

Determinants of Intent to Continue Using Online Learning: A Tale of Two Universities

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Abstract

This paper examines the determinants of intent to continue using online learning. The success of online learning programs depends not only on students' satisfaction but also their intent to continue using it. Unlike the recent research under this topic, its antecedent model consists of the following three components that affect learners' intent to continue using online learning: perceived social ability, online learning readiness, and perceived usefulness. Eight hundred and seventy-two samples collected from students in online business classes from two universities in the United States and South Korea were analyzed using factor analysis, structural equation model techniques, and independent sample t-statistics. Perceived social ability, online learning readiness, and perceived usefulness are significant predictors of intent to continue using online learning in both groups. However, there is a significant difference between these groups in terms of online learning readiness and perceived usefulness of online learning systems.

Keywords: Intent to continue using online learning, e-learning, Information communication technology, Social ability, Online learning readiness

Introduction

As more university systems leverage advanced technologies to offer online courses, understanding the drivers of student satisfaction and student learning outcomes has become increasingly important. This particular research investigates a crucial and timely issue on student intent to continue using online learning. Online education in this study is defined as the delivery of course content to students via Internet technology using web-based software. The purpose of this study is to synthesize theories of social motivations with the technology acceptance model to examine student intent to continue using online learning. It is predicted that the perceived social ability will directly influence perceived usefulness and online learning readiness, and that all three of

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these variables will have direct impacts on student intent to continue using online learning. Variations in these relationships are further investigated by comparing group differences between Korean and U.S. students. A path analysis is employed to decompose correlations into different pieces for interpretation of effects and to examine the connections among perceived social ability, perceived usefulness, online

learning readiness, and their effects toward intent to continue using online learning. The hypotheses are tested using data collected via survey from one thousand Korean business students and four hundred U.S. business students in two universities.

Flexibility of time and place for learning may be important benefits of online education. Learning activities can be extended via the Internet and information communication technology without relying on traditional face-to-face classes. Social interaction is an integral condition for learning and such interaction is mediated by technology in the online environment. How students experience the social aspects of online classes, and how they use technology to foster social interaction are important to their success and intent to continue using online learning.

Literature Review

How interaction is related to learning is described in Wenger's (1998) social theory of learning. According to the social theory of learning, students learn by making sense of their experiences. Interaction within community promotes learning. Researchers have explored the social nature of online learning in a variety of ways. These include student perceptions towards sense of presence (Picciano, 2002) and the relationship between students' feelings toward sense of belonging and the amount of social interaction (Rovai, 2002). Social presence, social navigation, and social connectedness are important factors in explaining social interaction in online learning environments (Laffey, Lin, & Lin, 2006). This finding is consistent with previous studies that find positive relationships between social interaction and learning satisfaction in online learning environments (Picciano, 2002; Rovai & Barnum, 2003; Yang, Tsai, Kim, Cho, & Laffey, 2006). Failure to achieve a sense of community and feelings of isolation negatively affect acceptance of online classes and student satisfaction (Vonderwell, 2003).

Perceived Social Ability

Social ability is defined as the degree of an individual's capacity to associate with peers and to use the members and tools of social context to achieve something of value (Laffey et al., 2006). It explains how students experience and perceive social interaction while they communicate with other members and undertake tasks in online learning environments. Social ability was a significant predictor for students' online learning acceptance and satisfaction (Laffey et al., 2006). Students' participation and interaction are somewhat determined by how well the tools support their social needs while achieving their learning goals. Social actions have been examined in online learning environments focusing on the creation and maintenance of virtual learning communities (Riva, 2001).

Students who have higher social ability tend to engage in discussion more often. This ability has been shown to impact students' online learning process and outcomes. The construct of social ability is explicated by responding to an instrument measuring social presence, social navigation, and social connection in online learning environments (Laffey et al., 2006). Social navigation is a construct representing an awareness of what others are doing as a primary guide for one's own action. This means using information about the action of others to guide action and decision making. Thus, the capability of students to observe the footprints of others before making decisions has the potential to impact the efficiency and effectiveness of online learning and contribute to a greater sense of community.

Researchers report a variety of benefits derived from a strong sense of community. A sense of classroom community is moderately and positively related to the number of messages posted to discussion boards (Rovai, 2001). The comments posted by students provide evidence that more interaction and participation promote sense of community in online classes. This increased sense of classroom community is attributed to how interaction and involvement lessen psychological

distance of online students in online class activities. The lack of social interaction is a factor that depresses online learning acceptance and student satisfaction in online classes (Arbaugh, 2000). Therefore, students need to feel involved and develop relationships with other students in online classes.

Technology Acceptance Model

Online education at a basic level is characterized by the separation of instructors and students in space and/or time, the self-control of learning by students rather than the instructor at a distance, and non-contiguous communication between students and the instructor, mediated by communication tools and web technology. One of the primary goals of using online learning systems is to support and improve student learning. Like any information system, user acceptance and satisfaction with online learning are important primary measures of system success. The technology acceptance model (TAM) suggests that user acceptance of technology is driven by users' beliefs about the consequences of that usage (Davis, Bagozzi, & Warshaw, 1989). In particular, users embrace new technology when their perceived ease of use and the usefulness of the technology are positive. Y. Lin (2005) examined student satisfaction and technology adoption in online classes. The result shows that student intention to use technology impacts their learning outcomes in the online class environment. Besides perceived ease of use and perceived usefulness factors, other measures related to acceptance or intention to accept online learning systems are perceived enjoyment (Lee, Cheung, & Chen, 2005), perceived credibility (Ong, Lai, & Wang, 2004), computer self-efficacy and social support (Thatcher, Loughry, Lim, & McKnight, 2007), and cognitive absorption (Saadé & Bahli, 2005).

