An Exploratory Study of Personalization and Learning Systems Continuance

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Abstract

Learning systems are widely adopted by institutions worldwide in the new millennium. The challenge on utilization of learning systems is switched from users' pre-acceptance behaviours (whether they are likely to adopt learning systems) to post-acceptance behaviours (whether they will continue to use the learning systems). It is commonly expected that successfully adopted learning systems that have, at one time, been perceived as being useful and easy to use would likely achieve a high rate of user continuance. However, reality can be different as user continuance is often not as high as expected. The continuance of learning systems draws our attention because the investment in institutionalizing a learning system is huge. There is also a theoretical gap between technology acceptance and system continuance for which continuance behaviour cannot be explained by traditional technology acceptance models. This study extends a post-adoption model on habit and IS continuance to investigate the effect of personalization (which includes personal content management, personal time management and privacy control) on learning system continuance. Empirical results suggest that personalization has a positive influence on perceived usefulness and habit, but does not directly influence continuance intention.

Keywords: Information Systems Continuance Intention, Learning Systems, Personalization, Post-adoption behaviour, Habit.

1   INTRODUCTION

Advancement in computing, Internet and networking technologies has brought rapid growth in e-Learning in both academic institutions and private organizations. On the one hand, some learning systems have been proven to be a success. While some successful learning systems have been commercialized, a number of successful learning systems are even packaged as an Open Source model that is freely available for adoption and modification (Kanellopoulos et al. 2007). On the other hand, some learning systems have failed because they are not utilized by students and teachers even after successful adoption. Much more important than initial successful adoption, continued use of the learning system is the key to its success (Chiu & Wang 2008).

Often, learning systems provide a number personalization options for individual users. We define "personalization" in this paper using three characteristics in personal memorandum use (Burton, 1994): (1) personal content creation: the owner composes his own content on the memorandum informally, often without secretarial support; (2) privacy control: the owner may, or may not, share the memorandum with the others; and (3) daily activities support: the owner records his appointments, reminders and schedules on a memorandum. Burton (1994) claims that internal memorandum is one kind of personalization option among academics for learning and collaboration before the evolution of computer-mediated communication.

There are several factors that may provide clues to the success of continued use of learning systems. The problem of low continuance rate may possibly be due to the lack of personalization options meeting individuals' unique needs in order to build habits for automatic usage. McMullan & Cahoon (1979) suggest that every individual has tendency to focus only on personally useful ideas in a learning cycle. Providing extra personalization options to cater to individual learning needs is believed to give learners higher expectations of benefiting from the system (Tiwana & Bush 2005). Simply providing useful options to users does not ensure long-term continuance because awareness of usefulness also decreases with time (Jasperson 2005). Personalizing individual learning is believed to be the critical area in the new era of individualized learning (Christensen et al. 2008). Reflective practices in teaching and learning bring deep learning outcomes not only to students, but also to teachers who need to align learning outcomes, teaching and learning activities, as well as assessments (Biggs 2003).

Unlike most IS research, the focus of learning systems research places heavy attention on the purely pedagogical issues or the purely technical issues. Seldom do researchers in learning systems address the issues of post-adoption, particularly in continuance. This is confirmed by Vogel et al. (2007) who posit that mobile learning applications are encouraging in terms of learning enhancement but discouraging in terms of continued use. Limayem & Cheung (2008) advocate that teachers should develop students' habit of using learning systems so that usage becomes automatic and continued.

Continuance of learning systems is especially important in the context of reflective learning because learning systems provide different personalization options that support reflections. Reflection needs continuous effort from the learners and may take the form of regular lesson-learnt documents, blogging, and learning profiles, which are all personalized activities yielding unique deliverables. Personalization in learning systems has promising potential for building students' habit of frequent usage on a long-term basis. More frequent interactions with the learning system may eventually develop students' habit which accentuates continuance.

This exploratory study addresses the research question: How does learning system personalization enhance user continuance intention? The study adopts Limayem et al.'s (2007) model of habit and IS continuance intention as the theoretical foundation. Our hypotheses are then tested empirically using data collected during the summer holiday from a group of year 1 undergraduate students.

