

## CONTINUANCE MODEL INCORPORATING PERSONAL INNOVATIVENESS IN INFORMATION TECHNOLOGY

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### ABSTRACT

This paper proposes a second-stage model of continuance intention of using mobile Internet data services. The proposed model is based on the latest expanded continuance theory in information systems literature. Our argument is that personal innovativeness in information technology should be studied as antecedent for the constructs of disconfirmation, satisfaction, and post-usage beliefs. Disconfirmation on any of the mobile data usage related beliefs such as effort expectancy, mobility, and social influences is expected to influence satisfaction and post-usage attitude, which ultimately influence continuance intention toward mobile Internet data services. Theoretical and practical implications of the proposed model are also discussed in the paper.

**Keywords:** continuance intention, mobile data services, disconfirmation, satisfaction, post-usage beliefs.

### Introduction

With rapid proliferation of 3G and 4G wireless broadband networks and mobile devices such as iPhones and iPads, mobile Internet data services are enjoying the level of popularity among mobile users which was never experienced by any previous computing technology before. According to a consumer information report by CTIA, a well-known market research company, mobile devices penetration rate reached to 104% in the U.S. by the end of June 2011 ([http://www.ctia.org/consumer\\_info/index.cfm/AID/10323](http://www.ctia.org/consumer_info/index.cfm/AID/10323)). Morgan Stanley's mobile Internet research report (2009) reveals that U.S. has overtaken Japan in 3G user base. By a Nielsen Company report, the US became the global leader in mobile internet adoption in 2008. Presently, the United States has far more total devices connected to the Internet than any other country (2008). Consumers, obviously, ought to take an active part in determining the fate of mobile life in the age of the wireless Internet.

Since the turn of this century, a good number of research studies have been done to predict and explain user adoption of wireless mobile data services (Lu, Yu, Liu, & Yao, 2003; Lu, Yu, & Yao, 2005; Lu, Liu, Yu, & Wang, 2008). With mobile phones more data-focused in most developed nations, more users are predicted to connect to the Internet with wireless devices than desktop PC's within five years (Morgan Stanley, 2011). On the other hand, Mobile Web access today still suffers from interoperability and usability problems. User retention and loyalty appear to be critical in determining the fate of mobile life in the age of the wireless Internet.

Conventional wisdom held by marketing practitioners has long revealed that retaining current customers is easier and more cost effective than gaining new customers. The mobile users in the

US have reached a critical mass. It is the high time to examine the perceptions, satisfaction and continuance intentions of mobile Internet users. Our preliminary literature review reveals very few user continuance studies in mobile context; and those published recently are all conducted in other countries (Baek, Park, and Lee, 2011; Choi, Kim, and Kim, 2011; Zhou, 2011). No continuance study using American mobile Internet users in the literature so far. Thus, there is some evident lack of understanding of user continuance intentions with mobile Internet services in this country; lack of understanding of the factors influencing their continuance intentions.

Prior research has suggested that continued use is not simply an extension of the adoption decision and that these two behaviors are not mediated by the same antecedents that predict the adoption decision (see Ajzen and Fishbein 2005, Limayem et al. 2007). As a result, researchers have attempted to identify which antecedents are most critical to continued use and how continued use can change attitudes that have been found to be important predictors of adoption intention (Chiu and Wang 2008, Limayem and Cheung 2008).

In order to reveal whether actual usage experience adjust user perceptions, this study will adopt a process model to study mobile Internet user continuance intentions, with a balanced attention to the utilitarian determinants, social influences, and user characteristics. Study of this nature should yield important theoretical contributions, as well as practical implications.

To achieve the research purpose, we first discuss the relevant literature and propose our research model with hypothesized relationships. We then propose our research methodology and data analysis plan to test our research model. The expected implications for research and practice will also be discussed, prior to research limitations and future directions.

## **Theory Background**

Users' post-adoption behaviors have emerged as a key topic in information systems (IS) research in recent years. Important theories include expectation-confirmation theory (ECT), unified theory of acceptance and use of technology (UTAUT), and the latest integration of UTAUT and ECT, Expanded two-stage model of IS continuance.

