, Brazy, Jonas, & Shah, 2013) and age (Lockwood, Chasteen, & Wong, 2005). This research has concluded that males are more promotion-focused than females, whereas older adults are more prevention-focused than younger adults.

Thus, it is plausible that prior findings showing the effects of gender and age on IS adoption maybe driven by users' regulatory focus. More recent research provides further support for a theoretical connection between regulatory focus and various situational moderators of TAM. While regulatory focus has been shown to be a reliable individual difference variable, it is important to recognize that both types of regulatory foci coexist in one person (Higgins, 2000) and thus can be temporarily activated by situational cues (Lisjak, Molden, & Lee, 2012). It is therefore plausible that the moderating effect of situational variables such as system characteristics and voluntariness on TAM relationships may occur, due to the temporary activations of distinct regulatory orientations. For example, an IS adoption intended to expedite routine office tasks may trigger a promotion or locomotion orientation (i.e. moving from a current state to another state; Avnet & Tory Higgins, 2003), whereas an IS adoption intended to correct existing problems may prompt a prevention or assessment orientation (i.e. maintaining and evaluating a current state; Avnet & Tory Higgins, 2003). In a similar vein, a voluntary IS adoption task maybe associated with eagerness and hence make salient a promotion focus, whereas mandatory IS adoption maybe associated with duties and obligations and hence activate a prevention focus. From these perspectives, regulatory focus may serve as a more general framework that integrates moderators identified in prior studies and, thus, simplifies and facilitates practical implementations of TAM in IS strategy.

Extant research findings from both IS and non-IS contexts suggest that an individual's regulatory focus has a profound impact on their beliefs and tendency to engage in particular courses of action (Aaker & Lee, 2006; Anderson & Agarwal, 2010; Zhang & Mittal, 2007). For example, Keller (2006) suggests that individuals maybe concerned with different efficacy appraisals as a function of their regulatory focus. More specifically, individuals with a promotion focus pursue their goals with eagerness and hence are more concerned with whether the proposed action is easy enough to execute toward achieving a desired end state, whereas those with a prevention focus pursue goals with vigilance and hence are more concerned with whether the proposed action is effective. Supporting this line of reasoning, Keller (2006, experiment 2) finds that the weighting of self- and response efficacy appraisal is determined by the individual's regulatory focus, such that promotion-oriented individuals tend to put more weight on self-efficacy appraisal than response efficacy appraisal when forming their behavior intentions; whereas, prevention-focused individuals are more likely to rely on their response efficacy appraisal when deciding whether or not to adopt the advocated behavior.

There are at least two reasons why a user might put more emphasis on the efficacy appraisal that fits their regulatory focus. First, information consistent with one's regulatory focus is thought to be more self-relevant than inconsistent information. Thus, individuals maybe more motivated to process fit rather than non-fit information (Updegraff, Sherman, Luyster, & Mann, 2007; Wheeler, DeMarree, & Petty, 2008). Second, people "feel right" when they think about topics in a way that sustains their regulatory focus (Higgins, 2000; Lee, Keller, & Sternthal, 2010). This feeling right experience in turn intensifies people's reactions, leading to more elaborated processing and consequently better decision. Thus, it is plausible that users with a promotion focus will be more likely to engage in self-efficacy appraisal and put more weight on perceived ease of use when deciding on the adoption of a recommended system, whereas users with a prevention focus will be more likely to participate in response efficacy appraisal and thus rely more on perceived usefulness when deciding on system adoption.

Preliminary support for the above delineation can also be found in IS literature. For example, Moon and Kim (2001) found that perceived usefulness (reflecting response efficacy appraisal) predicted Internet usage intentions for a work-related task, which may make salient a prevention orientation that focuses on duties and responsibilities, whereas perceived ease of use (reflecting self-efficacy) predicted intentions for an entertainment task that maybe associated with fun and excitement and, in turn, activate a promotion orientation. Similarly, Ridings and Gefen (2000) applied TAM in a situation where both old IS and new IS were used. Arguably, end users maybe more likely to adopt a promotion (rather than prevention) mindset when considering a new IS. Consistent with our conjecture, perceived ease of use (reflecting self-efficacy) indeed has a stronger effect on the intentions for

new IS adoption than perceived usefulness (reflecting response efficacy). Thus, we offer the following hypotheses:

H6: For end users with a promotion focus, perceptions of self-efficacy will have a stronger effect on their adoption intentions and actual adoption of a recommended system than end users with a prevention focus.

H7: For end users with a prevention focus, perceptions of response efficacy will have a stronger effect on their adoption intentions and actual adoption of a recommended system than end users with a promotion focus.

These hypotheses are examined in three studies. First, a pilot study develops and refines the self-/response efficacy instrument and establishes the links between the two types of efficacy, perceived ease of use/usefulness and regulatory focus, by asking participants to rate self- and response efficacy related features of a fictitious resume-building software program. Then the first study uses a controlled experiment to prime regulatory focus and examines how the effects of ease of use/usefulness and self- and response efficacy on adoption intentions of the fictitious resume-building software program may vary when different regulatory focus is primed. The second study validates these findings in a field experiment by showing a similar pattern of effects on the actual adoption of a professional network, LinkedIn. The convergence observed in both studies provides evidence of triangulation in support of our hypotheses (Denzin, 1978).

