Computers in Human Behavior 62 (2016) 644–657

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

Do emotions matter in technology training? Exploring their effects on individual perceptions and willingness to learn

Mehdi Darban*, Greta L. Polites

Kent State University, College of Business Administration, Department of Management and Information Systems, Terrace Drive, Kent, OH, 44242, USA

ARTICLE INFO

Article history:
Received 21 December 2015
Received in revised form
13 April 2016
Accepted 18 April 2016

Keywords:
Emotions
Technology radicalness
Enterprise resource planning
Simulation games

ABSTRACT

Due to the growing importance of enterprise resource planning (ERP) systems in organizations today, many universities and corporate training programs now incorporate such systems into their curricula using novel tools, such as ERP simulation games. To improve the understanding of individuals' learning patterns, we extend prior cognition based models by incorporating emotions. Moreover, we highlight the role of perceived radicalness, which mediates the relationship between emotions and individuals' willingness to learn. The proposed research model draws from the appraisal tendency framework and includes four distinct classes of emotions: challenge, achievement, loss, and deterrence. The model was tested via a lab experiment in which participants (N = 145) played an ERP simulation game. The hypothesized links were tested using structural equation modeling. Anger and excitement were negatively associated with perceived radicalness. Anxiety was positively associated with perceived radicalness and the positive effect of happiness on perceived radicalness was insignificant. Finally, perceived radicalness was positively related to individuals' willingness to learn. Results indicate that perceived radicalness is an important mechanism via which classes of emotions impact students' ERP learning behaviors. In addition, negative emotions have greater effects on radicalness perceptions compared to positive emotions.

1. Introduction

Enterprise resource planning (ERP) systems have gained popularity due to their dramatic improvements to business performance (Davenport & Beck, 2013; Liang, Saraf, Hu, & Xue, 2007). A typical ERP implementation requires radical organizational changes that can result in significant modifications to nearly 30% of key routines in contemporary firms (Morris & Venkatesh, 2010). While user training is important to the success of all types of systems (Chou, Lin, Lu, Chang, & Chou, 2014), it is a particularly crucial element in reducing the rate of unsuccessful ERP system implementations (Sykes, Venkatesh, & Johnson, 2014). Many universities, recognizing the importance of ERP systems in industry, and their own critical role in training the future users of such systems, now incorporate ERP systems (e.g., SAP or Oracle) into their curricula (Antonucci, Corbitt, Stewart, & Harris, 2004). Studies found that using ERP simulation games to form a more realistic environment for learners is a more effective training method compared to traditional learning settings (e.g., Léger et al. 2011).

Individuals' reactions to a new technology may range from adopting early, deciding to adopt later, or complete rejection, based on their evaluation of the level of change involved (Kim & Kankanhalli, 2009). Introduction of a new technology requires individuals to change their allegiance from a familiar incumbent form of a technology to a new version. However, temporary resistance to acceptance and an inclination to maintain the status quo is often manifested as failure to upgrade from a current technology to a newly introduced one (Bhattacherjee & Park, 2014) . Information systems (IS) research has made important advances toward comprehending the determinants of information technology (IT) adoption through cognitive-based models such as the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), the theory of planned behavior (TPB) (Ajzen, 1991), the technology acceptance model (TAM) (Davis, 1989; Davis, Bagozzi, & Warshaw, 1992), and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003), which all emphasize the role of perceptions about the crucial elements of technology such as performance expectancy, relative advantage, and compatibility. Nevertheless, due to increasing levels of system complexity today,

* Corresponding author.
E-mail addresses: mdarbanh@kent.edu (M. Darban), gpolites@kent.edu (G.L. Polites).

http://dx.doi.org/10.1016/j.chb.2016.04.028
0747-5632/

we need to go beyond current cognitive models in order to capture other key antecedents of adoption and usage behavior (Beaudry & Pinsonneault, 2010; Stein, Newell, Wagner, & Galliers, 2015; Zhang, 2013). All of these theoretical approaches are sharing the same latent set of assumptions. These psychological premises deemphasize the likely role of emotions as the major determinant of individual's success in coping with the adaptive behavioral challenges of radical technologies.

A possible extension to current models is to consider the role of human emotions (de Guinea, Titah & Léger, 2014; Zhang, 2013). No doubt, emotions play a dominant part in our lives. Specifically, they have a powerful influence on individuals' assessments and beliefs, and they provide direction to our judgment and decision-making (Gratch & Marsella, 2004). Recent research suggests an emotional dimension to individual perceptions (e.g., Stein et al. 2015). Adopting a new theoretical lens, we account for one form of automatic and unconscious information processing underlying human judgment, an aspect that most current models fail to realize. We argue that such an extension can specifically improve educators' understandings about how best to apply new teaching tools such as ERP simulation games (ERPsim), which in turn provide an excellent opportunity for students to gain insight into the integration of critical business functions with IT (Cronan, Léger, Robert, Babin, & Charland, 2012). Through being provided with a more facilitating learning environment for such novel technologies, individuals may demonstrate better adoption performance (Morris & Venkatesh, 2010).

