TOJDEL
The Online Journal of Distance Education and e Learning

ISSN 2147-6454

The Online Journal of Distance Education and e-Learning

Volume 6 Issue 4
October 2018

www.tojdel.net
October 2018

Contact Address:
Prof. Dr. Aytekin İŞMAN
TOJDEL, Editor in Chief
Sakarya-Turkey

Published in TURKEY

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October 01, 2018
Prof. Dr. Aytekin ISMAN
Sakarya University

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A STUDY ON THE FACTORS AFFECT E-LEARNING OUTCOMES OF THE PILOTS IN A SELECTED AIRLINE IN THAILAND

Dr. Dinesh Elango
Lecturer, Graduate School of Business, Assumption University, Bangkok, Thailand
vipdinesh@gmail.com

Dr. Kitikorn Dowpiset
Associate Dean and Lecturer, Graduate School of Business, Assumption University, Bangkok, Thailand.
kdowpiset@gmail.com

Mr. Titikorn Chukkaew
Manager, Airbus Flight Operations Services Ltd, Bangkok, Thailand.
nickkmutt@hotmail.com

ABSTRACT

E-Learning is a platform that is being used for training in the digital era. Many researchers try to identify the different influencing factors that affect E-Learning outcomes. The six (6) important factors, which appear in the literature, included Learner-Learner Interaction, Learner-Instructor Interaction, Learner-Content Interaction, Perceived Ease of Use and Readiness Factors, will be examined in this research. The respondents, numbering 205 pilots of Thai Airways who are using E-Learning for the pilot's ground school. However, only 200 are valid. The Pearson's Correlation results showed that all independent and dependent variables have positive relationship with each other. The results of multiple linear regression showed that three significant variables impact on E-Learning outcomes, which are Learner-Learner Interaction, Learner-Content Interaction and Readiness Factors.But three other variables, Learner-Instructor Interaction, Perceived Ease of Use and Computer Self-Efficacy,do not show a significant effect.

Keywords: E-Learning, Computer Based Training (CBT), Airbus Cockpit Experience (ACE), Outcomes, Learner, Instructor, Air Pilot.

INTRODUCTION

In recent years of aviation and education world, numerous attentions were focused on E-Learning and this sort of education encompasses a significant growth (Franceschi et al., 2009). The training trend is moving towards online-learning to create accessible education for all (Keramati, Afshari-Mofrad and Kamrani, 2011) and the number of E-Learning students is increasing rapidly (Michinov et al., 2011). E-Learning has the most vital advantage that it will increase flexibility through resources which encourages learning anytime and in anyplace (Michinov et al., 2011). Developing on the efficiencies of the web, educational establishments and organizations have been affected to quickly apply this kind of new technology for tutorial functions. The purpose of E-Learning is to attain the learning objectives (Selim, 2007). A lot of researchers study many semblances of E-learning and various approaches were adopted (Abu Sneineh, 2010). Modern researches have shown that about $40 billion is invested each year on technology-based training (Johnson, Gueutal and Falbe, 2009). E-learning could be a great opportunity for organizations and universities to minimize the cost of training and enhance quality (Lim, Lee and Nam, 2007) however it needs to be financially ready due to its high investment prices (Schreurs and Ehlers, 2008). Thus, it is important to work out variables which might influence its outcomes. Technology-based educating is an emerging field and minor studies have already investigated the factors that contribute to E-learning's success or failure. (Michinov et al., 2011).

This research to review the influence factor that existed in the literature on the E-Learning outcomes and determine the level of significant on each factor.The researcher uses the multilinear regression to analyze the six important factors in E-Learning. The objectives of this research are shown as follows:

- To investigate the factors which influence on the E-Learning outcomes of the pilots from Thai Airways.
- To investigate the level of influence on the E-Learning outcomes of each factor.

LITERATURE REVIEW

Interactions (LLI, LII, and LCI)

Interaction is the exchange of data processes between sender and receiver. There are several correspondence methods which can be used in connectingto different partners within the e-learning circumstance, such as learners – instructors, learners –learners, etc. In 2006, Tung and Deng stated that the interaction could be regarded as a

common process of communication connecting people and computers. Piccoli et al. mentioned in 2001 that interaction grants users to transfer information, to get criticism, and also evaluate improvement in e-learning prosperity. Researchers discover that vital training circumstance gives substances which encourage interaction between the trainees and trainers thus advocate training effectively. In 2008 Guffey,acclaimed that interaction could be a communication process when the sender has a notion, encrypts notion into a message, then sends it through a channel such as phone, e-mail, or face to face. The message will then be decoded by the receiver.As reported byTe'eniin 2001, the interactive process is a communication process by at least two people to make a relationship by talking and action. In 2001, Lear, Ansorge, and Steckelberg stated that communication encourages the common interaction of students inside a class with attendant and instructor.In 1989, Moore introduced three types of interaction, which are: (a) learner-content interaction, (b) learner-instructor interaction, and (c) learner-learner interaction. However, due to the progression of technology, Hillman, Willis, and Gunawardena in 1994, added another type of interaction, which is learner-technology interaction.

Perceived Ease of use (PEU)

In 1989, Davis proposed the Technology Acceptance Model (TAM) which instructed that a lots of variables affect users' choice on how and when they are going to utilize an updated technology: seen value thus seen ease of use (Davis, 1989). Practically, the moment it is figured out (such as seen ease of use) suggests that clients will accept technology easier when technology ease of use is high (Venkatesh and Bala, 2008). Since technology is important in learning online, those programs which are simple to utilize will conduct higher learning demeanor (Lim et al., 2007). A few hypothetical models center over significance of trainees' recognitions in the ease of use, that is fruitful in forecasting and clarifying the user behavior and intention (Davis et al., 1989 and Davis, 1989). In such case, comprehended ease of use will be characterized as "the degree to which an individual believes that using a particular system would be free of physical and mental effort." (Davis, 1989).

Computer Self- Efficacy (CSE)

Self-efficacy appears to influence the behaviors of human over the implementation of activities. Furthermore, self-efficacy is a people's perception about their ability to exert the essential sources for project accomplishment (Wood and Bandura, 1989). Prior research instructed the significance of computer self-efficacy on the evolution of behaviours in E-Learning (Compeau and Higgins, (1995), Lim et al., (2007) and Hernandez et al., (2009)). According to social cognitive theory (Wood and Bandura, 1989), self-efficacy is presented to effect behavior of learners, many endeavors allowed to the behavior and the personal achievement.At this point, self-efficacy is hypothesized that it affects learning results in interpersonal aptitude training (Gist et al., 2006), specific computer assignments (Compeau and Higgins, 1995), military training programs (Tannenbaum et al., 1991), and training course of the home page design (Chou and Wang, 2000). Self-efficacy considerations change according to three aspects which have vigorous attainment meanings: generalizability, magnitude, and strength (Compeau and Higgins, 1995). Magnitude implies to the scale of job difficulty and complication which is categorized into three levels: low, moderate, and high. Persons with low magnitude judge themselves less capable to perform difficult tasks and activities than persons with higher magnitudes. On the other hand, strength refers to an individual's certainty in his/her competence to perform exercises and assignments. Finally, generalizability is the degree to which an individual's exploitis generalized over identical activity realms (Latham,1998).

Readiness Factor (RF)

The role of readiness factors has been examined by many researchers in E-Learning results (Zhao, 2009). A previous study has demonstrated that one of the most significant factors affecting E-Learning results is technical readiness (Brush, 2003). Moreover, it is significant to pair suitable technology with suitable learning purpose (Kidd, 2010). This study, which is based on literature, researcher encounters, and respondents' explanations, readiness factor is classified into three categories, including technical, social, and organizational factors. Technical factors consisted of Internet access, Bandwidth, Content, Hardware, Software, and School's area. Organizational factors consisted of Experts, Organizational cultures, Organizational rules and Management permanence. Social factors consisted of Governmental rules, Social perception of learning online, and Administrative instructions.

E-Learning Outcomes (ELO)

According to Carswell in 2001, evaluating E-Learning results is imperative since people are less fulfilled with this framework have less propensities for selecting further E-Learning programs. Some model suggested to review at E-Learning outcomes (Cukusic et al., 2010, Piccoli, 2001; Faded, et al., 2008, Johnson et al., 2009). This study depended on past inquiries about three imperative variables that have been inspected: Instructors advance, understudies advance and get to instruction for all.

In 2000, Colquitt stated that numerous considerations have to assess the relationship between E-Learning factors and the results, by checking on the writing shows that they don't continuously successfully anticipate learning exchanges. In this study, part of the preparation components within E-Learning results will be evaluated.

RESEARCH FRAMEWORK AND METHODOLOGY

This conceptual framework was adapted by the researcher to analyze the factors that have the significant impact on E-Learning outcomes. There are six independent variables: Learner-Learner Interaction, Learner-Instructor Interaction, Learner-Content Interaction, Perceived Ease of use, Computer Self-Efficacy, Readiness Factor, that affect E-Learning Outcomes for Thai Airway International Pilot.

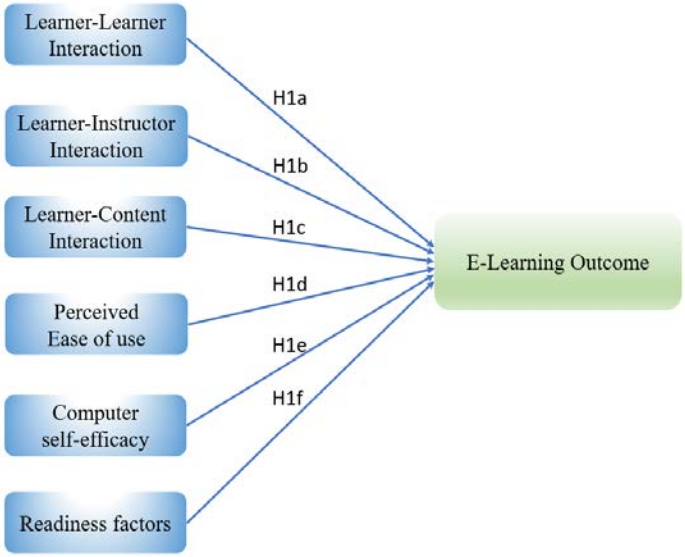

Figure 1. Conceptual Framework (adapted by the researcher for this research)

The hypotheses of this research are:

H1a: Learner-learner interaction (H1a) has a significant impact on E-Learning outcomes.
H1b: Learner-instructor interaction (H1b) has a significant impact on E-Learning outcomes.
H1c: Learner-content interaction (H1c) has a significant impact on E-Learning outcomes.
H1d: Perceived Ease of use (H1d) has a significant impact on E-Learning outcomes.
H1e: Computer self-efficacy (H1e) has a significant impact on E-Learning outcomes.
H1f: Readiness factors (H1f) has a significant impact on E-Learning outcomes.

Research Methodology

This research uses a quantitative approach to describe the factors' impact on E-Learning outcomes. The collection data was done by applying a non-probability convenience sampling and snowball sampling from the respondents who are pilots of Thai Airways, who are the target population. Multiple linear regression was used to analyze the impact of independent variables (H1a-H1f) using a Likert scale five- point ranking from 1 representing "Strongly disagree" to 5 representing "Strongly agree"

Measurement of variables

The target respondents of this research are pilots who work for Thai Airways and had an experience using E-Learning. The conceptual framework was developed to ensure that it is an appropriate model based on the literature review.

