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# A balanced thinking–feelings model of information systems continuance

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**Abstract**

Most studies on technology adoption and usage continuance examine cognitive factors, leaving affective factors or the feelings of users relatively unexplored. In contrast, researchers in the diverse fields of human–computer interaction, medicine, psychology and marketing have begun to note the importance of feelings in understanding and predicting human behavior. Feelings are anticipated to be essential particularly in the context of modern applications, such as mobile Internet (M-Internet) services. Users of modern technology are not simply technology users but also service consumers and may consider both cognitive and emotional benefits. Drawing upon multidisciplinary findings, this study proposes a balanced thinking–feelings model of IS continuance. In the process of developing this model, the concepts of attitude, thinking and feelings are further articulated, defined and distinguished. The balanced thinking–feelings model is validated in a survey of M-Internet service users. To encourage continuance, companies should consider ways to enhance both cognitive and emotional benefits for users. The model could be also useful for balanced understanding of other behaviors.


*Keywords:* IS continuance; Thinking; Feelings; Mobile internet service

## 1. Introduction

The last decade has seen an increasing body of information technology (IT) adoption studies. The adoption studies recognize initial acceptance as a critical step toward realizing information systems (IS) success. However, the feasibility of IS and their eventual success depend on continued usage more than on initial adoption. Without effective long-term use, initially adopted IS resources are wasted, which may have serious consequences.

The focus of research on IT adoption and post-adoption or IS continuance has been on mainly cognition-oriented behavioral models, such as the technology acceptance model (TAM) (Davis, 1989; Davis et al., 1989), the Theory of Planned Behavior (Ajzen, 2001) and the IS continuance model (Bhattacherjee, 2001). Cognition (i.e., thinking) means the mental process of knowing, including aspects such as perception, reasoning, and judgment. Belief may result from perception and reasoning. Belief is defined as the individual's subjective probability that performing the target behavior will result in a specified outcome (Fishbein and Ajzen, 1975). TAM (Davis, 1989; Davis et al., 1989) posits that two beliefs, perceived usefulness and perceived ease of use, are central determinants of users' adoption intention. Similar to TAM, TPB (Ajzen, 1991) considers beliefs, attitude, subjective norm, and perceived behavioral control. Attitude is conceptualized as judgment (Ajzen, 2001). Subjective norm refers to the perceived social pressure to perform or not to perform a certain behavior. Perceived behavioral control is the individual's belief concerning how easy or difficult it is to perform the behavior. Further, IS continuance model (Bhattacherjee, 2001) considers perceived usefulness, confirmation, and satisfaction. Confirmation is another cognitive approach that builds on cognitive comparison between perceived performance and cognitive standards (e.g., expectations). For this reason, it has been argued that satisfaction highlights the concept of evaluative judgment (Ajzen, 2001; Oliver, 1993; De Wulf et al., 2006). All these models should be considered as cognitive models as they all rely on beliefs to predict user behaviors.

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Cognition-oriented models may be important for mandatory IS usage in the organizational setting where cost of adoption and usage is borne by the organization, e.g., for traditional technologies, such as word processor, spreadsheet, and email, where most users are employees in organizational settings. In such environments, personal liking or the affective experience factors may not be important.

However, the emergence of the Internet and mobile technologies has generated new forms of information and communication technology (ICT) that are used in non-organizational settings. An example is the mobile Internet (M-Internet), which provides diverse services to users. In contrast to users of traditional technologies, adopters of new ICT use the technology for personal purposes and the cost of voluntary adoption and usage is borne by the individuals. In contrast to traditional users, such users play the dual role of technology user and service consumer. As a technology user, instrumental (economic/cognitive view of consumption) benefits are more important. As a service consumer, emotional (hedonic view of the situation) benefits are also important. Both types of benefit may affect decision making (Derbaix and Pham, 1991; van der Heijden, 2004). Thus, there is a need to give more emphasis to emotional factors as the advancement of new ICT. Furthermore, many disciplines have shown that emotions are important for many behaviors. As a result, researchers have advocated the extension of the traditional one-sided cognitive view by integrating the affective components of consumption experiences (Holbrook et al., 1990; Kempf, 1999). For this reason, feelings or emotions[1] are expected to feature prominently together with thinking in IS continuance studies.

This study aims to examine IS continuance intention at the individual level, from a balanced thinking and feelings perspective. Specifically, we seek to answer two research questions: (1) What are the prominent thinking and feelings factors in determining IS continuance intention? (2) How do thinking and feelings lead to IS continuance intention? These questions are answered firstly through a thorough analysis of the relevant literature in IS and related areas to develop a balanced thinking–feelings model of behavior, and subsequently through an empirical application of the model to M-Internet services.

From a theoretical perspective, this study extends our current knowledge on IS continuance intention by examining the balanced effects of thinking and feelings. From a practical perspective, this study provides guidelines on how to retain M-Internet service users. In integrating the thinking and feelings perspectives, the balanced thinking–feelings model identifies the importance of both the cognitive and emotive channels for M-Internet service providers to attract and keep customers.

This paper is organized as follows. The next section presents the theoretical framework, arguing for a balanced thinking–feelings model, with cognitive and emotional factors affecting attitude and intention. It also presents a systematic theoretical classification of the various emotional factors that have been studied in IS area. The detailed balanced thinking–feelings model (the research model) and hypotheses are then presented in Section 3. In Section 4, we describe our research methodology for an online survey of M-Internet service users. In Sections 5 and 6, we interpret the empirical results and offer theoretical and practical implications. We conclude the paper with a summary of contributions.

## 2. Theoretical framework

### 2.1. Previous research on IS continuance

Before developing the theoretical framework in this study, we first review previous research on IS continuance. The review briefly shows how various, mostly cognitive, factors have been added in the studies on IS continuance. The concept of IS continuance has been examined variously as "routinization" (Cooper and Zmud, 1990) and "confirmation" (Rogers, 1995). Despite the variations, studies agree that continuance behavior assumes institutionalizing IS use as a part of normal ongoing activity. Hence, IS continuance behavior may be defined as continued usage of IS by adopters, where a continuance decision follows an initial acceptance decision.

Table 1 summarizes previous research on IS continuance. Parthasarathy and Bhattacherjee (1998) studied a dichotomous division between continuers and discontinuers, with a set of perceptual beliefs. Later studies focus more on the "strength" of continuance. A basic model with only three factors (attitude, subjective norm and voluntariness) to explain IS continuance was proposed by Karahanna et al. (1999). More factors were identified in later studies on continuance. For example, Bhattacherjee (2001) identified usefulness and satisfaction, Kim and Malhotra (2005) added perceived ease of use and usage experience, and Thong et al. (2006) added perceived enjoyment.

Parthasarathy and Bhattacherjee (1998) examined individual characteristics and perceptual beliefs related to IS services that can help differentiate potential discontinuers from continuers in the context of online service. They found that potential discontinuers differ from continuers based on their sources of influence (external and interpersonal), perceived service attributes (usefulness and compatibility), service utilization, and network externality (complementary product usage), during their time of initial adoption. Later studies treat continuance as an interval variable, rather than a categorical two-value variable. This interval treatment of continuance is also adopted in this current study.

Many theories have been used in studying IS continuance. For example, Karahanna et al. (1999) adopts the TPB theory, and found that IS continuance intention was

[1] "Emotions" and "feelings" are treated synonymously in this study.