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Understanding E-Learning Continuance Intention: Towards A Conceptual Model

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Abstract

Understanding the factors behind employee’s e-learning continuance intention is becoming imperative as more and more organizations rely on technology to deliver training. While e-learning has the potential to offer cost effective and flexible training methods, practitioners are concerned with low completion rates. Although several reasons have been put forward to explain e-learning attrition, no clear understanding has emerged of how different factors influence the intention to continue using an e-learning system. This paper synthesizes the IS continuance model with self-regulated learning from social cognitive theory to offer an integrative model of the factors that influence e-learning continuance intention. We thus advance prior research on e-learning continuance by formulating relationships between the most relevant contextual factors identified in the literature, the affective learning process, and the intention to continue using e-learning systems. Relevant contextual factors were identified based on empirical evidence and suggestions from practice. As a result, we aim to offer further insights on how to deliver corporate e-learning so that technology-based training can realize its potential.

Keywords: e-learning continuance intention, IS continuance model, self-regulated learning, e-learning attrition
1 Introduction

In the past years, technology has changed the way how learning is conducted in organizations (Derouin et al., 2005). Among the various definitions for technology-mediated learning, the term e-learning has emerged as a unifying concept to describe learning forms such as web-based training or virtual learning environments (Romiszowski, 2004). E-learning information systems have the potential to offer cost-effective and flexible learning environments that are centered on the learner, providing her or him with a diverse amount of content in a personalized manner (Zhang et al., 2004). With these new training opportunities, the utilization of e-learning has reached a new peak in the top Fortune 500 corporations in 2010, with 40 percent of overall learning time delivered via technology, the majority through self-paced online learning (Green, 2011, p. 39). Despite these heavy investments in e-learning systems, it seems that organizations have not received the level of benefits in terms of learning outcomes and cost effectiveness that were expected (Garavan et al., 2010; Romiszowski, 2004). While the flexibility and abundance of learning resources account for major advantages of e-learning, they also pose a challenge to learners who are unaccustomed to e-learning environments (Santhanam et al., 2008; Tsai, 2009). Reports have indicated that the use of corporate e-learning systems is diminished by high attrition rates (Frankola, 2001; Tyler-Smith, 2006; Welsh et al., 2003). Many learners abort their learning courses before completion, leading to high dropout levels in e-learning compared to instructor-led classroom training (Welsh et al., 2003).

Several reasons have been suggested to explain the low completion rates of learners, including poorly designed courses and content, lack of management support, and personal attributes (Frankola, 2001; Tyler-Smith, 2006). Moreover, employees are likely to reduce their frequency of e-learning system use over time as they struggle between competing work and learning tasks (Brown, 2005). A number of studies has investigated e-learning continuance intention with a focus on information system related factors (Chiu and Wang, 2008; Lee, 2010; Limayem and Cheung, 2008; Roca et al., 2006). However, to our knowledge, so far no studies have systematically analyzed different organizational, individual, and system related factors leading to continued use of e-learning information systems. In addition to contextual factors, self-regulated learning strategies from educational psychology have been found to play an essential role for the individual learning process in e-learning (Eom, 2011; Kramarski and Gutman, 2006; Santhanam et al., 2008; Sharma et al., 2007; Wan et al., 2012). With this study, we aim to contribute to the understanding of e-learning continuance intention by establishing a theory-driven perspective to explain how contextual factors influence the decision to continue with e-learning courses. We thus focus on the following research question: How do various contextual factors and personal attributes influence continuance intention in corporate e-learning systems?

In order to address the research question, we develop a conceptual model based on the information systems (IS) continuance model (Bhattacherjee, 2001). This model has been proven reliable for explaining user’s behavior in the context of e-learning (Lee, 2010; Limayem and Cheung, 2008; Lin, 2011; Roca et al., 2006). Since e-learning systems typically require a long term use, we expect the IS continuance model to be particularly suited to investigate user’s post-acceptance continuance decision. To extend this model, we identify relevant contextual factors from the literature based on empirical evidence and suggestions from practice, which we analyse in their influence on e-learning continuance intention. As a result, we aim to offer further insights on how to deliver corporate e-learning so that technology-based training can realize its potential. Following Alavi and Leidner (2001) and Gupta and Bostrom (2009), we regard the psychological learning process as the center of our model.

