ADOPTING INTERNET TELEPHONY TECHNOLOGY AS A CROSS-CULTURAL COMMUNICATION TRAINING TOOL

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Abstract

The e-learning system market is so fragmented that its developers are struggling with high attrition rate and low customer loyalty. Voice over Internet Protocol enabled online learning service providers are struggling with the same disloyalty issue despite its high degree of system fit for online global learning applications. Effective solutions to this prevalent problem rely on the understanding of not only system quality but also information quality and individual belief about the usefulness of this technology. This research aims to provide insights into a creative solution from the perspectives of information systems success and control belief. A theoretical model is proposed to integrate seven major constructs of IS success and planned behavior theory. We test our model using the path analysis of data collected from an experiment where 98 undergraduate students from USA and Taiwan worked in pairs using Skype to improve their English and intercultural communication skills. Data analysis results show that information quality and perceived behavioral control are much more important than system quality in increasing satisfaction with the use of Skype. Along with the increase of user satisfaction can lead to the improvement of intercultural communication competence, and increased user loyalty.

Keywords: Information quality, Systems quality, Perceived behavioral control, User satisfaction, Intention to reuse, Individual performance.
1 INTRODUCTION

The effective delivery of a course needs to carefully consider the potential impact of “transactional distance,” determined by the dialogue between the learner and the instructor, on learning effectiveness (Wedemeyer, 1981; Moore, 1983). Personalized instruction method can increase the rate of dialogue and shorten the transactional distance (Saba and Shearer, 1994). As a result, the learning effectiveness can be much improved than the traditional “instructor control” delivery method.

VoIP (Voice over Internet Protocol) technology was originally dedicated to converting audio and video signals into digital data that can be transmitted over the Internet. Because of technological convergence that devices are taking on each other’s functions (Han, Chung and Sohn, 2009), current VoIP technology offers many of the following technical features, such as audio- and video-conferencing, instant messaging, screen sharing, and file sharing, via computers, TV, and handheld devices. These technical and nomadic VoIP features can be utilized as a cost-effective, one-on-one learning tool to offer individualized e-learning experiences and shorten both physical and virtual “transactional distance” between the instructor and the learner. Therefore, VoIP could be an ideal technology to deliver global learning experiences that requires one-on-one interactions (Vannoy and Chen, 2012).

Although e-learning is becoming an increasingly important learning trend, VoIP systems are not a popular choice among online learners. Rather, online asynchronous or self-paced e-learning systems (e.g. WebCT, Moodle, podcast, Edmodo) are thriving because they empower learners to learn from anywhere and at anytime. In addition, although there are more than 120 million subscribers the VoIP market is highly fragmented (Networkworld Asia, 2011), and has not focused on developing e-learning features for the educational sector. A 2012 e-learning outlook study shows that many e-learning systems have been underperformed because online learners receive little guidance and encouragement they need before adopting the systems (e-learning, 2002). To employ VoIP systems as a promising tool in education that can be used to engage students to enhance students’ motivation and communication skills, more evidence are required to shed lights on technical and cognitive barriers to user satisfaction with, acceptance of, and the continuance intention of using VoIP technology as a global learning tool.

Learners are proactive actors and customers in an online learning class (Triki and Ouerghi, 2007; Ruiz, Sanz and Tronch, 2008). Their disposition to accept or refuse in adopting VoIP technology is an important prerequisite to its success in global learning applications. This paper offers an empirical insight into e-learning effectiveness via Skype to increase user satisfaction, individual learning performance, and the continuance intention of using VoIP systems in the global learning context. To achieve this goal, we analyze the potential impact of system success factors, including information and system quality, and control belief factor; that is, perceived behavior control, on user satisfaction, individual performance and the intention to reuse. A research model is proposed to integrate eight constructs of IS success model and planned behavior theory. An experiment is conducted as the research method to collect data from 65 American subjects participating in an intercultural communication class. Partial Least Square method is used to analyze the collected data and test the proposed hypotheses. Findings are reported and discussed with regard to their academic and practical implications. Future research direction and limitations are further discussed to conclude this study.

