IJER © Serials Publications
12(2), 2015: 411-416
ISSN: 0972-9380

DIMENSIONS OF E-LEARNING EFFECTIVENESS - A THEORETICAL PERSPECTIVE

A. Bindhu* and Hansa Lysander Manohar**

Abstract: *Corporates and educational institutions are increasing adopting e-learning as an effective alternative to traditional methods of education and training. E-learning is believed to provide significant economic benefits apart from offering a sophisticated learner-centric asynchronous learning environment, adaptable to the pedagogy in any discipline. These pros offered by an e-learning system make it attractive for all the stakeholders. As the other side of every coin, adopting an e-learning system faces challenges at various stages of its development, implementation and usage. The huge investment involved needs to be justified by highlighting the benefits offered. The author explores the literature available on e-learning effectiveness for over a decade in order to identify the dimensions that make up the success of an e-learning system. A theoretical framework is proposed which would be validated with empirical data.*

Keywords*: E-learning, effectiveness, learner-centric, asynchronous.*

INTRODUCTION

The internet age is changing the face of education. Social, economic and technological changes are driving education reforms around the world. Globalization of business manifolds challenges posed by fierce competition and pressurizes corporate to explore new techniques to patch up the lack of skilled labor. Moreover, technological up gradations are increasing the complexity and velocity of the work environment, making the skill gap still wider.

E-learning is a technology-based instruction delivery method relying on a variety of electronic media including the Internet, intranet, extranet, satellite broadcasts and interactive TV. (Ozkan & Keseler, 2009). E-learning is increasingly adopted in IT as well as soft skill training. Corporate e-learning is one of the fastest growing and

* Asst. Professor, Department of Management Studies, Jeppiaar Engineering College, Chennai, *E-mail: bindhu.arumugam@gmail.com,*

** Associate Professor, Department of Management Sciences, Anna University, Chennai, *E-mail: mhansa@ymail.com*

promising markets in the education industry. Indian e-learning market was estimated to be $276 million in 2008 is growing at a compound annual growth rate and is expected to reach 17.4% by 2018.

As e-learning is penetrating all areas of corporate training, it is imperative to measure the success of the e-learning systems. The focus is to build a comprehensive model of E-learning success through a systematic review of literature. Articles and research papers were gathered from university and general research databases available online, with the keywords for search as "e-learning success","e-learning effectiveness models". The first part of the paper explains the dimensions that make up e-learning effectiveness. that includes the. The second part categorizes the dimensions as influencing factors and expected outcomes. Finally the proposed framework depicting the association between the dimensions as derived from the literature is presented. The developed model would be subjected to empirical tests for validation.

Theoretical Base

System quality: System quality is a measure of the technical efficiency of the e-learning system and is comprised of its structure, functionality and accessibility (DeLone & McLean, 1992, 2003). Y.-S. Wang et al measure availability, system use, user friendliness, interactivity between system and users, personalized information presentation, attractive features and high speed information access to assess the system quality, which has a direct impact on user satisfaction. Yengin et al (2011) included system quality as the determinant of system use by instructors in their multidimensional model of e-learning success.

Availability of appropriate infrastructure must have a significant effect on the effective use of e-learning systems. The availability of an efficient communication system with Internet access, specialized centres with a central reference databases and the appropriate software all lead to the effectiveness of the system (647-1977-1-PB).

Content quality: The training content refers to the knowledge skills and behavior that is being taught during the training program (Rabeb Mbarek and Ferid Zaddem (2013) The Content of an e-learning system is determined by the individual user's needs (relevance) and aims to satisfy the needs of every user(comprehensive). Content should change constantly based on user input, experiences, new practices, business rules and heuristics. Courses with strong writing component and wider online content availability were found to be very successful **(Wyne_Akthar.pdf - ALL).** The purpose of training program is to develop task related content to satisfy the needs of the learners and hence is vital for learning performance. Relevancy, Adequacy, Comprehensiveness, Updation.

Service quality: Service quality comprises of the level of service received by the learner and the appropriateness of the pedagogy adopted by the e-learning system.

Student tracking, course management, instructional authorization, knowledgeability and security are identified as the elements of service quality by many authors. Kristal Reynolds considers 'Support quality' as a more accurate label as the trainees seek things that support their learning and their use of the e-learning system.