The remainder of this paper is organized as follows. The next section presents the literature review of the theoretical foundations that underlie our hypotheses in this study. The third section describes the research methodology to test our hypotheses quantitatively, followed by the results of data analysis in the fourth section. The fifth section offers the discussion, limitations and future directions of this study. Finally, the conclusions are followed by recommendations for further research.

2 LITERATURE REVIEW

This section first provides an overview of technology acceptance based on Davis' (1989) Technology Acceptance Model and its extensions. Next follows the theoretical background of IS post-adoption based on a number of papers which show the limitations of technology acceptance theories. Then the idea of IS continuance by Bhattacherjee (2001) follows. Finally, Limayem et al.'s (2007) work on IS Habit is discussed, which forms the foundations for this research.

2.1 Technology Acceptance

The first step towards IS success is initial user adoption. Extensive effort has been placed on exploring user behaviour in IS adoption. For example, the Technology Acceptance Model (TAM) (Davis 1989) is one of the classic theories in IS that identifies perceived usefulness and perceived ease of use as the factors determining intention to use an IS, and the subsequent mediation of the actual system use. TAM has been extended to include additional constructs in the direction of Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003). TAM has been replicated in educational contexts. It has been found that institutional technology acceptance of online learning can be consistently explained by TAM (e.g. Martins et al. 2004; Landry et al. 2006; Gibson et al. 2008). Features that students perceive as being useful, and which positively influence initial adoption behavior, have been reported in the literature (Landry et al. 2006).

Theories on technology acceptance have been well established in the past two decades to predict users' IS initial adoption. However, technology acceptance only explains the behaviour in the first four domains (knowledge, persuasion, decision and implementation) of the five-stage adoption decision process in innovation diffusion (Rogers 1995). TAM and its extensions, therefore, are unable to explain discontinuance after successful acceptance (Bhattacherjee 2001) and to predict continued usage of a new technology after initial adoption (Nathwani & Eason 2005). Attempts have been made to add different constructs to TAM. Adams et al. (1992) have pointed to a variety of factors, such as user experience, type or sophistication of system use, and other task and user characteristics that are possible mediators between perceived usefulness and perceived ease of use. Nathwani & Eason (2005) report a case on applying TAM to predict the continued usage of Wireless Application Protocol (WAP) services compared with Short Message Service (SMS). They have shown that a more complex relationship exists between perceived usefulness, ease of use, usage, and long-term continued usage that cannot be explained well by TAM and its extensions.

2.2 IS Post-Adoption Behaviour

The second stage towards IS success is users' post-adoption behaviour. Post-adoption behaviour refers to a number of behaviours after initial acceptance, such as continuance, routinization, infusion, adaption and assimilation (Rogers 1995; Limayem et al. 2007). Researchers understand the significance of post-adoption behaviour in IS success. Traditional research on IS post-adoption sees it as an extension of technology acceptance. TAM and its extensions have been widely incorporated in IS post-adoption research (Jasperson et al. 2005). For example, Saeed & Abdinnour-Helm (2008) suggest that IS usefulness is perceived as a critical factor that impacts IS post-adoption behaviour, while Lippert & Forman (2005) propose that perceived usefulness does have some relationship, but not strong, with the intention to utilize an IS. However, these theories are inadequate in explaining

users' psychological motivations after initial acceptance. For example, social factors (Thompson & Higgins 1991) are found to be a critical factor in influencing personal computer utilization in an organization. However, TAM does not adequately explain social factors and the impact they have on post-adoption behaviour. Instead, TAM explains only the attitude for acceptance based on individual users' perceptions. Therefore, a unitary model does not work for explaining both user acceptance and predicting future continuous usage (Agarwal & Prasad 1997).

When compared with the research in users' adoption behaviour, until recent years little research has been carried out to investigate users' post-adoption behaviour in a new dimension. Researchers are now trying to solve the theoretical gap between technology acceptance and post-adoption behaviour by separating post-adoption into a new domain. Some recent examples of post-adoption behaviour being studied are innovative IT use after acceptance (Ahuja & Thatcher 2005), users' experience with technology (Castan~eda et al. 2007) and cultural effects on technology utilization after acceptance (Lippert & Volkmar 2007). However, the fundamental questions of why users continue to use IS, and how to sustain continuance, have not been adequately addressed.