2 THEORETICAL DEVELOPMENT

An information system success involves at least two important attributes: information and system quality (DeLone and McLean, 2003). The successful use of VoIP technology as a global learning tool may also need to consider these important qualities because they are inseparable from each other in the design of an e-learning system (Kim et al., 2012). A reliable VoIP technology does not guarantee the success of a cross-cultural learning class involving users having language barriers, with different cultural
backgrounds, located in different countries, or possessing different personal beliefs. These non-technical issues are closely related to information quality and control belief. Although it may seem obvious that both information and system qualities, as well as personal belief have to be considered when designing a VoIP-enabled global learning class, it remains unclear which factor is more important from a user perspective. Limited evidence is also available to help us understand which of these three factors is more conducive to the increase of usage and user satisfaction, thereby enhancing individual learning performance and the continuance intention of using VoIP technology as a global learning tool. The following will examine literature related to the logical relationships among these constructs in the context of user satisfaction and VoIP adoption.

2.1 The Influence of Information Quality on the Satisfied Use of VoIP Applications as a Global Learning Tool

The learning outcome of a global learning program is to help students acquire intercultural communication competence to resolve intercultural misconceptions (Alagic, Rimmington and Orel, 2009). Intercultural communication competence can be assessed with learners’ skills and knowledge of managing communication in culturally and linguistically diverse context (Beamer, 1998; Henderson, 2005). Therefore, how information is presented could be much more important than system quality to a user because VoIP technology is just one of many means to help achieve this end. This essence may partly explain why the current e-learning market is highly fragmented and many players have poor quality materials to retain their users (e-learning, 2012).

Information quality is the measure of information system outputs, including information accuracy, timeliness, relevance, aggregation, and format (Ahituv, 1980). As an alternative to F2F meetings, VoIP is a media with high information richness because it can enhance information exchangers’ understanding within a specific time interval (Daft and Lengel, 1986). VoIP are incorporating new media that can further increase the degree of media richness. A high rich media should contain four attributes: (1) immediate feedback, (2) the number of cues and channels available, (3) language variety, and (4) information recipient focus (Daft and Lengel, 1984). VoIP can be used as an audio- or a video-conferencing tool that can give users timely feedback during the conversation. Body languages vary greatly with cultures. A VoIP-enabled meeting can help capture body movement of participants and allow participants to clarify any misunderstanding via external links to useful resources (e.g. instant messaging, online translation, website links). These features can help enhance the information accuracy and relevance. Furthermore, screen and document sharing among participants in a VoIP-enabled classroom can help users aggregate and present information in different formats. If properly used, VoIP technology can achieve task closure and support communication among geographically dispersed teammates as effective as the traditional F2F meeting (Tan, Tan and Teo, 2012). Therefore, VoIP has the potential of delivering an effective global e-learning program because contains all information quality attributes.

H1: Information quality has a positive influence on user satisfaction with the use of VoIP in acquiring intercultural communication competence.

H2: Information quality has a positive influence on the frequency of using VoIP in acquiring intercultural communication competence.

2.2 The Influence of System Quality on the Satisfied Use of VoIP Applications as a Global Learning Tool

System quality is an overall representation of the entire system (Bharati, 2003), as well as a measure of all engineering-oriented performance attributes (DeLone and McLean, 2003). System quality has a direct effect on user satisfaction with systems (Wixom and Todd, 2005). Therefore, system quality is essential to the success of using VoIP to deliver a global learning class because poor system quality can delay the transmission of sound and images, thereby causing breakdowns during the conversation. VoIP requires
that users have at least a webcam and a speaker in order to see and talk to each other. High-end webcam and speaker can deliver more vivid images and clear sound than low-end webcams and speaker. Users are more likely to be satisfied with high quality systems than low ones because they can better capture multiple social cues (e.g. gesture, voice, tone and facial expressions) (Coyle et al., 2001). Understanding linguistic and cultural differences requires some critical thinking and analytical efforts (Rabasso and Rabasso, 2011). Media with much language variety have a higher performance than media with a low variety for analytical tasks (Liim and Benbasat, 2000). Quality VoIP seamlessly integrating with other technologies (e.g. social media, automatic translation software, instant messaging, and screen sharing) can help cope with language variety. High system quality can satisfy users with the technology and motivate them to use the technology to complete e-learning tasks (Kim et al., 2012). Thus, the higher system quality that VoIP has, the more satisfied and motivated users are to use the technology in acquiring intercultural communication competence.