Population and sample

The research's questionnaire was distributed online and offline to 205 respondents who are pilots at Thai Airways using convenience sampling and snowball sampling to collect the data. However, only 200 questionnaires are valid. The least number of respondents required for this study should be 297 respondents in order to get 95% confidence level to represent 1,300 pilots of Thai Airways. However, due to limited time availability of pilots, the researcher can get only 205 respondents.

Reliability test

The reliability has been tested from the data of 30 target respondents that was conducted using Cronbach's Alpha Coefficient to test the reliable data of the questionnaire. In order to for the questionnaire to be accepted, the

Cronbach's alpha must be greater than 0.6 (Cronbach, 1951). Table 1 also shows the result that Cronbach's alpha of all variables are greater than 0.6 that means this questionnaire is reliable and acceptable.

Table 1. Consistency of Scales Test (N=30)

Variables	Cronbach's Alpha	No. of Items
Learner-Learner Interaction (LLI)	**0.945**	**7**
Learner-Instructor Interaction (LII)	**0.955**	**7**
Learner-Content Interaction (LCI)	**0.948**	**7**
Perceived Ease of use (PEU)	**0.941**	**7**
Computer Self- Efficacy (CSE)	**0.941**	**7**
Readiness Factors (RF)	**0.941**	**7**
E-Learning Outcomes (ELO)	**0.945**	**7**

DATA ANALYSIS

In the data analysis section, statistical analysis software has been used to find the impact of all independent variables towards E-Learning outcomes. The Multiple Linear Regression (MLR) was used to analyze the relationship according to the defined conceptual framework. There are 6 independent variables i.e. Learner-Learner Interaction (LLI), Learner-Instructor Interaction (LII), Learner-Content Interaction (LCI), Perceived Ease of use (PEU), Computer Self- Efficacy (CSE), Readiness Factors (RF) and one dependent variable which is E-Learning Outcomes (ELO).

Descriptive Analysis

The demographic factors as shown in Table 2 were conducted to describe the general information from 200 respondents who are pilots working at Thai Airways and had an experience the using E-Learning for pilot.

Table 2. Demographic Information of the target respondents (N = 200)

Demographic	Frequency	Percentage (%)
Age		
21-29 years old	126	63%
30-36 years old	38	19%
37-44 years old	19	9.5%
45-52 years old	10	5%
53-60 years old	7	3.5%
Education		
Bachelor's Degree	164	82%
Master's Degree or above	36	18%
Working with Thai Airway		
Less than 10 years	160	80%
10-20 years old	16	8%
20-30 years old	22	11%
More than 30 years	2	1%
Used to fly		
A300, A320, A330, A350 XWB, or A380	132	66%
B737, B747, B757, B767, B777 or B787	76	38%
There is no A/C Type assigned	7	3.5%
Aircraft Fleet		
Airbus Fleet	127	63.5%
Boeing Fleet	67	33.5%
There is no fleet assigned	10	5%

In the questionnaire, the screening question was specified in order to select respondents who are pilots working at Thai Airways and had an experience using E-Learning for pilots. Fortunately, 100 percent of respondents met the qualifications. Table2 shows the demographic information of respondents relating to age, education, number of years working with Thai Airways, types of aircraft flown by pilot, types of fleet assigned to pilots. The majority of respondents are 21-29 years old which is 63%; and the least number of respondents are 53-60 years old which is only 3.5%. For education, 82% of respondents are bachelor's degree graduates and 18% of respondents have master's degree or above. Since majority of the respondents are 21-29 years old, therefore 80% of respondents have worked for less than 10 years with Thai Airways. With regards to the types of planes flown by pilot, 66% of the respondents used to fly A300, A320, A330, A350 XWB, or A380 and 38% of respondent used to fly B737, B747, B757, B767, B777 or B787. Only 3.5% said that they have not been assigned any aircraft type. In terms

of the fleet that the respondents are assigned to fly, 63.5% of respondents are flying Airbus Fleet and 33.5% are flying Boeing fleet. The remaining 5% said that they have not been assigned on any Aircraft fleet.

Descriptive Research and Correlation Matrix

The researcher used the five-point Likert scale to test the variable ranging from 1 representing "Strongly disagree" to 5 representing "Strongly agree"

Table 3. Correlation Matrix for Hypothesis

	Mean	*Std. Deviation*	*LLI*	*LII*	*LCI*	*PEU*	*CSE*	*RF*	*ELO*
Learner-Learner Interaction (LLI)	***3.9014***	***0.52570***	-						
Learner-Instructor Interaction (LII)	***3.9700***	***0.57438***	**.668****	-					
Learner-Content Interaction (LCI)	***4.2429***	***0.52491***	**.481****	**.448****	-				
Perceived Ease of Use (PEU)	***3.9250***	***0.60631***	**.442****	**.486****	**.544****	-			
Computer Self-Efficacy (CSE)	***3.7805***	***0.63461***	**.408****	**.459****	**.426****	**.654****	-		
Readiness Factors (RF)	***3.9075***	***0.56604***	**.445****	**.500****	**.495****	**.640****	**.523****	-	
E-Learning Outcomes (ELO)	***4.0975***	***0.61839***	**.527****	**.503****	**.557****	**.598****	**.528****	**.619****	-

*** Correlation is significant at the 0.01 level (2-tailed).*

Table 3 shows the Pearson's Correlation Coefficients Matrix for H1a-H1f. Based on the analysis, all the independent and dependent variables have positive relationships with each other as P-value < 0.01 in Pearson

Correlation referring to the strength of correlation. The Learner-Learner Interaction (LLI) has a moderate positive relationship at 0.668 with the Learner-Instructor Interaction (LII). The Learner-Content Interaction (LCI) has a weak positive relationship with the Learner-Learner Interaction (LLI) and the Learner-Instructor Interaction (LII), at 0.481 and 0.448, respectively. The Perceived Ease of Use (PEU) has a weak positive relationship with the Learner-Learner Interaction (LLI) and the Learner-Instructor Interaction (LII), at 0.442 and 0.486, respectively. The Perceived Ease of Use (PEU) has a moderate positive relationship at 0.544 with the Learner-Content Interactive (LCI). The Readiness Factors (RF) has a weak positive relationship with the Learner-Learner Interaction (LLI) and the Learner-Content Interaction (LCI), at 0.445 and 0.495,respectively. The Readiness Factors (RF) also have moderate positive relationship at with the Learner-Instructor Interaction (LII), Perceived Ease of Use (PEU) and Computer Self-Efficacy (CSE), 0.500, 0.640 and 0.523,respectively. In addition, the E-Learning Outcomes (ELO) which is a dependent variable has a moderate positive relationship with all independent variables.

Inferential Analysis

This research used Multiple Linear Regression (MLR) analysis to test the hypotheses in order to define Inferential Analysis at P-value equal to 0.05 significance with Variance Inflation Factor (VIF) to examine the critical multicollinearity problem in this research at VIF > 5 (Ringle et al., 2015).

H1a: Learner-learner interaction (H1a) has a significant impact on E-Learning outcomes.
H1b: Learner-instructor interaction (H1b) has a significant impact on E-Learning outcomes.
H1c: Learner-content interaction (H1c) has a significant impact on E-Learning outcomes.
H1d: Perceived Ease of use (H1d) has a significant impact on E-Learning outcomes.
H1e: Computer self-efficacy (H1e) has a significant impact on E-Learning outcomes.
H1f: Readiness factors (H1f) has a significant impact on E-Learning outcomes.

Table 4. Result of multiple linear regression for H1; Dependent Variable E-Learning Outcomes (ELO)

Variables	Standardized Coefficients (Beta)	P-value	VIF
Learner-Learner Interaction (LLI)	***0.175****	***0.012***	***1.974***
Learner-Instructor Interaction (LII)	***0.039***	***0.581***	***2.068***
Learner-Content Interaction (LCI)	***0.191****	***0.003***	***1.634***
Perceived Ease of Use (PEU)	***0.146***	***0.057***	***2.418***
Computer Self-Efficacy (CSE)	***0.120***	***0.074***	***1.869***
Readiness Factors (RF)	***0.270****	***0.000***	***1.926***
R Square	***0.536***		
Adjusted R Square	***0.522***		

Note: Beta coefficients are reported, * $p < 0.05$

Table 4 indicates that the result of R Square was 0.536 that means the dependent variable, which is E-Learning Outcomes (ELO) could be explained by six independent variables which are: Learner-Learner Interaction (LLI),

Learner-Instructor Interaction (LII), Learner-Content Interaction (LCI), Perceived Ease of Use (PEU), Computer Self-Efficacy (CSE) and Readiness Factors (RF) by 53.6% at 0.05 significance level. The p-value of three independent variables (Learner-Learner Interaction (LLI), the Learner-Content Interaction (LCI) and the Readiness Factors (RF) variables) are less than 0.05, which means that the independent variables have statistically significant impact to the dependent variable, hence H1a, H1c and H1f are supported. In addition, the Standardized Coefficients (Beta) shows that the Readiness Factors (RF) has the most impact to the E-Learning Outcomes (ELO) at Beta = 0.27. The second and third influential factors that impact to the E-Learning Outcomes are Learner-Content Interaction (LCI) and Learner-Learner Interaction (LLI) respectively.

However, the p-value of three independent variables (Learner-Instructor Interaction (LII), Perceived Ease of Use (PEU) and Computer Self-Efficacy (CSE)) are more than 0.05, which means that three variables have no statistically significant impact to the E-Learning Outcomes (ELO), hence H1b, H1d and H1e are not supported.

The variance inflation factors or VIF were described inorder to determine any multicollinearity problem. It shows all of the independent variables values are less than 5.00, which means that the multicollinearity is not a critical problem in this research (Ringle et al.,2015).

CONCLUSIONS

This research emphasized on the factors that have an impact on the E-Learning outcomes of pilots at Thai Airways by using multiple linear regression (H1). The results clarify the relationships between Learner-Learner Interaction, Learner-Instructor Interaction, Learner-Content Interaction, Perceived Ease of Use, Computer Self-Efficacy, Readiness Factors, and E-Learning results.

The results of this research demonstrated that three independent variables (Learner-Learner Interaction, the Learner-Content Interaction and the Readiness Factors variables) have positively significant impacts on E-Learning Outcomes. The two independent variables' (Learner-Learner Interaction and Learner-Content Interaction) resultsaresupportedbyMbarek and Zaddem in 2013 including social cognitive theory, media richness theory and technology acceptance theory. For Readiness Factors (RF), the result is supported by (Keramati, Afshari-Mofrad and Kamrani, 2011)'s conceptual model of study which categorized the readiness factors into three categories as technical, organizational and social factors.In addition, Standardized Coefficients (Beta) shows that Readiness Factors has the most impact to E-Learning Outcomes at Beta = 0.27. The second and third influence factor that impact to the E-Learning Outcomes are Learner-Content Interaction (Beta = 0.191) and Learner-Learner Interaction (Beta = 0.175) respectively.

