

A Study on Older Adult Students' Behavioural Intention and Learning Satisfaction of Blended e-Learning Course at the Active Aging University

Hornng-Jyh Chen¹, Chien-Jen Liu², Chien-Liang Lin³, Yi-Fang Chen⁴ and Hung-Liang Chen⁵

¹*Department of Information Management, Kao-Yuan University, Kaohsiung, Taiwan*

²*Institute of Education, National Sun Yat-sen University, Kaohsiung, Taiwan*

³*Department of Management Information Systems, National Cheng Chi University, Taipei, Taiwan*

⁴*Institute of Education, National Sun Yat-sen University, Kaohsiung, Taiwan*

⁵*Department of Safety and Health, Chia-Nan University, Tainan, Taiwan*

Keywords: Active Aging University, Blended e-Learning, Behavioural Intention, Learning Satisfaction, Structural Equation Model (SEM).

Abstract: Recently, the blended e-learning is implemented in many fields more and more popularly. In this paper, the program of ceramics teaching at the Active Aging University is also applied blended e-learning without exception in order to raise older adult students' behavioural intention and learning satisfaction. Because of the unfamiliar with IT technology application for these older adult students the different results from most of younger students in this investigation are expected. In this study, the questionnaire is designed for 44 older adult students whose ages are all over 55 years old. The teaching experiment of blended e-learning for ceramics teaching course is performed at the Active Aging University in the southern of Taiwan. And the Structural Equation Model (SEM) quantitative analysis is carried out that the conclusions are got with the perceived usefulness of learning contents has positive relationship with learning satisfaction. Also, the perceived ease of use for interfaces has positive relationship with the perceived usefulness of learning contents and learning satisfaction. Therefore, these conclusions could be applied to develop and design for all the blended e-learning programs at the Active Aging University with the best teaching and learning strategy in the future.

1 INTRODUCTION

Because of the improvement of medicine technology, the subtle changes of proportion of different age population have been happened. For example, the aging society exists in Taiwan since 1993. Till 2010 the ratio of aging population rises to 10.7% of total population (OEPD, 2010). Hence, the Ministry of Education in Taiwan proposes the White Book of the education policy for most of the aging populations. This objective becomes one of the most important government social policies. Therefore, this live to old to learn policy gives most of older adult students the opportunity to learn so many suitable courses at the Active Aging University in Taiwan. In this paper, the course of ceramics teaching at the Active Aging University is also applied blended e-learning in order to raise older adult students' behavioural intention and learning satisfaction.

Because of the unfamiliar with IT technology application of these older adult students the different results from most of younger students in this investigation are expected.

On the other hand, the user cognitive behaviour and attitude for information technology application have been investigated for younger students at many universities (Davis, 1989). And also, due to the development of information technology, DeLone and McLean (2003) suggested the model to explain the successful experiment of information technology application. According to the DeLone and McLean (2004) researched results the user satisfaction has relationship with user behavioural intention. In addition, the Expectation Confirmation Theory (ECT) and models suggested that the factor of perceived usefulness has close relationship with user satisfaction (Bhattacharjee, 2001a). Therefore, In this research the authors try to combine these three

research frameworks and models to study simultaneously many older adult students' behavioural intention and learning satisfaction of blended e-learning for ceramics teaching course at the Active Aging University in the southern of Taiwan. The quite different results for this special group in the investigation are concluded.

2 LITERATURE REVIEW AND HYPOTHESE

The Extended Technology Acceptance Models are also suggested by many researchers (Park et al., 2011, Palvia, 2009, Hsu and Lin, 2008). Nevertheless, in this research the authors also adopt the model being suggested by Venkatesh and Davis (2000). That is how two factors of the perceived usefulness and perceived ease of use affect the user behavioural intention. Therefore, the following conditions are assumed

H1: Perceived usefulness with positively influence behavioural intention of blended e-learning.

H2: Perceived of ease of use positively influence user behavioural intention of blended e-learning.

H3: Perceived of ease of use positively influence perceived usefulness of blended e-learning.

Due to the development of information technology, DeLone and McLean (2003) suggested the model to explain the successful experiment of information technology application. And, according to the Seddon (1997), DeLone and McLean (2004) researched results the user satisfaction has relationship with user behavioural intention. Therefore, the following additional assumption is:

H4: Behavioural intention positively influences satisfaction of blended e-learning.

According to the conclusions of the Expectation Confirmation Theory (ECT) and models, research suggested that the factor of perceived usefulness has relationship with user satisfaction (Roca and Gagné, 2008, Bhattacharjee, 2001b). Hence, in this study the following additional assumption is also suggested.

H5: Perceived usefulness with positively influence user satisfaction of blended e-learning.