2.3   IS Continuance Intention

Addressing the problem on improving IS user retention during post-adoption, researchers have proposed a new field known as IS continuance. Hong et al. (2008) argue that IS users continue to maintain their relationship with IS because it either fulfils their needs or there are no alternative ways to accomplish their needs. Clearly, IS continuance is not as simple as an "extension of adoption behaviour" (Limayem et al. 2007). Possible clues to the different outcomes in acceptance and continuation are the underlying psychological factors that have not been examined in TAM. Bhattacherjee (2001) has identified user satisfaction, a construct missing in TAM and its extensions, that brings "disastrous" consequences in IS continuance if ignored.

Given successful user acceptance, retention becomes the key factor to IS success. Contemporary IS continuance research changes the traditional model incorporating pre- and post-acceptance factors into a purely post-acceptance IS model (Sørebø & Eikebrokk 2008). Based on consumer behaviour research, expectation-confirmation theory (Oliver 1980) is extended to explain IS continuance (Bhattacherjee 2001). Continuous IS usage can be compared to consumer repurchasing decisions. Two critical factors, namely satisfaction and confirmation (i.e., whether expectations from users regarding IS usage are fulfilled), are found to have strong positive influence on users' intention for IS continuation. Research in consumer loyalty and retention also suggests that personalization may build up continuance intention. Ball et al. (2006) point out that service personalization brings greater customer satisfaction and trust which, in turn, indirectly enhance loyalty. Personalization is found to be the important feature for online shoppers to repurchase (Agarwal & Venkatesh 2002; Pearson & Pearson 2008). Ferguson & Hlavinka (2008) also mention personalization as the key to driving participation in a loyalty programme.

Recently, considerable research has been carried out to investigate the continuance intention of students using learning systems (e.g. Chiu et al. 2007; Chiu & Wang 2008). The general findings from IS have also been verified and supported in educational contexts in that satisfaction is positively related to learners' intention to continue using Web-based learning systems. Further, system use is positively related to learners' satisfaction with Web-based learning (Chiu et al. 2007) and further factors have been proposed to have an influence on continuance intention. Hayashi et al. (2004) posit that computer self-efficacy is not a strong moderating effect of continuance intention. Chiu & Wang (2008) point to the importance of subjective task value in building loyalty to the learning system.

Although extensive literature is available, there still are some considerations that need to be addressed. First, non-response bias may have influenced the surveys (Bhattacherjee 2001). The nature of IS continuation research is longitudinal which requires prolonged study of users' usage of a newly adopted system. It is reasonable to assume that some users would eventually discontinue system use after the study period, but such dropouts are not reflected in the surveys. Another limitation of post-

adoption behaviour research is the lack of identifying the cause of confirmation and satisfaction. Discontinuance by less-than-satisfied customers is identified as a major threat faced by online service provides (Walczak & Parthasarathy 2006). More factors positively influencing continuation intention should be identified to give practical advice for system designers to increase user retention.

2.4　　IS Habit

IS habit is defined as "the extent to which people tend to use IS automatically because of learning" (Limayem et al. 2007). The idea of habit in IS continuance first emerged from consumer retention research in e-commerce. In e-commerce research, both online shopping habit and online shopping experience have been seen to have significant impact on satisfaction and, more importantly, to mediate repurchase intention (Khalifa & Liu 2007). IS continuance, both theoretically and practically, is similar to the e-commerce retention research. Theoretically, both the e-commerce consumer retention and IS continuation theories are an extension of the expectation-confirmation model (Oliver 1980). Practically, IS can be treated as a product or service, while IS users are similar to customers. Bhattacherjee (2001) has successfully shown that expectation-confirmation theory (Oliver 1980) can be applied to IS continuance to explain users' continuation behaviour. Confirmation and satisfaction are found to positively influence both online customer retention and IS continuous usage. This IS continuance model is extended by Limayem et al. (2007) by incorporating habit as a new construct. Limayem et al. (2007) tested two models on habit in their research: (1) habit as a direct effect to IS continuance usage, and (2) habit as a moderator to IS continuance usage. Both models are empirically supported. However, the second model in which habit moderates the link between intention and continuous usage is reported to have significantly higher explanatory power than the direct model. Research also indicates that the power of habit in influencing system use is greater than either behavioural intention or behavioural expectation as time passes (Venkatesh 2008).