3. Method

3.1. Pilot study

A pilot study was conducted in a large American University to develop and refine the research instrument and to provide preliminary support for the hypothesized linkages between self- and response efficacy and regulatory focus. To develop the initial item pool, eight resume users were interviewed to help generate a set of features for a fictitious resume-building software program named “JobMaker.” Twelve features consistently surfaced in the interviews, some of which were rated as reflecting self-efficacy, while others were rated as reflecting response efficacy, and were subsequently included in the pilot test. Fifty-eight undergraduate students were then recruited to participate in a pilot study (male = 62%; $M_{age} = 22.16$). Participants were asked to read about a fictitious resume-building software program, *MyResumes*. They were then asked to classify each of the twelve features associated with the software into whether it (1) reflected perceived ease of use or perceived usefulness; and (2) made them “feel eager” or “feel vigilant.” Eagerness and vigilance respectively represented promotion, and prevention related feelings (Keller, 2006). Six features (three perceived ease of use/self-efficacy items and three perceived usefulness/response efficacy items) that provided a clear distinction between eagerness and vigilance were selected, based on the results of the pilot study.

3.2. Instrument development

Of the six features, three were self-efficacy items and three were response efficacy items. The self-efficacy measures included: (1) “*MyResumes* takes only several minutes to learn, regardless of the level of your computer skills,” (2) “The interface of *MyResumes* is specifically designed for students, so it is simple to use,” and (3) “Even if you’re a first-time resume maker, using *MyResumes* is as easy as 1-2-3.” The response efficacy items included: (1) “Using *MyResumes* reduces your chances of making errors,” (2) “*MyResumes* has a spell check function that will keep you from making spelling errors,” and (3) “*MyResumes* searches for gaps in employment history.” Students were asked to rate each feature on “how important this feature is for achieving your resume-making goal?” (1 = not important, 7 = very important) and their valence toward this feature (1 = negative, 7 positive).

3.3. Results

As predicted, participants were more likely to classify the three self-efficacy features as more in line with “ease of use” than “usefulness” (only several minutes: 82.8 vs. 11.2%; designed for students: 86.2 vs. 13.8%; easy as 1-2-3: 87.9 vs. 12.1%) and the three response efficacy features as more in line with “usefulness” than “ease of use” (reduces chances of making errors: 79.3 vs. 20.7%; spell check function: 75.9 vs. 24.1%; and searches for gaps in employment history: 86.2 vs. 13.8%). These findings support the theoretical connection between response efficacy/self-efficacy and perceived usefulness/ease of use, lending preliminary support to H1 and H2.

Further supporting our delineation, participants reported feeling more “eager” than “vigilant” in response to the self-efficacy items that emphasized ease of use (only several minutes: 72.4 vs. 27.6%; especially designed for students: 69 vs. 31%; easy as 1-2-3: 70.7 vs. 29.3%). In contrast, participants indicated feeling more “vigilant” than “eager” when rating the response efficacy items that emphasized usefulness (reduces chances of making errors: 72.4 vs. 27.6%; spell check function: 70.7 vs. 29.3%; searches for gaps in employment history: 58.6 vs. 41.4%). Given that eagerness is associated with promotion focus and vigilance is associated with prevention focus (Keller, 2006), these findings are consistent with prior research showing a relationship between regulatory focus and efficacy.

4. Main experiment

4.1. Experimental design

We hypothesized that self-efficacy underlies the perceived ease of use effect on adoption intention, whereas response efficacy underlies the perceived usefulness effect, and that regulatory focus moderates the relative weight of the two types of efficacy on adoption intention. We tested our hypotheses using a controlled experiment to maximize internal validity. The experiment featured a 2×2 between-subjects design, across message appeal (ease of use vs. usefulness), and regulatory focus prime (promotion vs. prevention). The participants were 120 undergraduate students attending a business course at a large American university. These participants attended the class in part to learn how to build effectively a professional resume for their imminent needs of securing a job upon graduation. As such, these undergraduate students represented the real-world end users of the software we were testing. The participants were first directed to complete an online questionnaire. Thirty-two responses were identified as unusable because these participants indicated that they lacked English proficiency to complete the questionnaire, resulting in a final sample of 88 ($M_{age} = 24.02$; Female = 55%). Of these participants, 39 were male, 48 were female, and 1 participant didn't disclose this information. The average age was 24 years. These participants were randomly assigned to one of the four experimental conditions.

At the beginning of the web-based experiment, participants were asked to give consent to participate in the study via a checkbox query. Once they had consented, participants were randomly exposed to either a promotion or a prevention prime. Similar to the priming techniques used in prior research (e.g. Freitas & Higgins, 2002; Keller, 2006), the promotion prime group was asked to list five hopes or aspirations and then list three attributes that one ideally would like to possess. The prevention prime group was asked to list five duties and responsibilities and then list three attributes that one ought to possess. Next, participants were asked to rate the extent to which they would ideally like to (ought to) possess these attributes. Then, we administered the regulatory focus manipulation check measure. All users indicated what was more important for them to do on a seven-point scale (1 = something I ought to, 7 = something I want to; Keller, 2006).