ECT. A key theory explaining continued IS usage is expectation-confirmation theory (ECT) (Bhattacharjee, 2001). Originated in marketing field to study consumer satisfaction and post-purchase Behavior (e.g. Oliver, 1980), ECT suggests that consumers first form an initial expectation of a product or service prior to purchase. After the purchase decision and a period of use, consumers will form perceptions of the performance of the product or service. Next, consumers will compare the perceived performance with their initial expectations and determine the extent to which their expectations are confirmed. Finally, based on their expectations and confirmation levels, consumers form a satisfaction assessment that in turn affects their repurchase intention. IS users' continuance decisions are similar to consumers' repurchase decisions, as both types of decisions (1) follow an initial decision; (2) are influenced by the usage experience; and (3) can potentially lead to ex post reversal of the initial decision (Bhattacharjee, 2001). The model posited that continuance intention was influenced by user satisfaction and post-acceptance usefulness perceptions, while user satisfaction was determined by confirmation of expectations from prior use. Furthermore, confirmation influenced perceived

usefulness. ECT has been applied to study different problems in IS, such as IS continuance (Bhattacharjee, 2001), changes in users' beliefs and attitudes during the course of usage (Bhattacharjee & Premkumar, 2004), post-usage satisfaction (Susarla *et al.*, 2003) and extended use of complex IS (Hsieh & Wang, 2007).

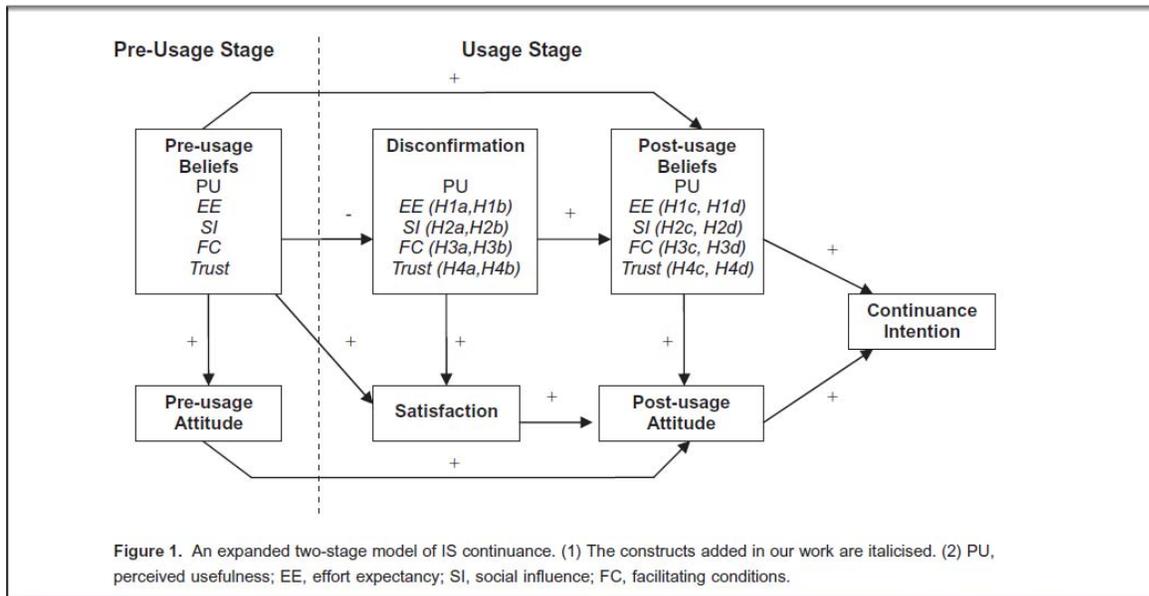
Based on the ECT, Bhattacharjee & Premkumar (2004) proposed a two-stage model of IS continuance, a process model, to study the change in cognitive beliefs (i.e. perceived usefulness and disconfirmation) and affect (i.e. satisfaction and attitude) during the course of IS usage. This two-stage model links usage-related beliefs and attitudes in the pre-usage stage with those in the usage stage and posits disconfirmation (equivalent to confirmation in essence) and satisfaction as emergent constructs affecting post-usage beliefs and attitudes that, in turn, influence continuance intention. This model makes it possible to capture how users' perceptions changed in the pre- and post-acceptance stages. However, perceived usefulness was incorporated as the only usage-related belief.