However, the independent variables (Learner-Instructor Interaction, Perceived Ease of Use and Computer Self-Efficacy)have no important effect on E-Learning outcomes in this research. For Computer Self-Efficacy, the result was supported by (Mbarek and Zaddem, 2013) as it also has no significant impact on the previous research. It implies that learners, who believe more in their aptitudes and capacities to utilize computer devices will not be contributed to perform their training more operational. The result of Learner-Instructor Interaction factor which is not affecting the E-Learning outcomes. This means that in context of using the E-Learning in Thai Airways, the pilot has more face to face interaction with each other than with the instructor, and the rest of the study is with the computer. The role of pilot ground instructor in Thai Airways is just to give guidelines for studying with the computer-based training hence, they only have brief encounters with the trainees. Therefore, majority of the training time, the pilots are face to face with the other pilots and the computer. This is the reason why the two independent variables (Learner-Learner Interaction and Learner-Content Interaction) have significant impact with E-Learning outcomes. For the Perceived Ease of Use, the result contrasts with the study of Ghazinoory and Afshari-Mofrad in 2012. For Thai Airways pilot, it implies that whether the computer-based training is easy to use or not, they have the responsibility to follow and finish all the lessons. In addition, with regards to the Airbus and Boeing aircraft, computer-based training modules have been developed for these types of aircraft with user-friendly functions, which is a mandatory specification of the E-Learning for the pilot. This is the reason why Perceived Ease of Use does not impact significantly on the E-Learning outcomes.

RECOMMENDATION AND FURTHER STUDY FOR FUTURE RESEARCH

Based on the results of the study, the researcher recommends that aircraft manufacturers (e.g. Airbus, Boeing) develop E-Learning instructional guides for the operation of their aircraft and the airline industry to use the E-Learning for their pilot's trainings. They must pay attention on the influencing factors that have positive significant impact to the E-Learning outcomes in order to meet their customers' expectations. For Thai Airways, as the result showed that Learner-Instructor Interaction has no significant impact to E-Learning outcomes, the pilot training department could have more face to face time with the pilots to get higher learning achievement which is supported

by "Further, trainer and trainee's interaction was related to learning achievement. Lim et al. (2007) the importance of face to face meetings between trainees and trainers in enhancing e-learning achievement".

Although this research demonstrated cautious and systemic endeavor to consolidate components of E-Learning, the research contains unavoidable limitations which ought to be taken with thought. First, this study is conducted in Thai Airways, Thailand circumstance only and thus likely to appear distinctive when it comes to other environments and nations. Second, the limit of time and assets could impact the outcomes.

ACKNOWLEDGEMENT

The authors acknowledged the pilots of Thai Airways, Bangkok, Thailand for their extensive support. A special thanks to Graduate School of Business, Assumption University, Bangkok and Thai Airways Back Office Team, Bangkok.

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AN EMPIRICAL STUDY ON THE EFFECT OF INSTITUTIONAL FACTOR ON PERCEIVED VALUE OF E-LEARNING IN MANAGEMENT EDUCATION: WITH SPECIFIC REFERENCE TO E-S-QUAL

Assistant Professor Pillai Anita Radhakrishnan
Prin. L. N. Welingkar Institute of Management Development & Research, 102/103, Electronic City Phase 1, Next to BSNL, Hosur Road, Bengaluru, Karnataka 560100, India.
E-mail: anita_santoshpillai@yahoo.co.in

ABSTRACT
Contemporary management education aims to equip students with knowledge, skills and competencies to deal with real time business challenges. At present there is considerable interest in how e-learning can be harnessed to enhance the efficacy of management education. Management institutions allocate substantial amount of resources for e-learning systems. Based on extensive literature review this paper identifies the dimensions that contribute to the institutional factor. The objective of this study is to examine the influence of institutional factor on service quality in e-learning and its influence on perceived value by the management students. The framework proposed is tested using structural equation modeling. The model examines the effect of institutional factors on E-S-QUAL sub-dimensions of efficiency, system availability, fulfillment and privacy. Further these E-S-QUAL sub-dimensions influences on perceived value are tested in the context of Indian management education. The main finding of this study is that institutional factors influence e-learning adoption and institutional factors have a direct impact on the service quality dimensions. Further service quality dimensions have a significant impact on perceived value among students using e-learning in management education.
Keywords: E-learning, E-S-QUAL, Information Communication Technology, Institutional Factor, Management Education, Perceived Value, Structural Equation Modeling

INTRODUCTION

The technological developments have had profound impact on businesses since the 18th century industrial revolution to the 21st century Industry 4.0 revolution powered by information technology and big data. There has been a great demand for integrating technology in education ever since the advent of personal computers and internet. From elementary education to higher education, information communication technology (ICT) has played a major role in not only revolutionizing the education system, but also making it more relevant from the industry perspective.

With the globalization of Indian economy there has been a surge in demand for management education in India. Management education is a much sought-after program because of attractive career prospects and broad scope of opportunities it offers to the students. Considering the growing demand for management education many management institutions have been set up in India. The aim of good management education is to provide students the skills, abilities, competencies and capabilities to face the challenges of the dynamic business world with confidence. With complex and dynamic business environment, the need for management professionals with relevant knowledge is growing rapidly. Management students passing out of the institutions should not only acquaint themselves with the relevant skill sets but they also need to have the right mix of technological knowhow to remain competitive throughout their career. Management institutions are looking at integrating ICT-based ways of teaching and learning called e-learning along with conventional face-to-face learning. In e-learning the course contents are delivered via internet, satellite system, intranet or extranet and through mediums like audio, videotape, interactive TV and CD-ROM (ASTD, 2018). E-learning offers an exciting option to complement classroom interaction with ICT-based course delivery (Agarwal et al., 2002). E-learning facilitates meaningful learning and engages the students in the process of thinking, and problem-solving along with developing reasoning skills (Jonassen et al., 2008). Jhurreev observed that the introduction of information technology in higher education will change the entire educational landscape forever (Jhurreev, 2005). Emerging e-learning technologies have opened doors to new opportunities that enhance the teaching-learning process which were unimaginable a few years ago. With increase and improvement in technologies and application worldwide, the use of e-learning is expected to increase drastically. Though management institutions are investing in e-learning solutions it does not guarantee better learning outcomes. In fact there are several cases of e-learning failures like Open University in England, New York University (NYU) Online, Columbia University, Global University Alliance and UK e-University (Matthews et al., 2007). However to remain relevant it is imperative for management institutions to adopt e-learning. Understanding critical success factors contributing to effective adoption of e-learning systems and its influence on service quality will benefit educational institutions implementing e-learning system. There is dearth of studies that examines the effect of institutional factor on

service quality and student's satisfaction. The current study focuses on the influence of institutional factor on service quality of e-learning and its effect on perceived value.

LITERATURE REVIEW

E-learning offers several benefits like vast geographic coverage, scalability, access flexibility and fast delivery among others (DeRouin et al., 2004). E-learning ensures a shift from teaching to active learning where users are encouraged to participate (Schrand, 2008). It offers personalized learning options from anywhere at anytime for the learners. There is scope for different learning options using multiple media that can meet the cognitive, affective and psychomotor learning needs of individuals and make learning an interactive and engaging process (Schrand, 2008). Considering the advantages of e-learning many educational institutions are allocating considerable amount of resources for e-learning systems. The factors that can influence e-learning adoption are discussed in the literature review. Alavi and Leidner (2001) framework based on empirical study to determine critical success factors for e-learning emphasized on technology, instructional design and psychological factors to improve e-learning adoption. The framework ignored student and facilitator characteristics which other researchers have found can influence technology usage and can affect e-learning adoption (Piccoli et al., 2001; Sharda et al., 2004). Facilitator can affect the learning outcomes by interacting online, providing quick feedbacks and participating in electronic discussions with students (McFadzean and MdKenzie, 2001; Marks et al., 2005). Piccoli (2001) focused on web-based virtual learning. The model stressed on facilitator as well as student dimension but ignored technological and institutional factors. The model incorporated information technology as a variable of instructional design dimension. Benbunan-Fich and Hiltz (2003) proposed framework considered technological factor, instructional design and emphasized on the effect of student active participation and motivation on e-learning. The model represented the relationship between course design, technology, student participation and learning outcomes. Volery (2000) suggested a framework based on a survey conducted on college students enrolled in an online management course. According to Volery technology, instructor and students competency in using technology are key factors for e-learning adoption.

Bhuasiri et al. (2012) conducted a study among ICT experts and faculty to identify the critical success factors of e-learning implementation in developing countries. The proposed model focused on technology awareness, technology usage, institutional support, training and quality material. Institute for Higher Education Policy, USA conducted an extensive study on six institutions of higher education in the USA that had implemented e-learning. The study recommend institutional support, course development, teaching and learning, course structure, student support, faculty support, evaluation and assessment as the critical success factors that influence e-learning systems (Govindasamy, 2002). Cheawjindakarn (2012) reviewed 19 research papers published between 2000 and 2012. Based on the papers reviewed he classified e-learning critical success factors in five categories which were institutional management, learning environment, instructional design, technical support, and evaluation. Selim (2007) conducted an empirical study on students and based on their perception categorized critical success factors for e-learning as 1) instructors' characteristics (style of teaching, approach toward students, control on technology etc.) 2) students' characteristics (motivation, technological competency, perception about course content and system, attitude, collaboration etc.) 3) technological infrastructure (ease of access, speed of internet, interface design, etc.) and 4) institutional support (technical support, IT infrastructure availability, course material accessibility, etc). A study conducted by Oluyinka (2015) revealed that in developing countries the most crucial issues for effective usage of e-learning system are allocation of adequate funds for IT infrastructure, providing training support, devising strategies for e-learning use and quality assurance. According to Fresen (2005) the institutional factors include infrastructural readiness of the institution such as internet connections, cultural readiness, financial readiness, content readiness, technical infrastructure and management support for training. From various studies considered, it is apparent that the institutional factor is a critical factor for e-learning implementation in education.

Higher education is a service industry (Hill, 1995) and in higher education implementation of quality practices ensures that the educational institution performs well and the customers are well served (Sohil et al., 2003). Hill (1995) pointed out that students are the main customers of educational institutions and hence institution must focus on student centered services and education. Most researchers emphasized customer expectation as a key factor to define quality. Crosby philosophy was that the product or service must conform to requirement of customer while Deming advocated that quality can be specified by the customer depending on their needs and expectation (Cronin, 1992). Parasuraman et al., (1985) conducted an extensive study on the service industry and defined service quality as the difference between consumer expectation before receiving service and actual experience with the service. Parasuraman et al. (1988) based on their research developed the SERVQUAL model to measure service quality. The SERVQUAL model consists of five dimensions to measure service quality which are: tangibles, reliability, responsiveness, assurance and empathy. SERVQUAL is a popular scale and is used extensively to measure service quality. Many researchers have used SERVQUAL instrument for

assessment of service quality in higher education (Badri et al., 2005; Chatterjee et al., 2009; LaBay et al. 2003). It has been used in higher education to evaluate relationships between service quality and student satisfaction (Stodnick & Rogers, 2008, Smith & Clarke, 2007).

For services being offered in virtual environment the SERVQUAL dimensions needed to be altered to measure service quality. Parasuraman, Ziethaml, and Malhotra (2005) developed the E-S-QUAL model to measure the service quality for web-based service. The instrument consisted of dimensions like efficiency, system availability, fulfillment and privacy. Efficiency is the simplicity, ease and speed of accessing services. System availability reflects the technological functioning and performance of the system. Fulfillment measures how well the system delivers the promised services and meet user expectations. Privacy refers to transactional security and protection a user feels when using the services (Parasuraman et al., 2005).These E-S-QUAL dimensions included attributes from SERVQUAL model also. The instrument was tested and found be a good scale for measuring service quality for Web-based service and electronic channel based delivery service (Christo, 2007). The advantage of the model is that it is generic model which can be used for all electronic-based service.

