Acceptance of e-learning among distance learners: A Malaysian perspective

Bibiana Lim Chiu Yiong
Swinburne University of Technology (Sarawak Campus), Kuching, Sarawak, Malaysia

Hong Kian Sam and Tan Kock Wah
Faculty of Cognitive Science and Human Development
Universiti Malaysia Sarawak, Sarawak, Malaysia

Distance learning and e-learning are rapidly becoming popular modes of studies among students and working adults worldwide. This trend is also visible in Malaysia, with the emergence of several higher education distance learning institutions using e-learning to support its learning activities such as the Open University of Malaysia and the Wawasan University. However, an important point of concern to both educators and researchers are the distance learners' acceptance of e-learning. Therefore, this study aimed to investigate the acceptance of e-learning among distance learners at the Open University of Malaysia in Malaysia. This cross-sectional survey used questionnaires to obtain the necessary data. The questionnaires used to measure distance learners' acceptance of e-learning were adapted from the research instruments used by Poon, Low and Yong (2004). A total of 112 students from the Open University branch campus in Kuching, Sarawak, Malaysia responded to the questionnaires. Most of the students surveyed reported moderate levels of e-learning acceptance. The findings of this study indicated that institutions offering distance learning via e-learning should provide some non-credit courses to improve students' acceptance of e-learning.

Keywords: distance learning, e-learning, acceptance of e-learning

Introduction

Several distance learning tertiary institution such as the Wawasan Open University and the Open University of Malaysia had emerged in recent times reflecting the growing importance of distance learning in Malaysia (Jefferies & Hussain, 1998). The use of electronic learning (e-learning) as a medium of instruction in distance learning is also becoming increasingly important in Malaysia (Jefferies & Hussain, 1998; Poon et al., 2004) and worldwide (Volery & Lord, 2000). E-learning as a form of distance learning is being promoted as the educational medium of the future (O'Malley, 1999). E-learning includes web-based courses, computer-mediated communications and multimedia enhanced delivery medium and it has the potential to make the learning process an active one. However, distance learners need to be ready for this type of learning technology as past experiences showed that new technologies do not necessarily lead to major improvement in education (Stephenson, 2001).

Purposes of the study

This study aimed to determine how well distance learners at a distance learning tertiary institution in Malaysia accept e-learning as an instructional medium. Specifically, the research objectives of this study were to:

- ascertain distance learners' level of e-learning acceptance, and
- investigate possible factors affecting e-learning acceptance.

Literature review

Acceptance of e-learning (AEL)

Dillon and Morris (1996, p. 4) defined students' acceptance as "the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support". Although, e-learning is increasingly used in the Malaysian tertiary distance learning institutions, the question of how well

learners accept e-learning as a learning medium has not been well-researched. Hong, Lai and Holton (2003) investigated a web-based course at Universiti Malaysia Sarawak and reported that more than half of their participants had high level of acceptance with the web-based course. The students who had high level of acceptance indicated that the web-based course was convenient and flexible. Nonetheless, some students faced difficulties with the web-based learning environment. They found the web-based course to be a new learning experience and felt that they needed more guidance and time to adapt to the learning environment (Hong et al., 2003). Meanwhile, Poon et al. (2004) studied web-based learning environments at several local universities in Malaysia and reported that their participants were not fully comfortable with e-learning. Likewise, Poon et al. (2004) posited one possible reason was that the students were unfamiliar with the e-learning medium. On the positive side, Hong et al. (2003) and Poon et al. (2004) reported that students generally agreed that e-learning helped in their studies. However, past research showed that a number of factors such as students' and instructors' characteristics (Hong et al., 2003; Ndubisi, 2004; Poon et al., 2004), technology support and system (Poon et al., 2004; Rafaeli & Sudweeks, 1997), institutional support (Passmore, 2000; Latifah & Ramli, 2005), course content and knowledge management (Selim, 2005; Rosenberg, 2001), and online tasks and discussion groups (McDonald, 2001; Webb, Nemer, Chizhik, & Surgue, 1998) could influence learners' acceptance of e-learning.

Students' characteristics

Poon et al. (2004), Folorunso, Ogunseye, and Sharma (2006), Selim (2005) and Volery and Lord (2000) reported that students' characteristics such as their satisfactions with time and place flexibility of the system; students' involvement and participation; students' cognitive engagement; students' level of self-confidence; students' technology self-efficacy; students' initiative and motivation and students' anxiety could influence acceptance of e-learning among students.