UTAUT. Rooted in TRA and TAM, UTAUT is commonly regarded a most recent and integrated view of IS acceptance (Venkatesh *et al.*, 2003). As a most mature stream of IS research, IS acceptance research categorize acceptance into early adoption and post adoption usage (Venkatesh *et al.*, 2007). UTAUT has been validated using data collected in the workplace at multiple time periods. The strength of UTAUT for explaining usage has been demonstrated in a number of studies (e.g. Park *et al.*, 2007; Wang & Yang, 2005; Wang *et al.*, 2006). UTAUT shows clear evidence of correlations among effort expectancy, social influence and facilitating conditions measured at different points in time, although these correlations are lower than the correlations of perceived usefulness (performance expectancy) over time (Venkatesh *et al.*, 2003). This suggests that pre-usage beliefs may serve as anchors for post-usage beliefs as people tend to rely on their initial beliefs and early impressions in the formation of future beliefs. It is possible for these pre-usage beliefs to be disconfirmed, with such disconfirmation ultimately influencing future behavior. However, the UTAUT model has not been built from an ECT perspective, and thus it is unclear how disconfirmation of these beliefs will affect satisfaction or continuance intention.

Expanded Two-Stage Model of IS Continuance. Venkatesh and his colleagues (2011) extended Bhattacharjee and Premkumar's (2004) model by incorporating major beliefs such as effort expectancy, social influence and facilitating conditions from UTAUT, thus resulting in a more comprehensive set of beliefs. They further extended their model by incorporating trust as a contextual belief to reflect users' increased concerns about privacy and security when using emerging technologies in contexts that require online transmission of personal and sensitive information. In line with Bhattacharjee & Premkumar's two-stage model (2004), they defined disconfirmation as the extent to which users' pre-usage expectation of IS usage is contravened during actual usage experience. This expanded model is expected to be generalizable and applicable to other usage-related beliefs, with usage experience helping to resolve the uncertainty in these beliefs. Furthermore, disconfirmation of any of these usage-related beliefs is expected to influence satisfaction, the affective response to the degree to which expectations generated on previous occasions have been met (Oliver, 1999). Thus, the inclusion of these additional beliefs in the two-stage IS continuance model is expected to deepen understanding of the change in cognitive beliefs during the course of IS usage from a broader perspective (see Figure 1). To test

this expanded IS continuance model, Venkatesh and his colleagues (2011) conducted a longitudinal field study of over three thousand Hong Kong citizens across two electronic government (e-government) technologies that enable citizens’ access to government services. In general, the results supported the expanded model in providing a rich understanding of the changes in the preusage beliefs and attitudes through the emergent constructs of disconfirmation and satisfaction, ultimately influencing IS continuance intention.

IS literature has taught us that individuals form beliefs about information technologies within a milieu of influences emanating from the institutional and social context in which they interact with information technologies (Lewis, Agarwal and Sambarmurthy, 2003). Further, as mobile services often used in a voluntary mode, individual psychological states are critical for explaining their behavioral decisions (Wu, Li and Fu, 2011). However, user characteristics were not included in the latest expanded IS continuance model. Further, mobile adoption literature reveals some typical beliefs not included in expanded continuance model, either.



Source: Venkatesh, V., Thong, J. Y. L., Chan, F. K. Y., Hu, P., and Brown, S.A. (2011). Extending the two-stage information systems continuance model: incorporating UTAUT predictors and the role of context, *Information Systems Journal*, 21, pp. 527-555.