The remainder of the paper proceeds as follows: Section 2 lays the theoretical foundation and introduces the IS continuance model as well as the concept of self-regulated learning. In addition, factors that have been found to determine e-learning satisfaction and self-regulated learning are identified from literature. In section 3, we derive a conceptual model for e-learning continuance intention and deduce specific research propositions. Section 4 concludes with suggestions for further research.
2 Theoretical background

In order to develop a model of e-learning continuance intention, we suggest taking a comprehensive view that includes not only the technological dimension, but also the learner, the learning environment, and the instructional design. The following analysis is therefore based on three structural levels to investigate the learner’s attitudes towards e-learning (Gupta and Bostrom, 2009; Liaw and Huang, 2013): First, the learning context is an important dimension of e-learning and aims to include the relevant factors that enable and support the learning process. The second level represents the affective learning process as a central element of technology based learning. Individual learning processes refer to the cognitive and motivational information processing and thus explain the variation in learning behavior and continuance intention (Alavi and Leidner, 2001). We represent the learning process in our model by the individual engagement to apply self-regulated learning strategies. Third, the learner’s decision to continue using the e-learning system depends on the affective learning process. Figure 1 provides a framework that guides our research model.

Figure 1. A framework for e-learning continuance intention

Continuance intention: the information systems (IS) continuance model

Acceptance of e-learning systems has been studied as an important prerequisite of actual use and, subsequently, learning outcomes (Cheng, 2011). As a result, research has examined a number of variables that motivate the acceptance of e-learning systems (e.g. Brown and Charlier, 2012). The use of information systems however changes over time along with the factors that determine the use behavior (Jon et al., 2005; Karahanna et al., 1999). The analysis of technology acceptance therefore fails to explain the continuance intention of e-learning systems after initial acceptance, leading to the “acceptance-discontinuity anomaly” (Bhattacherjee, 2001, p. 352). The IS continuance model builds on the assumption that users of information systems re-evaluate their intention towards further use after their initial acceptance decision. In this post-acceptance state, the intention of further use is assumed to determine actual continued use, and ultimately a system’s success. The original model has been adapted from consumer behavior literature on expectation-confirmation theory by Bhattacherjee (2001). In essence, the decision towards continued use depends on the degree to which initial expectations are confirmed. The degree of perceived usefulness and confirmation of expectations regarding a system determines the user’s overall satisfaction and can lead to a subsequent reversal of the initial acceptance decision (Bhattacherjee, 2001). In addition, perceived usefulness of a technology has been shown to continuously influence usage intentions at different points in time. Perceived usefulness is therefore expected to influence both satisfaction and the intention of continued use (Bhattacherjee, 2001).

Learning processes: self-regulated learning strategies

Learning processes build the link between the learning context and behavioral learning outcomes (Alavi and Leidner, 2001; Gupta and Bostrom, 2009). Several studies have found a strong relationship between motivational factors and learning outcomes (Lim et al., 2007; Paechter et al., 2010; Sharma et al., 2007; Wan et al., 2012) as well as time spent using an e-learning system (Brown, 2005). According to the social cognitive theory, the level of personal engagement is dependent on self-regulatory factors (Bandura, 2001). In educational psychology, self-regulation refers to a set of cognitive learning principles that enable self-regulation and control of the learning process. These principles are based on internal strategies, including metacognitive strategies (information processing, goal setting, self-motivated planning), motivational and reflective processes (self-monitoring, self-guidance, self-reaction), as well as self-reaction and learning resource management (Bandura, 2001; Pintrich and De Groot, 1990; Zimmerman, 2008). Self-regulated learning is thus a metacognitive
The process by which learners set themselves goals, and attempt to proactively monitor, regulate and control their behavioral learning process and motivation. Furthermore, due to high levels of flexibility and learner control, time management has been emphasized for e-learning (Sharma et al., 2007; Tsai, 2009). The different dimensions of self-regulated learning are determined by relatively stable individual and environmental characteristics. The social cognitive perspective includes individual beliefs such as confidence, self-efficacy, anxiety, and cognitive learning skills as determinants of self-regulation (Pintrich and De Groot, 1990; Zimmerman, 2008). Individual differences in motivation and self-regulatory skills such as strategic planning will thus likely affect the self-regulated learning behavior and learning outcome (Kramarski and Gutman, 2006). Furthermore, self-regulation also depends on external contextual factors, including external support (Boekaerts, 1999) as well as socioeconomic norms and environmental factors (Bandura, 2001).