Instructors' characteristics

Hong et al. (2003) and Shea, Swan, Fredericksen and Pickett (2001) believed that lecturers played an important role in successful e-learning experience. Lecturers must ensure an optimum level of interactions and discussions with students to enhance the e-learning experience. Moreover, lecturers could influence and motivate students to accept e-learning environment (Ndubisi, 2004; Ndubisi & Chukwunonso, 2004; Selim, 2005). According to Salmon (2000) and Abouchedid and Eid (2004), instructors' characteristics such as confidence, positive behaviours, facilitation, knowledge sharing and creativity could promote interactions and motivate students to learn in an e-learning environment.

Technology support and system

Other factors contributing to the acceptance of e-learning are the infrastructure of technology and technical support of e-learning system (Folorunso et al., 2006; Poon et al., 2004; Selim, 2005). It is important to look into the reliability and quality of the system as it plays an important role in the acceptance of e-learning. To create e-learning acceptance, the technology and the e-learning system must be well maintained and up-to-date (Folorunso et al., 2006; Poon et al., 2004; Selim, 2005). The system must have minimal technical problem and support various platforms and applications. Rafaeli and Sudweeks (1997) reported that if the technology and communication technology used were reliable, students studied better in e-learning environment and had higher e-learning acceptance.

Institutional support

To improve e-learning adoption, institutional support should not be neglected (Latifah & Ramli, 2005). Educational institutions should provide better technology facilities, copyright system, accreditation system and human and technical support (Poon et al., 2004). Passmore (2000) asserted that students' satisfactions and progress in e-learning depended on institutions providing adequate facilities and infrastructures of technology and support.

Course content and knowledge management

Well-designed course content provided students with better learning experiences (Gan, 1998; Parker, 1997) and helped students accessed information easily (Carlson & Zhao, 2004). The self-instructional materials or learning packages available on the course website should include a variety of support services for students (Selim, 2005; Silong & Ibrahim, 2002), linked to additional learning materials available in other websites (Selim, 2005), and multimedia presentation or animation and narration rather than just text-based materials (Zhang, Zhao, Zhou, & Nunamaker, 2004). Rosenberg (2001), on the other hand, stated that knowledge management could support creativity and information sharing between

students and instructors. Students could learn better with knowledge sharing among them and instructors; this would become a new learning mode in e-learning (Poon et al., 2004).

Online tasks or discussion groups

A well developed assignment or online task created opportunity for a two-way feedback among students about their learning experiences (MacDonald, 2001) and increased interactivity and development of students' cognitive skills (Silong & Ibrahim, 2002). Online tasks or online assignments helped students to resolve difficulties in writing assignments. Discussion groups allowed students to achieve critical thinking and retained information longer than students who studied individually (Gokhale, 1995; Webb, Nemer, Chizhik, & Surgue, 1998).

Research methodology

Research design

This study used a cross-sectional survey design (Nesbary, 1999) by employing the administration of self-administered questionnaires to gather the required data for the research.

Research participants

The Open University of Malaysia (OUM) was the distance learning tertiary institution investigated, with approximately 3,157 students at its Kuching Campus in 2004 (Open University Malaysia, 2005) as the targeted population. Questionnaires were distributed to 150 selected OUM students from the open market bachelor and diploma programmes (business and management courses, education courses and technology management courses), and the special teachers bachelor programmes (education courses), covering those who were in their first semester to the final semester of study using purposive sampling, carried out between 2nd August 2005 and 30th September 2005. The total number of questionnaires returned was 112.

Research instruments

Data were collected from the participants using questionnaires. The first part of the questionnaire gathered information pertaining to the participants' age, gender, marital status, working experience, computer use experience and educational background. The second section of the questionnaires determined the learners' acceptance of e-learning based on the research instrument validated and proven reliable for use in research on e-learning by Poon et al. (2004). The five factors measured in this section included: "students' behaviours and attitudes," "technology and system," "interactive applications," "institutional factors" and "instructors' characteristics" (Poon et al., 2004).

Data analysis

The data obtained from the questionnaires were analysed and presented using descriptive statistics such as means and standard deviations.

Results

Demographics

The participants in the study were almost equal in terms of gender with 54 (48.2%) males and 58 (51.8%) females. They were aged between 20-30 (60, 53.6%), 31-40 (35, 31.2%) and 41-50 (15, 13.4%). There was almost equal number of single (49, 43.8%) and married (59, 52.7%) students. Only 19 (17.0%) students were not working while the rest had between 1-5 (32, 28.5%), 6-10 (21, 18.8%), 11-15 (23, 20.5%) and 16 and above (17, 15.2%) years of working experiences. Most of the students had Form 5 or Form 6 (50, 44.6%) educational background, followed by college diploma (39, 34.9%) and bachelor degree (23, 20.5%). Majority of the students had between 1-5 years (59, 52.7%) and more than 5 years (48, 42.8%) of computer use experiences.