Understanding which IS features develop habitual behaviours among users remains the key to promoting habitual use of IS in the long term. Personalization is possibly an answer to address IS habit development. In e-commerce research, personalization is reported as a feature to develop online shopper's habit to re-visit the online store. Zhang & Wedel (2009) report that personalized shopping list in online store creates dependency on shoppers who gradually develop re-purchasing habit with the online store. However, the effect of personalization in developing users' IS habit, and particularly in developing automatic use of IS, has not been thoroughly studied. Therefore, personalization is added as a new construct extending the model on habit and IS continuance. Our research model is discussed in the next section.

3　　RESEARCH MODEL

Limayem et al.'s (2007) model on habit as a moderator of IS continuance is the foundation of our research model. Students' intention of continued use of a learning system is similar to IS users' intention of continued use. On the one hand, students can opt for using traditional means of accessing subject content and then collaborating with their peers after initial acceptance; on the other hand, learning systems can be treated as a subset of IS. Therefore, theories of IS continuance are also potentially valid for learning system continuance.

Research of personalization in consumer behaviour provides some direction as to how personalization relates perceived usefulness, which influences satisfaction and habit. Ives & Mason (1990) postulate that personalization allows businesses to understand individual customers' needs, while information technology enables businesses to track individuals' buying habits and then provide personalized service. This is a competitive advantage because personalized customer service certainly addresses the self-esteem of customers better than the "standardized" service where every customer is treated identically. In the academic discipline, personalization also brings better satisfaction. The cognitive style defined as the "individual's preferred and habitual approach to organizing and representing

information" (Riding & Rainer 1998, Frias-Martinez et al. 2007) is believed to be a key element in personalization that improves user satisfaction in the digital library system. Christensen et al. (2008) offer a revolutionary prediction for personalized learning through information and communication technology that will gradually "disrupt" and replace traditional "standardized" teaching and learning activities within 20 years. All these findings suggest that personalization in learning systems: (1) is useful, (2) develops new user habits, and (3) enhances continuation.

This leads to our first hypothesis:

H1: Personalization is perceived as a useful feature in learning systems.

As suggested by Limayem et al. (2007), habit has a moderating effect on IS continuance. Developing users' habit in utilizing the IS can be a way of improving IS continuance. One of the ways to develop users' habit is through increasing the cost of switching to other systems. Hong et al. (2008) assert that switching cost has a direct effect on continuation intention, while habit has an indirect effect on continuation via influencing the switching cost. Research in e-commerce also shows that personalization and switching cost dominate online customers' repurchase decisions rather than price, which was originally believed to be the most important element in online retailing (Rodríguez-Ardura et al. 2008). In order to use the systems' personalization features, it is necessary for the user to configure the personal profile before using the systems for the first time. Setting up the personal profile initially in a system is time consuming, and this may be the first switching cost to discourage users from switching to a new system. Further, switching to a new system means that the user needs to re-configure all personal parameters, thus creating a significant exit barrier to the existing IS. Therefore, we form the second hypothesis on personalization and habit as:

H2: Personalization is positively associated with users' habits of learning system usage.

To collect evidence for verifying and supporting our first two hypotheses in the educational context, a pilot study in the form of a focus group meeting was held in Spring 2008 with year 1 undergraduate students majoring in Information Systems. The focus group meeting was conducted in a relaxed atmosphere where all members were encouraged to express their ideas in a formative and qualitative fashion. The theme of the meeting related to a new mobile learning system that contained options on teaching and learning with a high degree of personalization. These personalization options covered both teaching and learning needs, as well as individual users' needs in their daily social life.

