Adult Distance Education Students’ Perspective on Critical Success Factors of e-Learning

Farn-Shing Chen, Chin-Wen Liao, Tsai-Hsiu Chen
Department of Industrial Education and Technology
National Changhua University of Education, NCUE
Changhua, Taiwan, R. O. C.
e-mail: jsjen@cc.ncue.edu.tw; e-mail: cwliao.robert@msa.hinet.net; e-mail: show@mdu.edu.tw

Abstract—It is still the greatest hot issue about efficiency on learning. This study is part of a broader research approach concerning the investigation of students’ opinions and aims to study adult distance education students’ perspective on critical success factors of e-learning. Based on a comprehensive study by Selim (2007) grouped “Critical Success Factor” into four categories: (1) instructor, (2) student, (3) information technology, and (4) university support.

The participants are selected from National Open University (NOU) in Taiwan. The NOU is not only the first school to implement distance education in Taiwan, but also the students are all adult. During seminar training be teach by technology, learning and instruction. The distance education implement by teaching of TV and broadcast early, developed by way of Video On Demand (VOD) later.

In a few of research about e-learning, especially study on critical success factors of e-learning, this study tries to discuss students’ perspective. This study has two main objectives. The first one is to analysis the difference in aspects of students’ perspective on critical success factors of different personal backgrounds. The second objective is to comparative the results of Selim’s research in 2007.

In order to generalize the data with demographic and focus on calculation, to discuss the differences between “Instructor”, “Student”, “Information Technology”, and “University Support” is investigated by a one-way Analysis of Variance (ANOVA) and Multivariate Analysis of Variance (MANOVA).

The research result includes: (1) Students’ perspective of distance education on critical success factors of e-Learning are good instructor and good website. (2) Both of them have to be usefully and friendly. (3) Students in distance education need more efficiency on e-Learning. (4) The website should be easily, clearly, sufficiently, and pleasantly. We expect more research to investigate the thoughts of students and teachers about critical success factors of e-learning in the future.

Keywords—Adult Learning; Distance Education

I. INTRODUCTION

E-learning, which is the application of information and communication technologies in a wide array of solutions, improve knowledge and performance [1]. The integration of IT supported learning helps workers to acquire the necessary skills and knowledge for their job [2].

The past 10 years have seen dramatic changes in Higher Education in terms of increased access to education, lifelong learning, increased choice in areas of study and the personalisation of learning [3][4]. Unlike traditional face-to-face learning environments, technology inserts a layer of mediation between course interactions [5]. This lack of a shared environment occurs because e-learning appears to lack a shared learning space similar to that created in a traditional classroom [6].

E-learning refers to training initiatives which provide learning material, course communications, and the delivery of course content electronically through technology mediation [7]. The current approaches for e-learning systems development remain ill-structured in their definitions and descriptions, which can limit tutors in their choice and use of them [8].

Horton (2000) considers an e-learning course as the combination of mainly lessons, activities, and collaboration mechanisms [9]. Jonassen (1999) establishes that knowledge is elaborated individually and socially by the students on the basis of the interpretations of their experiences. He defines the constructivist learning environments to conceive a problem, a question, or an example as the centre of the environment [11].

To use of the Web as an educational delivery medium (e-learning) provides the students with the opportunity to develop an additional set of communication, technical, teamwork and interpersonal skills that mirror the business environment in which they will work [12]. Students may react differently to the online learning environment, depending on their own level and attitude [13].

Online collaborative teams face many challenges due to the lack of face-to-face communications or shared social context [14]. With a variety of information and communication technologies, it is very important yet challenging to select and utilize appropriate media for different tasks [15].

The Open University is the first school to implement distance learning in Taiwan. It is by the teaching of TV and broadcast to be early, developed by way of Video On Demand (VOD) later. In so many researches about e-learning, especially study on critical success factors of e-learning. We try to discuss students’ perspective. This study has two main objectives. The first one is to analysis the difference in aspects of students’ perspective on critical success factors of different personal backgrounds. The
second objective is to comparative the results of Selim’s research in 2007.