Reliability of the questionnaire

The Cronbach Alpha coefficients for the second section of the questionnaire relating to the acceptance of e-learning ranged from 0.638 to 0.851 (refer Table 1). The reliability levels were satisfactory and mostly exceeded the conventional acceptance level of the coefficient, i.e., 0.70 (Nunnally, 1978). In addition, the reliability values obtained in this study were consistent with those reported by Poon et al. (2004).

Table 1: Reliability of the acceptance of e-learning section of the questionnaire

Factors affecting acceptance of e-learning	Cronbach Alpha coefficients
Students' behaviours and attitudes	0.782
Technology and system	0.812
Interactive applications	0.816
Institutional factors	0.638
Instructors' characteristics	0.851

Descriptive measures of acceptance of e-learning

Table 2 shows that distance learners generally had moderate level of acceptance for e-learning. Students reported highest mean for "institutional factors," followed by "students' behaviours and attitudes," "interactive applications," "instructors' characteristics," and "technology and systems." The following section discusses the analyses for each of the five AEL factors.

Table 2: Means and standard deviations for factors influencing acceptance of e-learning

Acceptance of e-learning factors	OUM	
	Mean	Standard Deviation
Institutional factors	3.87	0.748
Students' behaviours and attitudes	3.80	0.746
Interactive applications	3.73	0.737
Instructors' characteristics	3.72	0.752
Technology and system	3.59	0.760
Mean	3.74	0.748

1) The items had responses in the Likert format with 5 = Strongly Agree (SA), 4 = Agree (A), 3 = Neutral (N), 2 = Disagree (D) and 1 = Strongly Disagree (SD).
2) For the overall mean scores, scores of 1.0 - 2.9 = low level, 3.0 – 3.9 = moderate level and 4.0 – 5.0 = high level.

Generally, the scores shown in Table 3 on the factor related to "students' behaviours and attitudes" demonstrated moderate level of acceptance of e-learning, with mean of 3.80. Overall, the students were anxious to complete their studies successfully. The e-learning system at OUM could increase students' self-motivations and desires to complete their studies successfully. They were capable of interacting with the e-learning system. In fact, most students could cope with the required level of cognitive engagements and were able to involve themselves in the e-learning system. The students also preferred higher level of cognitive engagements in the distance learning course. Furthermore, they had the initiatives and motivations to learn and perceived themselves as having high level of self-confidence in using the system. Generally, the students perceived time and place flexibility of the e-learning system as advantageous. All the means for the items in this factor were in the range of 3.65 to 3.97.

Table 3: Responses to Factor 1: Students' behaviours and attitudes

	OUM	
	Mean	Std deviation
1. I am anxious in completing my degree	3.97	0.875
2. I belief in my capability to interact with technology	3.88	0.699
3. I am cognitively engaged in doing the e-learning activities	3.87	0.800
4. I am willing to participate in e-learning activities	3.83	0.642
5. I have the initiative and motivation to learn and use the system	3.76	0.701
6. I have high level of self-confidence in using the system	3.67	0.776
7. I am satisfied with time and place flexibility of the system	3.65	0.732
Mean	3.80	0.746

The students demonstrated moderate level of acceptance of e-learning during their studies at OUM for the factor "technology and system" with mean of 3.59 (refer Table 4). The means for items in this factor were in the range of 3.27 to 3.79. The participants found that information required was easy to access and credible. Screen layout and design, colour and background and help-screen of the e-learning system were generally adequate for learning. The information technology infrastructure was reliable and secured and they believed that adequate investments were provided to support the e-learning system. The students,

however, did experience some problems or slightly negative experiences with navigating the e-learning system. The students also perceived that browsing speed and connectivity to online tutorials were not very satisfactory.