Educational institutions are now not only concerned about values, skills and abilities of their students but also want to gauge the perceived value and satisfaction level of students (Abdullah, 2006). E-Service quality has been associated with perceived value (Parasuraman et al., 2005; Santouridis et al., 2012). Many researchers have studied the influence of service quality on perceived value (Wolfinbarger and Gilly, 2003; Yen et al., 2008). In the service sector perceived value is customer's assessment between expectations versus experience (Zeithaml, 1988). Perceived value includes overall convenience and control. Positive perception about the service provided leads to better level of perceived value which in turn leads to higher satisfaction level among students (Cristobal et al., 2007) and reduces the likelihood of user complaints (Quach et al., 2016). According to Veloso et al. (2018) service quality is the main determinant of user satisfaction. The acceptance of e-learning system by students is determined by the perceived value and satisfaction derived from services offered by the system (Kasse and Balunywa, 2013). Service quality is the keyfor student satisfaction and is decisive for the acceptance and usage of e-learning system.

RESEARCH GAP

Several researchers have identified institutional management and support as critical factor for implementation of e-learning. Service quality has been the subject of several studies. However there is lack of sufficient research that examines the effect of institutional factors on e-learning service quality using E-S-QUAL. This study is significant as it assesses and validates the influence of institutional factor on e-leaning service quality. The research also evaluates the impact of e-service quality on perceived value among students. The study would assist educational institutions in leveraging e-learning as the study examines the relationship between institutional factor, service quality and perceived value using E-S-QUAL.

RESEARCH OBJECTIVES

The objectives of the research are

- To study the effect of institutional factor on each of the E-S-QUAL sub-dimensions.
- To evaluate the relationship between E-S-QUAL and perceived value of e-learning systems.

METHODOLOGY AND CONCEPTUAL FRAMEWORK

The study was conducted in Bangalore, India to examine the influence of institutional factors on e-learning service quality using E-S-QUAL. The study also examines the influence of service quality on perceived value among post graduate management students. A city like Bangalore was selected as most management institutions would have reasonably good IT infrastructural facilities. Stratified random sampling technique was adopted. A structured questionnaire was administered to the students across several management institutions. Of the 500 questionnaires distributed 366 filled questionnaire were collected.

The questionnaire was designed by meta-analysis of the literature on the variables. The questions were framed covering the objectives. The problem areas were categorized, simplified and redundancy was eliminated to devise the questions in a standard form for the research. The questionnaire consisted of questions related to the demographic details of respondents, the E-S-QUAL dimensions and the institutional factors influencing e-learning adoption. The data was collected in the form of closed ended questions, mutually exclusive, multiple choice, 5-point Likert scale (1 to 5) with 1 being 'Strongly Disagree' and 5 being 'Strongly Agree'. Cronbach's alpha values were greater than 0.70 demonstrating that all constructs have adequate reliability assessment scores for internal consistency and scale reliability. The quantitative data collected was tested using descriptive statistics like mean, standard deviation, skewness and kurtosis using IBM SPSS. The descriptive statistics reveals the spread of data collected on various parameters of the study. The conceptual framework and the

hypothesis were tested using Structural Equation Modeling (SEM) in IBM AMOS. SEM uses confirmatory factory analysis method. The path diagrams are drawn to quantitatively prove the proposed conceptual framework. The model fit was tested using adjusted goodness fit index (AGFI), non-normed fit index (NNFI), comparative fit index (CFI), root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR)

The following are the main hypothesis tested

H1: The institutional factor significantly affects efficiency
H2: The institutional factor has a significant effect on system availability
H3: The institutional factors significantly influences fulfillment
H4: The institutional factor significantly affects privacy
H5: Efficiency has a significant influence on perceived value
H6: System availability significantly influences perceived value
H7: Fulfillment significantly impacts perceived value
H8: Privacy significantly affects perceived value

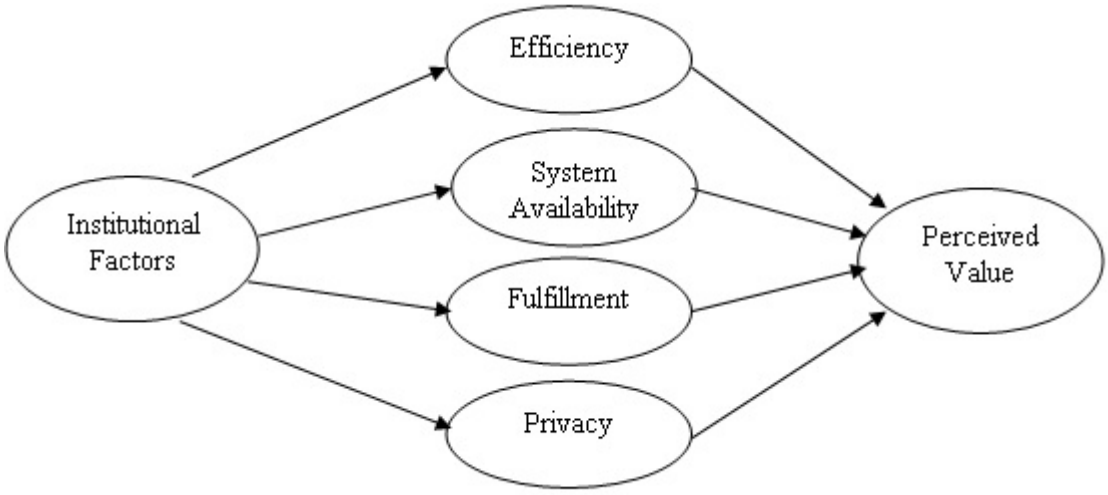

Figure 1. Conceptual framework

The conceptual framework shown in Figure 1 is proposed and tested using structural equation modeling. The influence of institutional factors on E-S-QUAL sub-dimensions like efficiency, system availability, fulfillment and privacy are examined. Further these E-S-QUAL sub-dimensions influences on the perceived value are tested.

RESULTS AND DISCUSSION

Among the 366 students surveyed about 211 (57.7%) were Male and 155 (42.3%) were Female. About 343 (93.7%) of the students were in the age group of 20-25 years and around 19 (5.2%) were in the age group of 25 to 27 years. The number of students who had work experience was 26 (7.1%) and about 340 (95.8%) students were fresher or had a work experience of below 2 years.

The institutional factors influencing the adoption of ICT in management education

The responses were recorded for the satisfaction level of the institutional factors influencing ICT adoption in management education on a scale of 1 to 5 with 1 representing extremely unsatisfied and 5 representing extremely satisfied. Table 1 shows the indicators for institutional factors with the variable names used to represent them in SPSS and IBM AMOS. The table also shows the mean of the responses and the standard deviation. It is observed that most of the responses for the indicators were around the midpoint. However the responses were negatively skewed for IF1, IF2, IF3, IF5 and IF6 and positively skewed for IF4. The low kurtosis compared to the normal distribution also shows that the data was widely spread around the mean. This shows that the students had very diverse opinion about the institutional factors influencing the adoption of ICT in their respective institutions.

Table 1. Descriptive statistics of the indicators for institutional factor

Sr. No	Indicators for Institutional Factor	Variable Name	Mean	Std Dev	Skewness	Kurtosis
1	ICT Budget	IF1	2.77	.851	-.031	.687
2	ICT integration in class is an institutional policy	IF2	2.96	.807	-.151	.473
3	Quality of ICT based course content	IF3	3.04	.880	-.153	.597
4	Availability of technology based course content	IF4	3.03	.906	.079	.082
5	Internet &Wi-Fi availability at the institution	IF5	3.02	.979	-.026	-.181
6	Quality of IT support	IF6	3.01	.985	-.115	.016

Among the institutional factors 57.1% respondents were just satisfied with the ICT budget of the institution, 55.6% were satisfied with their institutes policy on e-learning , only 49.2% were satisfied with the quality of ICT based course content and 72% were satisfied with the availability of technology based course content. 44% of the students were not satisfied with the quality of IT support in the management institutions. More than 50% of the students were dissatisfied with the quality of internet and Wi-Fi connection in their campus.

The E-S-QUAL sub-dimensions

The study adopts Parasuraman model for understanding the e-learning service quality offered by the management institutions. The major variables of the study under E-S-QUAL are efficiency, system availability, service fulfillment, privacy and perceived value of the e-learning system. The responses were recorded for E-S-QUAL dimensions on a scale of 1 to 5 with 1 representing strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. The analysis of the responses is shown in the following section.

Efficiency

With respect to efficiency 74% of the respondents were satisfied with the ease of operation of the e-learning system in their college, 83% were satisfied with the ease of access to information, about 85% said that the information was well organized, 84% said the system was simple to use and 81% said the e-learning system in their campus allowed them to complete a transaction quickly.

Table 2. Descriptive statistics of the indicators for efficiency

Sr. No	Indicator used for the construct efficiency	Variable Name	Mean	Std Dev	Skewness	Kurtosis
1	The e-learning system in the college is easy to operate	EFF1	3.77	.946	-.590	.313
2	With the e-learning system it is easy to access information	EFF2	3.60	.968	-.658	.481
3	The information is well organized.	EFF3	3.66	.993	-.585	.272
4	It is very simple to use	EFF4	3.66	.966	-.644	.297
5	It enables me to complete a transaction quickly.	EFF5	3.60	1.031	-.511	.042
6	The LMS of our college enables me to get on to it quickly.	EFF6	1.82	1.018	-.383	-.155

Table 2 shows that, the mean scores for most of the responses on the indicators of efficiency construct were above 3, which shows that the respondents agreed that the adoption of e-learning in their institution was efficient. However most of the institutions did not pay much attention to the adoption of Learning Management Systems (LMS) in their institute and 70% of the students were dissatisfied with the LMS. The descriptive statistics also shows that the responses were mostly negatively skewed with a very low kurtosis. This indicates that the student opinions were diverse with majority of them agreeing on the efficiency of the e-learning system within their institution.

System Availability

With respect to the system availability 27% of the respondents were dissatisfied with the system's downtime, 30% believed that the required software does not launch and run quickly and 29% were unhappy about the e-learning system crashing. About 72% of the participants were happy with the flexibility of accessing the content from anywhere at their convenience.

Table 3. Descriptive statistics of the indicators for system availability

Sr. No	Indicator used for the construct system availability	Variable Name	Mean	Std Dev	Skewness	Kurtosis
1	ICT has very less down time	SA1	3.89	.926	-.317	.382
2	This required software's launches and runs right away.	SA2	3.87	.915	-.371	.256
3	This required software does not crash	SA3	1.82	1.014	.188	-.198
4	Contents are accessible anywhere, anytime	SA4	3.22	1.003	-.330	-.093
5	I have a PC / Laptop which is compatible with my college LMS	SA5	3.69	1.030	-.477	.118

Table 3 show that mean responses for SA1, SA2, SA4 and SA5 were above 3 which indicates that the respondents agreed that they experienced very less down time with the ICT at their institution, the system starts properly and students have the flexibility to access the contents on their device from anywhere, anytime at their convenience. However they were not satisfied with SA3 which indicates that the required software crashed often. The descriptive statistics also shows that the responses were mostly negatively skewed with a very low kurtosis. This indicates that the student's opinions were very diverse with majority of them being satisfied with the system availability of e-learning system in their institution.