H3: System quality has a positive influence on user satisfaction with the use of VoIP in acquiring intercultural communication competence.

H4: System quality has a positive influence on the frequency of using VoIP in acquiring intercultural communication competence.

2.3 The Influence of Use and Perceived Behavioral Control on the Level of Satisfaction with VoIP Applications as a Global Learning Tool

System use has been one of prominent factors accounting for user satisfaction (DeLone and McLean, 1992; Holsapple and Lee-Post, 2006), thereby increasing individual performance (Hou, 2012). The more frequently used, the more comfortable and satisfied users would be with using an information system (Wang et al. 2008). The basic skills and knowledge required to operate VoIP technology include hardware, such as webcam and headphone, and software, such as system and VoIP software. Effective use of VoIP technology to acquire intercultural communication competence requires that users overcome some learning curve. Along with overcoming the learning curve can lead to the smooth transfer of application-level knowledge, and performance enhancement (Kim, Krishnan and Argote, 2012). Therefore, the more frequently used, the more comfortable and satisfied users would be with using VoIP applications as a global learning tool.

H5: The more frequent of use with VoIP technology, the higher level of user satisfaction with the use of VoIP in acquiring intercultural communication competence.

Perceived behavioral control is a user’s perception about how easy or difficult to perform a behavior (Ajzen, 1991). Depends on situations, a user may express different degree of perceived behavioral control. Perceived behavioral control, similar to perceived self-efficacy, is a significant determinant of various cross-cultural behaviors, such as ethical judgment (Cherry, 2006) and green purchasing behavior (Chan and Lau, 2002). A cross-cultural study shows that medical professionals in the USA and Ethiopia are more willingly to share knowledge with each other via videoconference-based training support, such as access to experts, sharing experience, and sense of community (Negash, 2010). The likes of these training supports have the potential of increasing learners’ perceived self-efficacy. Increasing users’ perceived behavioral control of using VoIP technology to acquire intercultural communication competence has the potential of satisfying and helping learners cope with linguistic and cultural differences.

H6: Perceived behavioral control has a positive influence on the level of user satisfaction with VoIP in acquiring intercultural communication competence.
2.4 The Influence of User Satisfaction on Individual Performance in and Loyalty to the Use of VoIP Applications as a Global Learning Tool

Users are satisfied with a system if they reach a positive summary psychological state resulting from the consumption experience (Oliver, 1981). However, satisfaction with a system alone can no longer guarantee users’ loyalty to the adopted system. The high satisfaction, but low loyalty phenomenon is becoming a more common theme in the e-learning market because users are constantly looking for alternative systems that is more cost effective than the adopted system. Therefore, it is important to examine not only user satisfaction but also loyalty cultivation when evaluating the success of e-learning systems.

Satisfaction is a short-term behaviour exhibited by users when they are satisfied with a service or product (Bearden and Teel, 1983; Bolton, 1998). VoIP can bring users numerous benefits, such as synchronic collaboration (Dillenbourg et al., 1995); one-on-one interaction (Kearsely, 2000); mutual support for collaborative work (Salter, 2000); intellectual development (MacKnight, 2000); and improving critical thinking skills (Muilenburg and Berge, 2000). Particularly, VoIP technology has a high degree of fit for cross-cultural communication training (Vannoy and Chen, 2012). When applying VoIP to help users acquire intercultural communication competence, its benefits have the potential of increasing user satisfaction.

H7: User satisfaction with the use of VoIP has a positive influence on increasing individual performance in acquiring intercultural communication competence.