Online Learning Continuance Intention

From the previous sections, the Laffey et al. (2006) study already investigated the impacts of social ability (ability and navigation) and sense of community (connectedness and presence) at a fine level of detail. Additionally, applying TAM to online courses and online learning has been extensively studied to determine technology adoption and student satisfaction. In recent years, only a few researchers have addressed intent to continue using online learning.

The antecedent model of web-based learning continuance (Chiu, Sun, Sun, & Ju, 2007) consists of four components of subjective task value (attainment, utility, intrinsic, and cost) and three dimensions of fairness (distributive, procedural, and interactional) that affect learners' satisfaction. They argued that satisfaction and four distinct components of subjective task value influence learners' intention to continue using Web-based learning. Using data collected from 202 learners of a Web-based learning program designed for continuing education, the results showed that utility value and satisfaction play significant roles in shaping learners' intention to continue using Web-based learning. A similar study examines the integrated influence of fairness and quality on learners' satisfaction and Web-based learning continuance intention (Chiu, Chiu, & Chang, 2007). This research theorizes that the three dimensions of quality (information, system, and service) and the three dimensions of fairness (distributive, procedural, and interactional) affect learners' satisfaction. In turn, satisfaction and the three dimensions of fairness will influence learners' intention to continue using Web-based learning. Employing data garnered from 289 learners of a Web-based learning service, the results indicate that procedural fairness and satisfaction play significant roles in shaping learners' intention to continue using Web-based learning. Shin and Chan (2004) present a study that investigates the effects of online learning on distance education students in an open university context. The analysis of data collected from 285 online learning students reveals multifaceted relationships between students' engagement in online learning, their perceptions of institutional presence, and the three learning outcome variables: student learning achievement, satisfaction, and intent-to-persist.

Investigating the efficacy of intent to continue using online learning is an important area of research. A much more in-depth and nuanced examination of this phenomenon is needed. This new research integrates the social theory of learning and TAM into a model to investigate other factors related to intent to continue using online learning.

Cross-cultural Contexts

Knowledge construction takes place in social and cultural contexts and is mediated by sub-cultures. Students from cultures where the teacher is regarded as the fountain of knowledge hesitate to interact and communicate with teachers. Students from such cultures may not value their own opinions, may be reluctant to share their ideas with others voluntarily, or may be reluctant to make social interactions with peers and instructors. They tend to be passive learners. On the contrary, American students tend to be active learners. While interacting with peers and instructors in online classes, students explore their possible relationships within cultural dimensions. The interaction of online learning environments is a social function even in cross-cultural contexts (Osman & Herring, 2007; Srite, Galvin, Ahuja, & Karahanna, 2007). Researchers have employed cultural parameters in their studies of online education (Srite, Thatcher, & Galy, 2008; Zaharias, 2008). Most studies in this field adopt Hofstede's framework and cultural dimensions.

Culture refers to values, traits, beliefs, and behavioral patterns that may characterize a group of people. It reflects a composite of human nature and personality, i.e., values and traits inherited or learned by individuals (Hofstede, 2001). Hofstede's early work consists of four dimensions to differentiate cultures: individualism-collectivism, power distance, uncertainty avoidance, and masculinity-femininity (Hofstede, 1984). (1) Societies and their culture differ in their emphasis on individualism and collectivism. Individualism describes societies in which the ties between individuals are loose, such as the United States, the United Kingdom, and Canada, and people are expected to both take greater initiative and work on their own. In collectivism, people are integrated into strong and cohesive groups that work toward a common goal and tend to focus on the needs of the group over their personal needs, such as in Korea, China, and Japan. (2) Power distance suggests that title, rank, age, and seniority are important in large-power-distance countries. In large-power-distance countries (e.g., Singapore and Malaysia), people want direction and formality is important, while a consultative style of leadership and informality are the norm in small-power-distance countries (e.g., United States and United Kingdom). (3) Uncertainty avoidance reflects a country's comfort with uncertainty. Strong uncertainty avoidance countries (e.g., Japan and South Korea) resist change while weak uncertainty avoidance countries (e.g., United States and Australia) view conflict as positive aspects, encourage risk taking, and expect innovation. (4) Masculinity-femininity refers to the distribution of gender roles across cultures. Hofstede later added a fifth dimension: long-term orientation. (5) People in long-term oriented countries (e.g., China and Japan) value attitudes and actions that affect the future, such as thrift and saving face at the group level. In short-term oriented countries (e.g., Canada and United Kingdom), people's values are linked to the past and present such as respect for tradition and protecting face at the individual level (Ting-Toomey, 1999).

A few studies have examined both technology acceptance and national culture (Gallivan & Srite, 2005; Srite & Karahanna, 2006). Furthermore, online user preferences might be affected by cultural characteristics or social responses as mentioned above. Thus, a group difference in online learning is investigated because the social nature of learning is important to the learning experience and learning outcomes.

Research Hypotheses

A social theory of learning and the technology acceptance previously described are adapted to the context of online education to identify an interesting gap in current understanding. An empirical

model in this section is designed to address the intent to continue using online learning. To examine the intent to continue using online learning, six hypotheses are proposed based on two key antecedents: (1) intrinsic motivator, perceived social ability (PSA), and (2) extrinsic motivators, online learning readiness (OLR) and perceived usefulness (PU). Given the increasing interest on culture and online education, the last hypothesis tests whether a group difference exists in all four factors. The argument is built along with supporting citation or evidence, and then the hypothesis is presented in each paragraph. Accordingly, the research framework is presented in Figure 1. Questions for the survey are developed from this figure and the full survey is in the Appendix.