Fulfillment

On the service fulfillment aspect 72% of the respondents said that e-learning delivers what it promised and 81% said that the course materials as well as results were available online. More than 71% of the students were happy with the electronic library while 75% were happy with the online reference material for their subjects and 78% of the respondents said that the LMS support was good.

Table 4. Descriptive statistics of the indicators for fulfillment

Sr. No	Indicator used for the construct Fulfillment	Variable Name	Mean	Std Dev	Skewness	Kurtosis
1	E-learning delivers what is promised.	FL1	3.79	.961	-.438	.019
2	The course materials are available when required	FL2	3.71	1.022	-.521	.003
3	The results of the assignments are available to students instantaneously	FL3	3.73	1.011	-.359	-.153
4	The electronic library is very useful	FL4	3.69	1.029	-.510	.025
5	All the subjects have good online reference materials	FL5	3.73	1.027	-.506	-.079
6	LMS vendor / ICT support fulfill their promise	FL6	3.82	1.027	-.495	-.063

Table 4 represents the descriptive statistics of the indicators for fulfillment. The mean responses were above 3 for the indicator variables related to the fulfillment construct of the E-S-QUAL dimension. Most of the responses were negatively skewed with low kurtosis. Hence the respondents agreed that the e-learning system delivered what it promised, the results of the assignment were available instantaneously, the electronic library was useful and most importantly the ICT support fulfilled their promise.

Privacy

On the Privacy aspect 81% of the respondents said that the e-learning system was secure and personal information was not shared on external sites. More than 85% agreed that e-learning systems provides appropriate restriction for students access and online evaluation system were also robust and secure.

Table 5. Descriptive statistics of the indicators for privacy

Sr. No	Indicator used for the construct privacy	Variable Name	Mean	Std Dev	Skewness	Kurtosis
1	The e-learning is secure and information is safe	PR1	3.60	.919	-.419	.378
2	It does not share my personal information with other sites.	PR2	3.55	.943	-.505	.435
3	IT provides appropriate restriction for student access	PR3	3.52	.953	-.384	.344
4	The online evaluation system is very robust and secure	PR4	3.56	.951	-.583	.398

Table 5 shows that the mean scores for all the indicator variables of privacy were above 3 and negatively skewed. It also shows low kurtosis. This indicates that most of the respondents agreed that the e-learning system of their institution was secure, it did not share any information with other sites, the system ensured appropriate restriction and the online evaluation system was also very robust and secure.

Perceived Value

In most researches perceived value is shown as one of the dimensions of E-S-QUAL model. In this research perceived value also measures the overall satisfaction and value derived from the e-learning adoption. The students were satisfied with the perceived value of e-learning with more than 84% of the students agreeing on the fact that overall working of the e-learning system was good and they were satisfied with the overall value derived out of the e-learning.

Table 6 Descriptive statistics of the indicators for Efficiency

Sr. No	Indicator used for the construct perceived value	Variable Name	Mean	Std Dev	Skewness	Kurtosis
1	The overall convenience of working	PV1	3.55	.934	-.647	.654
2	The extent to which e-learning gives you a feeling of being in control	PV2	3.67	.974	-.600	.401
3	The overall value you get for your efforts	PV3	3.60	.967	-.443	.331

Table 6 shows that the mean of responses of students for the indicators of perceived value is more than 3, which means that they were satisfied with the e-learning system in their institution. Further the responses were negatively skewed with low kurtosis. It is proven that the students agreed on the overall convenience of working with the e-learning system provided by their institution and they were satisfied with the overall value derived from the system .

Structural Equation Modeling

This section tries to identify the relationship between various constructs proposed in the conceptual model using confirmatory factor analysis and structural equation model with the help of IBM AMOS. The structural equation model tries to establish a quantitative relationship between various constructs and their respective indicators. The effect of institutional factors on the E-S-QUAL dimensions of efficiency, system availability, fulfillment and privacy is tested. In turn the effect of E-S-QUAL dimensions on perceived value is verified. The following diagram illustrates the output from IBM AMOS and shows the result of the model with the path diagram, regression weights and error estimates.

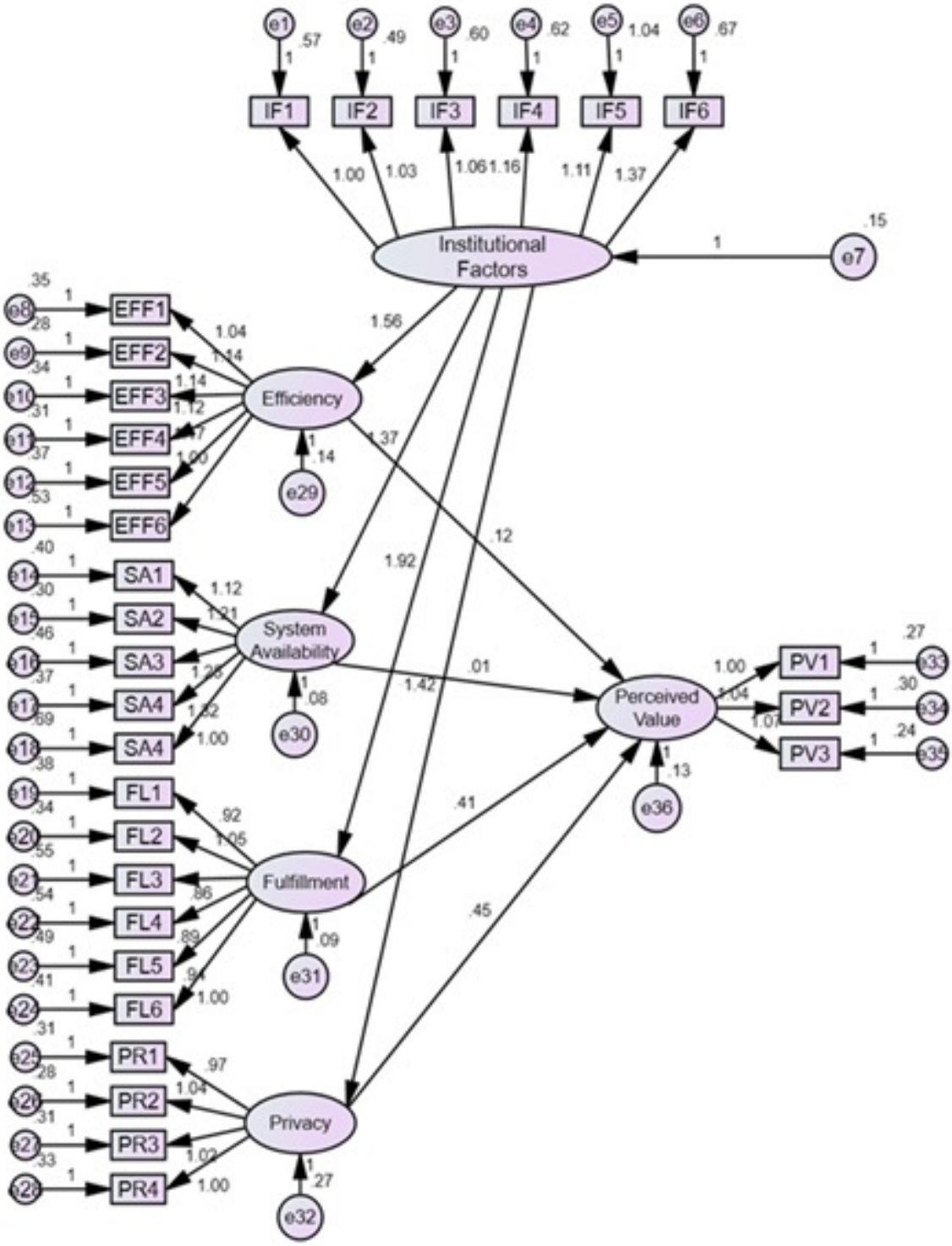

Figure 2 Path diagram of the conceptual framework

Table 7. Result of regression analysis

			Estimate	S.E.	C.R.	P	
Efficiency	<---	Institutional Factors	1.562	.198	7.885	***	Significant
System Availability	<---	Institutional Factors	1.369	.187	7.331	***	Significant
Fulfillment	<---	Institutional Factors	1.921	.229	8.388	***	Significant
Privacy	<---	Institutional Factors	1.420	.183	7.776	***	Significant
Percieved Value	<---	Efficiency	.116	.075	5.805	***	Significant
Percieved Value	<---	System Availability	.006	.101	6.351	***	Significant
Percieved Value	<---	Fulfillment	.413	.089	4.651	***	Significant
Percieved Value	<---	Privacy	.446	.060	7.477	***	Significant
IF1	<---	Institutional Factors	1.000				
IF2	<---	Institutional Factors	1.029	.149	6.908	***	Significant
IF3	<---	Institutional Factors	1.063	.159	6.688	***	Significant
IF4	<---	Institutional Factors	1.163	.168	6.934	***	Significant
IF5	<---	Institutional Factors	1.112	.188	5.919	***	Significant
IF6	<---	Institutional Factors	1.372	.188	7.285	***	Significant
EFF6	<---	Efficiency	1.000				
EFF5	<---	Efficiency	1.174	.081	14.418	***	Significant
EFF4	<---	Efficiency	1.115	.076	14.600	***	Significant
EFF3	<---	Efficiency	1.136	.078	14.475	***	Significant
EFF2	<---	Efficiency	1.145	.077	14.926	***	Significant
EFF1	<---	Efficiency	1.041	.075	13.951	***	Significant
SA5	<---	System Availability	1.000				
SA4	<---	System Availability	1.317	.116	11.322	***	Significant
SA3	<---	System Availability	1.248	.115	10.876	***	Significant
SA2	<---	System Availability	1.206	.106	11.347	***	Significant
SA1	<---	System Availability	1.120	.104	10.755	***	Significant
PR4	<---	Privacy	1.000				
PR3	<---	Privacy	1.024	.061	16.673	***	Significant
PR2	<---	Privacy	1.036	.061	17.115	***	Significant
PR1	<---	Privacy	.971	.059	16.337	***	Significant
FL6	<---	Fulfillment	1.000				
FL5	<---	Fulfillment	.939	.064	14.745	***	Significant
FL4	<---	Fulfillment	.895	.064	13.893	***	Significant
FL3	<---	Fulfillment	.858	.064	13.489	***	Significant
FL2	<---	Fulfillment	1.046	.062	16.917	***	Significant
FL1	<---	Fulfillment	.921	.059	15.583	***	Significant
PV1	<---	Percieved Value	1.000				
PV2	<---	Percieved Value	1.038	.056	18.439	***	Significant
PV3	<---	Percieved Value	1.071	.055	19.475	***	Significant

Output from IBM AMOS from the empirical data collected

As per Figure 2 and Table 7 the regression weights of the indicators for each of the constructs are significant at p-value 0.01. It can be inferred that ICT budget, institutional policy, internet availability, quality of IT support, availability and quality of technology based course content represents the institutional factor construct.

As per Figure 2 and Table 7 the regression weights of the constructs in the study are significant at p-value 0.01. The regression weights of institution factors on the E-S-QUAL dimension of efficiency, system availability, fulfillment and privacy are 1.562, 1.369, 1.921 and 1.420 respectively. This shows that institutional factor affects efficiency, system availability, fulfillment, privacy and influences the e-learning service quality.