The effects of learning activities and learner satisfaction are influenced by instructors' attitudes in handling learning activities (Sun, P. -C. et al, 2007). When the instructors are satisfied with the e-learning system, they tend to provide high quality content to the learners.

Training method accounts for 33% of the variance in learning outcomes (Rabeb *et al.*, 2013).

Learner quality: Learner quality comprises of the individual profile of the learner and includes the learners attitude, computer self efficacy, learning style, motivation to learn, learning pace and other individual differences. Learner attitude towards IT is an important factor in e-Learning satisfaction (Arbaugh, 2002; Arbaugh & Duray, 2002; Hong, 2002; Piccoli et al., 2001). Computer self Efficacy refers to the extent of the perception that he/she has the ability to use the e-learning system effectively.

Hong (2002) has listed Gender, age, scholastic aptitude, learning style, and initial computer skills, interaction with instructor, interaction with fellow students, course activities, discussion sessions, and time spent on the course as factors affecting learner satisfaction, thereby indirectly affecting the effectiveness of the e-learning system.

Rabeb at al meta analysis conducted by reveals the fact that individuals motivation is one of the most important predictor of the learning performance. TAM and its extensions (Davis 1989, Venkatesh et al 2003) have identified that extent of use of the e-learning system by the learners and intention to use the system in future is the factors affecting the value generated by the system.

Organizational Factors

In order to catch up with the fast paced competitive environment many organizations encourage continuous learning culture. Continuous learning is one in which the organizational members consider learning as an important part of their everyday work life.

User Satisfaction

User satisfaction is the most commonly used construct in evaluating e-learning effectiveness. It is a complex construct to measure and many scholars have attempted to develop a comprehensive set of factors to measure user satisfaction. According to D&M IS success model, system quality, information quality and system use jointly affects user satisfaction, which is a direct antecedent of e-learning systems impact on individual performance. Learner computer anxiety, instructor attitude toward e-Learning, e-Learning course flexibility, course quality, perceived usefulness, perceived

ease of use, and diversity in assessment are the variables proved to have a critical relationship with e-learner satisfaction (Sun, P. C. *et al.*, 2007).

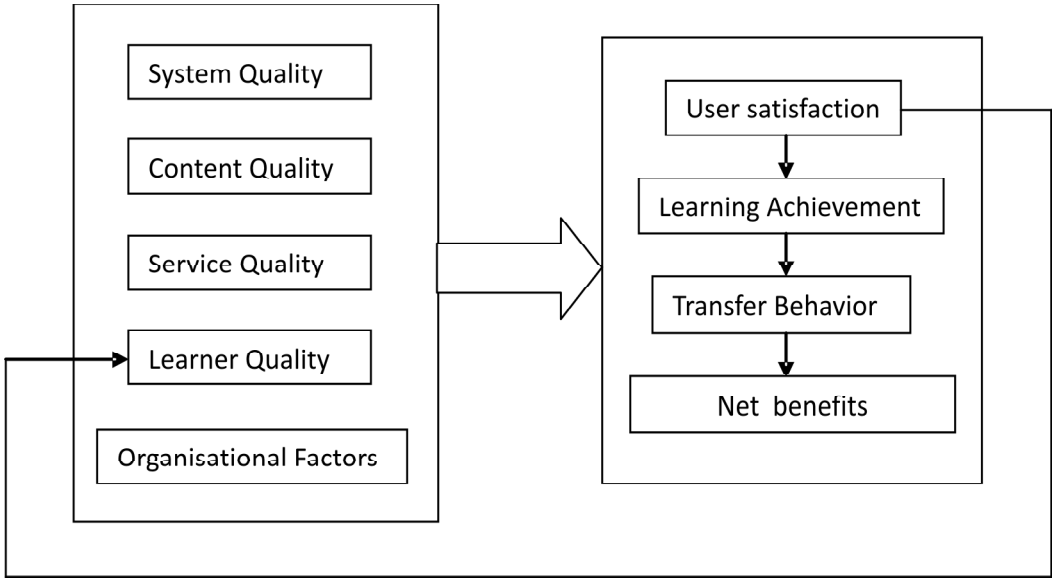
Learning Achievement

Learning benefits refers to the knowledge, skills and behavior learnt during the training session. This construct is being widely used as a success measure of an e-learning system and is unveiled by the learner performance. Rovai et al. (2009) developed and validated a measurement instrument comprising of nine items representing cognitive, affective and psychomotor learning. Redding and Rotzien (1999) reported that the online learning group was the most successful at cognitive learning compared to traditional learning. The learning construct must reflect in both knowledge transfer and knowledge retention (Colquitt, LePine and Noe, 2000).