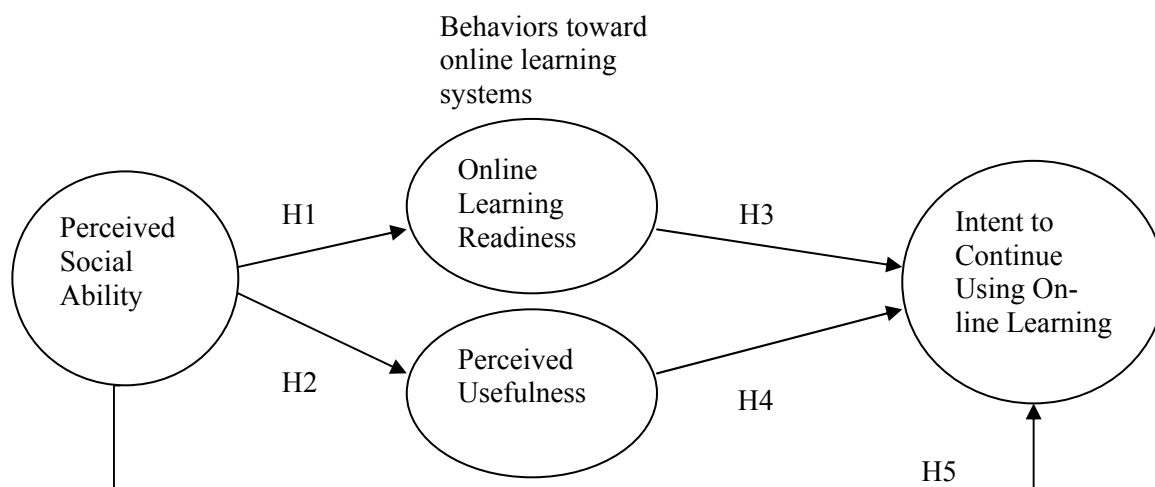


Figure 1: Research framework and structural model

From the previous literature review, social ability was a significant predictor for students' online learning acceptance and satisfaction (Laffey et al., 2006). Social ability can demonstrate and promote the usefulness of the online learning systems. Various kinds of meaningful interaction in social constructivism influence online learning (Woo & Reeves, 2007). In addition, peer pressure positively influences participation intention to online discussion (Yang, Li, Tan, & Teo, 2007). Social ability such as interaction, bonding, networking and communication encourages people to use online learning systems (Appendix, PSA 1-3). Potential users of online learning systems may feel that adopting the online learning system requires minimal effort if others in their social environment say that the online learning system is easy to use. Social ability may shape individuals' confidence or ability to be ready for the challenge of online learning. Online learning readiness questions are adapted from existing research on learner readiness for online learning: scale development and student perceptions by Hung, Chou, Chen, and Own (2010) and students' readiness in using mathematics online portal, a preliminary study among undergraduates by Chiou, Mohd Ayub, and Luan (2010). Thus, online learning readiness (OLR) is dependent on student proficiency, knowledge, and ability to become skillful in using the online learning system (Appendix, OLR 1-4). Consequently, perceived social ability is expected to yield a positive impact on online learning readiness.

Hypothesis 1 (H1): Perceived social ability (PSA) will have a positive effect on online learning readiness (OLR).

Questions reflecting completion of tasks, productivity, and effectiveness from the existing technology acceptance research (Davis et al., 1989) are adopted to measure perceived usefulness

(PU). The underlying idea of perceived usefulness is derived from the ability to expedite completion of educational and academic tasks and to enhance productivity and effectiveness in accomplishing academic tasks (Appendix, PU 1-5). Social interaction, bonding, networking, and communication can influence a person's belief that online learning systems will help in performing a task more easily, quickly, and with quality, productivity and effectiveness.

Hypothesis 2 (H2): Perceived social ability (PSA) will have a positive effect on perceived usefulness (PU) toward online learning.

In addition, PU is one of the main factors that influence users' acceptance behaviors (Davis, 1989). By the same token, online learning readiness and perceived usefulness predominantly determine the intent to continue using online learning when users expect, recommend, and intend to continue using as a result of satisfaction (Appendix, ICUOL 1-4). Perceived usefulness is the degree to which an individual believes that using a particular system will enhance his or her job performance. The relevant findings indicate that perceived credibility, perceived ease of use, and perceived usefulness affect learners' intention to accept online learning systems (Ong et al., 2004). Computer self-efficacy and social support have significant impact on user acceptance of new Internet applications such as online learning systems (Thatcher et al., 2007). Cognitive absorption, perceived ease of use, and perceived usefulness affect students' behavioral intention to accept Internet-based learning systems (Saadé & Bahli, 2005). Therefore, student's online learning readiness influence their intent to continue using online learning.

Hypothesis 3 (H3): Online learning readiness (OLR) will have a positive effect on intent to continue using online learning (ICUOL).

Pertaining to the findings in the above paragraphs, when users perceive the usefulness of online learning, the likelihood for intent to continue using online learning increases.

Hypothesis 4 (H4): Perceived usefulness (PU) will have a positive effect on intent to continue using online learning (ICUOL).

Social connection or sense of community is a feeling that members have of belonging: a feeling that members matter to one another and to the group. Investigation of the relationship between students' academic motivation and social ability in online learning environments suggests that perceived social ability affects students' behavioral intention to accept online learning systems (Laffey et al., 2006; Yang et al., 2007). Student satisfaction with online courses increases when they feel involved and have strong relationships with members in the learning community (Robinson & Hullinger, 2008). Students who have more interaction with their peers as well as their instructors have high degrees of sense of community, and this influences them to have high levels of satisfaction in their online classes (Dawson, 2006). Online students who have a strong sense of community feel less isolated and have greater satisfaction with their academic programs (Rovai, 2002). As a result, social interaction, bonding, networking, and communication in the online learning will lead to intent to continue using online learning.