### Model and Hypotheses Development

To enhance our understanding of the post-adoption phenomenon related to Internet service usage via mobile devices, we’ve created a second-stage model (Figure 2) based on the latest expanded IS continuance theory. Our argument is that to explore the changes in user beliefs determining continuance intentions toward mobile Internet data services, user characteristics such as personal innovativeness with information technology (PIIT) should be studied as antecedent since it is shown affecting user beliefs in relevant studies; adequate attention should be paid to beliefs critical in mobile context such as effort expectancy, mobility, and social influences. Disconfirmation of any of the usage-related beliefs is expected to influence satisfaction and post usage attitude, which ultimately influences continuance intention toward Internet services via

mobile devices. The rest of the section focuses on discussion of PIIT, disconfirmation, user beliefs and hypothesized relationships.

PIIT. For decades a number of studies in innovation diffusion research, marketing, and psychology investigated the effect of personal traits on adoption behavior as an internal motivation stimulus. The common belief is that individuals with high innovativeness are more likely to try out new things and have greater ability to control uncertainty and risk (Rogers, 2005). Drawing mainly on Rogers' innovations diffusion theory, Agarwal and Prasad (1998) developed the construct of personal innovativeness in information technology (PIIT). PIIT is defined as the willingness of a user to experiment on new information technologies. They described such personal innovativeness toward technology innovation adoption behaviors as symbolizing the risk-taking propensity that exists in certain individuals and not in others. They believed that most influential factor working on an individual's cognitive interpretations of information technology is factors related to the individual.

Recently more studies have discussed the direct, indirect, and moderating effects of PIIT on adoption behavior of various information technologies (Keisidou, Sarigiannidis, and Maditinos, 2011; Wang, Hsieh, Butler, and Hsu, 2008; Yi, Fiedler, and Park, 2006; Yi, Jackson, Park, and Probst, 2006). The findings were mostly sample and context specific. In mobile context, Lu, Yao and Yu (2005) revealed PIIT in their study as significant antecedent to instrumental perceptual beliefs of both usefulness and ease of use, which in turn impact individual intentions to adopt wireless mobile technology in general. A study of mobile phone users in Spain (Aldás-Manzano, Ruiz-Mafé, and Sanz-Blas, 2009) confirmed that omitting PIIT lead to over emphasizing the effect of perceived usefulness and ease of use. Such mistake could make intention formation to be perceived as more rational than it really is. Most recently, Wu, Li, and Fu (2011) found PIIT mainly worked through perceived ease of use and behavioral control using an integrative model of TAM and TPB, in their study of mobile healthcare adoption. PIIT seems to have enduring impact on users in a consistent manner in mobile context.

So far most findings on PIIT seem to support the argument of Thatcher and Perrewe (2002) – PIIT, as domain specific and enduring personality trait, predispose individuals to respond consistently to varied stimuli in a fairly consistent manner especially for voluntary situations. Integrating of PIIT in IS continuance model is the most recent phenomenon and far from adequate. Examination of PIIT in IS continuance model was first motivated by explaining why satisfied mobile shoppers still decided to discontinue their use (Hung, Hwang, and Hsieh, 2007). Drawing on the tripartite model of attitude from psychology (Breckler, 1984), a group of researchers (Hong, Thong, Chasalow, and Dhillon, 2011) examined the effect of PIIT in context of agile IS characterized by frequent upgrades with a small number of new features released periodically, or simply, constantly evolving software programs. Their argument is that an innovative person is more likely to welcome agile IS as composed of many small innovations (Thong, Hong, and Tam, 2006), and thus more willing to continue using such IS. The predicted positive effect of personal innovativeness on continuance intention, however, was not supported by the empirical data. Instead, users with high levels of personal innovativeness in their study were found more likely to explore new features for their stronger curiosity and higher receptiveness of anything new. This finding suggests that some users are more willing to use new features than others, not necessarily because they think the future features are going to be

beneficial to their work, but just because they like to try new things. This study vividly confirmed the direct tie between personal innovativeness and willingness to change in a continuance model. By the same logic, is it possible that those with low levels of PIIT will simply find the constant changes annoying or difficult to keep up with, and choose to stick to the existing functions or devices that they are familiar with? Will such negative tendency of influence affect user expectation-disconfirmation, their post-adoption beliefs and the more affective dimensions such as satisfaction and post-adoption attitude? Our literature review did not reveal any integration of PIIT in a process-oriented continuance model to answer such questions. We, thus, posit the following hypotheses that in the context of ISMD:

H1a: PIIT has a positive impact on disconfirmation of effort expectancy.