Our preliminary findings provided encouraging support for the first two hypotheses and gave us some suggestions for refining our model. It was found that personalized content and personalized applications had a positive impact on learning system continuance intention. First, in the teaching and learning context, "standard" options treating every individual in the same way did not give any continuation intention. Students tended not to use the mobile applications unless it was made compulsory in assessment. They believed that the existing applications for teaching and learning did not utilize the mobile device, especially the personalization functions. Second, usage of personalized applications in daily social life continued since students reported that they used their PDAs mainly for personal purposes outside the classroom. Some students used the mobile device as their cellular phone. MP3 player, MSN Messenger, games and Google Map were the other popular applications used for personal purposes. When students were asked which applications they would like to have, they requested personalized applications that supported learning and teaching. For example, (1) a personal multimedia content editor that enabled them to record audio and video and make personal annotations; (2) a content editor than enabled them to personally create and annotate learning content; and (3) a personal learning diary integrated with a daily schedule.

Based on the feedback collected on the focus group meeting on the mobile learning system, it was concluded that personalization was an important component perceived to be useful in long-term utilization, which would favour continuance intention of a learning system. Therefore, we form the third hypothesis on personalization and continuation intention based on our preliminary observations and suggestions by Burton (1994):

H3: Personalization is positively associated with continuance intention on learning system usage.

We formed our research model by extending Limayem et al.'s (2007) model with personalization as a direct cause of perceived usefulness, habit and continuance intention. Figure 1 shows our proposed model with the inter-relationships between the constructs. Empirical testing of the proposed model was done in the summer of 2008 with a group of undergraduate students who served as mentors.
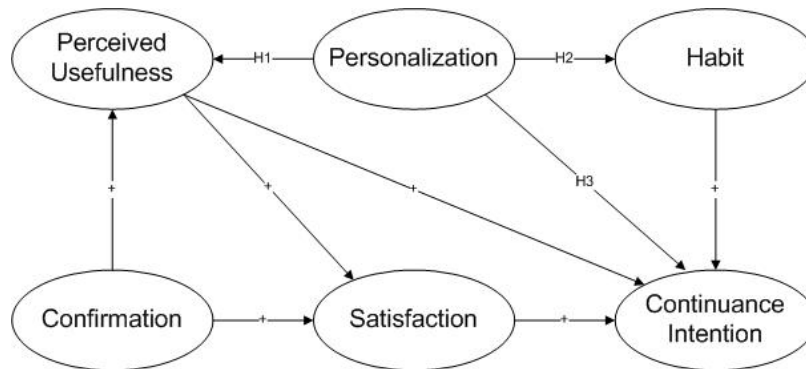

Figure 1.   Proposed Research Model extended from Limayem et al. (2007)

4   RESEARCH METHODOLOGY

We studied the effect of personalization options of Backpack, an extension of the Blackboard Learning Support System that is differentiated from Blackboard by its capability for mobility and personalization options on content management and time management (e.g. diary, to-do list, calendar, appointment reminder etc.). Specifically, personalization options in Backpack include (1) "New Notes" - a function that enables students to create new content; (2) "Capture" - a function that enables students to capture a document for personal annotation; (3) "Calendar" - a function that enables students to set up appointments and tasks; and (4) "Personal Course" - a function that enables students to create a new personalized course and manipulate personal content. Backpack also allows the owner to control who can access his contents which preserves individual privacy.

4.1   Data Collection

Questionnaires were administered in July 2008 to a group of 48 student mentors, who were first-year students in Information Systems and would be promoted to year 2. We chose Backpack as the system to study because it is clearly differentiated from the original Blackboard system by its support of personalization options. In fact, most of the students treated Blackboard as a system for retrieving course materials and submitting assignments. Another issue we considered was training support. As an extension of Blackboard (with which the mentors had at least one year of experience), it was obvious that they could easily master Backpack without much help and assistance. A total of 24 questionnaires were returned. However, 2 questionnaires were considered to be invalid: one due to incompleteness and the other because the respondent would discontinue studying in the coming semester and would therefore be unable to evaluate the intention to continue using Backpack. There were a total of 22 valid questionnaires that were analyzed in the study, giving a response rate of 46%.

4.2   Measurement

Perceived usefulness (Davis 1989), perceived ease of use (Davis 1989), confirmation (Bhattacherjee 2001), satisfaction(Sprang et al. 1996; Bhattacherjee 2001), continuance intention (Limayem et al. 2007), personalization (self-developed based on our definition of personalization) and habit (Limayem

2007) were measured in the self-administered questionnaire. These constructs were deemed to be appropriate as their validity is confirmed by wide adoption in the literature and similar studies.