Hypothesis 5 (H5): Perceived social ability (PSA) will have a positive effect on intent to continue using online learning (ICUOL).

Finally, it is important to consider culture and sub-cultures when facilitating online learning for international markets (Morse, 2003; St. Amant, 2005) because differences in culture impact expectations about teaching and learning (Bodycott & Walker, 2000). In general, Asian cultures highly value social ability in the sense that business people generally make friends before they make business partners or do business. They use social skills or people skills to find out whether the other side is trustworthy or dependable. However, Asian people seem to view online learning as inferior to traditional classroom learning. An impersonal and asynchronous learning environment creates barriers to needed social interactions and knowledge delivery. Hence, acceptance of

online learning and satisfaction may be influenced by individuals' beliefs toward social ability. In other words, culture may influence perceived social ability and intent to continue using online learning. This hypothesis is rooted in the purported nature of different levels of social ability in many countries. Cultural values influence technology acceptance and use, and, specifically, individualism-collectivism directly influences the use of computer-based learning systems (Srite et al., 2008). There are individual differences between the U.K. and Chinese students in terms of attitudes toward computer-based learning (Graff, Davies, & McNorton, 2003). In addition to individualism and collectivism characteristics of culture discussed previously, individuals from cultures with low power distance indicators rate the online learning system's usability higher than individuals from high power distance cultures (Downey, Wentling, Wentling, & Wadsworth, 2005). Furthermore, people from industrialized countries also are less likely to avoid uncertainty compared to people from developing countries (Hofstede, 2001). Therefore, westerners embrace new technology and learning approach with better perceptions of the readiness and the usefulness. These previous findings lead to expectation of different path coefficients in the model using the U.S. data versus those using the Korean data. In light of cultural influence while controlling for age and experience with online learning factors, a group difference that may affect perceived social ability, online learning readiness, perceived usefulness, and intent to continue using online learning between South Korea and the U.S. students is explored in order to better understand the diverse user populations.

Hypothesis 6 (H6): There is a group difference on perceived social ability (PSA), online learning readiness (OLR), perceived usefulness (PU) and the intent to continue using online learning (ICUOL).

In summary, the following hypotheses are generated for verification based on the discussion raised above:

- H1: Perceived social ability (PSA) will have a positive effect on online learning readiness (OLR).
- H2: Perceived social ability (PSA) will have a positive effect on perceived usefulness (PU) toward online learning.
- H3: Online learning readiness (OLR) will have a positive effect on intent to continue using online learning (ICUOL).
- H4: Perceived usefulness (PU) will have a positive effect on intent to continue using online learning (ICUOL).
- H5: Perceived social ability (PSA) will have a positive effect on intent to continue using online learning (ICUOL).
- H6: There is a group difference on perceived social ability (PSA), online learning readiness (OLR), perceived usefulness (PU) and the intent to continue using online learning (ICUOL).

Research Methodology

Survey and Sample Characteristics

A questionnaire was developed to determine student perceptions towards PSA, OLR, PU of online classes, and ICUOL. Two web-based surveys were conducted with business students from South Korea and the U.S. in 2010 (Table 1). The students in the two survey groups were enrolled in pure e-learning courses. None of their courses were based on the blended learning mode. All business courses in this survey use similar information communication technology to deliver or support education. The same or similar instructional approach avoids its influence on the participants' online learning experience. Furthermore, there is a difference in the reported number of

participants and the number of collected valid responses in both survey groups due to the varying class size in each university and control variables. Of 1,000 participants in Korea, there are 582 valid cases and 290 valid cases out of 400 participants in the U.S. These valid cases include only students 23 to 39 years of age who have taken 5 or more 100 percent online business courses. Thus, age and the level of experience with online learning are control variables. In addition, to limit the findings to certain groups of subjects, these two control variables are included in the estimation in order to test the relative impact of independent variables without their influence.

Country		KOREA	THE U.S.	TOTAL
Number of valid cases		582	290	N = 872
Sample characteristics		Frequency (percentage)	Frequency(percentage)	
Gender	Male	340 (58.4)	152 (52.4)	492 (56.4)
	Female	242 (41.6)	138 (47.6)	380 (43.6)
Age*	23-29	310 (53.3)	151 (52.1)	461 (52.9)
	30-39	272 (46.7)	139 (47.9)	411 (47.1)
Online Experience*	Completed 5+ online courses	58.2% of 1,000	72.5% of 400	
NOTE: *Age and educational experience in online business courses are control variables.				

The Appendix displays all questions constructed and prescribed from the research hypotheses. The principles of scale design and development are well documented, and many books describe methods of item selection, content validation, criterion validation, construct validation, reliability assessment, scaling, and analysis (e.g. Nunnally & Bernstein, 1994). Although various rating scale options of measuring student perceptions and intent are reported by many studies, the degree of variability among the most commonly used measurement scales deter the need to rely on a single superior measurement scale. Selected researchers who employ a nine-point scale to measure service providers' personality and customer perceptions of service quality between gender groups in Taiwan are N. P. Lin, Chiu and Hsieh (2001), also Kettinger and Lee (2005) to measure service quality of information systems between two U.S. universities. However, Drennan, Pisarski, and Kennedy (2005) used a seven-point scale in measuring student attitudes toward online learning acceptance between two groups (pre-test versus post-test) in Australia. Tsai, Kim, Liu, Goggins, Kumalasari, and Laffey (2008) also used a seven-point scale to measure student perceptions of social ability and usefulness of online learning in the US. Those adopting a five-point scale are Chiou et al. (2010) who measure student readiness of online learning in Malaysia, Ho (2009) measuring student perceptions of information system quality and technology readiness in Taiwan, and Hung et al. (2010) estimating student perceptions of online learning readiness between two groups (senior versus freshman students) in Taiwan. The sensitivity of data in measuring student perceptions and intent in many different cultural contexts poses a problem for the adoption of a single superior scale due to limited data comparability (Bartoshuk, Fast, & Snyder, 2005; Dawes, 2008; Garland, 1991). For this reason, different researchers have employed different scales in their measurement of student perceptions and intent as one size does not fit all. Therefore, a five-point Likert scale is used in this study to be consistent with research in a different cultural context. Hence, the response options in this research are (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree.