3 RESEARCH DESIGN AND METHOD

3.1 Measurement Design and Research Framework

According to the above discussions, the research model is shown in figure 1. Before the questionnaire is performed, two experts have evaluated the questionnaire scales. And also, two professors of information management department have examined the questionnaire scales for content validity. The details of final scales for the factors of perceived usefulness, perceived ease of use and user behavioural intention are revised from the scales which were developed by Davis (1989). And then, the scales of user satisfaction are modified from the original copies of Bhattachjee (2001b). Finally, the measuring scales are all with Likert 5 scales.

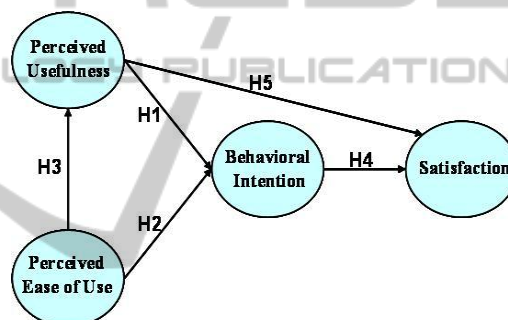


Figure 1: Extended technology acceptance model.

3.2 Experimental Design and Objects

In this research the one group posttest only design is adopted. The authors select one group of the older adult students who has attended the blended e-learning for ceramics teaching course to participate in this experiment. Finally, the research objects are this special group of the older adult students at the Active Aging University in the southern of Taiwan. The research objects of 44 older adult students whose ages are all over 55 years old. The ratio of male is 41.9% and female is 58.1% and the experience in using of computer for all the older adult students is less than one year.

3.3 Experimental Procedure

Because of the less experience in using of computer for all the older adult students, the contents of ceramics teaching course are explained previously by experts in the real classroom and laboratory. And

then the experiment let all the students learn blended e-learning digital contents at home at any time after the real classroom learning. The blended e-learning program of ceramics teaching course takes three hours per week for one semester. After the experiment finished, the authors implement the questionnaire to all the older adult students and collect all the effective data for the quantitative analysis.

4 DATA ANALYSIS AND RESULTS

4.1 Measurement Model

A confirmatory factor analysis is performed to examine the measurement model. The partial least squares (PLS) method using SmartPLS 2.0 (Ringle et al., 2005) is chosen because it presumes no distributional form for measured variables, nor does it posit a strong requirement for large sample sizes (Chin et al., 2003, Chin, 1998). PLS supports both exploratory and confirmatory research (Gefen et al., 2000) and gives optimal prediction accuracy because it is prediction-oriented (Fornell and Cha, 1994).

Internal consistency can be assured by examining the composite reliability of the constructs (Fornell and Larcker, 1981), and all composite reliability values in this study ranged from 0.9705 to 0.9872, surpassing the suggested threshold value of 0.7 (Bagozzi and Yi, 1988, Gefen et al., 2000). And then, Convergent validity refers to the degree to which multiple items measure one construct. Convergent validity in this study is evaluated by checking whether (1) the average variance extracted (AVE) values are larger than 0.5 (Gefen et al., 2000), and (2) the factors loadings of the all items are significant and higher than 0.7 (Nunnally, 1978). All these conditions are met, indicating acceptable convergent validity of the measurement.

Besides, to assess discriminant validity, the square root of AVE of each construct is computed and compared with the correlation between constructs (Chin et al., 2003, Chin, 1998). Based on the results, all square roots of AVE are larger than the correlation coefficients between constructs, indicating that each construct is more closely related to its corresponding measurement items than to those of other constructs. This again supports the discriminant validity of the measures. In sum, the positive evidence supporting good reliability, convergent validity, and discriminant validity of the

measurement model shows the appropriateness of this model to be used in subsequent hypotheses testing.

4.2 Structural Model

The test of the hypotheses involves estimating path coefficients of the Structural Model, which indicate the strength of the relationship between the dependent and independent variables, and the R-square value, which indicates the amount of variance explained by the independent variables. Moreover, the bootstrap re-sampling procedure is used to examine the stability of the PLS estimates (Chin, 1998). This study chose re-samples of 100.

The model explained 92.1 percent of the variances in satisfaction to adopt blended e-learning. In addition, the model explained 53.8 percent of the variances in behavioural intention, and 78.6 percent in perceived usefulness. The path coefficients perceived ease of use (H1, $\beta=-0.046$, $t=0.926$) no significantly affected behavioural intention, and perceived ease of use (H5, $\beta=0.055$, $t=2.898$) was positively affected learning satisfaction. And then, perceived ease of use (H2, $\beta=0.774$, $t=15.065$) has significantly effect on behavioural intention, and perceived ease of use (H3, $\beta=0.887$, $t=26.477$) also significant effect on perceived usefulness. Finally, the effect of behavioural intention on satisfaction (H4, $\beta=0.924$, $t=46.450$) is significant at the $p<0.05$ level.