4.3 Data Analysis & Results

The reliability and validity of our model are measured in Table 1 following the approach suggested by Limayem et al. (2007). The average variance extracted are considered satisfactory because the values are 0.773 or above. The composite reliability is generally satisfactory at 0.773-level except on Continuance Intention which is reported to be marginally satisfactory at 0.688.

Construct	Item	Loading	St. Error	t-value
Perceived Usefulness (PU)				
CR = 0.960	PU1	0.9556	0.0171	55.7507 ***
AVE = 0.889	PU2	0.9561	0.0219	43.7221 ***
	PU3	0.9165	0.0456	20.1393 ***
Personalization (P)				
CR = 0.872	P1	0.9533	0.0231	40.5921 ***
AVE = 0.774	P2	0.7226	0.2214	3.6925 ***
Habit (H)				
CR = 0.939	H1	0.9166	0.0449	20.3913 ***
AVE = 0.837	H2	0.9274	0.0407	22.7144 ***
	H3	0.9099	0.0335	27.0204 ***
Confirmation (C)				
CR = 0.917	C1	0.7538	0.2058	3.7281 **
AVE = 0.787	C2	0.9466	0.0262	35.5197 ***
	C3	0.9536	0.0175	54.3395 ***
Satisfaction (S)				
CR = 0.917	S1	1.000	1.0000	0.0000
AVE = 0.787				
Continuation Intention (CI)				
CR = 0.688	CI1	0.3862	0.3574	1.2167
AVE = 0.558	CI2	0.9445	0.0465	20.6998 ***

Table 1.   Table of CFA, CR and AVE Analysis for Reliability and Validity Measurement

Our model is tested with Partial Least Squares (PLS) with PLS-Graph version 3.00. PLS is adopted in this study because of its ability to specify relationships among the conceptual factors of interests and the measures underlying each construct, thus showing how well the relationships are and whether the hypothesis are empirically true with small to medium sample sizes (Limayem et al. 2007).

Our findings suggest that H1 and H2 are supported with significance at the 0.05 level and the 0.01 level respectively. However, H3 is not supported due to its weak significance. Figure 2 shows the path analysis of our model.
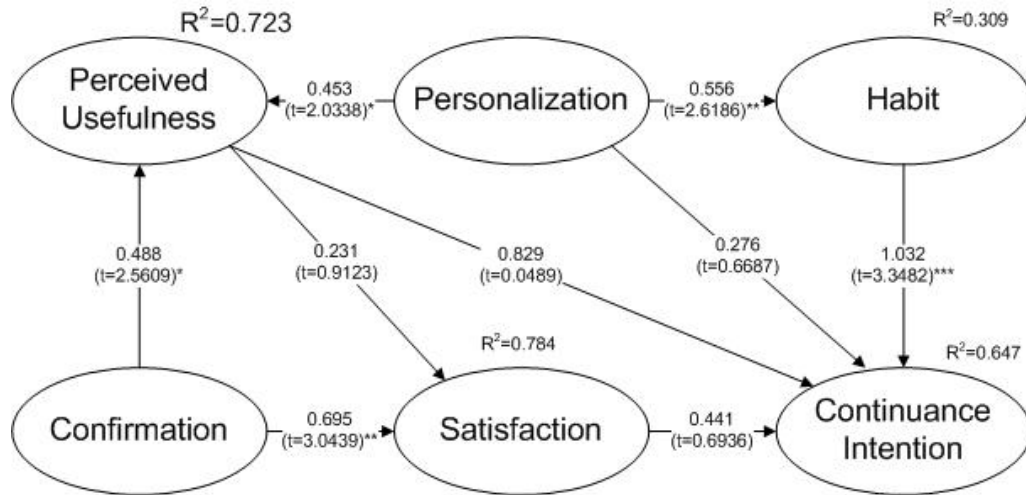
Figure 2.   *Path Analysis of our model (*: Significance at 0.05 level, **: Significance at 0.01 level, ***: Significance at 0.001 level)*

5   DISCUSSION

In this research, we introduce personalization as a new construct in the extension of Limayem et al.'s (2007) framework on IS habit and continuance intention. We first hypothesize *H1: personalization is perceived as a useful feature in learning systems.* Empirically, H1 is supported. Qualitatively, students also mentioned in written feedback that they would perceive personalization options, especially privacy control, as important features that should be emphasized and improved. Based on both empirical and formative evidence, our results support H1.