Satisfaction can only explain part of loyalty because it involves the other three elements: value reception, re-purchasing, and customer recommendation to third parties (Zeithaml et al., 1996). The absence of these three elements may explain the prevalence of low loyalty issues in spite that users are satisfied with their current e-learning systems. The challenge of differentiating between true and spurious loyalty could be another missing piece of this social phenomenon (Shankar et al., 2003). Spurious loyalty is that some users may repurchase the same product while constantly looking for other alternatives in the market (Shankar et al., 2003). This non-true loyalty can appear in the process of adopting VoIP as a global learning tool since the market is so fragmented that many other cost-effective alternatives are readily available for users to adopt. To achieve true loyalty behaviour, VoIP service providers need to emphasize on the long-term behaviour; that is, the intention of users to continue using VoIP to acquire intercultural communication competence even though they may experience some problems in service performance (Reichheld, 1993).

H8: Individual performance has a positive influence on increasing the intention of users to continuously use VoIP to acquire intercultural communication competence.

Although VoIP is considered a natural product to help learners acquire intercultural communication competence, information quality, system quality, and perceived behavioral control are potential barriers to learners’ satisfied usage experience. Our literature review indicates that improving these three factors has the potential of increasing both the usage frequency and user satisfaction. Consequently, user satisfaction can lead to increased individual performance, and intention to reuse Skype as a global learning tool.

3 RESEARCH METHODOLOGY

Three one-hour sessions of a global learning class were conducted for 66 American and 32 Taiwanese college students to increase their intercultural communication competence. Since the number of students on both sides is not equal, each Taiwanese student was scheduled to converse with two American students. The primary learning goal of these classes was to help all participants increase their understanding of linguistic and cultural difference between USA and Taiwan. Skype is the VoIP technology chosen to facilitate the cross-cultural communication process. The researchers used the
Google Doc. to create a document with a broad list of topics linked by a Table of Contents. The purpose of these suggested topics was to give the students certain topics to communicate about so that their discussion would have substance and some measure of structure. Since this is an open document, all students were given one week to add questions and answers under each topic. The entire document with inputs from all students was saved as a PDF file and made available to students as a reference during the global learning classes. This complete document has four chapters: (1) personal experience, (2) personal preference, (3) personal opinions, and (4) personal comparisons. Chapter 1 topics include places, people, culture, food and hobbies. Chapter 2 topics range from cars, vacation, gifts, indoor activities, to outdoor activities. Chapter 3 topics include chores, beauty, decisions, and zoos. Chapter 4 topics range from jobs, travel, language, news, to food. All participants can freely access this compiled document to assist in their intercultural communication experience during the global learning classes.

In addition to creating discussion topics, students received a short instructional session on the use of Skype before the global learning classes were conducted. In the beginning of each class, students received the following instructions to complete each session:

Step 1: Log into Skype with your assigned username and password;
Step 2: Add the corresponding student’s Skype username as a new contact;
Step 3: Wait for the student to accept your invitation;
Step 4: Start discussing with each other according to the topics file;
Step 5: Wrap up your discussion;
Step 6: Log out of Skype.

Since we recruited unequal number of American and Taiwanese students, we controlled the matching process so that an American student would be able to communicate with two different Taiwanese students over the three-week period. A graduate assistant or instructor were monitoring each session in a computer lab during their communication, and helped resolve technical issues encountered by students. Skype was adopted for this study because of its popularity, and installed on all computers in the computer lab. Each student was equipped with a webcam and a headphone, and was freely to use all cost-free PC-to-PC Skype applications, including video conferencing, text messaging, screen sharing, and document sharing.

3.1 Survey

At the end of three class sessions, American students completed a questionnaire related to the global learning experience. Linguistic and cultural challenges were present during the entire communication because Taiwanese students were struggled with using English to communicate and American students were not familiar with Taiwanese cultures and strong accents. Information quality, system quality, system use, user satisfaction, and individual performance items were adapted from DeLone and McLean (1992). Perceived behavioral control items were adopted from Ajzen (1991). The intention of continuously using VoIP to acquire intercultural communication competence was adapted from Bhattacharjee (2001). All questionnaire items were measured on Likert-type (1) = strongly disagree, (3) = neutral, and (5) = strongly agree scales.