II. LITERATURE REVIEW

Recently, information technology has been viewed as a solution to universities’ cost and quality problems. Information technology in teaching and learning has created a need to transform how university students learn by using more modern, efficient, and effective alternative such as e-learning [16].

Papp (2000) explores distance learning from a macro perspective and suggests some critical success factors that can assist faculty and universities in e-learning environment development. And then, suggests studying each one of these critical success factors in isolation and also as a composite to determine which factor(s) influence and impact e-learning success [17].

E-learning critical success factors were specified within each critical success factor category. The proposition of grouping e-learning critical success factors into 4 categories was not supported by the research results.

TABLE I. CRITICAL SUCCESS FACTORS OF RESEARCHES

<table>
<thead>
<tr>
<th>Research</th>
<th>Critical Success Factors</th>
</tr>
</thead>
</table>
| Papp (2000)         | 1. intellectual property  
|                     | 2. suitability of the course for e-learning environment  
|                     | 3. building the e-learning course  
|                     | 4. e-learning course content  
|                     | 5. e-learning course maintenance  
|                     | 6. e-learning platform  
|                     | 7. measuring the success of an e-learning course |
| Volery and Lord     | 1. technology  
| (2000)              | 2. instructor  
|                     | 3. previous use of technology |
| Soong, Chan, Chua, and Loh (2001) | 1. human factors  
|                     | 2. technical competency of both instructor and student  
|                     | 3. e-learning mindset of both instructor and student  
|                     | 4. level of collaboration  
|                     | 5. perceived information technology infrastructure |
| Dillon and Guawardena (1995) and Leidner and Jarvenpaa (1993) | 1. technology  
|                     | 2. instructor characteristics  
|                     | 3. student characteristics |
| Govindasamy (2002)  | 1. institutional support  
|                     | 2. course development  
|                     | 3. teaching and learning  
|                     | 4. course structure  
|                     | 5. student support  
|                     | 6. faculty support  
|                     | 7. evaluation and assessment |
| Selim (2007)        | 1. instructor’s attitude towards and control of the technology  
|                     | 2. instructor’s teaching style  
|                     | 3. student motivation and technical competency  
|                     | 4. student interactive collaboration  
|                     | 5. e-learning course content and structure  
|                     | 6. ease of on-campus internet access  
|                     | 7. effectiveness of information technology infrastructure  
|                     | 8. university support of e-learning activities |

From: Selim (2007), this research put in order.

The confirmatory factor models test results proposed 8 categories for e-learning critical success factors as follows: (1) instructor’s attitude towards and control of the technology, (2) instructor’s teaching style, (3) student motivation and technical competency, (4) student interactive collaboration, (5) e-learning course content and structure, (6) ease of on-campus internet access, (7) effectiveness of information technology infrastructure, and (8) university support of e-learning activities. Each category of the 8 categories included several critical measures. The level of criticality of each indicator is represented by its validity coefficient (quoted in Selim, 2007). Another research is Testa & de Freitas (2004) on critical success factors of e-learning. They analyse the research data and indicate that there are five critical success factors in e-learning programs, related to (1) the qualification and experience of the e-learning program teams, (2) the knowledge and concern with the student’s characteristics and behavior, (3) the learning model, (4) the technology, especially the technological infrastructure and software used and, (5) the establishment of strategic alliances [18].

III. RESEARCH METHODOLOGY

This study is part of a broader research approach concerning the investigation of students’ opinions. Based on a comprehensive study by Selim (2007) grouped “Critical Success Factor” into four categories: (1) instructor, (2) student, (3) information technology, and (4) university support. During seminar training in the areas of “Organization Behavior” and “Digital Government” be teach by technology, learning and instruction.

The participants are 46 adult students. The participants attend a training program about distance learning. They are selected via the Program of Police’s Special Class and University Program of National Open University. All students participated voluntarily in the study.