H1b: PIIT has a positive impact on disconfirmation of mobility.

H1c: PIIT has a positive impact on disconfirmation of social influence.

H1d: PIIT has a positive impact on post-usage belief of effort expectancy.

H1e: PIIT has a positive impact on post-usage belief of mobility.

H1f: PIIT has a positive impact on post-usage belief of social influence.

H1g: PIIT has a positive influence on satisfaction.

H1h: PIIT has a positive influence on post-usage attitude.

**Effort Expectancy.** Effort expectancy is defined as the degree of ease associated with the use of an IS (Venkatesh *et al.*, 2003). In previous technology adoption models, such as the TAM and the theory of planned behaviour (TPB), the role of effort expectancy on intentions is mediated by attitude (Venkatesh *et al.*, 2003). Also, customers are more satisfied with self-service technologies that are easy to use (Meuter *et al.*, 2005).

As a major utilitarian belief in TAM and UTAUT, effort expectancy has been repeatedly declared as a fundamental drive of adoption in the mobile domain by studies targeting on commercial or non-commercial Internet services, in different contexts, and in different countries (i.e., Lee and Cho, 2011; Suki, 2011; Singh, Srivastava, and Srivastava, 2010; Vatanparast and Qadim, 2009; Mozeik, Beldona, Cobanoglu, Poorani, 2009; Ko, Kim, and Lee, 2009; Lu, Liu, Yu, and Wang, 2008; Lee, Cheung, and Chen, 2007).

The role of effort expectancy was recently supported in post adoption studies in mobile domain. Choi, Kim, and Kim (2011) studied the antecedents of post adoption behavior toward mobile data services using the motivational theory. Post ease of use was found a major motivational factor influencing post adoption usage. Perceived ease of use was again found supporting intention to continual usage in another study (Baek, Park, and Lee, 2011). However, none of the studies ever investigated whether the post ease of use reflect adjusted perception during actual use to show various aspects of the experience. The one which modeled after ECT (Zhou, 2011) did not apply the expectation-confirmation concept to any of the user perceptions. Venkatesh and his colleagues (2011) pointed out that during the course of actual use, users' pre-usage effort expectancy will undergo a disconfirmation process and, in turn, influence satisfaction, post-usage effort expectancy and subsequently, post-usage attitude and continuance intention. In another word, after direct experience, users could assess the fit of service design to the mobile device, in turn, confirm or disconfirm their expectations. They also believe that positive disconfirmation of effort expectancy (i.e. high degree of ease of use) is positively related to satisfaction because it

implies affirmation of achieving the expected benefits of system use, and it will also promote post-usage perceived benefits. To keep in line with the findings in prior adoption studies and post adoption studies, we replicate the relevant hypotheses from the expanded IS continuance model to our Internet service via mobile device context in US:

H2a: Positive disconfirmation of effort expectancy has a positive influence on satisfaction.

H2b: Positive disconfirmation of effort expectancy has a positive influence on post-usage effort expectancy.

H2c: Post-usage effort expectancy has a positive influence on post-usage attitude.

H2d: Post-usage effort expectancy has a positive influence on continuance intention.