4 ANALYSIS AND RESULTS

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett’s statistical tests were first performed to assess whether the measurement items would yield distinct factors. Table 1 summarizes the results of these two tests for all seven constructs. All KMO values are equal to or higher than the minimum acceptable threshold of 0.50. All Bartlett’s Sphere values are significant, indicating that the
correlation matrix is not an identify matrix. These positive test results warrant the Structured Equation Modeling (SEM) test.

<table>
<thead>
<tr>
<th>Factors</th>
<th>KMO Test</th>
<th>Bartlett’s Sphere</th>
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</thead>
<tbody>
<tr>
<td>Information Quality</td>
<td>0.851 &gt; 0.50</td>
<td>p=0.000 &lt; 0.01</td>
</tr>
<tr>
<td>System Quality</td>
<td>0.500 &gt; 0.50</td>
<td>p=0.000 &lt; 0.01</td>
</tr>
<tr>
<td>System Usage</td>
<td>0.702 &gt; 0.50</td>
<td>p=0.000 &lt; 0.01</td>
</tr>
<tr>
<td>User Satisfaction</td>
<td>0.822 &gt; 0.50</td>
<td>p=0.000 &lt; 0.01</td>
</tr>
<tr>
<td>Individual Performance</td>
<td>0.732 &gt; 0.50</td>
<td>p=0.000 &lt; 0.01</td>
</tr>
<tr>
<td>Intention to Reuse</td>
<td>0.714 &gt; 0.50</td>
<td>p=0.000 &lt; 0.01</td>
</tr>
</tbody>
</table>

Table 1. Factor Analysis

SmartPLS (Partial Least Squares) was adopted to perform SEM test and analyze the hypothesized relationships among these seven constructs. PLS has minimal restrictions on sample size and residual distribution (Chin et al. 2003). To cope with our limited sample size, the bootstrap re-sampling method (500 re-samples) was chosen to run the SEM test and assess the measurement and structural models.

4.1 Measurement Model

Our research instrument was further assessed with Cronbach’s alpha, composite reliability, convergent, and discriminant tests. Table 2 shows that Cronbach’s alpha values show that the internal consistency of all items used to measure each construct exceeded the generally accepted minimum threshold of 0.70 (Cronbach, 1951). This indicates that all items used to measure each construct carry the same weight (George and Mallery, 2003). Composite reliability values also exceeded the threshold value of 0.70 (Fornell and Larcker, 1981; Nunnally 1978), indicating that the actual loadings to construct the factor score have a high internal consistency (Chin, 1996).

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Composite Reliability</th>
<th>Cronbach’s Alpha</th>
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<tbody>
<tr>
<td>Information Quality</td>
<td>0.9585</td>
<td>0.9424</td>
</tr>
<tr>
<td>System Quality</td>
<td>0.9324</td>
<td>0.8551</td>
</tr>
<tr>
<td>System Usage</td>
<td>0.9655</td>
<td>0.9285</td>
</tr>
<tr>
<td>User Satisfaction</td>
<td>0.9393</td>
<td>0.9137</td>
</tr>
<tr>
<td>Individual Performance</td>
<td>0.9215</td>
<td>0.8725</td>
</tr>
<tr>
<td>Intention to Reuse</td>
<td>0.9386</td>
<td>0.9018</td>
</tr>
</tbody>
</table>