Table 4: Responses to Factor 2: Technology and system

	OUM	
	Mean	Std dev
1. The system allows easy access to information	3.79	0.773
2. The configuration colour and background are clear and harmonious for the system	3.76	0.647
3. There is information credibility in the system	3.73	0.697
4. The guidance screen is clear and easy to use	3.71	0.663
5. The IT infrastructure is reliable and secure	3.65	0.768
6. There is adequate investment in infrastructure to support electronic performance	3.65	0.756
7. The screen layout and design are appropriate	3.56	0.745
8. I am rarely disconnected during online tutorial	3.36	0.868
9. I am satisfied with the browsing speed	3.38	0.773
10. I do not experience problems while navigating	3.27	0.910
Mean	3.59	0.760

The scores shown in Table 5 indicated that the participants had moderate level of e-learning acceptance for the factor "interactive application" with mean of 3.73. They were able to get engaged in online discussions, believing that it could improve knowledge sharing, exchanging of ideas and the quality of learning though the students perceived it as rather time consuming. The students felt that they focused more on the quality of learning when they were engaged in online mode especially in discussion forums or chat rooms where they could ask questions and received answers from peers and instructors. In fact, students felt that work qualities could be improved by browsing and emulating the works of others. In addition, they could easily upload their coursework and discovered that interactive applications in the e-learning system were beneficial. However, some students gave low emphasis on browsing peers' feedbacks (refer item 12 in Table 5, mean = 3.46).

Table 5: Responses to Factor 3: Interactive applications

	OUM	
	Mean	Std dev
1. I think sharing knowledge through online discussions is a good idea	4.04	0.702
2. Online discussion enables students to exchange ideas and comments	3.88	0.836
3. I benefit from using interactive applications	3.82	0.726
4. I am able to ask questions and receive answers	3.73	0.671
5. Browsing classmates' works helps reflect own shortcoming	3.73	0.697
6. I think sharing knowledge through online discussions is time consuming	3.71	0.843
7. I am able to concentrate on the quality of learning	3.69	0.672
8. I have discussions with course mates via e-learning system	3.68	0.830
9. Uploading coursework is easy	3.66	0.717
10. Browsing classmates' works helps improve the quality of own work	3.65	0.654
11. Uploading coursework is an appropriate method	3.63	0.737
12. I browse peers' feedbacks of most of my classmates	3.46	0.758
Mean	3.73	0.737

As observed in Table 6, the scores on "institutional factors" showed that they demonstrated moderate level of e-learning acceptance with mean of 3.87. The students viewed the course content delivery method as the most important under the "institutional factors". In terms of copyrights, the students generally agreed that it was important for institutions to have legal copyrights and accreditation toward the online learning programme. Moreover, they also felt that the resources in the virtual library and e-resources were relevant to the course. They believed that they could perform better in face-to-face learning environment (refer item 7, mean = 3.77, item 8, mean = 3.67, and item 9, mean = 3.74).

Table 6: Responses to Factor 4: Institutional factors

	OUM	
	Mean	Std dev
1. Accreditation is important in choosing an e-learning course	3.91	0.754
2. Availability of virtual library is an important factor	3.92	0.725
3. The course content method of delivery is important	4.32	0.832
4. It is important that an institution has the copyrights of the online learning programme	3.97	0.765
5. Electronic resources are easily accessible by clicking on related links in the Internet	3.80	0.769
6. Materials in virtual library is relevant to the course	3.75	0.729
7. Face-to-face delivery is complementary to e-learning	3.77	0.723
8. It is equally effective to learn in online environment or classroom mode	3.67	0.690
9. I perform better in the classroom mode of learning	3.74	0.744
Means	3.87	0.748

The participants had moderate level of e-learning acceptance for the factor related to "instructors' characteristics," as shown in Table 7 and the mean for this factor was 3.72. In particular, they felt that the instructors' knowledge and familiarity with the Internet technology improved the efficiency of e-learning experiences. The instructors were approachable, could be easily contacted, encouraged students' interactions, ensured sufficient online learning resources and provided explanations on the use of course website from start. However, the students felt that the instructors gave opinions or encouragements to students only when they did not understand or showed anxiety on a problem. The instructors involved themselves actively only when students did not give correct answers to the problems assigned. However, generally, the responses indicated that the instructors were enthusiastic in teaching and were able to solve most problems efficiently.

Table 7: Responses to Factor 5: Instructors' characteristics

	OUM	
	Mean	Std dev
1. Instructors' knowledge on using the Internet technology affects efficiency of online learning	3.95	0.733
2. Instructors are friendly and approachable	3.90	0.677
3. Instructors are easily contacted	3.86	0.696
4. Instructors explain how to use the website at the beginning of the semester	3.84	0.823
5. Instructors encourage student interactions	3.81	0.777
6. Instructors provide sufficient learning resources online	3.79	0.699
7. Instructors solve emerging problems efficiently	3.70	0.721
8. Instructors provide fast feedbacks to queries in the discussion forum	3.64	0.733
9. Instructors are enthusiastic in teaching and explaining via the web	3.64	0.733
10. Instructors reply e-mail queries rapidly	3.53	0.771
11. Instructors do not intervene unless students asked for the correct answers	3.27	0.910
Mean	3.72	0.752

Discussion

Students' acceptance of e-learning

Overall, the students' scores from the study showed moderate level of e-learning acceptance. Likewise, Poon et al. (2004) also found that their students in various local universities demonstrated moderate level of AEL. This study showed that the students reported highest mean for ""institutional factors" followed by students' behaviours and attitudes," "interactive applications," "instructors' characteristics," and "technology and systems." In contrast, Poon et al. (2004) found that "students' behaviours and attitudes" was ranked highest, followed by "technology and systems," "institutional factors," "interactive applications," and "instructors' characteristics" among distance learning students in various local universities in Malaysia.