**Mobility.** The value and usefulness of Internet services via mobile devices is mostly shown in mobility. Mobility, a most significant feature of Internet services via mobile devices, is commonly defined as the degree of internet service availability on the move (Baek, Park and Lee, 2011). This is actually is a form of mobile computing relying on wireless mobile networks, portable computing devices and mobile applications. Specifically, mobility may refer to both ubiquity (i.e., location-based services) and instant connectivity of wireless or mobile Internet (Yoo et al, 2006). Mobility has been identified as what is distinctive about the wireless mobile channel in its own right and where the mobile platform clearly wins over the fixed Internet (Jiang, 2009). Ghose and Han (2011) believe that mobility can be classified geographically into local, regional, national, and international mobility. The extent of geographical mobility of users has a positive effect on their mobile Internet activities. Their literature review shows that users more frequently engage in content usage when they are traveling. User travel patterns have a stronger impact on mobile Internet activities. Most users view content using mobile phones while commuting from home to work and back. The value of mobility – ubiquity and instant connectivity - is enabled by portability (Jiang, 2009). The portability of the mobile device made it possible for consumers to access internet services anyplace, anywhere, and anytime. With the availability of the Internet almost instantaneously at the users' fingertips via internet-enabled mobile device, users can better manage their daily lives.

Studies so far showed significant effects of instant connectivity (Lee and Park, 2006) and location awareness (Choi, 2007; Kim, Suh, and Yoo, 2007) on the intention to adopt mobile Internet services. Studies also showed mobility based on perceived ubiquity, instant connectivity and portability significant determinant of mobile adoption intentions (Kim et al., 2009), and determinant of continued usage intentions via usefulness and ease of use (Baek, Park and Lee, 2011).

According to ECT and the expanded IS continuance model, during the course of actual use, users' pre-usage perceptions will undergo a disconfirmation process and, in turn, influence satisfaction, post-usage perceptions and subsequently, post-usage attitude and continuance intention. In another word, after direct experience, users could confirm or disconfirm their expectations. In another word, positive disconfirmation of perceived mobility is positively related to satisfaction because it implies affirmation of achieving the expected benefits of system use, and it will also promote post-usage perceived benefits. To keep in line with the findings in prior adoption studies and post adoption studies, we posit the following hypotheses:

H3a: Positive disconfirmation of perceived mobility has a positive influence on satisfaction.

H3b: Positive disconfirmation of perceived mobility has a positive influence on post-usage perceived mobility.

H3c: Post-usage perceived mobility has a positive influence on post-usage attitude.

H3d: Post-usage perceived mobility has a positive influence on continuance intention.

**Social Influence.** Social influence, or subjective norms, is defined as the degree to which an individual perceives that important others believe he or she should use the new IS (Venkatesh *et al.*, 2003). Innovation diffusion research suggests that user adoption decisions are influenced by social norms beyond an individual's decision style and the characteristics of the IT (Rogers, 2003). Subjective norms was also theorized in attitude theories, such as theory of reasoned action or theory of planned behavior (Ajzen & Fishbein, 1980; Ajzen, 1985). Its positive effect on intentions to use was modeled in the extended TAM (Venkatesh & Davis, 2000). In behavioral science, Bagozzi (1992) once explained normative influence as the result of integrating one's own expectations and feelings with significant others' expectations and feelings with respect to the shared moral or social meaning of performing a prospective act. Based on Kelman's (1958) work on internalisation and identification, Venkatesh & Davis (2000) suggested that the effect of subjective norm may be mediated via attitude, though not tested in their paper. Supporting evidence was later discovered (Schepers & Wetzels, 2007). The significance of social influence on adoption has recently been widely researched both in IS and marketing fields. The findings vary across studies.

Most studies in mobile sphere show that a user's adoption of mobile Internet services is, to a large extent, the result of the influence from the social circle and by peer mobile Internet activities (Kim, Kim, and Kil, 2009; Song, Koo, and Kim, 2007). Moreover, a social network has a strong positive effect on consumer behavior in the mobile Internet (O'Cass & Fenech, 2003). Okazaki (2009) explained such phenomenon using consumer participation in mobile word of mouth (mWOM) as an example. Okazaki believes that the mobile sphere absent of time and space constraints would enable consumers to access Internet in any place, at any time. Thus, the sending and receipt of a message is immediate, and makes the benefits from the information exchange more realistic. This would provide users with a stronger motivation to connect with their interpersonal network. His study in Japan found social intention significantly greater in mWOM, suggesting that the respondents are likely to perceive higher levels of social intention when exchanging information via mobile internet than via PC internet. By the same logic, more innovative opinion leaders, or earlier adopters of new ideas or products, could thus play a more pivotal role in encouraging or discouraging certain behavior for their family and peer groups within their social network. Supporting evidence is repeatedly provided by marketing researchers (Ghose and Han 2011; Okazaki, 2009).