The regression weights of the E-S-QUAL dimension of efficiency, system availability, fulfillment and privacy on perceived value are 0.116, 0.006, 0.413 and 0.446 respectively. This shows that the E-S-QUAL sub-dimensions have a significant influence on perceived value among the students. Table 7 shows the results of regression analysis of institutional factors on E-S-QUAL dimensions and the effect of E-S-QUAL on perceived

value. The results highlights that institutional factor significantly impacts E-S-QUAL dimensions. According to these results, hypotheses H1, H2, H3 and H4 are accepted. From the table it can be inferred that E-S-QUAL dimension affect perceived value. Based on these results hypothesis H5,H 6, H7, and H8 are accepted.

Table 8. Model Fit Summary

Measure	Cut off for Good Fit	Result from SEM	Interpretation
Adjusted goodness fit index (AGFI)	GFI > 0.95 AGFI > 0.90	0.967 0.923	Good Fit
Non-normed fit index (NNFI)	NNFI > 0.95	0.93	Not a good fit
Comparative fit index (CFI)	CFI > 0.95	0.98	Good fit
Root mean square error of approximation (RMSEA)	RMSEA < 0.08	0.071	Good fit
Standardised root mean square residual (SRMR)	SRMR < 0.08	0.065	Good fit

Output from IBM AMOS

As per the above Table 8 it can be inferred that the given structural equation model is a good fit for most of the model fit test. Goodness of fit (GFI) and adjusted goodness of fit (AGFI) is the proportion of variance accounted for by the estimated population covariance. Analogous to R2, AGFI favours parsimony. The model shows that GFI = 0.967 (>0.95) and AGFI is 0.923 (>0.90). Hence we deduce that the model is a good fit

Normed fit index (NFI) of 0.95, indicates the model of interest improves the fit by 95% relative to the null model. In this case the value is 0.93 which marginally fails to accept the model fit. Comparative Fit Index (CFI) is a revised form of NFI. It is not very sensitive to sample size. It compares the fit of a target model to the fit of an independent or null model. The CFI for the current model is 0.98 (>.90) and hence shows a good model fit.

The Root Mean Square Error Approximation (RMSEA) is a parsimony-adjusted index. The values closer to 0 represent a good fit. The current model shows RMSEA is 0.071 (<0.08) and hence represents a good fit. Standardized Root Mean Square Residual (SRMR) is the square-root of the difference between the residuals of the sample covariance matrix and the hypothesized model. SRMR is 0.065 (<0.08) which shows the model is a good fit..

Over all the SEM for the proposed confirmatory factor analysis (CFA) shows that the overall conceptual framework is a good fit. Also the hypotheses H1, H2, H3, H4, H5, H6, H7 and H8 are significant

CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

The study examines the role of institutional factor on service quality in e-leaning using E-S-QUAL. A conceptual framework was designed to examine the influence of institutional factor on e-learning service quality and to test the effect of service quality on perceived value. Structural equation modeling was used to validate the framework and hypothesis. The findings of this study show that institutional factor has a significant influence on the E-S-QUAL sub-dimensions of efficiency, system availability, fulfillment and privacy. The findings in this study validates that indicators such as ICT budget, institutional policy, internet availability, quality of IT support, availability and quality of technology based course content represents the institutional factor construct. Further the E-S-QUAL sub-dimensions have a significant influence on perceived value among the students. The perceived value represents the overall convenience of working, the extent to which e-learning gives a feeling of being in control and the overall value derived from the efforts put in.

Further research can be conducted to study the effect of not only the institutional factors, but pedagogical factors, technological factors and teacher factors on the various E-S-QUAL dimensions.

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CYBER CRIME AND MEDIA AWARENESS IN INDIA (QUANTITATIVE ANALYSIS METHOD)

Ravichandran Kamalakannan
Department of Media Sciences, Anna University, Chennai-600025 Tamil Nadu, India
ravi.news10@yahoo.com

ABSTRACT

Computer and cellular phone based crimes have elevated alarmingly in India. From the unauthorized dissemination, preserving statistics systems secure from tampering and from unauthorized removals are the want of the hour, otherwise, the incidents of hacking, facts theft, cyber bullying and now cyber extortion as nicely has kept the cyber safety team on its feet. For this, a majority of the respondents represents that is 60 percent felt that most effective on occasion the media is giving cyber crime related information. 25% in keeping with cent stated they did not find enough news associated with cyber protection, even as handiest according to 20% had been of the opinion that cyber crime associated information seem in media very often. Of the last 20%, 5% were of the opinion that print media is creating more awareness and 80% stated, it is far the digital media that is growing people more privy to on troubles associated with cyber crime. Quantitative evaluation in the fashion of a survey became instrumental in gathering the statistics that has analyzed by the ANOVA test; Multivariate Tests, Normative evaluation, Structural Equation Model, and Model match assessment. Along with this, measures has analyzed to control cyber crime also have also been mentioned.

INTRODUCTION

India is one of the populous countries and booms in crime rate is a reason for worry for the Indian economic system and to the Indian government at massive. Particularly PC based cyber crimes are also growing and there is a more threat to the kingdom. Computers play a very giant function in modern life. A Number of people who has to get entry to information on the computers and the maximum of the industrial and government records and unrestricted access to records gift an actual chance (Janna Anderson,2014), (Ben Brandt,2011). From the unauthorized dissemination, keeping data systems relaxed from tampering and from unauthorized removals are the want of the hour, otherwise, the incidents of hacking, statistics robbery, cyber bullying and now cyber extortion as properly has kept the cyber protection crew on its ft (National Crime Records Bureau Ministry of Home Affairs,2015). Significantly, Website builders, the Internet, and networking software program professionals are hardly ever able to manipulate this risk. Such violations can also debilitate a rustic's protection and money associated well-being troubles encompassing these forms of crimes have turned out to be prominent, especially the ones encompassing hacking, copyright encroachment, tyke erotic amusement, and child making ready (Internet security Threat Report 2014)..

LITERATURE REVIEW

The records at the boom in cyber crime in India are alarming. Consistent with the January 2015 document of the associated Chambers of Commerce and industry of India, the quantitative of cyber crimes in India would have touched a decade of 3, 00,000 ultimate twelve months. Hacking, expertise robbery, cyber bullying and even cyber extortion had been on a constant rise. Mumbai Police is celebrating 'Cyber protection Week' and utilizing its authentic Twitter take care of along with that of the Commissioner of Police to proportion public service messages — with memes and quirky one-liners to help unfold recognition on cyber crime (Vinit Kumar, Sharda Avdhanam,2013). They have been given, even used the lately long gone viral 'Be like invoice' meme to attach with their audience and consider it, their messages are spot on. With growing web penetration, cyber crimes have also increased in the final few years. Between 2011 and 2015, a number of cyber crimes registered inside the country have lengthy beyond up 5 events.

Maharashtra & Uttar Pradesh has accounted for one-third of these crimes. With growing cellular and net penetration in United States of America, cyber crimes have additionally prolonged proportionately. Between 2011 and 2015, greater than 32000 cyber crimes have suggested in the course of the state. Greater than 24000 of these times are registered under the IT Act and the rest beneath the pretty lots of sections of IPC and other State stage Legislations (SLL) (Rakesh Dubbudu ,2016).

The numbers of instances registered beneath the IT Act and IPC have been growing constantly. The instances registered under the IT act grew by way of using more than 350% from 2011 to 2015. There turned into nearly a 70% increase in a number of cyber crimes underneath the IT act among 2013 and 2014. The cases registered under the IPC increased with the resource of greater than 7 times throughout the interval between 2011 and

2015. The identical trend is observed in the number of people arrested. The government moreover acknowledges the expand the number of such crimes and that the creation of implemented sciences, devices along with smart telephones and complex functions, and rise in utilization of cyberspace for corporations has ended in such an expand.

INFORMATION AND CYBER INSECURITY:

The insights on virtual crime in India paint a photograph that none may be glad for. Right now, the digital crimes in India are nearly around 1, 49,254 and can susceptible to move the 3,00000 in the years yet to come, developing at Compounded Annual Growth Rate (CAGR) of around 107 for every penny. According to the discoveries, constantly about 12,456 instances enrolled in India. The managing an account segment maintains on being more inclined to virtual cheats. The styles of misrepresentation might be recommended using PC frameworks, consisting of bank misrepresentation, checking, records fraud, blackmail, and theft of characterized facts. A collection of internet hints, numerous in view of phishing and social building, target consumers and companies (Peter K, 2013).

DEFINITION OF CYBER CRIME:

The expression "cybercrime" has not characterized in any Statute or Act (National Crime Records Bureau Ministry of Home Affairs,2015). The Oxford Reference online characterizes "cybercrime" as a crime perpetrated over the Internet. PC crime, or cybercrime, is a crime that consists of a PC and a device. The PC might also have applied as a part of the commission of against the law, or it might be the target (Amit Kumar, Sharda Avdhanam, 2013). Cybercrimes is an “Offence which is finished against humans or gatherings of humans with a criminal notion manner to intentionally hurt the notoriety of the casualty or reason bodily or mental damage, or misfortune, to the casualty especially or by way of implication, using modern-day media transmission systems, as an instance, Internet (Debarati Halder, 2011). Cyber crime is the crime in which a computer and a network can also be used for the cause. The fundamental element for the boom in cyber crime is the accessibility of the Internet to users even on their mobile phones. Through the usage of Internet, cyber criminals have often indulged in crimes like identification robbery, economic robbery, espionage, pornography, or copyright infringement (James M. Stewart, 2008).

Issues revolving around cyber crime became additional and extra superior. Pc related crook activities have full-grown in importance Associate in Nursing institutions vicinity unit extra interested than ever inputs and finish to those attacks. Progressions are created within the improvement of latest malware package deal, which might also without a doubt find crook behavior (Svensson, P, 2011). Top nice antivirus structures area unit presented free presently with the buy of a laptop or software machine (Balkin, J, 2007).

OBJECTIVES OF THE STUDY

The growing risk from crimes has committed via the Internet, or against statistics on computer systems, is beginning to claim the interest of the sector at huge. This has a look at investigates whether or now not individuals might use the internet to file crime. The essential objective of the have a look at is to discover media recognition among different respondents on the risk of cyber crime.

MATERIALS AND METHODS

Quantitative analysis of the kind of a survey instrument has used to build up the information and descriptive data to investigate the knowledge. Quantitative evaluation technique turned into as soon as used to guide the genuine confirmed reality that the outcomes of the survey have were given to be part of the society who has access to the internet. Because of the character of the evaluation, queries have derived from the literature. These queries supplied a foundation for the analysis of the way to get a transparent opinion about cyber crime among respondents and additionally to find out the kind of cyber crime so happening in the modern day days and what needs to be finished to stop such crimes.

RESULTS

The number one target respondents were working professionals who were aware of diverse PC related crimes and security troubles inside his/her organization. Typically, they included senior managers, IT administrators as well as IT experts. Simple random sampling was the primary sampling approach used when choosing the sample for this survey.

The demographic profile (Table 1) shows the respondents of involved in this study. As per this, out of 100 respondents, majority that is 60% were male and 40% female. With reference to age, 50 per cent fall in the category of 19-24 years, 40% belong to 25-30 age group while the remaining 10% are above30. Regarding the profession, half of the respondents that is, 50% were students and the remaining half were IT professionals. When enquired about the device they use, it was learnt that 18% were using only mobile phone. Laptop or

personal computer was used among 7% of the respondents while 57% reported they use laptop and PC as well as mobile whereas the rest 18% are making use of all the devices. Figure: 1 shows the strength of password being used on a computer or mobile. When asked about either active firewall or antivirus was installed in the computers, it was found that most of the users having active antivirus in their computers, 28% to 30% and the very few of them had a very low active firewall in their gadgets.