After the regulatory focus induction, all participants saw a full-page description of a fictitious resume-building software, branded as *Resume Builder*, which contained either an ease of use appeal (e.g. “Resume Builder is extremely easy to use ... It only takes several minutes to learn, even for the non-techies. You can do it!”), or a usefulness message appeal (e.g. “Resume Builder is extremely useful. It provides hundreds of professionally designed templates to help you win the job ... Nothing

works better!"). Participants then completed measures of perceived usefulness/ease of use, self-/response-efficacy, adoption intentions, regulatory focus, and background variables.

4.2. Operationalization of variables

All constructs were measured on multiple seven-point Likert scales. To measure perceived ease of use and usefulness, we employed a six-item scale for each construct by adapting Davis (1989)'s measures (e.g. perceived ease of use: "I would find the software easy to use"; $\alpha = 0.91$; perceived usefulness: "Using the software would increase my productivity"; $\alpha = 0.93$). Based on prior studies (e.g. Keller, 2006) and results from the pilot study reported earlier, we used a three-item scale to measure each type of efficacy: self-efficacy (e.g. "I am confident in my ability to use the software, as it is designed for a first-time resume maker"; $\alpha = 0.82$) and response efficacy (e.g. "I think using the software can prevent me from making grammatical errors in my resume"; $\alpha = 0.78$). In addition, we used two items to measure adoption intentions (e.g. "Assuming the software is available at a university computer lab, I intend to use it"; $\gamma = 0.54$) that have been employed extensively in previous technology adoption research (e.g. Gefen et al., 2003; Taylor & Todd, 1995). Further, most studies of attitude change and persuasion concur that individuals' level of involvement will dictate the manner in which they process persuasive message appeals and that their attitudes and subsequent behaviors are a function of this information-processing activity (Johnson & Eagly, 1989; Petty & Cacioppo, 1990). As such, we included involvement as a control variable to examine the predicted effects on adoption intentions. Involvement was measured using a four-item scale (Laczniak, Muehling, & Grossbart, 1989). All the scale items used in the main experiment are provided in Table A1.

4.3. Analysis and results

4.3.1. Manipulation checks

Supporting the effectiveness of regulatory focus manipulation, participants who wrote about their hopes and aspirations indicated that it was more important for them to do what they wanted to ($M = 4.38$) rather than what they ought to, as compared to those who wrote about their duties and obligations ($M = 3.61$, $t(1, 86) = 2.05$, $p < 0.05$).

4.3.2. Measurement validation

The measurement model was assessed in terms of reliability and convergent and discriminant validity. Item reliability was indicated by the loading of measures on their corresponding construct and by the composite reliability scores (Werts, Linn, & Jöreskog, 1974). We tested for convergent and discriminant validity using confirmatory factor analysis. Using a cut-off value of 0.70 for internal consistency and loadings (Fornell & Larcker, 1981), we excluded seven items from the subsequent analysis (see Table A1) and identified a few borderline items (0.63–0.66), which were retained for further analysis. Cronbach's alpha values, representing the internal consistency within constructs, were acceptable for our focal constructs, with scores ranging from 0.78 to 0.93, and the inter-item correlation of the two items measuring adoption intentions was 0.54 (see Table A1). Finally, we fit a measurement model to the data. The analysis yielded an acceptable model fit (CFI = 0.90; GFI = 0.75; RMSEA = 0.10). Because the measurement model displayed an acceptable fit, no modifications were made to the model parameters.

4.3.3. Hypothesis testing

Descriptive statistics and correlations of the testing variables are reported in Table 1. We tested the hypothesized relationships among the constructs using maximum likelihood structural equation modeling (ML-SEM). Given that our hypothesis testing involved categorical data and interaction effects, similar to Angst and Agarwal's (2009) study, we used composite measures for hypothesis testing, rather than latent construct. This approach is recommended when the theoretical model involves interactive effects and the sample size is relatively small (Bagozzi & Heatherton, 1994; McDonald, 1996). All the variables were centered for subsequent data analyses. We created an interaction term between self-efficacy (response efficacy) and regulatory focus manipulation by multiplying the variables (Kenny, 2004).

Table 1. Descriptive statistics and correlation matrix for variables in main experiment

Variable	Descriptives		Correlations					
	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)
(1) Perceived ease of use	5.20	1.13	1					
(2) Perceived usefulness	5.11	1.10	0.71**	1				
(3) Self-efficacy	5.38	1.24	0.65**	0.45**	1			
(4) Response efficacy	5.13	1.15	0.64**	0.54**	0.59**	1		
(5) Adoption intentions	4.09	1.69	0.46**	0.33**	0.27*	0.37**	1	
(6) Involvement	4.00	1.57	0.41**	0.40**	0.22*	0.37**	0.41**	1

* $p \leq 0.05$.

** $p \leq 0.01$.

To test the hypotheses, similar to the methodology of prior studies (e.g. Gelbrich, 2010), we compared the proposed model that included interaction terms (theoretical model) with a model that did not include interaction terms (baseline model) and the original TAM. Nested model comparison results indicated that our theoretical model represented a substantially stronger fit to the data than two rival models: baseline model: $\Delta\chi^2_{\text{baseline/proposed}}(3) = 41.81, p = 0.00$; TAM: $\Delta\chi^2_{\text{TAM/proposed}}(7) = 120.30, p = 0.00$. Fit indicators for the theoretical model also supported the overall fit of the model to the data: $\chi^2(30) = 54.74, p = 0.01, \chi^2/df = 1.82, CFI = 0.91, GFI = 0.90, RMSEA = 0.09$. The analysis results from the theoretical model and the two rival models are reported in Table 2.