Based on common explanation of normative influences and ECT, Venkatesh and his colleagues (2011) argued that if an individual was to perform a behaviour (e.g. use a system), the outcome of the behaviour could either confirm or disconfirm a priori expectations that, in turn, could strengthen or weaken the influences of the others who created the expectations. During system use, individuals may adjust their pre-usage social influence perceptions because of their observations of others' performance of the behaviour, the availability of new information and/or changes in friends' and peers' opinions. That is, user perceptions of social influence may be disconfirmed, and such disconfirmation will, in turn, influence satisfaction, post-usage social influence and subsequently, post-usage attitude and continuance intention. Based on the

reasoning drawn from ECT (Bhattacharjee, 2001), positive disconfirmation of social influence is positively related to satisfaction and post-usage social influence because positive disconfirmation implies realization of the expectations (i.e. existence of social norm) and elevates the corresponding post-usage perceptions. Furthermore, based on prior relevant research (Venkatesh *et al.*, 2003), post-usage social influence will have a positive influence on continuance intention, in addition to its indirect effect via post-usage attitude. Since wireless mobile sphere promotes social activities and exchange of information, disconfirmation of social expectation and influence is expected to happen faster, but not necessarily change the pattern. We, thus, hypothesize that

- H4a: Positive disconfirmation of social influence has a positive influence on satisfaction.
- H4b: Positive disconfirmation of social influence has a positive influence on post-usage social influence.
- H4c: Post-usage social influence has a positive influence on post-usage attitude.
- H4d: Post-usage social influence has a positive influence on continuance intention.

Satisfaction, Post-usage Attitude and Continuance Intention. Satisfaction, as an affect construct, is regarded the result of expectation-confirmation and cognitive beliefs and a predictor of post adoption behavioral decisions in the IS Continuance Model (i.e., Bhattacharjee, 2001). The two-stage model of belief and attitude (Bhattacharjee & Premkumar, 2004) posits satisfaction as an emergent construct affecting attitudes that in turn influence continuance intention. Supported by the empirical data from two longitudinal studies, Bhattacharjee and Premkumar later recommended that satisfaction be included in future process models of IT usage. The latest expanded IS continuance model (Venkatesh *et al.*, 2011) contains the constructs of satisfaction, attitude and continuance intention to help achieve their research objective. For the same reason they also appear in our revised model, not as the focus of our study but as the indispensable parts of the entire model.