Factor Analysis and Internal Consistency Reliability Test

The validation of a scale is crucial. Evidence of the effectiveness of a scale for its purpose is examined. Bartholomew (1996) and Basilevsky (1994) provide a comprehensive description of scale development and validation. Many methods of validation rely heavily on the analysis of inter-item or inter-scale correlations. Construct validity embraces a variety of techniques for assessing the degree to which an instrument measures the concept that it is designed to measure. This may include testing dimensionality and homogeneity. Construct validation is best seen as a process of learning more about the joint behavior of the items and of making and testing new predictions about this behavior. Factor analysis is an often used key technique in this process. Therefore, factor analysis with a varimax rotation procedure was employed to identify underlying predictors of intent to continue using online learning. Four factors based on an eigenvalue cut-off of one were obtained in Table 2. The sums of squared loadings from the four components: perceived social ability (PSA), online learning readiness (OLR), perceived usefulness (PU), and intent to continue using online learning (ICUOL) have the cumulative value of 79% in explaining the total variance of the data.

ITEMS	FACTOR LOADINGS	EIGENVALUE	EXTRACTED VARIANCE	CONSTRUCT NAME
PSA1	0.892	2.756	17.228	Perceived Social Ability
PSA2	0.915			
PSA3	0.878			
OLR1	0.827	3.077	19.230	Online Learning Readiness
OLR2	0.824			
OLR3	0.806			
OLR4	0.867			
PU1	0.788	4.141	25.882	Perceived Usefulness
PU2	0.822			
PU3	0.849			
PU4	0.862			
PU5	0.763			
ICUOL1	0.834	2.757	17.231	Intent to Continue Using Online Learning
ICUOL2	0.687			
ICUOL3	0.847			
ICUOL4	0.602			
Total			79.571	
The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.927 Bartlett's Test of Sphericity, Chi-square = 11345.633, DF = 120, Significance = 0.000 Extraction: Principal Component Analysis, Rotation: Varimax with Kaiser Normalization				

To test the appropriateness of factor analysis, two measures-- the Kaiser-Meyer-Olkin (KMO) and the Bartlett's test-- were used. The KMO overall measure of sampling adequacy (MSA) of 0.927 falls within the acceptable significant level at $p < 0.001$. The Bartlett's test of sphericity of

11345.633 at 120 degree of freedom shows a highly significant correlation among the survey questions at $p < 0.001$.

Internal consistency reliability is a measure of how well a test addresses different constructs and delivers reliable scores. A more comprehensive description of scale development and reliability is given in Dunn (1989). Three main reliability tests are split halves, Kudar Richardson, and Cronbach’s alpha tests. These tests check that the results and constructs measured by a test are correct, and the exact type used is dictated by subject and size of the data set and responses. However, the most common method for assessing internal consistency is Cronbach’s alpha. This form of intra-class correlation is closely related to convergent validity, i.e., the extent to which the items in a scale are all highly inter-correlated. For example, in a series of questions that ask the subjects to rate their response between one and five, Cronbach’s alpha gives a score between zero and one, with 0.7 and above being reliable. The test also takes into account both the size of the sample and the number of potential responses.

The survey questions in this research are in both English and Korean. The Cronbach’s alpha test is preferred in this study due to the benefit of averaging the correlation between every possible combination of split halves and allowing multi-level responses. For example, the survey questions are divided into PSA, OLR, PU, and ICUOL. The internal consistency reliability test provides a measure so that each of these particular constructs is measured correctly and reliably. The results of internal consistency reliability tests are reported in Table 3: PSA (3 items, $\alpha = 0.924$), OLR (4 items, $\alpha = 0.881$), PU (5 items, $\alpha = 0.921$), and ICUOL (4 items, $\alpha = 0.914$).

Table 3: Results of internal consistency reliability tests for survey questions

ITEMS	CONSTRUCT NAME	AGGREGATED DATA		KOREAN DATA		U.S. DATA	
		Corrected item-total correlation	α	Corrected item-total correlation	α	Corrected item-total correlation	α
PSA1	Perceived Social Ability	0.827	0.924	0.873	0.940	0.742	0.893
PSA2		0.872		0.892		0.832	
PSA3		0.835		0.842		0.797	
OLR1	Online Learning Readiness	0.638	0.881	0.612	0.879	0.696	0.891
OLR2		0.777		0.797		0.754	
OLR3		0.790		0.804		0.771	
OLR4		0.776		0.758		0.816	
PU1	Perceived Usefulness	0.759	0.921	0.804	0.934	0.679	0.908
PU2		0.829		0.825		0.834	
PU3		0.837		0.851		0.830	
PU4		0.817		0.843		0.796	
PU5		0.749		0.799		0.704	
ICUOL1	Intent to Continue Using Online Learning	0.824	0.914	0.836	0.922	0.799	0.897
ICUOL2		0.785		0.826		0.708	
ICUOL3		0.836		0.855		0.806	
ICUOL4		0.770		0.769		0.771	

Results

The Estimates

The analysis of moment structures, AMOS (Arbuckle, 2006), was used for an empirical test of the structural model. The maximum likelihood estimation (MLE) was applied to estimate numerical values for the components in the model. The Goodness-of-fit measures included as follows:

- (1) the measures of the sample discrepancy included the minimum value of the discrepancy (CMIN), the probability of getting a large discrepancy (P), the root mean square residual (RMSR), and the minimum discrepancy divided by its degrees of freedom (CMIN/DF);
- (2) the measures of the population discrepancy included the estimate of the noncentrality parameter (NCP) and the root mean square of approximation (RMSEA);
- (3) the measures of parsimony included the parsimony ratio (PRATIO), the number of degrees of freedom (DF), and the number of distinct parameters being estimated (NPAR);
- (4) information-theoretic measures included the Akaike information criterion (AIC), the Browne-Cudeck criterion (BCC) and the Bayes information criterion (BIC);
- (5) the measures of comparisons included the Bentler-Bonett normed fit index (NFI), the Bollen's relative fit index (RFI), the Tucker-Lewis coefficient index (TLI), and the comparative fit index (CFI); and
- (6) the measures of goodness of fit and related fit included the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), and the parsimony goodness of fit index (PGFI).

The results in Table 4 generally achieve acceptable goodness-of-fit measures. For example, the index of GFI (0.914) indicates that the fit of the proposed model is about 91% of the saturated model (the perfectly fitting model). The index of NFI (0.922) indicates that the fit of the proposed model is about 92%. Figure 2 displays the estimates of the structural equation model.

INDEPENDENT VARIABLES		DEPENDENT VARIABLES	REGRESSION ESTIMATES	EFFECT		
				TOTAL	DIRECT	INDIRECT
H1: Perceived Social Ability	→	Online learning readiness	0.196***	0.196	0.196	
H2: Perceived Social Ability	→	Perceived Usefulness	0.458***	0.458	0.458	
H3: Online learning readiness	→	Intent to continue using online learning	0.337***	0.337	0.337	
H4: Perceived usefulness	→	Intent to continue using online learning	0.523***	0.523	0.523	
H5: Perceived Social Ability	→	Intent to continue using online learning	0.251***	0.556	0.251	0.306

*** p < 0.001, coefficient is statistically significant at a 95% confidence level.
 Goodness-of-Fit Measures: N = 872, CMIN = 852.185, DF = 120, Probability level = 0.000, CMIN/DF = 7.101, NPAR = 37, PRATIO = 0.825, RMSR = 0.042, RMSEA = 0.053, NCP = 753.185, AIC = 926.185, BCC = 927.658, BIC = 1205.290, NFI = 0.922, TLI = 0.915, RFI = 0.905, CFI = 0.930, GFI = 0.914, AGFI = 0.904, PGFI = 0.854

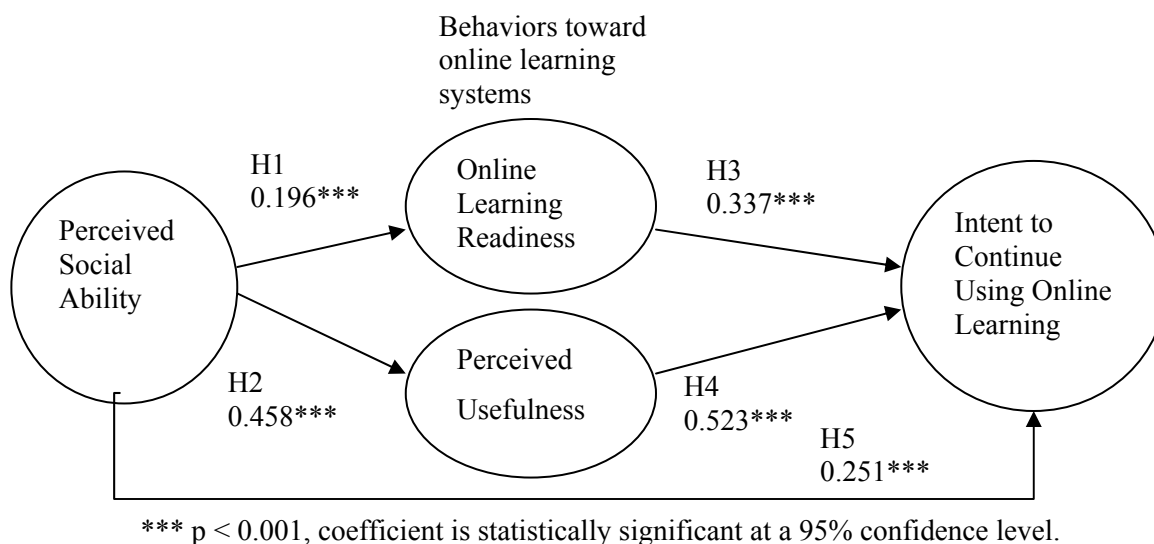


Figure 2: Estimates of the structural equation model

In testing *hypotheses 1 and 2* that there is relationship between perceived social ability (PSA) and online learning readiness (OLR) and between PSA and perceived usefulness (PU), Table 4 shows that there is a positive relationship between PSA and OLR, and also between PSA and PU. Each pair shows statistically significant at a 95% confidence level ($p < 0.001$). This suggests that perceived social ability has a positive and significant effect on both online learning readiness and perceived usefulness of online learning systems.

The *hypotheses 3 and 4* test the relationship between OLR and intent to continue using online learning (ICUOL), and between PU and ICUOL. Both hypotheses are supported at a 95% confidence level ($p < 0.001$). This means online learning readiness and perceived usefulness directly influence intent to continue using online learning.

The *hypothesis 5* testing of relationship between PSA and ICUOL shows a significant positive relationship at a 95% confidence level ($p < 0.001$). Thus, perceived social ability has a positive propensity towards intent to continue using online learning.

Overall, perceived social ability serves as an important antecedent of intent to continue using online learning. From Table 4, the 0.556 total effect of perceived social ability on intent to continue using online learning consists of a direct effect of 0.251 and an indirect effect of 0.306. On the other hand, perceived ease of use and perceived usefulness of online learning systems directly influence intent to continue using online learning.