Institutional factors

Selim (2005) stated that the efficiency and effectiveness in delivering the e-learning based components of a course is one of the most critical factors to students' acceptance of e-learning and success in e-learning courses. The findings of this study showed that although the scores from institutional factors indicated moderate level of acceptance of e-learning, it was the factor with the highest mean score. Past studies had shown that institutions need to evaluate their copyright policies and intellectual property issues which involved creation, ownership, and distribution of distance learning courses (Guernsey & Young, 1998). It is also important for the e-learning courses to be accredited as accredited courses would make the students more willing to accept e-learning (Poon et al., 2004). These past findings were in line with the results of the present study in which the students considered legal issues such as copyrights and accreditation of the e-learning programmes to be important contributing factors. The study revealed that the availability of online information, virtual libraries and other computer-based facilities were important features of e-learning and Poon et al. (2004) reported that these features could impact on the students' study habits.

Nonetheless, the present study also revealed that distance learning students still showed a preference for face-to-face learning sessions rather than relying solely on the e-learning environment. This was consistent with results reported in several local and foreign studies (Ndubisi, 2004; Poon et al., 2004). This observation indicated that face-to-face learning method was still perceived to be more effective in distance learning. However, several studies in the western context such as Dewhurst, Macleod and Norris (2000) and Tweddle et al. (2000) indicated that students were generally satisfied with online learning. Nevertheless, unifying face-to-face learning with some e-learning models may help distance learners to cope better with their studies (Hong et al., 2003).

Students' behaviours and attitudes

On "students' behaviours and attitudes," the scores showed moderate level of e-learning acceptance. Majority of the students felt that they had the initiative and motivation to learn with the e-learning system and completed their studies successfully. The students also viewed their involvement and participation in e-learning as important. This was consistent with the writings of Leidner and Jarvenpaa (1995) and Alavi and Yoo (1997). Their review of the literatures indicated that learning is best accomplished through active involvement of students. Poon et al. (2004) also stated that students' participations could enhance their learning interests. In addition, Selim (2005) and Volery and Lord (2000) stated that students' behaviours and attitudes toward e-learning are a critical success factor for AEL. This is in line with the findings of the study where "students' behaviours and attitudes" was the second highest mean scores among the factors influencing the acceptance of e-learning. Venkatesh (2000) and Agarwal and Prasad (1997) further reported that users' self-efficacy could influence the use of technology. According to Taylor and Todd (1995) and Selim (2005), self-efficacy is a measure of users' confidence in their ability to use technology for learning. Hence, as pointed out by Woodrow (1991), it is important to be aware of the students' attitudes and behaviours towards e-learning as it is a critical criterion for e-learning readiness and acceptance.

Interactive applications

Previous studies agreed that knowledge sharing through online discussions was important as having online discussions enabled students to exchange ideas and comments (Selim, 2005). Likewise, in this study, the students rated "interactive applications" as the third most important factor demonstrating moderate level of e-learning acceptance. The findings of the study also reported that students were able to engage themselves with online discussions. Moreover, the students considered knowledge sharing and exchanging of ideas as factors that could improve the quality of learning through e-learning system. In fact, Poon et al. (2004) believed that knowledge sharing in online discussions would help students and was an essential part of distance learning. The e-learning systems could also allow students to view questions posted during online tutorials and to obtain answers either from the instructors or among peers. Benigno and Trentin (2000) suggested that interactions with peers and the supports available via online discussions correlated with acceptance of e-learning and the performances of distance learning students. However, in the case of Poon et al. (2004), most of the students gave low emphasis in giving feedbacks to peers as was similarly reported in this study. This could mirror the traditional views of learning which placed more importance on getting the correct answers and believing that instructors should provide the answers (Poh & Abu Samah, 2006

Instructors' characteristics

The present study reported that the students' scores for instructors showed moderate level of e-learning acceptance. In a teaching institution, instructors play a central role in the students' acceptance of e-learning (Selim, 2005). Instructors should be knowledgeable in using the Internet technology as it could affect the learning process and assisted them in creating conducive e-learning environments. Collis (1995) reported that students believed instructors could help them in learning if they were knowledgeable in computer usage, adopted interactive teaching style and were able to perform basic troubleshooting tasks. Accordingly, Sharman and Wright (1995) stressed that an instructor should demonstrate how e-learning approach could be an effective method for acquiring information and for developing the ability to think critically.