Courses take Network Learning Model (VOD, see Figure 1). Students must select the course first, then link teaching websites and key in theirs account and password. Students can have a class whenever and wherever possible. The course is not limited by time and space.

Figure 1. VOD of Open University  
(From: http://www.nou.edu.tw)
Whole course divide into about 68 sessions and each session about 30 minutes. Students adopt one’s own way to study and learn. Both traditional learning and e-learning are application. The former means that students had to be required attendance, regular textbook, and presence of instructor during the learning processes of four months. The latter used are asynchronous course.

The purpose of the study is to investigate the different students’ perspective on critical success factors of personal background. In addition, this study investigates the difference in aspects of students’ perspective on critical success factors of different personal backgrounds. Specifically the study investigates the following questions:

- Do students of different demographic have difference of critical success factors (Instructor, Student, Information Technology, and University Support)?
- Do students’ perspective have difference on critical success factors (Instructor, Student, Information Technology, and University Support)?

The research instrument for the data collection is: The demographic questionnaire regarding students’ gender, age, PC ownership. The critical success factors Scale developed by Selim in 2007. The scale is a 53 items, Likert-scale that purports to measure a belief in personal competence. The Likert-scale items ranged from “1” (Strongly Agree) to “5” (Strongly Disagree). All data analysis implements with statistic software SPSS 10.0 and Microsoft Excel 2003. Table II shows min, mix, mean, and standard about four items of critical success factors scale. Both Program of Police’s Special Class and University Program have the highest mean on “Instructor” Item.

**IV. FINDINGS AND DISCUSSION**

**A. Research question 1: The difference of demographic between students’ perspective on critical success factors**

Table III shows demographic and descriptive statistics of surveyed students. There are more male in Program of Police’s Special Class than University Program. The average of students in Program of Police’s Special Class is younger than in University Program. There are over 76% under 40 years old in Program of Police’s Special Class and over 66% over 40 years old in University Program. Students almost have own computer in both classes.

During t test, there is no difference between different Ages, Gender, PC Ownership. Also, there is no difference between Program of Police’s Special Class and University Program. All results of t test are equal variances assumed. In order to generalize the data with demographic and focus on calculation, to discuss the differences between “Instructor”, “Student”, “Information Technology”, and “University Support” is investigated by a one-way Analysis of Variance (ANOVA) and Multivariate Analysis of Variance (MANOVA).

Using both independent sample one way multivariate analysis of variance and independent sample two way multivariate analysis of variance, to discuss differences on different age, gender, PC ownership to instructor, student, information technology, and university support. Tests the null hypothesis, that the observed covariance matrices of the dependent variables, are equal across groups. Box’s M values are significance, but the Wilks’ Lambda values are not significance.

**B. Research question 2: The difference of four constructs between students’ perspective on critical success factors**

As mention above (Research question 1), during t test, there is no difference between different classes, Program of Police’s Special Class and University Program on “Instructor”, “Student”, “Information Technology”, and “University Support”. All results of t test are equal variances assumed, besides T1, T3, TEC2, TEC3, TEC4, and TEC5 (see table IV).

During Multivariate Analysis of Variance (MANOVA), both variables age and gender of University Program on “Instructor”, “Student”, “Information Technology”, and “University Support” have no significant difference. In Program of Police’s Special Class, age and gender variables have significant difference.

**TABLE II. FOUR ITEMS OF CRITICAL SUCCESS FACTORS SCALE**

<table>
<thead>
<tr>
<th>Items</th>
<th>Samples</th>
<th>Min</th>
<th>Mix</th>
<th>Mean</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
<td>Total: 46</td>
<td>3.62</td>
<td>5.00</td>
<td>4.39</td>
<td>0.43</td>
</tr>
<tr>
<td>Student</td>
<td></td>
<td>3.23</td>
<td>5.00</td>
<td>4.05</td>
<td>0.45</td>
</tr>
<tr>
<td>Information Technology</td>
<td></td>
<td>2.31</td>
<td>5.00</td>
<td>3.75</td>
<td>0.58</td>
</tr>
<tr>
<td>University Support</td>
<td></td>
<td>2.40</td>
<td>5.00</td>
<td>3.80</td>
<td>0.61</td>
</tr>
</tbody>
</table>