**E-learning contextual factors**

In recent years research has proposed a significant number of contextual factors as explanatory variables in e-learning. While technological and design related factors such as system quality, information quality and perceived usefulness received considerate attention (e.g. Cheng, 2011; Eom, 2011; Lee and Lee, 2008; Piccoli et al., 2001; Roca et al., 2006), several more dimensions have been identified to influence the behavioural learning process and learning outcomes. Notably, individual characteristics (e.g. Brown, 2001; Piccoli et al., 2001; Sun et al., 2008; Wan et al., 2012) and characteristics of the learning and work environment (e.g. Brown, 2005; Cheng et al., 2012; Yoo et al., 2012) have been suggested as important determinants in e-learning. Furthermore, the literature on corporate training effectiveness has yielded strong and robust findings on a variety of individual, organizational and training related factors that explain the success of corporate training programs (Burke and Hutchins, 2007; Colquitt et al., 2000).

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Contextual factors</th>
<th>Empirically supported relation to satisfaction and self-regulated learning (learning self-regulation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual characteristics: self-motivation beliefs</td>
<td><strong>Self-efficacy</strong> (including computer self-efficacy): Individual level of confidence to successfully perform a particular learning task.</td>
<td>Liaw and Huang (2013); Eom (2011); Liaw and Huang (2013); Wu et al. (2010); Sun et al. (2008); Roca et al. (2006); Hu and Hui (2012); Wan et al. (2012); Brown (2001); (Paechter et al., 2010); (Garavan et al., 2010)</td>
</tr>
<tr>
<td></td>
<td><strong>Learning goal orientation</strong>: Concern for mastering learning tasks and gaining competences.</td>
<td>Wan et al. (2012); Brown (2001); Sharma et al. (2007); Cheng (2011)</td>
</tr>
<tr>
<td>Environmental characteristics</td>
<td><strong>Organizational climate and organizational learning support</strong>: Characteristics that affect behavior at the workplace, including supervisor and peer support.</td>
<td>Wu et al. (2010); Brown (2005); Yoo et al. (2012)</td>
</tr>
<tr>
<td></td>
<td><strong>Workload</strong>: Time and effort employees need to devote to their work tasks.</td>
<td>Brown (2005), Sitzmann (2011)</td>
</tr>
<tr>
<td></td>
<td><strong>Social norms</strong>: Socially shared norms in an organization regarding learning behavior and social interaction.</td>
<td>Wan et al. (2012)</td>
</tr>
<tr>
<td>Technology and course design</td>
<td><strong>System and information quality</strong>: Availability and reliability of the e-learning system.</td>
<td>Eom (2011); (Chiu et al., 2007); Roca et al. (2006); Lee and Lee (2008); Sun et al. (2008)</td>
</tr>
<tr>
<td></td>
<td><strong>Perceived usefulness and perceived ease of use</strong>: The degree to which using the system is perceived as beneficial and to which using the system is free of effort.</td>
<td>Sun et al. (2008); (Roca et al., 2006); Lee (2010); Lin (2011); Lee and Lee (2008); Liaw and Huang (2013); Arbaugh (2000)</td>
</tr>
<tr>
<td></td>
<td><strong>Learning interaction</strong>: Learners perceived interaction with peer learners, instructors and content.</td>
<td>Liaw and Huang (2013); Shea and Bidjerano (2010); Arbaugh (2000); Wu et al. (2010); Eom et al. (2006); Paechter et al. (2010)</td>
</tr>
<tr>
<td></td>
<td><strong>Course flexibility</strong>: Flexibility of the e-learning system in terms of time, space, and device.</td>
<td>(Arbaugh, 2000); Eom et al. (2006); Sun et al. (2008)</td>
</tr>
</tbody>
</table>

Table 1. Overview of contextual factors in e-learning as determinants of learning self-regulation and learning satisfaction.
Based on the synthesis of this literature, we assigned different contextual factors into three categories (see Table 1). Individual self-motivation beliefs describe the differences in personal attributes and experiences that determine how individual approach a particular learning task. Environmental characteristics contain the organizational climate for learning and support as well as social norms and job characteristics. Finally, we identified information system related technological and design dimensions, accounting for the instructional strategy (Alavi and Leidner, 2001) as well as learning interaction. As a second step, we identified empirical relationships between contextual factors and self-regulated learning and/or satisfaction in e-learning. Learning self-regulated was analysed representative for the learning process. Furthermore, consistent with the IS continuance model, learning satisfaction was included as second relevant factor for e-learning continuance intention. The last column of Table 1 summarizes studies that comprise a significant empirical link.