In H1, we proposed a positive relationship between perceptions of ease of use and perceptions of self-efficacy. Supporting H1, the path coefficient was positive and significant ($\beta = 0.65; p < 0.001$). Confirming H2, our results also revealed that perceptions of usefulness positively influenced perceptions of response efficacy ($\beta = 0.54; p < 0.001$). H3 posited the positive path from perceived ease of use to perceived usefulness, as predicted by TAM. This prediction was also supported by our data ($\beta = 0.71; p < 0.001$).

H4 predicted that greater self-efficacy would lead to increased end-user intentions to adopt the recommended system. This prediction was not supported ($\beta = 0.15; p > 0.27$). Our findings showed that response efficacy did not significantly impact adoption intentions ($\beta = -0.03; p > 0.79$); hence, H5 was also not supported. However, these null effects of self- and response-efficacy on adoption intention should be interpreted in light of the moderating role of regulatory focus, as the interaction between regulatory focus and self-efficacy ($\beta = 0.20; p < 0.09$) and the interaction between regulatory focus and response efficacy on adoption intentions ($\beta = 0.19; p < 0.10$) were both marginally significant, lending some support to H6 and H7.

To understand the nature of the interaction, we conducted a multi-group comparison of the path coefficients from efficacy to adoption intentions across the two regulatory focus sub-groups (promotion and prevention). Consistent with H6, the path coefficient from self-efficacy to adoption intentions was significant for participants with a promotion focus ($\beta = 0.42; p < 0.05$) but non-significant for participants with a prevention focus ($\beta = -0.03; p > 0.84$). And the path coefficient from response efficacy to adoption intentions was significant for participants with a prevention focus ($\beta = 0.34; p < 0.05$) but non-significant for those with a promotion focus ($\beta = -0.11; p > 0.41$). As such, both H6 and H7 were supported.

Table 2. Model testing results in main experiment

Relationship	Theoretical model		Baseline		TAM	
	Path coefficient	t-value	Path coefficient	t-value	Path coefficient	t-value
H1: Ease of use → self-efficacy	0.65	7.95**	0.65	7.95**	NA	NA
H2: Usefulness → Response efficacy	0.54	5.99**	0.54	5.99**	NA	NA
H3: Ease of use → Usefulness	0.71	9.33**	0.71	9.33**	0.34	6.00**
H4: Self-efficacy → Adoption intentions	0.15	1.11	0.15	1.03	NA	NA
H5: Response efficacy → Adoption intentions	-0.03	-0.26	-0.05	-0.43	NA	NA
H6: Self-efficacy X regulatory focus → Adoption intentions	0.20	1.73 ⁺	NA	NA	NA	NA
H7: Response efficacy X regulatory focus → Adoption Intentions	-0.19	-1.68 ⁺	NA	NA	NA	NA
Ease of use → Adoption intentions	0.39	2.82**	0.37	2.62**	0.38	3.44**
Usefulness → Adoption intentions	-0.12	-0.72	-0.11	-0.69	-0.04	-0.37
Involvement → Adoption intentions	0.27	2.81**	0.27	2.70**	0.27	2.77**
Age → Adoption intentions	-0.03	-0.32	-0.02	-0.18	0.00	0.00
Gender → Adoption intentions	0.01	0.04	0.00	0.00	0.02	0.00

⁺ $p \leq 0.10$.

* $p \leq 0.05$.

** $p \leq 0.01$.

5. Field experiment

Findings from our main experiment provide general support to our theoretical framework. The main study's results are nevertheless limited by the setting of the controlled experiment, utilizing fictitious software. As a result, we tested our theoretical framework by gauging end-user adoption intention. To add more credence to our findings and to examine if our predictions would hold with actual behavior, we conducted a field experiment to achieve triangulation Denzin (1978). In this field study, we employed an actual information system and measured its actual adoption. As part of a course requirement, students were required to develop a professional profile for a fictitious job candidate and had the option to use LinkedIn to complete their assignment. The convergence of the two studies would "enhance our belief that the results are valid and not a methodological artifact" (Bouchard, 1976, p. 268). Similar to the main experiment, the field experiment featured a 2 message appeal (ease of use vs. usefulness) X 2 regulatory focus prime (promotion vs. prevention) experimental design. Eighty-nine undergraduate students from a large American university participated in this research. Fourteen responses were excluded, due to the participants' English proficiency concerns, resulting in a final sample of 75 ($M_{age} = 24.17$; Female = 41%).

The regulatory focus manipulation was the same as that of our main experiment. The procedure and measures were also similar, with one exception: to enhance the external validity of this

research, rather than viewing an ad of a fictitious resume-building software program, all participants were exposed to a full-page appeal of LinkedIn, which contained either the ease of use appeal (“LinkedIn is designed to make developing a professional profile extremely easy. Its step-by-step guide makes it extremely easy to use. It only takes several minutes to learn, even for non-techies. Even if you are new to social media, it will help you develop a professional profile that looks sharp and professional. You can do it!”) or the usefulness message appeal (e.g. “LinkedIn is extremely useful in helping you develop a professional online identity and connect to others. It connects you to new careers opportunities. It helps you keep up with friends and colleagues regarding their professional lives. It helps you reach out and build relationships with business professionals. Nothing works better!”). Next, they completed involvement, perceived ease of use/usefulness, and efficacy measures adapted from the main study (see Table B1). Then, the participants indicated whether they currently had a LinkedIn account. If they didn’t, they were asked about the likelihood that they would open a LinkedIn account in the future (e.g. “I think that I will open a LinkedIn account soon.”). If they did, they were asked about the likelihood of increasing their activities on LinkedIn (e.g. “I will increase my activities on LinkedIn”). Finally, participants’ demographic information was collected. After the online survey, to gauge participants’ actual adoption, all students participated in this research were asked to complete an assignment to receive course credit. The assignment required the students to develop a professional profile for a fictitious job candidate. To complete the assignment, the students could either develop a LinkedIn profile or a professional resume for the designated job candidate. Both choices were credited equally, and their final choice was used to capture actual adoption.