Table 2. Construct and Composite Reliability Test Results

Convergent and discriminant validity are two important dimensions of construct validity. Table 3 provides the correlation matrix, with the square roots of the Average Variance Extracted (AVE) for each construct reported on the diagonal. Convergent and discriminant validity can be verified when the square root of the construct’s AVE is larger than the correlations with other constructs, and convergent validity can be further verified when item loadings on hypothesized constructs are greater than 0.50 (Wixom and Watson 2001). As seen in Table 2, the square roots of the constructs’ AVEs are larger than their cross-correlations, indicating that the variance explained by each construct is larger than the measurement error variance. Convergent validity was further verified as all items loaded greater than .50 on their associated constructs.
4.2 Structural Model and Hypothesis Testing

SEM test was performed to calculate the estimated path coefficients, path significance and R2 values. Table 3 shows the SEM test results, including path coefficients and their respective t-statistics. As shown in Table 3, Hypothesis 1 (H1) was rejected indicating that information quality has no significant effect on the increase of VoIP use in acquiring intercultural communication competence. However, H2 was supported indicating that information quality have statistically significant impact upon user satisfaction. H3 and H4 were rejected indicating that system quality has no significant impacts on either VoIP usage and user satisfaction. H5 was rejected indicating that no statistical support for the direct, positive relationship between usage frequency and user satisfaction.

In contrast, H6 was supported, indicating that the control belief factor perceived behavior control has a significant positive effect on the increase of user satisfaction. Information quality, system quality, VoIP usage, and user satisfaction are four antecedent constructs for user satisfaction. These four constructs together explain approximately 48% of variation in user satisfaction (R²=48.2). A closer look at the explanatory power of these four constructs for the variation in user satisfaction. System quality and VoIP usage have marginal effect. Perceived behavioral control has the strongest effect on user satisfaction, followed by information quality.

H7 and H8 were supported indicating that satisfaction has a positive effect on individual performance, thereby increasing the intention of users to reuse VoIP in acquiring intercultural communication competence. The structural path from individual performance to the intention to reuse VoIP is the strongest path in our model and can explain almost 50% of the variance in the ITR (R²=49.4). In addition, results show that user satisfaction has a strong positive effect on the increase of individual performance in intercultural communication competence (R²=28.6).

<table>
<thead>
<tr>
<th>Hypothesized Paths</th>
<th>Path Coefficients</th>
<th>T-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: IQ → SAT</td>
<td>0.861</td>
<td>0.788</td>
</tr>
<tr>
<td>H2: IQ → USE*</td>
<td>2.267</td>
<td>2.228</td>
</tr>
<tr>
<td>H3: SQ → SAT</td>
<td>0.649</td>
<td>0.596</td>
</tr>
<tr>
<td>H4: SQ → USE</td>
<td>1.142</td>
<td>1.114</td>
</tr>
<tr>
<td>H5: USE → SAT</td>
<td>0.986</td>
<td>1.040</td>
</tr>
<tr>
<td>H6: PBC → SAT**</td>
<td>2.349</td>
<td>2.493</td>
</tr>
<tr>
<td>H7: SAT → IP**</td>
<td>4.897</td>
<td>5.084</td>
</tr>
<tr>
<td>H8: IP → ITR**</td>
<td>10.077</td>
<td>10.459</td>
</tr>
</tbody>
</table>

Table 4. Structural Equation Modeling Test Results
DISCUSSION AND IMPLICATIONS

These research findings show some interesting insights into the relative importance of information system success and control belief factors for the increase of user satisfaction with the use and reuse of VoIP to acquire intercultural communication competence. Firstly, perceived behavioral control belief plays an important role for the increase of user satisfaction with the use of VoIP for intercultural communication learning. The competence of appreciating another culture consists many essential elements, such as sensitivity (Chen and Starosta, 1997), dispositions (Gudykunst, Wiseman and Hammer, 1977), respect, open-mindedness, empathy, and curiosity (Deardorff, 2006). In addition, perceived technical control of verbal and visual aids are essential to the acquisition of intercultural communication competence (Yu, 2012). All these technical and intercultural communication qualities are essential to the development of perceived behavioral control. Learners could express learning dissatisfaction if they are equipped with VoIP technology without first developing the perceived self-control. Lack of perceived control in these competencies has made some American students form negative beliefs. For instance, one student said, “She didn’t want to talk to me very much.” Another student said, “I don’t know another language.” Some other students have the belief “I am better at communicating face to face.” Students who have the low degree of perceived behavioral control are more likely to have dissatisfied global learning experiences via VoIP technology.

