A PRELIMINARY STUDY OF E-LEARNING CRITICAL SUCCESS FACTORS: THE STUDENT PERSPECTIVES

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ABSTRACT

In this recent day, information technology becomes prominent to support teaching and learning activities. E-learning also known as online learning was one of information technology (IT) tools introduced at College of Science and Technology (CST), University Technology Malaysia (UTM) City Campus Kuala Lumpur since 2001. It represents an innovative shift in the field of learning, providing rapid access to specific knowledge and information, and offers online instruction that can be delivered anytime and anywhere through a wide range of electronic learning solutions such as Web-based courseware and online discussion groups. It can be viewed as making learning materials such as presentation slides available on the web. The aim of e-learning, as any other learning approach is to achieve the learning objectives. Until today students in CST used the e-learning technology only for accessing the syllabus and course content, submitting assignments and taking class quizzes. Meanwhile, most of CST instructors had been given several e-learning courses and workshops by Centre of Teaching and Learning (CTL) in University Technology Malaysia regarding course content development. In this connection, the instructor plays a central role in the effectiveness and success of e-learning based courses. This paper will focus on issues relating to the e-learning critical success factors (CSFs) from student perspectives. In this study two main issues related to the e-learning CSFs within a university environment addresses include instructor characteristics and student characteristics.

Keywords: e-learning, critical success factors, College of Science and Technology

1. INTRODUCTION

The rapid growth in the use of the internet has led to a new dimension in interactive and collaborative learning anytime and anyplace dynamically. Electronic learning or e-learning introduced since 1990s had improved teaching and learning styles, and qualities. There are many definitions given to e-learning, but here we define e-learning as any learning that is done using an internet or intranet connection. This e-learning represents an innovative shift in the field of learning, providing rapid access to specific knowledge and information, and offers online instruction that can be delivered anytime and anywhere through a wide range of electronic learning solutions such as a web-based courseware and online discussion groups. It can be viewed as making learning materials such as presentation slides available on the web. Nowadays e-learning has become an accepted educational paradigm across universities worldwide (OECD 2005) E-learning also known as online learning was one of ICT tools introduced at College of Science and Technology (CST), UTM since 2001.

- Constructing
- Collaborating
- Creating
- Sharing

With regard to this learning environment and activities in the system, the universities can provide students with not only good understanding and create new ideas, but also can share the idea and work in team.In order to achieve the above objectives, the universities have been making heavy investment in the implementation of e-learning programs. Despite the many uncertainties occurred throughout the process, part of the teaching

and learning processes are moving towards the internet usage. These uncertainties bring about difficulties for academic administrators, who face the challenge of keeping the focus on essential and relevant aspects that will assure programs success. Accordingly, full understanding of the factors contributing to effectiveness of e-learning system is needed to help universities funding to effective factors and eliminate non-effective factors. Therefore, the objective of this study is to determine the critical success factors acceptance of e-learning by students.

2. CRITICAL SUCCESS FACTORS

Critical success factors (CSFs) are viewed as those activities and constituents that must be addressed in order to ensure its successful accomplishment. The term CSFs can be viewed as those things that must be done if an organization is to be successful, and CSFs should be few in number, measurable and controllable. E-learning CSFs included intellectual property, suitability of the course for e-learning environment, building the e-learning course, e-learning course content, e-learning course maintenance, e-learning platform, measuring the success of an e-learning course, evaluating the learning and the students' performance, technology, instructor, and previous use of technology. According to Selim (2005), e-learning CSFs within a university environment can be grouped into four categories such as instructor, student, information technology and university support. Instructor plays a central role in the effectiveness and success of e-learning based courses. The effectiveness of e-learning can be determines by the instructional implementation of the information technology (IT). Instructors should adopt interactive teaching style, encourage student-student interaction, and have good control over IT. University students need to have time management, discipline, and computer skill in order to be a successful in the e-learning era. Student prior IT experience such as having a computer at home and attitude towards e-learning is critical to e-learning success. E-learning integration into university courses is one of components of the IT explosion. The efficient and effective use of IT in delivering e-learning based components of a course is of critical important to the success and student acceptance of e-learning. There fore, the university IT infrastructure should be rich, reliable and capable of providing the courses with the necessary tools to make the delivery process are smooth as possible. The IT tools included network bandwidth, network security, network accessibility, audio and video plug-ins, video conferencing, user interface etc.

3. METHOD

Courses selected for the study were e-learning and all of them are computer desktop-based courses. E-learning tools used are electronic student-student and student-instructor communication. Data were collected through anonymous survey instrument administered to 1500 diploma students during the 2006/2007 session. The survey instructed students to provide honest feedback about their experiences with the e-learning approach. The survey targeted first year, second year and third year students at the College of Science and Technology and 822 responses were achieved, giving a 54.8% response rate. A survey instrument consisted of 3 sections, one for each e-learning CSF category (including the instructor characteristics and student characteristics sections) and the demographic characteristics section. The instructor characteristics section comprised 13 items that evaluate the characteristics of the instructor (that is, to represent instructor's attitude towards the technology, teaching style, and control of the e-learning technology). These 13 items were adopted from Volley and Lord (2000), and Soong et al. (2001). Meanwhile, the student characteristics were assessed by 22 items adopted from Soong et al. (2001) and Selim (2005), and items 8 through to 22 were excluded from further study and will be used in a follow-up article. Therefore, only seven items were considered in the study. The first two items measured the student motivation to use e-learning, and another five items measured the student computing competency. All items used a five-point Lickert scale of responses: 1-Strongly Agree, 2-Agree, 3-Neutral, 4-Disagree, and 5-Strongly Disagree.