Instructors should have a better understanding of the students; encouraged student-student interactions and involved them in online discussions (Durling, Cross, & Johnson, 1996; Mason, 1998). Results in the present study indicated that students were not actively engaged in the e-learning system unless they were guided and facilitated by instructors who were also active in using the e-learning system. This was supported by Armitt, Slack, Green and Beer (2002) who believed that there should be an instructor to facilitate the e-learning process as students might not collaborate spontaneously with peers. Thus, interactions between instructors and students were an important motivation factor for students to learn. Hence, to facilitate interactions between instructors and students, instructors should provide various office and after-office hours contact methods for students (Volery & Lord, 2000). Poon et al. (2004) suggested that instructors should maintain constant interactions with students via online forum discussions and emails. Instructors were also expected to utilize video conferencing as and when needed to improve interactions with students (Singh, 2005).

Technology and system

Several researchers had identified the interfaces of course web-page (Hong et al., 2003; Rafaeli & Sudweeks, 1997) and e-learning system (Folorunso et al., 2006; Poon et al., 2004) as important aspects of the "technology and system" factor in acceptance of e-learning. In the present study, the results indicated that students had moderate level of e-learning acceptance for the factor of "technology and system". Hong et al. (2003) and Rafaeli and Sudweeks (1997) stated that an e-learning system or a web-page with harmonious configuration of colour and background enhanced students' interest to study. Attractive combination of colours with appropriate graphics and animations on web sites were useful in delivering information in a user-friendly way (Carlson & Zhao, 2004; Hong et al., 2003; Poon et al., 2004). Likewise, the finding of this study showed that students indicated that the design of e-learning system could help in their learning.

Conversely, the study also found some problems faced by students in navigating the e-learning system. In addition, poor Internet services, software and infrastructures could impede distance learning programmes (Folorunso et al., 2006; Hong et al., 2003). These technical problems could affect the students' willingness to accept e-learning (Hong et al., 2003). Therefore, a user-friendly system is important especially to assist students who have problems in using some of the e-learning tools. Moreover, students thought that the infrastructure of the technology and e-learning system should be upgraded. According to Folorunso et al. (2006), educational institutions should identify and upgrade their e-learning system in order to enhance the acceptance of e-learning among students. Thus, the interfaces of e-learning courses and the institutional information technology infrastructure should be user friendly, reliable and secure (Poon et al., 2004; Rafaeli & Sudweeks, 1997). Nevertheless, the cost of upgrading the necessary technology and e-learning system could be prohibitive and this is what the relevant institutions need to seriously reflect on (Selim, 2005).

Conclusions

The findings from this study showed that more could be done to improve the students' acceptance of e-learning. Distance learning institutions in Malaysia should assist and prepare their students for distance learning and in particular guide them in utilizing e-learning. As proposed by various past research, the institutions should also provide courses to guide students to maximise the use of e-learning for learning purposes. It is hoped that the findings of this study could assist distance learning institutions in Malaysia improve the quality of learning experiences and help spur further research in the area of acceptance of e-learning, as undoubtedly, e-learning and distance learning would be one of the pillars of higher education in future (Jefferies & Hussain, 1998).

References

Abouchedid, K., & Eid, G.M. (2004). E-learning challenges in the Arab world: Revelations from a case study profile. *Quality Assurance in Education, 12*(1), 15-27.

Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences*, *28*, 557-582.

Alavi, M.A., & Yoo, Y. (1997). Using information technology to add value to management education. *Academy of Management Journal*, *6*(40), 1310-1333.

Armitt, G., Slack, F., Green, S., & Beer, M. (2002). The development of deep learning during a synchronous collaborative on-line course. In G. Stahl (Ed.), *Computer support for collaborative learning: Foundations for a CACL community* (pp. 151-159). Mahwah, NJ: Lawrence Erlbaum Associates. Retrieved September 2, 2005, from http://newmedia. colorado.edu/cscl/70.pdf.

Benigno, V., & Trentin, G. (2000). The evaluation of online courses. *Journal of Computer Assisted Learning, 16,* 259-270.