5.1. Analysis and results

5.1.1. Manipulation checks

Confirming the efficacy of the regulatory focus manipulation, participants in the promotion condition indicated that it was more important for them to do what they wanted to ($M = 4.39$), rather than what they ought to, as compared to those in the prevention condition ($M = 3.46$, $t(1, 73) = 2.03$, $p < 0.05$).

5.1.2. Measurement validation

Based on the factor analysis results, we excluded two items and retained two borderline items for further analyses. The measurement model yielded an acceptable model fit (CFI = 0.95; GFI = 0.85; RMSEA = 0.09); therefore, no modifications were made to the model parameters. The adoption intentions were not assessed in the measurement model, given that participants were provided different intention measures, based on whether they currently had a LinkedIn account. Cronbach’s alpha values were acceptable for all of our focal constructs, with scores ranging from 0.78 to 0.96 (see Table B1).

5.1.3. Hypothesis testing

Descriptive statistics and correlations of the testing variables are reported in Table 3. Similar to the methodology of the main study, we tested the hypothesized relationships among the constructs using ML-SEM with composite measures. The two composite measures for adoption intentions for participants with or without a LinkedIn account were combined to create a global measure for adoption intentions. Following the same procedure as in the main study, nested model comparison results indicated that the theoretical model represented a substantially better fit to the data than that of two rival models: baseline model: $\Delta\chi^2_{\text{baseline/proposed}}(3) = 26.14$, $p = 0.00$; TAM: $\Delta\chi^2_{\text{TAM/proposed}}(7) = 69.09$, $p = 0.00$. Fit indicators for the theoretical model also supported the overall fit of the model to the data: $\chi^2(15) = 26.76$, $p = 0.03$, CFI = 0.93, GFI = 0.92, RMSEA = 0.10. The analysis results from the theoretical model and the two rival models are reported in Table 4.

The results showed that perceived ease of use positively influenced perceptions of self-efficacy ($\beta = 0.41$; $p < 0.001$), perceived usefulness positively affected perceptions of response efficacy ($\beta = 0.48$; $p < 0.001$), and perceptions of ease of use increased perceptions of usefulness ($\beta = 0.68$;

Table 3. Descriptive statistics and correlation matrix for variables in field experiment

Variable	Descriptives		Correlations					
	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)
(1) Perceived ease of use	5.51	1.11	1					
(2) Perceived usefulness	5.03	1.21	0.68**	1				
(3) Self-efficacy	5.58	1.10	0.48**	0.32**	1			
(4) Response efficacy	5.20	1.13	0.51**	0.50**	0.52**	1		
(5) Adoption intentions	5.48	1.49	0.44**	0.50**	0.62**	0.40**	1	
(6) Involvement	4.43	1.39	0.14	0.20	0.33**	0.28*	0.36**	1

* $p \leq 0.05$.

** $p \leq 0.01$.

Table 4. Model testing results in field experiment: Adoption intentions

Relationship	Theoretical model		Baseline		TAM	
	Path coefficient	t-value	Path coefficient	t-value	Path coefficient	t-value
H1: Ease of use → Self-efficacy	0.41	4.21**	0.41	4.21**	NA	NA
H2: Usefulness → Response efficacy	0.48	4.96**	0.48	4.96**	NA	NA
H3: Ease of use → Usefulness	0.68	7.95**	0.68	7.95**	0.68	7.95**
H4: Self-efficacy → Adoption intentions	0.03	0.26	0.05	0.49	NA	NA
H5: Response efficacy → Adoption intentions	0.43	4.15**	0.41	3.87**	NA	NA
H6: Self-efficacy X regulatory focus → Adoption intentions	0.13	1.36	NA	NA	NA	NA
H7: Response efficacy X regulatory focus → Adoption intentions	-0.16	-1.64 ⁺	NA	NA	NA	NA
Ease of use → Adoption intentions	0.04	0.31	0.03	0.26	0.19	1.47
Usefulness → Adoption intentions	0.20	1.59	0.22	1.75 ⁺	0.32	2.44**
Involvement → Adoption intentions	0.19	2.21**	0.16	1.88 ⁺	0.27	2.84**

⁺ $p \leq 0.10$.

* $p \leq 0.05$.

** $p \leq 0.01$.

$p < 0.001$). As such, H1–H3 were supported. Contrary to H4, the relationship between self-efficacy and end-user intentions to adopt the recommended system was non-significant ($p > 0.79$). However, consistent with H5, response efficacy positively influenced adoption intentions ($\beta = 0.43$; $p < 0.001$). Finally, the interaction effect involving regulatory focus and response efficacy on adoption intention was marginally significant ($\beta = -0.16$; $p = 0.10$), although the interaction effect involving regulatory focus and self-efficacy on adoption intentions was not significant ($\beta = 0.13$; $p > 0.17$).