Regarding updating the software20 to 30% of the people agreed average to very high values respectively. Regarding Wi-Fi use at home, 28, 22, and 18 percent of the people expressed it as average, high and very high values respectively when it comes to safety. Regarding online offers, 15 to 32 per cent of the respondents were of the opinion that indeed it is high.

Table 1: The demographic profile

Criteria		Frequency	Percent	Chi-Square	P value
Age	19-24	50	50%		
	25-30	40	40%		
	above 30	10	10%	26.000	0.001**
	Total	100	100%		
Gender	Male	60	60%		
	Female	40	40%	4.000	0.046*
	Total	100	100%		
Profession	Student	50	50%		
	IT Professional	50	50%	0.000	1.000
	Total	100	100%		
Device Used	Mobile	18	18%		
	Laptop or PC	7	7%		
	Laptop or PC and Mobile	57	57%	57.840	0.001**
	all the above	18	18%		
	Total	100	100%		

Hypothesis:

H1 The distribution of Terrorism is the same across categories of Impact.

H2 The distribution of Safety is the same across categories of Impact.

H3 The distribution of Prevention is the same across categories of Impact.

H4 The distribution of Victimization is the same across categories of Impact.

H5 The distribution of Vandalism is the same across categories of Impact

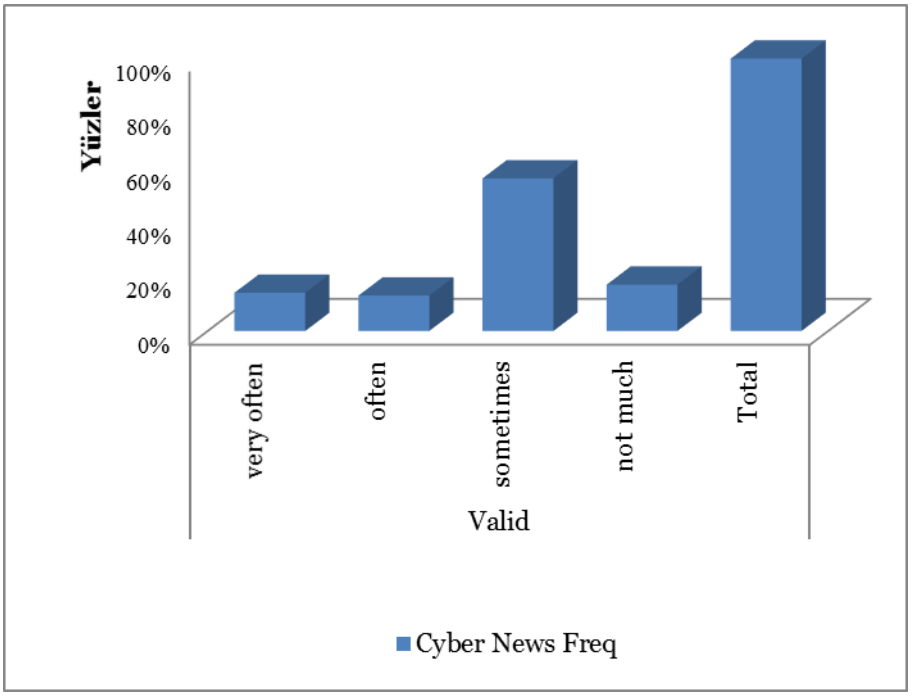

Figure: 2 Cyber Crime Frequency

Figure: 2 shows the frequency of cyber related crime news being presented in the media. For this a majority of the respondents that is 60 per cent felt that only sometimes the media is giving cyber crime related news, 25 per cent said they did not find enough news related to cyber security while only 20 per cent were of the opinion that cyber crime related news appear in media very often.

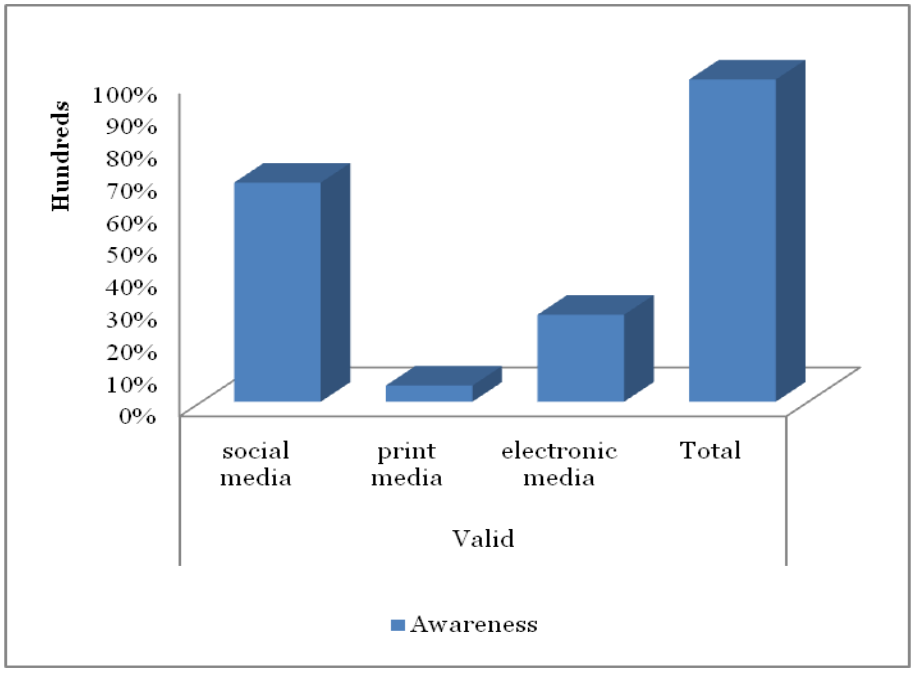

Figure: 3 Media Awareness

Figure: 3 show that most of the respondents that is 80 percent expressed that social media is creating more awareness than print or electronic media. Of the remaining 20 percent, 5 per cent were of the opinion that print media is creating more awareness and 15 per cent said it is the electronic media, which is creating people more aware of on issues related to cyber crime. Hypothesis in fig: 4 victimization of media impact has proved an significant value0.001**.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Prevention is the same across categories of Impact.	Independent-Samples Kruskal-Wallis Test	.068	Retain the null hypothesis.
2	The distribution of Victimization is the same across categories of Impact.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
3	The distribution of Vandalism is the same across categories of Impact.	Independent-Samples Kruskal-Wallis Test	.105	Retain the null hypothesis.
4	The distribution of Terrorism is the same across categories of Impact.	Independent-Samples Kruskal-Wallis Test	.138	Retain the null hypothesis.
5	The distribution of Safety is the same across categories of Impact.	Independent-Samples Kruskal-Wallis Test	.256	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure: 4 Hypothesis Test

0.001**Reject Null Hypothesis and others have retained Null Hypothesis.

Table:2 ANOVA:

		Sum of Squares	df	Mean Square	F	Sig.
Prevention	Between Groups	1.68	1	1.68	0.24	0.62
	Within Groups	677.07	98	6.91		
	Total	678.75	99			
Victimization	Between Groups	1.04	1	1.04	0.29	0.59
	Within Groups	356.75	98	3.64		
	Total	357.79	99			
.Piracy	Between Groups	8.42	1	8.42	4.43	0.04
	Within Groups	186.22	98	1.90		
	Total	194.64	99			
Terrorism	Between Groups	4.25	1	4.25	8.95	0.004
	Within Groups	46.50	98	.475		
	Total	50.75	99			
Prevention	Between Groups	211.33	1	211.33	2.20	0.14
	Within Groups	9414.62	98	96.07		
	Total	9625.96	99			
Media Impact	Between Groups	56.12	1	56.12	46.05	0.001
	Within Groups	119.43	98	1.22		
	Total	175.56	99			

Significant difference between conditions in table: 2 ANOVA. There used to be a enormous amount of reliability in words remembered at the p<.05 level for the three conditions [F (4, 995) = 4.62, p = 0.001].” There used to be a big outcomes of quantity +of factors on words remembered on the p<.05 stage for the three stipulations [F (4, 995) = 4.47, p = 0.001].” There was a enormous effect of quantity of theory on words remembered at the p<.05 stage for the three stipulations [F (4, 995) = 4.89, p = 0.001]. There was once a massive result of quantity of consumption on words remembered at the p<.05 stage for the three stipulations [F (4, 995) = 3.82, p = 0.004]. There used to be a big outcomes of amount of demands on words remembered at the p<.05 level for the three stipulations [F (4, 995) = 3.30, p = 0.011]. There was once a giant outcome of quantity of requisition on phrases remembered at the p<.05 levels for the three conditions [F (4, 995) = 1.22, p = 0.302] (table: 2 ANOVA).

Table:3 ANOVA with Cochran's Test

		Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People		1901.01	99	19.20		
Within People	Between Items	156067.15	5	31213.43	472.22	0.001**
	Residual	9182.35	495	18.55		
	Total	165249.50	500	330.50		
Total		167150.60	599	279.05		

Table:4 Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0 .10	6321.93[b]	2.00	55.00	0.001**	0.10
	Wilks' Lambda	0.004	6321.93[b]	2.00	55.00	0.001**	0.10
	Hotelling's Trace	229.90	6321.93[b]	2.00	55.00	0.001**	0.10
	Roy's Largest Root	229.90	6321.93[b]	2.00	55.00	0.001**	0.10
Prevention	Pillai's Trace	0.97	4.84	22.00	112.00	0.001**	0.49
	Wilks' Lambda	0.22	5.71[b]	22.00	110.00	0.001**	0.53
	Hotelling's Trace	2.70	6.63	22.00	108.00	0.001**	0.57
	Roy's Largest Root	2.32	11.81[c]	11.00	56.00	0.001**	0.70
Victimization	Pillai's Trace	0.58	3.81	12.00	112.00	0.001**	0.29
	Wilks' Lambda	0.49	3.90[b]	12.00	110.00	0.001**	0.30
	Hotelling's Trace	0.90	3.10	12.00	108.00	0.001**	0.31
	Roy's Largest Root	0.67	6.28[c]	6.00	56.00	0.001**	0.40
Prevention * Victimization	Pillai's Trace	1.44	5.54	52.00	112.00	0.001**	0.72
	Wilks' Lambda	0.07	5.88[b]	52.00	110.00	0.001**	0.73
	Hotelling's Trace	5.10	6.23	52.00	108.00	0.001**	0.75
	Roy's Largest Root	4.30	9.26[c]	26.00	56.00	0.001**	0.81

a. Design: Intercept + Prevention + Victimization + Prevention * Victimization
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Table: 3 suggests that A Cochran's Q experiment decided that there used to be statistically a big difference in the proportion of men and women who have crime consciousness over time, $p < .0005$. The multivariate tests (Table: 3) table displays four tests of significance for each model effect. When more than one measure is specified; multivariate tests are computed for between-subjects and within-subjects factors.