Carlson, K.S., & Zhao, G.X.A. (2004). *Collaborative learning: Some issues and recommendations.* Paper presented at The Centre for the Development of Technological Leadership Conference (CDTL) (National University Singapore, Singapore, April 24-27, 2004). Retrieved January 23, 2006, from http://www.cdtl.nus.edu.sg/brief/V7n4 /sec3.htm.

Collis, B. (1995). Anticipating the impact of multimedia in education: Lessons from the literature. *Computers in Adult Education and Training, 2*(2), 136-149.

Dewhurst, D.G., Macleod, H.A., & Norris, T.A.M. (2000). Independent student learning aided by computers: An acceptable alternative to lectures? *Computers & Education*, *35*, 223-41.

Dillon, A., & Morris, M.G. (1996). User acceptance of information technology: Theories and models. *Annual Review Of Information Science and Technology*, *31*, 3-32.

Durling, D., Cross, N., & Johnson, J. (1996). *CAI with style.* Paper presented at the 18th Annual Design Conference-Computer-aided Design Education (University of Bristol, England, June 26-27, 1997). Retrieved November 3, 2005, from www.ub.es/5ead/PDF/7/Durling. pdf.

Folorunso, O., Ogunseye, O.S., & Sharma, S.K. (2006). An exploratory study of the critical factors affecting the acceptability of e-learning in Nigerian universities. *Information Management and Computer Security, 14*(5), 496-505.

Gan, S.L. (1998). Online distance education program: Problems and issues. In the *Proceedings of the International Conference on Information Technology and Multimedia 1998* (pp. 25-29). Selangor: Malaysia.

Gokhale, A.A. (1995). Collaborative learning enhances critical thinking. *Journal of Technology Education*, *7*(1), 22-30. Retrieved November 24, 2005, from http://scholar.lib.vt.edu/ejournals/JTE/jte-v7n1/gokhale.jte-v7n1.html.

Guernsey, L., & Young, J. R. (1998). Who owns online courses? *The Chronicle of Higher Education*, *39*, A21-23.

Hong, K.S., Lai, K.W., & Holton, D. (2003). Students' satisfaction and perceived learning with a Web-based course. *Journal of Educational Technology & Society 6*(1). Retrieved January 15, 2004, from http://ifets.ieee.org/periodical/vol_1_2003/v_1_2003.html.

Jefferies, P., & Hussain, F. (1998). Using the Internet as a teaching resource. *Education & Training, 40* (8), 359-365.

Latifah, A.L., & Ramli, B. (2005). *Priority-satisfaction survey: A tool in developing effective retention strategies.* Paper presented at the Conference on Research in Distance and Adult Learning in Asia. (Open University of Hong Kong, P.R. China, June 20-22, 2005). Retrieved February 9, 2006, from http://www.ouhk.edu.hk/cridal/cridala2005 /latif_ bahroom.pdf.

Leidner, D., & Jarvenpaa, S. L. (1995). The use of information technology to enhance management school education: A theoretical view. *MIS Quarterly*, *19*(3), 265.

MacDonald, J. (2001). Exploiting online interactivity to enhance assignment development and feedback in distance education. *Open Learning, 16*(2), 179-189. Retrieved June 5, 2005, from http://taylorandfrancis.metapress.com/media/3duf6u8jrn5urm5enqt1/contributions /h/1/5/u/h15ubwh1tqmhf1tu.pdf.

Mason, R. (1998). Models of online courses. *ALN Magazine*, *2*(2). Retrieved November, 2005, from http://www.aln.org/alnweb/magazine/vol2_issue2/Masonfinal.htm.

Nesbary, D. (1999). *Survey research and the World Wide Web.* Boston: Allyn and Bacon.

Ndubisi, N.O. (2004). *Factors influencing e-learning adoption intention: Examining the determinant structure of the decomposed theory of planned behaviour constructs.* Paper presented at the HERDSA 2004 Conference. (Miri, Sarawak, July, 4-7 2004). Retrieved January 2, 2004, from http://www.herdsa.org.au/conference2004/Contributions/RPap ers/P057-jt.pdf.