On the contrary, learners having high degree of perceived behavioral control of technical and intercultural communication competencies are more likely to enjoy the VoIP-enabled global learning program. Learners who exhibit high perceived behavior control of their technical (e.g. operating webcam, headphone and VoIP software) and intercultural communication (e.g. respect, curiosity, empathy) competencies has brought satisfactory experiences to some of students participating in this study.

Secondly, not all information systems success factors can increase learners’ satisfaction with the use of VoIP to acquire intercultural communication competence. Our findings show that information quality rather than system quality can help increase user satisfaction. Many intercultural communication studies experiment with the use of various creative methods to increase information quality in the intercultural communication training and learners’ satisfaction. Some of these methods are comedy film, games, role-playing, simulation, conflict-resolution exercise, problem solving activities, and virtual interactions (Bennett, 1993; Byram, 1997; Fennes and Hapgood, 1997; Kayes, 2002; Mintzberg and Goslin, 2002). After using VoIP to interact with Taiwanese counterparts, some American students expressed their satisfaction with the use of VoIP to acquire intercultural communication competences as follows:

“I learned their hobbies and what their interests were.”

“They don’t like dogs in Taiwan. Music has lots of American influences.”

In contrast, many students have taken the system quality as granted and expressed the easiness of using VoIP for global cultural learning. When asked “How many more sessions would you need till the person you worked with was able to easily hold a conversation in English?” About 47% of participants chose the answer “none, they can hold a conversation now.” When asked “Describe the most negative aspect of the experience you just had?” most learners said, “none come to mind or nothing.” Only a few students complained about background noise in the computer lab and minor technical issues associated with a few webcams and headphones.

Thirdly, learners who are satisfied with the VoIP-enabled global learning experiences tend to show better learning outcomes. Positive comments about this experience include:

“Skype is a useful way to get to know another culture because it makes things more personal.”

“Its as if you’re speaking to them in person.”
Lastly, users who experience good learning outcomes are more likely to reuse VoIP technology to acquire intercultural communication competence. Some of the reuse intention could be reflected in the following comments:

“It was interesting trying to talk to a new person using the technology.”

“I made new Facebook friends.”

All these findings affirm that VoIP technology could be an effective tool to help learners achieve a satisfied global learning experience. Special emphasis should be spent on information quality instead of system quality because VoIP technology is widely available now and the learning curve is no longer steep for most college students. In addition, learners’ perceived behavioral control belief is equally important to, if not more important than, information quality. Before conducting an intercultural communication learning class, an instructor should emphasize on the education of students about linguistic and cultural differences between information sender and receiver. Allowing learners to have extra time in acquiring VoIP skills, and studying learning materials and students’ backgrounds can also help increase the perceived behavioral control. Any preparedness to help enhance the factor should be seriously considered in order to increase learners’ satisfaction with the use of VoIP to acquire intercultural communication competence. As challenging as other system for user loyalty, VoIP service providers should demonstrate students’ individual learning performance because it can directly contribute to the increase of loyalty to the use of this technology for the acquisition of intercultural communication competence. Effective use of technology to exchange intercultural information can help learners become less prejudiced and develop more understanding of others’ linguistic and cultural differences (Simsek and Nuss, 2010). VoIP-enabled global learning can promote not only the exchange of intercultural communication across borders, but also, most importantly, learners’ intercultural communication competence.

6 FUTURE RESEARCH AND LIMITATIONS

Rapid technology innovation continues to accelerate the globalization process (Friedman, 2005). This study further proves that the use of innovative VOIP-enabled technology can accelerate the globalization process by bringing the two groups of people across the globe closer to one another. The study also shows that information quality could be much more important than system quality in the globalization process. To further exemplify our case, a study on international sales team performance shows that the primary purpose of increasing technology sophistication is to improve the quality of cross-cultural communication among international sales team members (Ritchie et al., 2011). Information quality is a general construct comprising many attributes, such as information accuracy, timeliness, relevance, aggregation and format (Ahituv, 1980). However, it is unclear which attributes can contribute more to the satisfied use of VoIP for intercultural communication training. Future research may want to manipulate the control of these attributes and provide more insights on how to more effectively deliver a VoIP-enabled global learning class.