3 Development of the conceptual model

In this section, we propose a theoretical model and derive propositions aiming to explain e-learning system continuance intention. We adapt the IS continuance model to investigate the scenario of learners who decide on ongoing participation in an e-learning course. In addition to the learner’s satisfaction with the e-learning system, we propose that individual learning self-regulation is a second essential factor in predicting learner’s continuance intention. As e-learning systems are becoming increasingly learner-centered with self-paced forms of learning, the lack of effective learning supervision and teacher support imposes an additional strain on a learner’s continuance decision which is beyond the level of satisfaction with the e-learning system (Piccoli et al., 2001; Santhanam et al., 2008). Furthermore, based on the synthesis of prior literature, a number of variables are identified as being important for the learning process. Contextual factors were chosen based on their practical relevance for e-learning completion rates. Lack of management oversight and student support, lack of time and learning incentives, as well as problems with technology have been frequently reported as major reasons for dropping e-learning courses (Frankola, 2001; Tyler-Smith, 2006; Welsh et al., 2003). While technological obstacles are assumedly less critical with today’s e-learning systems, we expect that those factors are accounted for in the system’s perceived usefulness construct. Relevance and individualization of content as well as social interaction in the e-learning environment have been suggested as further important factors (Tyler-Smith, 2006). In addition, course flexibility has been suggested as an important factor in management education (Arbaugh, 2000).

An understanding of different contextual factors as predictors of learning self-regulation and satisfaction is important for two reasons: First, including contextual factors in our model provides a theoretical understanding of the possible reasons for continued use of e-learning systems. Furthermore, research has shown that factors which are important determinants of the behavioral intention of use continuance are likely to be different from the factors which led to initial acceptance (Karahanna et al., 1999). We therefore include only variables which have been found to influence user’s continuance intention and learning behavior in the post-acceptance phase. Based on the framework in Figure 1, we propose a conceptual model that integrates the IS continuance model with self-regulated learning strategies (see Figure 2). Since continuance intention (and ultimately the continuance use and completion of the e-learning course) is analysed as the main outcome, we begin at the end of our model with the dependent variable, tracing backwards to the intermediate dependent variables of the learning process (learning self-regulation and satisfaction), and conclude with the explanatory contextual factors. Together, we believe that these three levels provide a comprehensive set of constructs to investigate the effects of different contextual factors on learner’s continuance intention.

A user’s continuance intention has been conceptualized as the subjective probability that learners will continue using an information system (Bhattacherjee, 2001; Chiu et al., 2007). This decision is reflected by the level of resources that are dedicated to the learning process. On-task attention (i.e. the attention direct towards the learning task) has been studied in connection with self-regulated learning.
(Gravill and Compeau, 2008) and is assumed to be the most proximal indicator of continuance intention, followed by the actual time that is spent in the learning process.

Self-regulation has become an important construct in education to investigate the different components of successful learning processes (Boekaerts, 1999). Individual learning self-regulation is defined by the degree to which learners are committed, motivated, and metacognitively active in their learning process (Bandura, 2001; Zimmerman, 2008). These factors are observed as the learner’s disposition to take part in learning activities. Overall, self-regulated learners proactively guide their learning process and possess motivational aptitudes that predict relatively enduring behaviour (Zimmerman, 2008). Self-regulated learning strategies have been examined in e-learning in a variety of different settings. In relation to pre-training interventions, research has demonstrated that learners will have difficulties to benefit from e-learning environments if they are unable to engage in the learning process, self-regulate their learning and to determine their own learning pace (Azevedo and Cromley, 2004; Kramarski and Gutman, 2006; Santhanam et al., 2008). In analyzing e-learning success, Eom (2011) reported a significant positive relationship between the use of self-regulated learning and learning outcomes. As part of self-regulated learning, learning motivation was found to have a positive influence both on learning time in corporate e-learning courses (Brown, 2005) and on learning performance in online training (Lim et al., 2007). Although all learners use self-regulated learning strategies to some degree, they differ in their awareness of strategic processes and their use of these strategies in pursuing their personal learning goals. Students who are motivated in their learning process and engaged in trying to learn and comprehend the material are more likely to persist in their work (Pintrich and De Groot, 1990). Accordingly, learning self-regulation is an important variable in our model to explain learner’s intention to continue in their learning process.