Consistent with H7, multi-group comparison showed that response efficacy had a significant effect on adoption intentions for participants with a prevention focus ($\beta = 0.67$; $p < 0.001$) but not for those with a promotion focus ($\beta = 0.14$; $p > 0.36$). As such, H7 was supported. Contrary to H6, the path coefficient from self-efficacy to adoption intentions was non-significant for all participants, regardless of regulatory focus ($p > 0.33$).

We next performed the same analyses using actual adoption as the dependent variable. Once again, nested model comparison results indicated that the theoretical model represented a substantially better fit to the data than that of two rival models: baseline model: $\Delta\chi^2_{\text{baseline/proposed}}(3) = 29.99$, $p = 0.00$; TAM: $\Delta\chi^2_{\text{TAM/proposed}}(7) = 63.88$ $p = 0.00$. Fit indicators for the theoretical model also supported the overall fit of the model to the data: $\chi^2(16) = 28.15$, $p = 0.03$, CFI = 0.92, GFI = 0.92, RMSEA = 0.11. The results of the theoretical model and the two rival models are reported in Table 5.

The relationships between ease of use, usefulness, and efficacy with respect to actual adoption were virtually identical to those with respect to adoption intentions, providing further support for H1–H3. The relationship between self-efficacy and actual adoption was again non-significant ($p > 0.98$); thus, H4 was not supported. Consistent with H5, response efficacy positively influenced end users’ actual adoption of the recommended system ($\beta = 0.32$; $p < 0.01$). Finally, the interaction effect involving regulatory focus and response efficacy on actual adoption was significant ($\beta = -0.31$; $p < 0.01$), whereas the interaction effect involving regulatory focus and self-efficacy on actual adoption was non-significant ($p > 0.19$). The multi-group comparison of the path coefficients revealed that, contrary to H6, the path coefficients from self-efficacy to actual adoption were non-significant for all participants, regardless of regulatory focus ($p > 0.51$). Consistent with H7, response efficacy had a significant effect on actual adoption for participants with a prevention focus ($\beta = 0.63$; $p < 0.01$).

Table 5. Model testing results in field experiment: Actual adoption

Relationship	Theoretical model		Baseline		TAM	
	Path coefficient	t-value	Path coefficient	t-value	Path coefficient	t-value
H1: Ease of use → Self-efficacy	0.41	4.21**	0.41	4.21**	NA	NA
H2: Usefulness → Response efficacy	0.48	4.96**	0.48	4.96**	NA	NA
H3: Ease of use → Usefulness	0.68	7.95**	0.68	7.95**	0.68	7.95**
H4: Self-Efficacy → Adoption intentions	0.00	0.02	0.04	0.33	NA	NA
H5: Response efficacy → Adoption intentions	0.32	2.60**	0.30	2.33*	NA	NA
H6: Self-efficacy X regulatory focus → Adoption intentions	0.15	1.29	NA	NA	NA	NA
H7: Response efficacy X regulatory focus → Adoption intentions	-0.31	-2.68**	NA	NA	NA	NA
Usefulness → Adoption intentions	0.05	0.33	0.05	0.35	0.12	0.83
Ease of Use → Adoption intentions	0.06	0.41	0.06	0.37	0.17	1.17
Involvement → Adoption intentions	0.16	1.71 ⁺	0.14	1.30	0.22	2.00*

⁺ $p \leq 0.10$.

* $p \leq 0.05$.

** $p \leq 0.01$.

but not for those with a promotion focus ($\beta = 0.03$; $p > 0.89$). As such, H7 was supported, whereas H6 was not.

One reason we did not find support for the mediating role of self-efficacy could be because LinkedIn is a popular social media system that has been adopted by many people, hence perceived ease of use might not have been much of an issue to our participants, even if they had not used it before. In our sample, close to half of the participants (46.7%) indicated that they already had a LinkedIn account. Thus, participants might indeed not have been concerned about their ability to use the system, rendering the effect of self-efficacy non-significant.

6. Discussion and contribution

The results from our two experiments produced convergent results in support of the proposed theoretical model that contextualizes the self-efficacy and response-efficacy processes in the technology acceptance literature. The main predictions on the efficacy processes are stated in H1–H5. Across the two studies, all five hypotheses received support, with the exception of H5 in the main experiment and H4 in the field experiment. We found self-efficacy to be non-significant despite literature emphasis on the importance of self-efficacy in technology adoption. We acknowledge the use of LinkedIn to measure perceived ease of use maybe problematic. For future study, we may consider the use of lesser well-known media websites to mitigate the concern. The predicted effects were demonstrated on adoption intentions, as well as on actual adoption. These results provide evidence that the two types of efficacy play an important role in IS adoption.

More interestingly, regulatory focus is demonstrated to be a moderating variable in TAM relationships and may offer a parsimonious framework for understanding a wide range of moderating effects documented in the literature. Across the two experiments, our results provided strong evidence that response efficacy is more important for prevention-focused individuals when considering IS adoption, whereas promotion-focused individuals tend to put more weight on self-efficacy appraisal (H6 and H7). The effect of a prevention regulatory focus on the adoption of new technology (H7) was shown to be carried over to actual adoption in the field experiment. These findings have important implications for research and practice.