Ndubisi, N.O., & Chukwunonso, N.C. (2004). *On-line learning adoption intention: Comparing the predictive power of two competing models.* Paper presented at the HERDSA 2004 Conference (Miri,

Sarawak, July, 4-7 2004). Retrieved January 2, 2004, from http://herdsa2004.curtin.edu.my/Contributions/RPapers/P058-jt.pdf.
Nunnally, J.C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
O'Malley, J. (1999). Student perceptions of distance learning, online learning and the traditional classroom. *Online Journal of Distance Learning Administration*, *2* (4), 1-13.
Open University Malaysia (2005). *University Profile 2004*. Retrieved January 3, 2005, from http://www.oum.edu.my/portal/index.php.
Parker, A. (1997). A distance education how to manual: Recommendations from the field. *Educational Technology Review*, *8*, 7-10.
Passmore, D.L. (2000). Impediments to adoption of web-based course delivery among university faculty. *ALN Magazine*, *4* (2).
Poh, J.P., & Abu Samah, A.J. (2006). *Measuring students' satisfaction for quality education in an e-learning university*. UNITAR E-Journal, 2(1). Retrieved February 4, 2006, from http://ejournal.unitar.edu.my/index.php?option=content&task=view&id=3.
Poon, W.C., Low, L.T., & Yong, G. F. (2004). A study of Web-based learning (WBL) environment in Malaysia. *The International Journal of Educational Management*, *18*(6), 374-385.
Rafaeli, S., & Sudweeks, F. (1997). Networked interactivity. *Journal of Computer-Mediated Communications*, *2*(4). Retrieved July 17, 2004, from http://www.ascusc.org/jcmc/vol2/issue4/rafaeli.sudweeks.html.
Rosenberg, M.J. (2001). *E-learning: Strategies for delivering knowledge in the digital age*. New York: McGraw Hill. Retrieved February 23, 2004, from http://reach.ucf.edu/%eme6457 /main.html.
Salmon, G. (2000). *E-moderating: The key to teaching and learning online*. London: Kogan Page.
Selim, H.M. (2005). Critical success factors for e-learning acceptance: Confirmatory factor models. *Computers and Education.* Retrieved February 9, 2007, from http://mail.phy.bg.ac.yu/~marijam/milos/science7.pdf.
Sharman, C.C., & Wright, H.S. Jr. (1995). The power and use of teams in schools. In H.G. Garner (Ed.), *Teamwork models and experience in education* (pp. 17-30). Boston: Allyn and Bacon.
Shea, P. J., Swan, K., Fredericksen, E. E., & Pickett, A. M. (2001). Student satisfaction and reported learning in the SUNY Learning Network. In J. Bourne & J.C. Moore (Eds.), *Elements of Quality Online Education* (Vol. 3). Olin & Babson Colleges: Sloan Center for Online Education.
Silong, A.D., & Ibrahim, D.Z. (2002). Students' perspectives on effective online teaching and learning. In D. Murphy, S. Namin, & Y. Z. Wei (Eds.), *Advancing online learning in Asia* (pp. 15-19). Hong Kong*:* Open University of Hong Kong Press.
Singh, H.K., (2005). *Learner satisfaction in a collaborative online learning environment.* Retrieved January 26, 2006, from http://asiapacific-odl.oum.edu.my/C33/F239.pdf.
Stephenson, J. (2001). *Teaching and learning online, pedagogies for new technologies*. London, U.K.: Kogan Page Limited.
Taylor, S., & Todd, P.A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, *6*, 144-176.
Tweddle, S., James, C., Daniels, H., Davies, D., Harvey, P., James, N.N., Mossman, J., & Woofg, E. (2000). Use of a Web site for learning about cancer. *Computers & Education*, *35* (2), 309-25.
Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, *11*, 342-365.
Volery, T., & Lord, D. (2000). Critical success factors in online education. *International Journal of Educational Management, 14*(5), 216-223.
Webb, N.M., Nemer, K., Chizhik, A., & Surgue, B. (1998). Equity issues in collaborative group assessment: Group composition and performance. *American Educational Research Journal*, *35*(4), 607-651.
Woodrow, J.E.J. (1991). A comparison of four computer attitude scales. *Journal of Educational Computing Research, 7*(2), 165-187.
Zhang, D., Zhao, L., Zhou, L., & Nunamaker, J. (2004). Can e-learning replace classroom learning? *Communication of the ACM*, *47*(5), 75-79.

Authors: Bibiana Lim Chiu Yiong, School of Business and Enterprise, Swinburne University of Technology (Sarawak Campus), Jalan Simpang Tiga, 93576 Kuching, Sarawak, Malaysia. Email: blim@swinburne.edu.my
Dr. Hong Kian Sam. Email: hksam@fcs.unimas.my
Dr. Tan Kock Wah, Email: kwtan@fcs.unimas.my
Faculty of Cognitive Science and Human Development, University Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Please cite as: Lim, B., Hong, K.S., & Tan, K.W. (2008). Acceptance of e-learning among distance learners: A Malaysian perspective. *In Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008*
.http://www.ascilite.org.au/conferences/melbourne08/procs/lim.pdf