Transfer Behavior

The most expected outcome of any training program is improvement in performance of tasks. Transfer refers to how effectively the learners apply the knowledge and skills gained through the e-learning course, to their job tasks. Transfer refers to the learners' change of their behavior on the job because of training experience (Kirkpatrick, 1996). The meta analysis conducted by Rabeb *et al.* reveal a moderate correlation between learning performance and learning transfer which runs over many other research results. In the Tunisian study it was empirically proved that learning had a significant influence on transfer behavior (Rabeb Mbarek, 2011).

Figure 1: E-learning Effectiveness Model



Proposed Conceptual Model

A systematic review of literature reveals that the Delone and McLean IS success model may be extended with a few more dimensions namely organizational characteristics and learner characteristics. The system outcome is measured in four levels as specified by Kirkpatrick's model - User satisfaction, Learning Achievement, Transfer behavior and Net benefits. This results in a comprehensive model for E-learning success. This theoretical model may be tested empirically with varied respondents so as to measure its validity.

CONCLUSION

This research explores the various dimensions of e-learning effectiveness – System quality, Content quality, Service quality, learner characteristics, organizational characteristics, system use, learner satisfaction, learning outcomes and economic benefits. The proposed model is adapted from the widely accepted and reviewed DeLone & McLean Information System success model. The research would be furthered to empirically validate the proposed conceptual model with data collected through a cross sectional survey.

References

Arbaugh, J. B. (2000), Virtual classroom characteristics and student satisfaction with internet-based MBA courses. *Journal of Management Education,* 24(1), 32–54.

Arbaugh, J. B. (2002), Managing the on-line classroom: a study of technological and behavioral characteristics of web-based MBA courses. *Journal of High Technology Management Research*, 13, 203–223.

Chuttur, Mohammad (2009), "Overview of the technology acceptance model: Origins, developments and future directions."

Davis, Fred D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology." *MIS quarterly* 319-340.

DeLone, W.H., and McLean, E.R. (1992), Information systems success: The quest for the dependent variable. *Information Systems Research, 3,* 1, 60–95.

DeLone, W.H., and McLean, E.R. (2003), "The Delone and Mclean Model of Information Systems Success: A Ten-Year Update," *Journal of Management Information Systems* (19:4), pp. 9-30.

Hu, Paul, *et al.* (2005), "Examining e-Learning Effectiveness, Outcomes and Learning Style: A Longitudinal Field Experiment."

Islam, A., *et al.* "Factors Affecting E-Learning Effectiveness in a Higher Learning Institution in Malaysia." *Journal Pendelikon Malaysia* 35.2 (2010): 51-60.

Lee-Post, A. "e-Learning Success Model: an Information Systems Perspective." *Electronic Journal of e-Learning Volume 7 Issue 1 2009, (pp61 - 70), available online at www.ejel.org*

Measuring e-learning systems success in an organizational context: Scale development and validation - Wang, Wang, *et al.* - 2007.

Piccoli, G., Ahmad, R., & Ives, B. (2001), Web-based virtual learning environments: a research framework and a preliminary assessment of effectiveness in basic IT skill training. MIS Quarterly, 25(4), 401–426.

Proceedings ascilite Auckland (2009), *http://www.ascilite.org.au/conferences/auckland09/procs/samarasinghe-poster.pdf*

Rabeb Mbarek and Ferid Zaddem, "The examination of factors affecting e-learning effectiveness," *International Journal of Innovation and Applied Studies*, Vol. 2, No. 4, pp. 423–435, April 2013.

Rabeb Mbarek and Ferid Zaddem (2013), "Determinants of E-Learning Effectiveness: A Tunisian Study," *IBIMA Business Review*, Vol. 2013 (2013), Article ID 996925, DOI: 10.5171/2013.

Samarasinghe, S.M. & Tretiakov, A. (2009), A multi-dimensional measure of e-learning systems success. In Same places, different spaces.

Sun, P. C. *et al.*, What drives a successful e-Learning? An empirical investigation ..., Computers & Education (2007), doi:10.1016/j.compedu.2006.11.007.