**TABLE III. DEMOGRAPHIC PROFILE AND DESCRIPTIVE STATISTICS OF SURVEYED STUDENTS**

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Program of Police’s Special Class</th>
<th>University Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>30-39</td>
<td>11</td>
<td>44</td>
</tr>
<tr>
<td>40-49</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>50-59</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>21</td>
<td>84</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>PC Ownership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>24</td>
<td>96</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>
TABLE IV. DIFFERENCE OF FOUR CONSTRUCTS

<table>
<thead>
<tr>
<th>Items</th>
<th>Subjects</th>
<th>F</th>
<th>P</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>The instructor is enthusiastic about teaching the class</td>
<td>5.86</td>
<td>0.02</td>
<td>1.34</td>
</tr>
<tr>
<td>T3</td>
<td>The instructor is friendly towards individual students</td>
<td>5.86</td>
<td>0.02</td>
<td>1.34</td>
</tr>
<tr>
<td>TEC2</td>
<td>Did not experience problems while browsing</td>
<td>0.55</td>
<td>0.46</td>
<td>1.10</td>
</tr>
<tr>
<td>TEC3</td>
<td>Browsing speed was satisfactory</td>
<td>4.62</td>
<td>0.04</td>
<td>-0.17</td>
</tr>
<tr>
<td>TEC4</td>
<td>Overall, the website was easy to use</td>
<td>3.45</td>
<td>0.07</td>
<td>-1.77</td>
</tr>
<tr>
<td>TEC5</td>
<td>Information was well structured/presented</td>
<td>5.33</td>
<td>0.03</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Note: 1. 971= Program of Police’s Special Class; 972= University Program
   2. T1&T3: 971=4.76>972=4.57
   3. TEC2: 971=3.96<972=3.71
   4. TEC3: 971=3.72>972=3.76
   5. TEC4: 971=3.92<972=3.95
   6. TEC5: 971=4.00>972=3.90

V. CONCLUSION

This study is part of a broader research approach concerning the investigation of students’ opinions. The participants, 46 adult students, are selected from Program of Police’s Special Class and University Program of National Open University, the first school of distance education in Taiwan. This study aims to study distance education students’ perspective on critical success factors of e-learning.

As findings, students of Program of Police’s Special Class and University Program have the highest mean on “Instructor” variable than “Student”, “Information Technology”, and “University Support”. Students think the Instructor is the most important. As research of Volery and Lord (2000), instructor is one of critical success factors of e-learning. The same as research of Soong, Chan, Chua, and Loh (2001), Dillon and Guawardena (1995) and Leidner and Jarvenpaa (1993), Govindasamy (2002), they propose the importance of instructor’s mindset, characteristics, attitude, and teaching style further. The age, gender, PC ownership do not have any difference in four variables: instructor, student, information technology, and university support. Also do not have any difference between Program of Police’s Special Class and University Program. But, students think the instructor has to be friendly and enthusiastically, and the website has to be easy for use, browsing fast, and well information presented. Therefore, we can generalize a conclusion, students’ perspective of distance education on critical success factors of e-Learning are not only good instructor but also good website. Both good instructor and website have to be usefully and friendly.

Especially, students in Program of Police’s Special Class have different thoughts. Both good instructor and good website are certainly important. Moreover, instructor has to participate actively. The website should be easily, clearly, sufficiently, and pleasantly. As stated above, that has nothing to do with age and sex. We can generalize a conclusion, students in Special Class of distance education need more efficiency on e-learning.

A lot of research about e-learning is being produced. It is still the greatest hot issue how to reach effectively with efficiency. The participation of more students of future will be nearly more perfect. This is the investigations of a trial. It need more research to investigate the thoughts of students and teachers about critical success factors of e-learning in the future.

REFERENCES