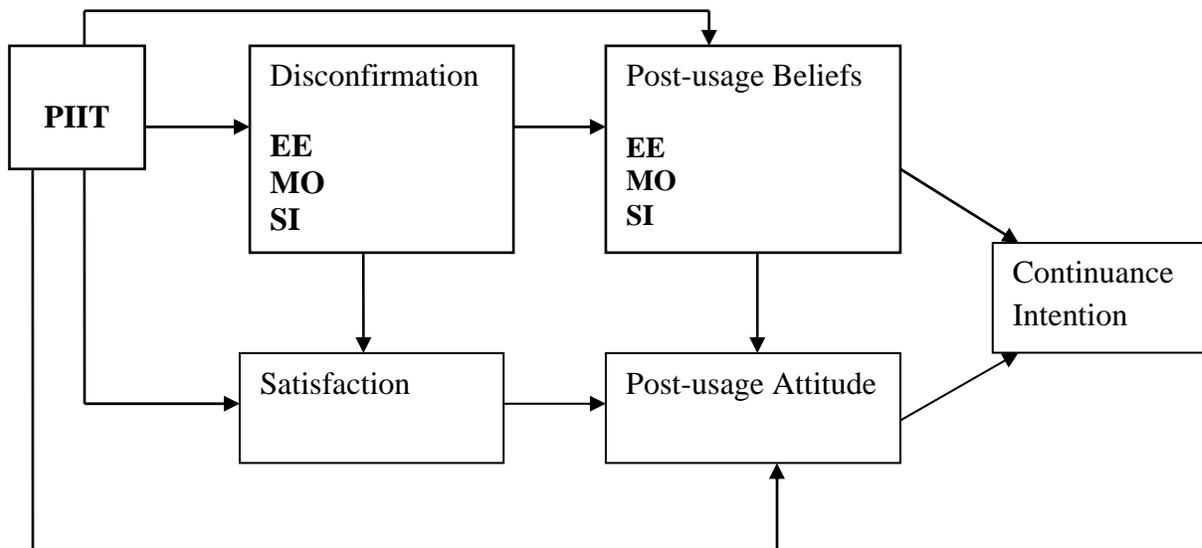


Figure 2 – A Revised Second-stage Model

## Discussion of Potential Contributions

This study is able to add value to the existing acceptance literature and adjust and provide training and promotion programs in practice. Specifically, the potential contributions are in the following aspects:

This study is one of the first efforts to revise and test the expanded IS continuance model in the U.S. It is, thus, able to examine, to some extent, the value of the expanded model in the context of Internet services via mobile devices. Since this study confirms and disconfirms certain perceptions commonly believed instrumental to acceptance, it is, thus, able to further our understanding of the possible dynamics in the key beliefs at post-usage stage of experience.

This study extends the expanded IS continuance model by highlighting the role of users that is critical to the advancement of understanding mobile Internet users; extends the IS continuance model by incorporating other constructs and relationships identified as important in adoption and continued use studies in mobile context. This extension is in line with recent calls for incorporating more constructs to aid the design of relevant interventions (Venkatesh *et al.*, 2007; Venkatesh & Bala, 2008) and managing mobile Internet services in practice.

Because of the balanced attention to the utilitarian determinants, social influences, and user characteristics, this study has strong potential to reveal the influences from selected variables after adoption, and thus, advance our understanding of mobile users' post-adoption behaviors. It should also contribute to the growing body of IS research emphasizing the importance of both context and user.

The strong ECT element in our model helps not only to examine the dynamic effects of the beliefs during the disconfirmation process, but also any crossover effects of the beliefs (e.g. positive disconfirmation in mobility improves the perception of usefulness). Such speculation of how different beliefs may influence each other during the process will definitely deepen our understanding of the behavioral decision process regarding IS continuance.

Since moderators such as age, gender, experience, device type and mobility level are also included in our research design, the study is expected to reveal some interesting moderating effects, in addition to the hypothesized main effects. This is in line with the advocate that future research should theorize how moderators would fit into the ECT framework (Venkatesh *et al.*, 2011).

## Methodology under Consideration

The sampling frame is the mobile Internet service users in the United States. Considering the research model and the objectives, one thousand or more participants will be needed. The survey instrument uses questions adapted from items in the related studies. We use previously validated scales for all the model constructs and modify them to fit our research context. We are currently in the process of collecting needed data using both offline and online channels, from undergraduate and graduate students and their social circles from Florida, Illinois and Texas. To test the research model, SPSS and Amos 19 will be used to run structural equation modeling

procedures and conduct model comparisons based on selected moderators. A complete research report can be delivered at the 2012 DSI annual conference.

### Limitations and Future Research

This study has two obvious limitations: (1) The correlations between adoption perceptions and post-adoption perceptions. Since this project is not designed as a two-stage study. We are, therefore, unable to examine the correlations between pre-usage beliefs and post-usage beliefs among users. However, when sample sizes are big enough, we are able to examine the correlations between post-usage beliefs of mobile users and adoption beliefs of non users. (2) Possible common method bias. Due to the way data is collected in our study, certain common method bias may arise (Podsakoff et al., 2003). To account for common method bias, we plan to use Harman's one-factor test to evaluate such possibility first; if necessary, we will also use comprehensive CFA marker technique (Lindell & Whitney, 2001; Malhotra et al., 2006) to limit the threat. In addition to such data analysis control, we will replicate this study in other countries to examine the robustness and the validity of our findings.

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