Due to the popularity of simulation based learning, our study investigates the learning behavior of individuals in an ERPsim context. Employing the Appraisal Tendency Framework (ATF) (Han, Lerner, & Keltner, 2007; Lerner & Keltner, 2000), we develop a model that explains how a learner's perceptions about the radicalness of a new technology relate her/his emotions (e.g., anger) to willingness to learn that technology. For instance, based on extant ATF research, perceptions of high threat and expected lack of control from using a new system may trigger students' anger (Han et al., 2007). This study thus adds to a burgeoning stream of IS research emphasizing the significance of emotions (Zhang, 2013) in technology acceptance. By studying emotional antecedents of IT usage in a learning context, as well as the mediating role of technology radicalness perceptions, we also extend research on IS education, by contributing to knowledge on student reactions to new technologies and their resulting willingness to learn.

2. Background

2.1. Emotions in IT

With a growing emphasis on improving graduate employability, real world problem-solving settings (e.g., simulation-based learning) now play a bigger role in training programs today. ERP-based simulations such as ERPsim (Léger, 2006) also prove useful in the area of IS. Especially, by adopting a learning-by-doing approach, ERPsim is mainly being used to teach students the concepts of enterprise systems and business process integration (Cronan et al., 2012; Seethamraju, 2011). Apart from teaching students the concepts and principals of management (i.e., learning objectives), computer-based business simulation games have been used to change students' attitudes toward a discipline (i.e., attitudinal objectives), and consequently improve the employment of the system (i.e., behavioral objectives) (Anderson & Lawton, 2009). Simulation games are adopting the pedagogical methods of experiential learning and problem-based (Kiili, 2005). Different with conventional subject-based learning approaches, they normally reverse the order of introducing the key concepts of the course (Anderson & Lawton, 2009). In other words, rather than presenting key concepts before applying them to a specific problem, lecturers let learners “discover” the course concepts during the simulation. This characteristic of the simulation game approach is similar to an individual's technology adoption process, in which individuals must explore the features of the newly adopted system in order to fully reap its benefits. This similarity makes the ERPsim setting interesting to study in order to understand how further learning intentions of students are influenced by their emotions as well as their perceptions (the latter of which is the focus of most extant technology acceptance research).

In this study, we argue that a user's specific affective state plays a significant role in determining his/her perceptions of technology characteristics, which in turn influence the user's willingness to learn further in the future. The term *affect* refers to a general class of mental processing that exposes IT user's subjective internal feelings (Cohen, Pham, & Andrade, 2008). Affect must be conceived here as an overarching notion for a set of more distinct affective mechanisms comprising *mood* and *emotion*; hence, it is useful to differentiate the two terms. Emotions are a mental state of readiness that results from cognitive judgments. They are often accompanied by physical expressions, and may promote specific behaviors to cope with emotions. Emotions organize and prioritize actions to improve adaptation and modification of a person to the requirements of the environment (Bagozzi, Gopinath, & Nyer, 1999). However, in the literature, scholars have used the terminology associated with emotions in an inconsistent manner. Moods are a very similar mental process to emotions and are frequently used exchangeably. Compared to emotions, moods usually do not require any explicit referents, and they largely have lower levels of intensity (Bagozzi et al., 1999). The changes caused by moods are generally non-intentional and intra-individual. It implies that moods are not related to explicit propensities to act. Emotions, on the other hand, influence the intentions of individuals and lead to variations in action willingness. Unlike moods, emotions have explicit referents, and particularly, they develop in regard to appraisals one makes for an important and relevant event to a person (Cohen et al., 2008).

2.2. Affect: emotions

In a technological context, we may define emotion as a mental feeling caused by the new IT stimulus event, which have a short duration with a determining impact on an individual's interaction with technological artifacts (Rafaeli & Vilnai-Yavetz, 2004). The term “IT stimulus event” refers to IT-induced changes, which involve deployment of a new system. The focus of the study is the announcement of the implementation of a novel system. The introduction of a new system prompts an emotional response when it causes disruption of the event sequence in an individual's work routine (Rafaeli & Vilnai-Yavetz, 2004). In such a setting, the stimulated emotions are followed by specific behaviors in an attempt to link the disconnection between the moments one's routines are interrupted (Beaudry & Pinsonneault, 2010). For instance, stimulation of anger due to the imminent implementation of an IT may lead the person to prioritize seeking out sympathy and social support. Generally, emotion-based and cognition-based mechanisms have been compared and contrasted, albeit their association has been a subject of numerous disputes. There are two schools of thought on how these two notions differ. Supporters of Zajonc (1980) contend that cognition and emotion are partially separate concepts and independent mechanisms, while the camp of Lazarus (1982) argues that emotion necessitates cognition, and the cognitive process of appraising and sensing leads to an