Group Comparison

Independent samples t-test was conducted to explore the differences between Korean and U.S. students on PSA, OLR, PU, and ICUOL. Table 5 reveals statistically significant group differences between Korean and U.S. students in OLR ($p < 0.05$) and PU ($p < 0.001$) while U.S. students' group mean were significantly higher in both OLR and PU. Further, the result shows no significant group differences ($p > 0.05$) between Korean and U.S. students in terms of perceived social ability and intent to continue using online learning. The two control variables, experience with online learning and ages, also shows insignificant group differences. The last *hypothesis 6* postulates that there is a group difference on PSA, OLR, PU, and ICUOL due to cultural influ-

ence. The results from Table 5 show group differences in only two factors--online learning readiness and usefulness of online classes.

VARIABLE	MEAN (S.E.)			T-STATISTIC
	OVERALL	KOREAN	U.S.	
Perceived Social Ability (PSA)	0.000 (0.033)	0.005 (0.041)	-0.010 (0.057)	0.213
Online Learning Readiness (OLR)	0.000 (0.033)	-0.048 (0.041)	0.097 (0.057)	-2.044**
Perceived Usefulness (PU)	0.000 (0.033)	-0.080 (0.040)	0.161 (0.055)	-3.380***
Intent To Continue Using Online Learning (ICUOL)	0.000 (0.033)	0.014 (0.039)	-0.028 (0.061)	0.586
Experience (with online courses)	6.273 (0.185)	6.470 (0.244)	5.876 (0.264)	1.511
Age	30.181(0.159)	30.202(0.196)	30.138(0.275)	0.191

** p < 0.05; *** p < 0.001, mean difference is statistically significant at a 95% confidence level.

Next, what has been undertaken is presented in the discussion section followed by what was found in the implication section. The contribution section presents the strength of the paper while the weakness or limitation will be immediately described in the last section. In effect, the weakness is essentially the opportunity for future research to improve it.

Discussion

A better understanding of intent to continue using online learning is an important and timely area of research. The success of an online learning program depends not only on students' satisfaction but also their intent to continue using it. Unlike recent research under this topic, this paper integrates some components of the social theory of learning and technology acceptance model (TAM) coupled with the recently developed construct of online learning readiness to determine the intent to continue using online learning. This may be a theoretical gap that this research addresses. A literature review was conducted to identify the items with reliability that can be used to measure the intended constructs. Social ability is based on theories of social or situated learning while TAM is a theory used to explain the initial adoption of information technology (IT) in a voluntary setting. Generally, TAM is a theory of IT use. Both theories have been widely used to determine adoption intention and satisfaction. As such, this paper presents a model to explain the structure and cause-effect relationships among four variables (perceived social ability, online learning readiness, perceived usefulness, and intent to continue using online learning) in an attempt to better understand the causal mechanisms that lead to student intent to continue using online learning. Furthermore, with the increasing interest on culture and online education, this study also investigates whether there are group differences among these factors considering Hofstede cultural dimensions that have been adopted in several studies related to the online education as presented in the literature review and hypothesis sections.

The result from an empirical analysis supports all hypotheses. This study shows that perceived social ability exerts an important influence on students' intent to continue using online learning. The positive impact of social ability on online learning readiness and usefulness is of special interest. The results indicate that perceived social ability should be viewed as an antecedent ex-

plaining an intent to continue using online learning. Moreover, there are group differences in online learning readiness and perceived usefulness.

Implications

As indicated in Table 2 and the Appendix, social ability is determined by interactions, bonding, networking, and communications. The findings of this study offer insights that may help academic institutions maximize the online program impact in a highly competitive market.

In particular, the perceived social bonding and networking (PSA2) with a factor loading score of 0.915 is the most important survey item explaining perceived social ability in online learning environments, followed by perceived social interaction with peers and instructors at 0.892 (PSA1), while perceived communication skills for social influence (PSA3) registered 0.878. Overall, Cronbach's coefficient alpha of 0.924 suggests that the social ability construct is well described and characterized by these three items. All figures in the Appendix are the average numbers. The average numbers on PSA items vary from 2.714 to 3.089 and they are relatively lower than other categories. Recommendations to enhance it are indicated under contributions section.

In addition, the proficiency and knowledge of online learning system (OLR1 & 2) with a factor loading score of 0.827 and 0.824 are also important survey items explaining online learning readiness followed by an ability to become skillful at 0.806. It is crucial that students are required to attend the training sessions to be familiar with tools used on the adopted web-base for online classes.

What is interesting in this research is that online learning readiness and perceived usefulness of online learning systems and intent to continue using online learning depend significantly on students' social ability. Perceived usefulness is derived from the ability to expedite completion of educational and academic tasks and to enhance productivity and effectiveness in accomplishing academic tasks. PU 1-5 varies from 0.763 to 0.862 where the highest represents enhancing effectiveness in productivity in accomplishing academic tasks. All of these are important points to promote the intent to continue using online learning. The highest ICUOL factor loading is 0.847 representing the intent to use online learning for advanced degree programs.

Online learning allows students to communicate with peers and instructors and stay socially connected while maintaining access to online learning systems. Students of early online learning systems were exposed to informal social networks. Opinions, decisions, and behavior are affected by these interactions. The degree to which individuals believe that they should use online learning systems to better influence the action of others becomes social ability. Online learning may be considered as a symbol of social progress and advanced technologies in different cultures. Students from different cultures may view an online learning system as trendy and adopt this learning approach to enhance their perceived social status or standing within the group.