6.1. Implications for research and practice

First, our proposed model drawing on efficacy theory makes an important contribution to the TAM literature by uncovering the psychological mechanisms underlying key TAM relationships. Further, self- and response efficacy as mediators of the ease of use and usefulness effects may help explain and resolve inconsistent findings regarding TAM relationships (Sun & Zhang, 2006), making our findings particularly interesting from a theoretical and practical standpoint. For example, according to Sun and Zhang (2006), inconsistent effects of perceived ease of use on IS adoption have been documented in TAM research. Among the 30 studies reviewed, eighteen showed a positive impact of perceived ease of use on adoption intentions, whereas the other twelve studies failed to find a significant relationship. According to our theoretical model, perceived ease of use enhances an end user's beliefs about one's ability to perform the recommended act (i.e. self-efficacy) and, in turn, impacts adoption. For those studies that failed to observe the link between perceived ease of use and adoption, one plausible explanation is that perceived ease of use failed to boost users' beliefs about their ability. For example, a user who has just experienced a major setback in life or who has low self-esteem may lack the confidence to adopt something new, regardless of how easy the adoption process looks. To overcome this hurdle, IS managers may provide users an extra boost to their self-esteem through positive feedback or a self-affirmation task (Greenberg et al., 1993; Sherman, Nelson, & Steele, 2000) to help them break through the psychological barriers, so that the effect of ease of use on IS adoption may surface.

Second, we contribute to the TAM literature by identifying regulatory focus as an important moderator. As noted earlier, while numerous moderators of TAM relationships have been identified (Gefen & Straub, 2000; Moon & Kim, 2001), extant research has yet to offer an integrative framework

that could accommodate different moderators in an effort to facilitate IS adoption in practice. Addressing this gap, we propose a parsimonious model with regulatory focus as the moderator that integrates prior TAM findings. Regulatory focus, as the fundamental driver that guides self-regulatory strategies (Higgins, 1997), maybe determined by one's life experiences, such as upbringing, cultural background, social class, as well as personal characteristics, including gender and age (Agrawal & Maheswaran, 2005; Bergadaa, 1990); it may also be temporarily activated by cues in the social and physical environment and, in turn, affect decision-making (Agrawal & Maheswaran, 2005; Zhang & Mittal, 2007). Arguably, the chronic aspect of regulatory focus may account for the individual difference moderators noted earlier, and the malleable aspect responsive to environmental cues may account for the social and situational influence moderators.

Finally, from a practical point of view, understanding the moderating role that regulatory focus plays may help IS managers determine the relative importance of the two TAM antecedents (i.e. perceived ease of use and perceived usefulness) on adoption, based on the target population, IS objectives, and organization characteristics, in turn facilitating their strategic IS planning, IS/business strategic alignment, and competitive use of IS in their organization (Chen, Mockler, Preston, & Teubner, 2010). To illustrate, whereas users from individualist cultures (e.g. the US) tend to be promotion-focused and hence would be more concerned about self-efficacy and perceived ease of use, users from collectivist cultures (e.g. China) tend to be prevention-focused and hence would be more concerned about the response efficacy and perceived usefulness. Recognizing these cultural differences should help managers better formulate and execute international IS strategies.

6.2. Limitations and future research

Limitations associated with the current research merit noting, particularly because they afford additional research opportunities. One limitation is the lack of support for the paths from self- and response efficacy to adoption intentions (H4/H5) in the main experiment and the path from self-efficacy to actual adoption (H4) in the field experiment. One possible explanation may lie in the IS context used in the current research (i.e. resume-building software); although the non-significance should be interpreted in light of the significant interaction between efficacy and regulatory focus. Additional research should use a different IS context to further evaluate the hypotheses and test the robustness of our findings. A second limitation is that the findings are based on observations of college students. While student samples serve the purpose of theory testing and are deemed appropriate, given our choice of IS context, replications of these results among other populations would be desirable to bolster the strategic implications of this research. It is also important to note that we only achieve acceptable fit for several of our models (e.g. RMSEA = 0.10). This might be due to a relatively small sample size ($n = 87$) used in our research. Future research may also systematically examine the theoretical linkages between regulatory focus and other TAM moderators. In short, user technology acceptance offers extremely fertile ground for scholarly inquiry and tremendous opportunities for IS practice.

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Appendix A.