5 DISCUSSION AND RESULT

According to the results, perceived usefulness of contents and ease of use for interfaces has significant effect on user behavioural intention. This result has the same conclusion with the Technology Acceptance Model having been investigated by many researchers before (Liu et al., 2009, Venkatesh and Davis, 2000). This result shows some meanings for the future research on all of the blended e-learning courses for older adult students. First of all, the most important factor is to strengthen the ease of use for interfaces. And then, the usefulness of contents should be improved effectively. The results provide another direction of thinking that is the design of e-learning contents should consider the requirements of the older adult students and let the interfaces operation easier. Simple to learn can enhance the learning outcome of the older adult students. As for the ease of use is defined as the operation of e-learning platform and interface easily.

Therefore, because the operation of interface is relatively simple that will raise the behavioural intention of and also improve the overall quality of learning.

Moreover, user behavioural intention and ease of use for interfaces are the important factors for user learning satisfaction. The higher of user behavioural intention and the easier operation of interfaces are the higher of user learning satisfaction will be. Therefore, in order to improve the user learning satisfaction of older adult students effectively how to strengthen the design of contents and improve the user intention of blended e-learning program for all the older adult students is more important. However, the result of the perceived usefulness of the contents does not meet with the basic assumption of the Technology Acceptance Model. This result is still worthy of discussing. Perhaps, older adult students believe that the use of blended e-learning platform for ceramics teaching course being necessary but usefulness to the extent not yet bigger enough to affect the user behavioural intention of learning.

REFERENCES

- Bagozzi, R. P. & Yi, Y. 1988. On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Science*, 16, 74-94.
- Bhattacharjee, A. 2001a. An empirical analysis of the antecedents of electronic commerce service continuance. *Decision Support Systems*, 32, 201-214.
- Bhattacharjee, A. 2001b. Understanding information systems continuance: an expectation-confirmation model. *MIS Quarterly*, 25, 351-370.
- Chin, W. W. 1998. Issues and opinion on structural equation modeling. *MIS Quarterly*, 22, VII-XVI.
- Chin, W. W., Marcolin, B. L. & Newsted, P. R. 2003. A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from a Monte Carlo Simulation Study and an Electronic-Mail Emotion/Adoption Study. *Information Systems Research*, 14, 189-217.
- Davis, F. D. 1989. Perceived Usefulness, Perceived Ease Of Use, And User Acceptance of Information Technology. *MIS Quarterly*, 13, 319-339.
- Davis, F. D., Bagozzi, R. P. & Warshaw, P. R. 1989. User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35, 982-1003.
- DeLone, W. H. & McLean, E. R. 2003. The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19, 9-30.
- DeLone, W. H. & McLean, E. R. 2004. Measuring e-Commerce Success: Applying the DeLone & McLean Information Systems Success Model. *International Journal of Electronic Commerce*, 9, 31-47.
- Fornell, C. & Cha, J. (eds.) 1994. *Partial least squares: Advanced Methods of Marketing Research*, Blackwell Publishers, Oxford, 52-78.
- Fornell, C. & Larcker, D. F. 1981. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research (JMR)*, 18, 39-50.
- Gefen, D., Straub, D. W. & Boudreau, M. C. 2000. Structural equation modeling and regression: Guidelines for research practices. *Communication of the Association for Information Systems*, 7, 1-79.
- Hsu, C.-L. & Lin, J. C.-C. 2008. Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Information & Management*, 45, 65.
- Liu, S.-H., Liao, H.-L. & Pratt, J. A. 2009. Impact of media richness and flow on e-learning technology acceptance. *Computers & Education*, 52, 599-607.
- Nunnally, J. (ed.) 1978. *Psychometric Theory*, New York: Mcgraw-Hill.
- OEPD. 2010. Estimation Report of Populations in Taiwan, <http://www.cepd.gov.tw/m1.aspx?sNo=0000455> (accessed 15 February 2012)
- Palvia, P. 2009. The role of trust in e-commerce relational exchange: A unified model. *Information & Management*, 46, 213-220.
- Park, N., Jin, B. & Annie Jin, S.-A. 2011. Effects of self-disclosure on relational intimacy in Facebook. *Computers in Human Behavior*, 27, 1974-1983.
- Ringle, C. M., Wende, S., and Will, S. 2005. SmartPLS 2.0, available at: <http://www.smartpls.de> (accessed 15 June 2011), Hamburg, Germany.
- Roca, J. C. & Gagn, M. 2008. Understanding e-learning continuance intention in the workplace: A self-determination theory perspective. *Computers in Human Behavior*, 24, 1585-1604.
- Seddon, P. B. 1997. A respecification and extension of the DeLone and McLean model of IS success. *Information Systems Research*, 8, 240-253.
- Venkatesh, V. & Davis, F. D. 2000. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46, 186.