Empirical evidence from this study shows group differences in online learning readiness and usefulness of online classes. These perceptions may differ due in part to cultural differences since age and online learning experiences are control variables. However, no group differences were found among Korean and U.S. students in terms of perceived social ability and intent to continue using online learning. This may be due partially to universal needs and characteristics while these two countries are striving for a similar stage of development in online education and usage of information technology. This may not be true for other countries. While the overall group differences do not exist, the individual perceptions may be different. The position an individual occupies in the social network is indicative of the perceived sense of social ability. Therefore, other social activities may facilitate the formation of social relationships and enhance the overall strength of the social ties.

Contributions

The area of e-learning is an important topic of research. The results of this study provide some useful information and suggest contributions as follows.

First, the findings support existing literature. Perceived social ability contributes to perceived usefulness in online learning. Students with perceived social abilities feel that the online learning system is useful for their learning.

Second, unlike the findings of existing research on intent to continue using online learning previously cited in the literature review section, this study shows that intent to continue using online learning depends on perceived social ability, the recently constructed online learning readiness, and perceived usefulness in online learning.

Third, higher perceived social ability may enhance the intent to continue using online learning. Therefore, instructors of online courses should encourage greater use of communication tools in their instructional designs to increase social ability among students. However, bear in mind that more tools required to engage in interaction may decrease perceived usefulness. To encourage student participation and interaction in online classes, instructional design may include collaborative course activities such as group work, debate and web polls. Different types of communication tools, such as chat room, discussion board, and blog, and technology features, such as supporting discussions, and personalization, are also useful.

Fourth, studying e-learning factors in different cultures is interesting and timely. A large data set for both U.S. and Korean students is an important factor in cross-cultural research. Thus, the large sample size that spans two countries is also a strength of this study. This study garnered 582 valid cases out of 1,000 participants in Korea and 290 valid cases out of 400 participants in the U.S. Most studies employ between 200-300 observations as cited in the literature review.

Fifth, the group differences in online learning readiness and usefulness of online classes support the existing findings on attitudes toward computer-based learning (Graff, Davies, & McNorton, 2003), power distance cultures (Downey et al., 2005), and uncertainty avoidance (Hofstede, 2001).

Sixth, despite the differences in the two groups' online learning readiness and perceived usefulness of online learning systems, the proposed model yields the same pathways in terms of the intent to continue using online learning due in part to having similar knowledge of the Internet and information communication technology. Identifying such differences could help educational institutions that offer online courses for students worldwide. Regardless of their differences in perceptions of online learning systems, the survey indicates that these two groups reported that they intend to continue to enroll in additional online courses in the future.

Conclusion and Future Work

The manuscript reported a survey study on the impact of online students' perceived social ability, perceived usefulness, and online learning readiness of their intent to continue using online learning. The topic is relevant and is intended to advance the current understanding of these phenomena. The participants were school of business students from U.S. and Korean universities. Social ability is directly related to understanding intent to continue using online learning. Social ability influences online learning readiness and perceived usefulness of online learning systems. In turn, students' online learning readiness and perceived usefulness affect intent to continue using online learning.

Future research to generalize these findings may examine additional universities from different countries as potential sources of variation in the determinants of intent to continue using online

learning. There may be differences between China, India, Brazil, Russia, and/or the U.S. Additional research is required to determine whether there is a consistent pattern. For example, extensions of this research may employ a more fine-grained approach to examining how individuals with different cultural backgrounds accept new information technology and pursue or intend to use online learning systems or engage in a range of activities with the technology.

Researchers may study cultural differences in online learning that emerge from the design and development of potentially different online course environments and, hence, the interactions between the course environment features and students' learning experiences, styles, and beliefs.

Further studies should validate selected survey items explaining perceived social ability, online learning readiness, and perceived usefulness in online learning environments. More research may be necessary to investigate the role of other forms of academic motivation such as computer self-efficacy, personal innovation, and other individual characteristics toward intent to continue using online learning. Furthermore, it is possible that the more tools that users are required to use, the more difficult they may perceive the task to be and, as a result, reduce their intent to continue using online learning. Future research and practice should also consider this potential implication.

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APPENDIX		
SURVEY QUESTIONS (5-point scale ranging from 'Strongly Disagree=1' to 'Strongly Agree =5')	KOREAN (N=582)	THE U.S. (N=290)
PSA: When I take online classes,		
1. I am able to have more interaction with my peers and instructors.	2.714	2.739
2. I am able to promote social bonding and networking.	2.872	2.834
3. I am able to communicate with people to influence the action of others.	2.979	3.089
OLR: Regarding, online learning readiness,		
1. I am proficient in using the online learning system.	3.943	4.110***
2. I have the knowledge necessary to use the online learning system.	3.958	3.934
3. I have the ability to become skillful in using the online learning system.	4.039	4.169**
4. Overall, I am ready to use the online learning system.	3.962	4.248***
PU: Using the online learning system		
1. enables me to complete my educational goal more quickly.	3.716	3.962***
2. improves my ability to accomplish academic tasks.	3.759	3.906**
3. increases my productivity in accomplishing academic tasks.	3.721	3.962***
4. enhances my effectiveness in accomplishing academic tasks	3.834	3.882
5. I find it useful in my study completion.	3.757	4.203***
ICUOL: With respect to intent to continue using online learning,		
1. If I need to study for advanced degree programs, I would expect to use the online learning system.	3.663	3.786
2. If asked, I would likely recommend the online learning system as an ideal learning platform.	3.670	3.713
3. For future advanced degree programs, I would probably use the online learning system.	3.738	3.810
4. Overall, I am satisfied with the online learning system.	3.881	3.948
How many courses have you completed over the online learning system?	6.471	5.876
How old are you?	30.202	30.138
** p < 0.05; *** p < 0.001, mean difference is statistically significant at a 95% confidence level.		

Biographies



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