Table A1. Measurement validation for main experiment

Scale items	Component					
	1	2	3	4	5	6
<i>Perceived ease of use</i> ($\alpha = 0.91$)						
Learning to operate the software would be easy for me.	0.63	0.51	0.17	0.24	0.05	0.17
I think I would find it easy to get the software to do what I want it to do.	0.74	0.28	0.21	0.23	0.21	0.17
My interaction with the software would be clear and understandable.	0.78	0.35	0.03	0.13	0.24	0.12
*I would find the software to be flexible to interact with.	0.53	0.49	0.07	0.43	0.19	0.15
*It would be easy for me to become skillful at using the software.	0.13	0.87	0.08	0.24	0.05	0.09
*I would find the software easy to use.	0.51	0.72	0.11	0.02	0.06	0.18
<i>Perceived usefulness</i> ($\alpha = 0.93$)						
Using the software would enable me to accomplish my resume building task more quickly.	0.19	0.79	0.37	0.17	0.07	0.13
*Using the software would improve the quality of my resume.	0.59	0.51	0.09	0.25	0.31	0.21
*Using the software would increase my productivity.	0.59	0.41	0.38	0.33	0.16	0.15
Using the software would enhance my effectiveness.	0.43	0.66	0.11	0.13	0.24	0.13
Using the software would make it easier to write my resume.	0.22	0.77	0.25	0.23	0.07	0.25
I would find the software useful in my resume building task.	0.15	0.83	0.37	0.03	0.00	0.10
<i>Self-efficacy</i> ($\alpha = 0.82$)						
*I believe the software will take only several minutes to learn regardless of my computer skills.	0.75	-0.02	0.40	0.29	0.10	0.18
I am confident in my ability to use the software as it is designed for first-time resume makers.	0.35	0.39	0.66	0.25	0.08	0.20
I feel good in my ability to write a professional resume as the software is easy to use.	0.22	0.42	0.66	0.23	0.18	0.09
<i>Response efficacy</i> ($\alpha = 0.78$)						
I think using the software can prevent me from making grammatical errors in my Resume.	0.28	0.29	0.19	0.83	0.05	0.00
*I think the software can keep me from making careless spelling mistakes.	0.16	0.49	0.64	0.11	0.08	0.13
Using the software can help me design a professional resume.	0.38	0.21	0.22	0.77	0.09	0.09
<i>Adoption intentions</i> ($\gamma = 0.54$)						
Given that I have access to Resume Builder, I predict that I would use it.	0.20	0.11	-0.01	0.10	0.83	0.17
Assuming the software is available at university computer lab, I intend to use it.	0.19	0.06	0.23	0.02	0.79	0.23
<i>Involvement</i> ($\alpha = 0.92$)						
Please tell us when you were reviewing the advertisement, how did you process the information?						
Not at all involved/very involved	0.27	0.04	0.00	0.18	0.14	0.80
Not at all interested/very interested	0.13	0.25	0.05	0.25	0.14	0.82
Skimmed it quickly/read it carefully	0.08	0.15	0.18	-0.18	0.10	0.90
Paid little attention/pay a lot of attention	0.07	0.14	0.11	-0.03	0.14	0.91

*Items excluded from the hypothesis testing.

Appendix B.

Table B1. Measurement validation for field experiment

Scale Items	Component				
	1	2	3	4	5
<i>Perceived Ease of Use</i> ($\alpha = 0.92$)					
It would be easy for me to become skillful at using LinkedIn.	0.81	0.20	0.20	0.21	-0.09
I Learning to use LinkedIn would be easy for me.	0.84	0.08	0.23	0.10	0.12
I think I would find it easy for me to learn the different features of LinkedIn.	0.84	0.17	0.20	0.12	0.07
It would be easy for me to become skillful at using the software.	0.86	0.19	0.14	0.09	0.06
<i>Perceived Usefulness</i> ($\alpha = 0.92$)					
*Using LinkedIn would enhance my effectiveness in pursuing my professional career.	0.65	0.52	0.27	0.05	0.04
*I would find LinkedIn useful for me to remain competitive in the professional world.	0.55	0.58	0.30	0.13	0.12
Using LinkedIn would improve my ability to succeed professionally.	0.44	0.80	0.20	0.00	0.05
Using LinkedIn would enable me to accomplish my professional goals more quickly.	0.43	0.74	0.18	0.07	0.10
<i>Self-Efficacy</i> ($\alpha = 0.78$)					
I believe LinkedIn will take only several minutes to learn regardless of my computer skills.	0.21	0.16	0.84	0.15	0.11
I am confident in my ability to use LinkedIn as it is designed for non- techies.	0.31	0.13	0.85	0.00	0.12
I feel good in my ability to use LinkedIn to create my professional profile as it is easy to use.	0.22	0.32	0.79	0.15	0.22
<i>Response Efficacy</i> ($\alpha = 0.90$)					
I think using LinkedIn can help me connect to new career opportunities.	0.13	0.07	-0.05	0.85	0.08
I think LinkedIn can help me stay in touch with my professional contacts.	0.24	0.11	0.49	0.66	0.12
LinkedIn can help me establish and maintain relationships with other business professionals.	0.37	0.01	0.46	0.65	0.16
<i>Involvement</i> ($\alpha = 0.87$)					
Not at all involved/very involved	0.05	0.07	0.16	0.09	0.85
Not at all interested/very interested	-0.07	0.42	0.17	0.18	0.68
Skimmed it quickly/read it carefully	0.06	-0.05	0.09	0.09	0.89
Paid little attention/pay a lot of attention	0.07	-0.04	-0.11	0.10	0.92
<i>Adoption intentions (Currently not using LinkedIn)</i> ($\alpha = 0.96$)					
I anticipate that I will be using LinkedIn frequently in the future.					
I think that I will open a LinkedIn account soon.					
I think that I will create a professional profile on LinkedIn.					
<i>Adoption intentions (Currently Using LinkedIn)</i> ($\alpha = 0.95$)					
I predict that I will be using LinkedIn frequently in the future.					
I think that I will improve my professional profile on LinkedIn.					
I will increase my activities on LinkedIn.					
I will explore and use more features that LinkedIn provides.					
I will more actively develop my LinkedIn connections.					

*Items excluded from the hypothesis testing.



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