Figure 2. A conceptual model of e-learning continuance intention.
Proposition 1: The level of learning self-regulation is positively associated with the continuance intention.

Satisfaction has been established as the primary determinant of user’s intention to continue using an information system (Bhattacherjee, 2001). Broadly defined, satisfaction describes an affectionate feeling, either positive or negative, that is based on the subjective evaluation of the overall learning sensation (Chiu et al., 2007). Satisfaction is thus an emotional state which is determined by the level of accordance of user’s expectations with the actual use experience. Building upon consistent findings in the literature (Chiu et al., 2007; Lee, 2010; Limayem and Cheung, 2008; Roca et al., 2006), we suggest that learners who experience a higher level of satisfaction are more inclined to continue using an e-learning system.

Proposition 2: The level of learners’ satisfaction with the system use is positively associated with the continuance intention.

The literature on self-regulated learning indicates that self-monitoring and self-intervention in the learning process are causally linked to learner’s satisfaction (Zimmerman, 2008). Since self-regulated learning strategies increase the performance during the learning process, they are likely to mitigate the negative experiences that learners tend to have with the high level of control in e-learning (Piccoli et al., 2001). Hu and Hui (2012) provide empirical evidence for a positive relationship between learning engagement and perceived learning effectiveness in e-learning. Moreover, self-motivation has been shown to increase learner’s satisfaction with e-learning courses (Eom, 2011; Eom et al., 2006). A similar conclusion was derived in Paechter et al. (2010), who found that difficulties in maintaining learning motivation was negatively associated with course satisfaction. We therefore expect that a high level of learning self-regulation increases the satisfaction with the e-learning course.

Proposition 3: The level of learning self-regulation positively influences the level of satisfaction.

The literature on e-learning acceptance has analysed perceived usefulness and perceived ease of use as antecedents to use intention (e.g. Brown and Charlier, 2012; Cheng, 2011). However, while perceived usefulness has been found to impact satisfaction consistently in the post-acceptance state (Arbaugh, 2000; Sun et al., 2008), perceived ease of use seems to cease being important after initial acceptance (Karahanna et al., 1999). Perceived usefulness therefore is taken as the most proximal factor to influence the affective learning process. In e-learning, a system’s perceived usefulness is based on the learning results and work improvement associated with using the system. Furthermore, perceived usefulness has been associated to the learning content in terms of perceived relevance for work tasks (Burke and Hutchins, 2007; Lim et al., 2007). The relevance of the learning content is important for two reasons: First, adult learners will make their decision to continue or abort the course depending on the usefulness of the content for their work. Thus, non-continuance of e-learning systems may be less a characteristic of academic failure, but rather reflect the deliberate choice of employees (Brown, 2001; Tyler-Smith, 2006). In accordance with the findings in Bhattacherjee (2001), Limayem and Cheung (2008), and Lee (2010), we therefore expect a direct relationship between perceived usefulness and continuance intention. Furthermore, as suggested by Liaw and Huang (2013), we propose that perceived usefulness will positively affect learning self-regulation. The argument is summarized in Proposition 4:

Proposition 4: Learners’ perceived usefulness is positively associated with (a) their satisfaction, (b) their learning self-regulation, and (c) their continuance intention.

The IS continuance model projects that the degree of a user’s confirmation of expectations determines satisfaction and perceived usefulness of the information system (Bhattacherjee, 2001). Based on their prior expectations, users assess their actual benefits which they obtain from using the system. Consequently, the subsequent level of satisfaction depends on the degree to which the user’s expectations are confirmed or disconfirmed. Furthermore, confirmation will positively influence user’s perceptions of the system’s usefulness. Both positive relations between confirmation and satisfaction and confirmation and perceived usefulness respectively have been well established in the context of e-
learning (Lee, 2010; Limayem and Cheung, 2008; Roca et al., 2006). Hence, we propose the following:

Proposition 5: The learners’ extent of confirmation is positively associated with (a) their satisfaction and (b) their perceived usefulness of the system.