4. RESULT AND ANALYSIS

The profile of respondents is depicted in Table 1. Respondents were majority male (58.8%)**4** compared to female (41.2%). By age, respondents were grouped into 17 to 19

(51.9%), 20 to 22 (46.9%), 23 to 25 (1.1%) and 26 to 28 (0.1%). Meanwhile for student level from first year student level is repre sented by 33.3%, second year student level is represented by 54.3%, and third year student level is represented by 12.4%. The reliability analysis was conducted in order to ensure the internal validity and consistency of the items or indicators used for each variable. Table 2 shows the Cronbach alpha values for the two e-learning CSFs. The suggested accepted values for Cronbach alpha from 0.6 to 0.7 were deemed the lower limit of acceptability. An alpha of more than 0.7 would indicate that the items are homogeneous and measuring the same constant (Hair et al., 1998) and all factors in Table 2 exhibit a high degree of internal consistency as the alpha values are more than 0.70.The results of the instructor descriptive analysis are as the following:

- Instructors should be able to handle the e-learning technology such as e-mail and e-forum effectively.
- Instructors should have positive attitude towards interactive learning and teaching via e-learning technology.

Table1: Respondents Profile

Item		Frequency (n)	Percentage (%)
Gender	Male	483	58.8
	Female	339	41.2
Age (years)	17 to 19	427	51.9
	20 to 22	386	46.9
	23 to 25	8	1.1
	26 to 28	1	0.1
Year (Student level)	First year	274	33.3
	Second year	446	54.3
	Third year	102	12.4

Table2: Reliability Analysis

Critical Success Factor (CSF)	Cronbach Alpha
INST (Instructor characteristics)	0.912
STUD (Student characteristics)	0.936

Based on descriptive analysis, mean and standard deviation were calculated as stated in Table 3 and Table 4. Table 3 and table 4 present the measures of students' perspectives of the e-learning acceptance. Respondents have a positive opinion towards e-learning usage when the mean values for the measures show more than average and above. Further, the standard deviation (SD) for all success factor to the success of e-learning. measures showed less than 1, indicated that there was less variation among respondents' opinion to each measure.

- Instructors should be able to encourage and motivate students to use e-learning. In other words, instructors should depend on e-learning tools such as online quiz or exam, and attract the students to depend on the tools provided in the course.

Table 3: Descriptive Analysis – Instructor Characteristics

Survey Question	Mean	SD
The instructor handles the e-learning units effectively. ***(control of the e-learning technology)***	2.55	0.92
The instructor explains how to use the e-learning components. ***(control of the e-learning technology)***	2.64	0.95
I feel the instructor is keen that we use the e-learning based units. ***(attitude towards the e-learning technology)***	2.59	0.87
The instructor encourages and motivates me to use e-learning. ***(teaching style)***	2.56	0.90
The instructor is active in teaching me the course subjects via e-learning. ***(teaching style)***	2.65	0.93

Survey Question	Mean	SD
The e-learning encourages me to participate more actively in the discussion than the traditional methods. ***(student motivation to use the e-learning technology)***	2.50	0.86
I am not intimidated by using the e-learning based courses. ***(student computing competency)***	2.61	0.81

In this study, the student as a factor contributing to the success of e-learning at the tertiary education was categorized into two factors capturing the students' perspectives of student motivation to use the e-learning technology and the student competency. The results of student descriptive analysis can be summarized as below:

- Most of the student responses were posi tive indicating a satisfaction with e-learn ing tool such as e-forum or e-discussion.
- Most of the students had exposed to com puting skills and e-learning experiences.

The descriptive analysis results and the students' perspective about the CSFs indicated the most critical factor to the success of e-learning courses was the instructor characteristics. Meanwhile, the student characteristics factor was perceived as the moderate critical

5. CONCLUSIONS

E-learning has been adopted by many universities. This paper specified two e-learning critical success factor categories that can help universities to efficiently and effectively adopt e-learning technologies. The specified e-learning CSF categories were based on students perceptions and included instructor characteristics (attitude towards interactive learning and teaching via e-learning technology and teaching style), and student characteristics (motivation to use e-learning and student computer competency).This study indicated that the instructor characteristics factor is the most critical factor in e-learning followed by the student characteristics factor, that is, the instructor is the key to successful

e-learning courses in the higher education institutions. Therefore, instructors should have adequate computing skill, and training must be provided in the technical aspects of the e-learning technology and in how to use these tools pedagogically. Likewise students' computing literacy also needs to be enhanced.

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REFERENCES

Hair, J., Anderson, R., Tatham, R. and Black, W. (1998. Multivariate data analysis. Prentice Hall, 5th edition

OECD (2005). E-learning in tertiary education: where do we stand?. Education & Skills, 4, 1-293.

Papp, R. (2000). Critical success factors for distance learning. Paper presented at the Americas Conference on Information Systems, Long Beach, CA, USA.

Santoso, H.B. and Hasibuan, Z.A. (2005). The use of e-learning towards new learning paradigm: case study student centered e-learning environment at Faculty of Computer Science – University of Indonesia. Proceedings of the Fifth IEEE International Conference on Advanced Learning Technologies (ICALT '05).

Selim, H. M. (2005). E-learning critical success factors: an exploratory investigation of student perceptions. In M. Khosrow-Pour (ed.) Managing Modern Organizations with Information Technology. Proceedings of the 2005 IRMA International Conference, San Diego, 340-346.

Soong B.M.H., Chan, H.C., Chua, B.C. and Loh, K.F. (2001). Critical success factors for on-line course resources. Computers & Education 36, 101-120.

Voley, T. and Lord, D. (2000). Critical success factors in online education. The International Journal of Educational Management 14, 216-223.