The effectiveness of a VoIP-enabled global learning program also relies on the belief of learners in overcoming technical, linguistic, and cultural barriers. Removing these barriers can help increase the degree of perceived behavioral control for users participating in global learning sessions. Although this finding sheds lights on the importance of perceived behavioral control, many other control beliefs are also prominent, but not examined in this study. Control beliefs that could be important in the technology-enabled learning may include: locus of control (Rotter, 1966), self-efficacy (Bandura, 1977), perceived situational control (Wallston, 1989), and helplessness (Seligman, 1975). Future study may want to focus on examining the influence of different control beliefs on learners’ satisfaction with the use of VoIP to enhance their intercultural communication competence.

As VoIP technology reaches its maturity, the challenges of increasing user loyalty remain high for its service providers. It is imperative to introduce new features to the current VoIP technology in order to
increase information quality. During the three-week sessions, some students heavily rely on online translation services (e.g. Google translation) to help understand difficult English words or simple Chinese words spoken by their counterparts in Taiwan. Some other students used Social media (e.g. Facebook) to share their backgrounds and common interests. These extra efforts helped these learners better understand each other and increased their gratifying experiences. VoIP service providers should search for novelty technologies (e.g. smart phone apps, virtual reality, direct translation or avatars) and integrate them into their current system. Future study can experiment the use of a combination of different technologies in addition to VoIP and assess their combined effect on user satisfaction and the intention of reusing VoIP to acquire intercultural communication competence.

A limitation on this study was that the incentives offered to American and Taiwanese students were different. American students were offered extra credit for their participation in this study, whereas Taiwanese students participated in this study on a voluntary basis. The difference in incentive may contribute to the findings of this study based on only American samples. A 13-hour time difference where the two groups were generally participating in a different timezones between Taiwan and the United States may also affect the attitude toward this study. When the communications took place, American students were asked to come to a computer lab as early as 8 am and Taiwanese students as late as 9 pm. These two hours are not appealing to students of either side. The suboptimal situation may contribute to the low participation of Taiwanese students when they were not motivated with any incentives. One side effect out of this temporal difference is the process of unequally pairing American and Taiwanese students for one-on-one learning experiences. Generalizing the findings of this study to business professionals warrant special consideration because they are based on student samples. Future study may want to overcome these limitations and provide a more complete picture about the use and reuse of VoIP for the acquisition of intercultural communication competence. For instance, a pre-test should also be used before the experiment in order to assess the degree of improvement before and after using VoIP technology to enhance their learning satisfaction and effectiveness. If time permits, a longitudinal study should also be carried out to track whether students’ intercultural communication competencies would be continuously improved by receiving VoIP-enhanced intercultural communication training over time.

7 CONCLUSION

As the technology is helping flatten the world, the globalization can be further accelerated with an increasing number of people developing intercultural communication competencies. E-learning is one of many means to help achieve this goal. This study examines VoIP as a promising technology to help users acquire intercultural communication skills because of its perceived fit for this purpose. However, low user loyalty is one persistent challenge that VoIP and other e-learning technologies are facing. To help overcome the challenge, this study demonstrates that the increase of user loyalty heavily relies on the improvement of individual performance via VoIP-enabled intercultural training programs. Information quality and perceived behavioral control are two critical antecedents for learners’ satisfaction with the use of VoIP to acquire intercultural communication competence. Along with the increased satisfaction will enhance learning outcomes, thereby developing users’ loyalty to VoIP. This study offers the perspectives of information system success and control belief that it is pragmatic and feasible to use and reuse VoIP technology as a cross-cultural communication tool.

References


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