The need for a high level of personal interaction is an important characteristic of e-learning environments (Arbaugh, 2000). Interaction with other course participants reduces the feeling of isolation in e-learning courses and provides mutual support with the learning material and the learning system. In addition, the relationship between learner and instructor is important for encouragement and for guiding through the course materials (Piccoli et al., 2001). While early e-learning applications were strongly centred on the interaction between instructor and learner, interaction between learners and knowledge exchange has become an important feature of today’s e-learning environments. Previous studies support the important role of perceived learning interaction concerning satisfaction (Arbaugh, 2000; Paechter et al., 2010; Wu et al., 2010) as well as learning self-regulation in e-learning courses (Liaw and Huang, 2013). Satisfaction essentially depends on the promptness, quality and accessibility of the exchange of knowledge and information. For example, learners who perceive a high level of instructor and class interaction are more likely to experience a sense of learning community (Piccoli et al., 2001). Moreover, when collaborating with other learners and discussing course assignments, learners mutually construct knowledge, reflect on their learning process and assess their level of understanding of the material. An interactive learning environment can thus assist self-regulated learning strategies. In addition, we propose a direct link between learning interaction and continuance intention. Similar to perceived usefulness, interaction is likely to have a sustained influence on the continuance intention which is independent of the behavioral state.

Proposition 6: Learners’ perceived learning interaction is positively associated with (a) their satisfaction, (b) their learning self-regulation, and (c) their continuance intention.

Perceived course flexibility

The flexibility of e-learning regarding time (time of learning), space (collection of available content), place (location of learning), and technology (delivery devices and tools) has been proposed as an important characteristic of the learning environment (Piccoli et al., 2001; Tsai, 2009). Independence of time and place offers employees the opportunity to learn outside of predetermined hours of work, thus reducing the tension between learning and work time. Rather than being constrained in their learning behavior, learners are able to succeed in their personal learning style, thereby experiencing a higher level of satisfaction (Arbaugh, 2000; Eom et al., 2006; Sun et al., 2008). As additional aspect, we posit that a high degree of course flexibility with little restrictions on the individual learning behavior provides time for learners to engage and self-regulate their learning. Moreover, a flexible, time and space independent access to an e-learning system is likely to affect the intention to continue with the course independent of the level of satisfaction and learning self-regulation. We therefore propose the following:

Proposition 7: Learners’ perceived course flexibility is positively associated with (a) their satisfaction, (b) their learning self-regulation, and (c) their continuance intention.

Self-efficacy has been described as people’s perception about the capabilities they have available to succeed in particular tasks and thus has an important influence in personal motivation (Bandura, 1993). In the educational context, self-efficacy can be defined as the degree of confidence learners have in their capability to organize and execute the required learning activities (Brown, 2001). Learners with low self-efficacy tend to avoid learning situations which they believe exceed their abilities. Self-efficacy thereby determines how learners utilize their knowledge and skills during the learning process (their cognitive effort) and their ability of redefining their learning strategies (Bandura, 1993). As a result, self-efficacy beliefs induce learners to use self-regulative strategies and are therefore strongly associated with learning self-regulation (Bandura, 2001; Pintrich and De Groot, 1990; Zimmerman, 2008). Previous studies on the role of self-efficacy in e-learning determined a
positive link to the use of self-regulatory strategies (Eom, 2011; Hu and Hui, 2012; Liaw and Huang, 2013), learning effort and motivation (Garavan et al., 2010; Shea and Bidjerano, 2010), and improved learning performance (Brown, 2001; Sharma et al., 2007). Moreover, studies have examined self-efficacy beliefs towards computer environments (Cheng, 2011; Sharma et al., 2007; Wan et al., 2012). Learners who have a higher self-efficacy in using virtual learning environments are likely to feel more comfortable in e-learning courses and experience a higher usefulness and satisfaction (Sun et al., 2008). In contrast, learners who report a low self-efficacy for their interaction with computers may experience difficult and frustrating learning situations more easily (Sharma et al., 2007). We therefore expect that self-efficacy is positively related to both learning self-regulation and satisfaction.

Proposition 8: Learners’ self-efficacy is positively associated with their (a) learning self-regulation and (b) their level of satisfaction.