We then hypothesize *H2: personalization is positively associated with users' habit on learning system usage.* Empirically, H2 is supported with high significance. To generalize the findings, more extensive longitudinal research is to be carried out in the next steps to discover the relationship between personalization and habit in learning systems continuation with a sufficiently large population.

Finally we hypothesize *H3: personalization is positively associated with users' continuance intention on learning system usage.* H3 is, however, rejected due to its weak significance. Rather than studying the direct relationship between personalization and continuance intention, the focus of next steps should be placed on investigating the indirect relationship between personalization and other constructs that indirectly lead to continuation intention, such as confirmation and satisfaction.

In summary, personalization does not directly increase users' intention to system continuance. In fact, personalization directly influences habit. Learning system users perceive the ability to personally annotate, create, edit learning content, and to keep track of daily activities through a calendar as useful, and have a high demand for privacy.

6   LIMITATIONS OF THIS RESEARCH

The major limitation of our research is the small sample size. IS continuation research needs a relatively large population, but our population is too small to generate accurate and satisfactory results. The small sample size makes accuracy data analysis less than satisfactory for all mature data analysis tools such as PLS and LISREL. However, at the current stage, this situation is unavoidable because the new Backpack system is not yet institutionalized.

The second limitation of our research is time setting. Research in IS continuance is best conducted as a longitudinal study because IS continuance can only be observed as a long term effect. Data collection

of Limayem et al. (2007) was done throughout a whole semester (3 months) in three rounds. Limayem & Cheung's (2008) data collection was done in two rounds at 4-week intervals.

The third limitation of our research is the teaching and learning environment. While Limayem et al. (2007) and Limayem & Cheung (2008) adopted a real teaching and learning environment in university for testing, we could only perform the study in a "mock" teaching and learning environment. Instead of supporting a regular course in a semester, our system was used to support a "virtual" course on mentor training. There are no standard course materials and assessment tasks in this "virtual" course, which makes a difference with the actual learning environment.

The fourth limitation is that our research is done only with undergraduate students. Limayem et al. (2007) argue that usage conditions in institutions may be different from that of other organizations. We agree that usage behaviour of undergraduate students may be different from that of postgraduate students who are normally in the workforce. It is clear that more research is needed before we generalize the results to other organizational settings.

7   CONCLUSIONS

Analyzing the inadequacy in existing pre-acceptance and post adoption behavior research, we are attempting to extend the existing pre-acceptance and post-adoption model with more explanatory factors addressing users' behaviour. We discovered that personalization might be a factor that enhances IS habit development and continuance intention through literature review and exploratory study.

The goal of our study was to evaluate how personalization affects pre-acceptance behaviour and continuance intention of a learning system. Limayem et al.'s (2007) model on habit and IS continuance was used as the foundation of the research. By extending it with a new construct on personalization and applying it in the context of learning systems, we hypothesized that personalization is a predictor of perceived usefulness, habit and learning system continuation intention.

An empirical study on a new learning system, Backpack (designed with extensive personalization features), was carried out in the summer of 2008 to evaluate how personalization affects learning systems continuance intention. Data were collected from year 1 undergraduate students majoring in Information Systems. We identified personalization as a critical component that positively affects IS habit and perceived usefulness. However, we found no direct strong relationship between personalization and continuance intention.

Our results indicate some directions for future work. First, the reliability can be improved if we conduct a more extensive survey with a larger population size (e.g., N=150). The second piece of information that helps to refine our work is the rejection of H3 empirically. It shows that the model should be refined to include the indirect effect of personalization and continuation intention. For example, a possible new hypothesis can be "personalization is a moderator between habit and continuance intention" as a competing model to our existing model.

Next steps include a comprehensive longitudinal study with two groups of students (undergraduates and postgraduates) across different disciplines in the University. Empirically, we expect to administer online questionnaires with 4-week intervals over the semester. Formatively, we expect to collect feedback through focus group meetings with students of different faculties over the semester.

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