Learning goal orientation is closely connected to self-efficacy beliefs regarding the influence on learning behaviour. Individual differences in learning goal orientation have been suggested to influence the attitudes towards learning and, consequently, the learning process (Kozlowski et al., 2001). Learners who possess a high level of goal orientation will spend more time learning, engage more in self-regulated learning and demonstrate a higher persistence in their learning effort (Brown, 2001; Pintrich and De Groot, 1990). Furthermore, learning goal orientation was found to be positively related to intrinsic motivation of e-learning use (Cheng, 2011) and student’s learning achievements (Paechter et al., 2010). Recent research by Wan et al. (2012) supports the argument that the level of goal orientation is positively related to self-regulation in e-learning as illustrated in Proposition 9:

Proposition 9: Learning goal orientation is positively associated with learning self-regulation.

The organizational learning environment includes a variety of characteristics that influence the learning process, including social group norms (Cheng, 2011; Wan et al., 2012), learning support from seniors and peers (Brown, 2005; Lim et al., 2007), learning climate (Wu et al., 2010), and organizational climate (Yoo et al., 2012). Overall, the results suggest that a positive learning environment has a substantial influence on learners’ attitude towards using an e-learning system. While we recognize the number of different aspects of the organizational learning environment in the e-learning literature (e.g. Yoo et al., 2012), we focus on learning climate in terms of learning support as suggested by Brown and Charlier (2012). We define learning climate as organizational learning culture regarding perceived learning support and learning norms. Learning support is described by emotional and tangible support which is offered as recognition and incentivizing of learning achievements, provision of learning time, and assistance with the workload and learning tasks (Brown, 2005). Similarly, organizational norms refer to perceived expectations of colleagues and the social environment regarding the learning process and learning achievements (Wan et al., 2012). Conditional on providing learning resources and encouragement, a positive learning climate should be supportive for learning self-regulation. This argument has been supported recently in Cheng et al. (2012) who find a positive relationship between organizational support and individual learning motivation. Among the factors of the immediate work environment, workload has been suggested as additional important determinant of learning behaviour (Brown, 2005). As employees need to balance between the competing duties of learning and work, a high level of individual workload poses a strain on learning self-regulation (Brown and Charlier, 2012; Sitzmann, 2011). Furthermore, consistent with the findings of Brown (2005) and Colquitt et al. (2000), we propose that the intention to continue in the e-learning course is not completely mediated by learning self-regulation. Consequently, even when learners are engaged in their learning process, environmental factors are likely to enable or constrain their participation in the learning process. Our model therefore includes a direct link between environmental characteristics (learning climate and workload) and the continuance intention.

Proposition 10: Learning self-regulation is moderated by (a) the learning climate and (b) the workload.

Proposition 11: The learners’ continuance intention is moderated by (a) the learning climate and (b) the workload.
4 Conclusions

Understanding the factors behind employee’s completion rates of e-learning courses is becoming imperative as more and more organizations implement e-learning information systems in their corporate training. In order to continue using e-learning systems, learners need a distinct rationale and strong motivation (Welsh et al., 2003). In this study, we have developed a conceptual model to investigate how different factors influence the learner’s continuance intention in corporate e-learning courses. Drawing on self-regulated learning strategies from social cognitive theory, we extend the IS continuance model to account for individual learning processes. We thus advance prior research on e-learning continuance by formulating relationships between the most relevant contextual factors identified in the literature, the affective learning process, and the intention to continue using e-learning systems. We recognize that additional contextual factors might influence learning self-regulation and satisfaction during e-learning. For example, intellectual work demand (Wan et al., 2012) and fairness in learning interaction (Chiu et al., 2007) have been found to positively affect e-learning satisfaction and self-regulated learning. Furthermore, we ignored potential reciprocal relationships between contextual factors. Brown (2001) for instance detected a significant interplay between self-efficacy and performance goal orientation. However, for reasons of conciseness, we focus on the unidirectional relationships to discern the most direct effects leading to continuance intention (Wan et al., 2012). Another interesting concern is employee’s abortion of e-learning courses due to achieved learning goals. In organizations, learners may complete only a small part of the course which is relevant for their work and intentionally skip other course content (Welsh et al., 2003). Thus, to the extent that training becomes more personalized and fitted to the individual requirements, e-learning attrition may point towards increased efficiency in corporate training. Investigating the influence of organizational factors on e-learning continuance could be an additional opportunity for future research. While lack of managerial support was reported among the most important factors for e-learning attrition, organizational characteristics so far received only little attention in the literature. Finally, since e-learning systems are likely to be used during the work time, the intensity of use as indicated by the level of on-task attention (Gravill and Compeau, 2008) could add valuable insight into the different aspects of the continuance decision.

References