The multivariate tests (Table: 4) table displays four tests of significance for each model effect. When more than one measure is specified, multivariate tests are computed for between-subjects and within-subjects factors

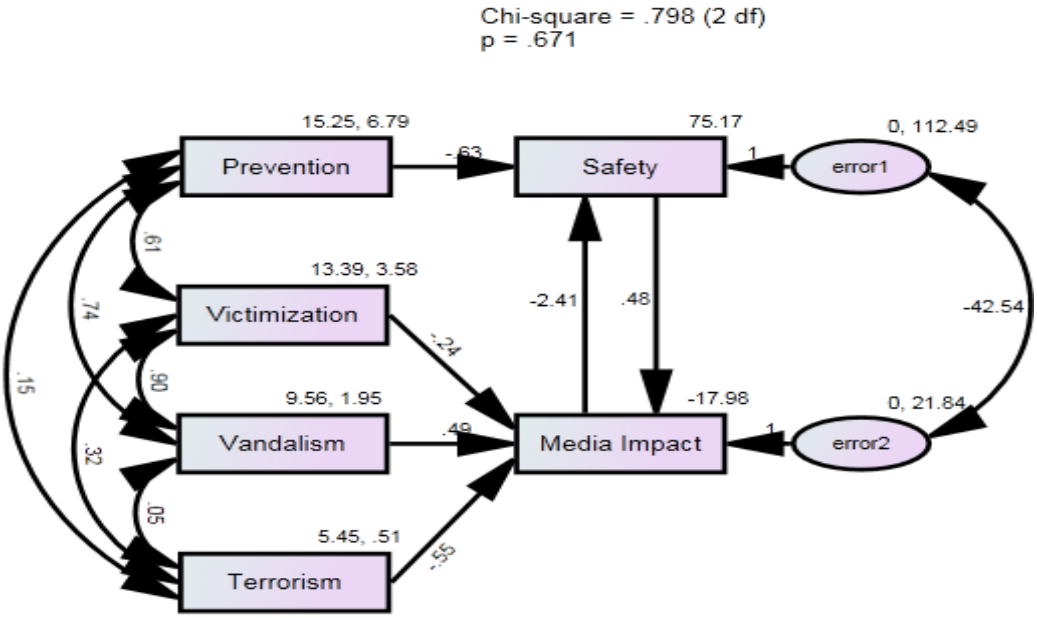

Figure: 5 Structural Equation Model

Table: 5 Means: (Group number 1 - Default model)

Factors	Estimate	S.E.	C.R.	P	Label
Prevention	15.25	0.26	58.24	***	par_14
Victimization	13.39	0.19	70.43	***	par_15
Terrorism	5.45	0.07	76.11	***	par_16
Vandalism	9.56	0.14	68.18	***	par_17

Figure: 5 Structural Equation model and table: 5 exhibit that the likelihood of getting a critical ratio as significant as fifty eight.241 in absolute worth is lower than 0.001. In different words, the imply of prevention is vastly special from no person on the 0.001 degree the likelihood of getting a valuable ratio as massive as 70.434 in absolute worth is not up to 0.001. In other phrases, the mean of Victimization is tremendously distinctive from zero on the zero.001 level. The likelihood of getting is a vital ratio as huge as 76.12 in absolute worth is less than 0.001. In other words, the Mean of Terrorism is greatly different from zero on the zero.001 stage. The likelihood of getting is a critical ratio as colossal as 68.18 in absolute value is lower than 0.001. In other phrases, the mean of Vandalism is vastly different from zero on the 0.001 candidly (two-tailed).These statements are roughly correct for lavish samples underneath compatible assumptions.

MODEL FIT ASSESSMENT

Model fit measures like chi-square/measure of freedom, the comparative match index, root imply rectangular error of approximation, the normative match index, incremental fit index, and the Tucker Lewis index had been used to estimate the measurement model fit.

Table: 6 Model fit Assessment

Indices	Value	Suggested value
Chi-square/degree of freedom (x2/d.f.)	0.797	≤ 5.00 (Hair et al., 1998)
CMIN	0.797	0.001
CFI	1.000`	> 0.90 (Daire et al., 2008)
Goodness of Fit Index (GFI)	0.528	>0.90 (Hair et al. 2006)
Adjusted Goodness of Fit Index (AGFI)	0.832	> 0.90 (Daire et al., 2008
Normated Fit Index (NFI)	0.981	≥ 0.90 (Hu and Bentler, 1999)
Incremental Fit Index (IFI)	1.028	Approaches 1
Tucker Lewis Index (TLI)	1.310	≥ 0.90 (Hair et al., 1998)

The GFI of this gain knowledge of was once 0.528more than the advocated value of 0.90 the other measures equipped satisfactorily; AGFI=zero.832, CFI=1.000, TLI=1.310, IFI=1.028and NFI=0.981with x2/DF < 3 at 2.51 and RMSEA=zero.152 point out a excellent absolute match of the model. Goodness of suits indices help the ultimate fit and these emphasized indices indicate the acceptability of this structural model. For the end of testing the superb match null speculation and substitute hypothesis are framed.

DISCUSSION

Analysis performed on the premise of the KPMG in India's cybercrime survey, 2015, The survey noticed over 250 contributors from the likes of CIOs, CISOs, CAEs, CROs, COOs* and related professionals from across India. While corporations work their manner into designing the most suitable cyber protection plan, considered one of the largest demanding situations faced by most CIOs in defining a strategy is the blurring traces of the IT perimeter of their organizations because of offerings shifting to the cloud, and worker-centric Bring their Own Device rules. This may want to suggest defining strategies based totally on figuring out what statistics is at stake, in preference to basing techniques on what safety equipment the employer is lacking. While placing cyber defense strategies into play, it's far vital for businesses to take attention of the subsequent key insights: Deeper cybercrime hazard assessment: With the constant growth in cybercrime and its impact, it's far vital for groups to identify the crown jewels that need to be protected. With a massive risk landscape and an extensive variety of chance assaults, companies want to reveal their structures (Cybercrime survey report,2015). But this observe of Structural Equation Model Analyzed on Cyber Crime and Media Awareness in India has been in a different way approached and proved social media to create an extra focus on cyber crime prevention with the fairly statistical quantitative evaluation version.

CONCLUSIONS

Lack of consciousness approximately the Internet as a device to Prevent crime changed into revealed. So there's no correlation between the extent of media recognition of the respondents and the underestimation of the cyber crime chance to the community. It can be brought to the fact that it's miles a commonplace misconception. One of the most vital outcomes is the capacity publicity of the population when it comes to the threats of cyber crime. Most of the respondents that are eighty in line with a cent of them are of the opinion that social media is creating focus the various public. How much are we safe, comfortable and reliable on these laptop surroundings? Moreover, not anything is assured. It is important no longer best to our national safety and for the Indian financial system; it's far seemed into as a specific scientific development and the possibility of time and more over now, not a clean venture to address Internet crime as such without proper policy implementations. However, it's miles viable to address such cyber crimes with proper policies and guidelines that need to be carried out by way of the government so that human beings at huge are safer at the cyber area and experience loose to use the Internet anyplace important without any fear. To obtain that object, it's far essential to bring about media focus a number of the public. The survey has analyzed with the aid of the ANOVA test; normative evaluation and Model in shape assessment.

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EXPERIMENTAL TESTING OF THE DISTANCE LEARNING MODEL IN THE SYSTEM OF LIFELONG EDUCATION OF PRIMARY SCHOOL TEACHERS

Oleksii P. Mukoviz
Doctor (Pedagogics), Professor of Theory of Primary Education Chair
Pavlo Tychyna Uman State Pedagogical University, Ukraine
alexsmukovoz@gmail.com

Natalia A. Kolomiiets
Ph.D (Pedagogics), Assoc. Prof. of the Education Technologies and Pedagogical Creativity Chair
Pavlo Tychyna Uman State Pedagogical University, Ukraine
kolomiets_nauka@i.ua

ABSTRACT
The article presents the results of testing of the distance learning model in the system of lifelong education of primary school teachers, namely the proofs of the effectiveness of the technology of training of distance learning tutors (organizers) of higher education institutions of III-IV accreditation levels and the ways of forming of primary school teachers' readiness to distance learning in lifelong education.
The methodology of the experiment provides for the identification of indices and levels of primary school teachers readiness for distance learning in the system of continuing education. The methods of questioning, interviews, and observations as well as methods of mathematical statistics were used in order to process the obtained data.
The analysis of the results of the experiment showed that the majority of respondents reached the highest level of readiness to distance learning in lifelong education. According to the results of statistical processing of the participants' questionnaires, a significant increase of all parameters of level indicators is stated.
Keywords: distance learning, tutor, lifelong education of primary school teachers.

INTRODUCTION

At the present-day stage of economic relations development, modernization processes in the higher education of Ukraine are oriented towards international integration globalization, democratization and humanization. Modern information society of a comprehensively developed state requires that higher educational institutions train professionals able to learn distantly within the context of lifelong education.

The necessity to implement modern information technologies in education is determined by the fact that, in this day and age, a primary school teacher needs to educate themselves lifelong, which gave rise to new opportunities for lifelong learning. Lifelong education is largely associated with distance learning (DL) technologies, i.e. with the implementation of internet technologies, which, in their turn, open up vast opportunities for efficient personality-centered learning. Therefore, the issue of primary school teachers' preparedness for DL within the system of lifelong education is of particular relevance.

The results of the research and publications analysis attested to the fact that the matter of student preparedness for DL in educational institutions has always been an issue researched by Valerii Bykov (Bykov, 2008), Serhii Semerikov, Ivan Teplytskyi, Svitlana Shokaliuk (Semerikov, Teplytskyi & Shokaliuk, 2008), Liubov Kartashova (Kartashova, 2011), Volodymyr Kukharenko (Kukharenko, 2012), Oleksandr Spivakovskyi, Mykhailo Lvov, Henadii Kravtsov (Spivakovskyi, Lvov & Kravtsov, 2009), Oleh Spirin, Kateryna Kolos (Spirin & Kolos, 2011) and others.. However, insufficiently studied remains the issue of primary school teachers' preparedness for DL within the system of lifelong education.

Article Objective: to experimentally test the efficiency of the DL model within the system of lifelong education of primary school teachers.

WAYS OF RESEARCH

We undertook the research of the training of primary school teachers on the use of DL technologies within the system of lifelong education in the framework of teacher's training higher educational institutions.

In the process of developing an efficient system of forming primary school teachers' preparedness for DL within the system of lifelong education, we have established the following stages of experimental verification of the core conclusions of our work:
1. Identifying stage, at which the levels of primary school teachers' preparedness for DL within the system of lifelong education were studied.

2. Formative stage, at which the efficiency of the author's DL model within the system of lifelong education of primary school teachers was tested.
3. Analysis of the outcomes of implemented the designed learning model.
These stages do not have rigid boundaries, given that it is not possible to mark limits within a single process and to establish its joining nexuses: where does education start and attitudes continue, and where the latter transition into the domain of will and action. However, each stage requires respective content, as well as organizing and teaching arrangement.

The design of the DL model in lifelong education of elementary school teachers (Mukoviz, 2014 c) builds on a certain number of necessary structural elements of professional training and teacher's personality traits by way of stimulating in a teacher already formed potential characteristics and taking them to a desired level.

At the experimental stage of research, not only the model was implemented as a holistic system of making elementary school teachers prepared for DL in lifelong education system, but also the process, the nature of the developed of the core formation components was traced. Essential was work on identifying and theoretical substantiation of material connections between transformations in content, forms and organizing methods of professional educator training on the one hand and the outcomes of elementary school teachers' practical work, the dynamic of the acquisition of professional skills to perform DL in lifelong education system, on the other hand.

Based on the results of the pedagogic experiment, its efficiency was assessed, necessary adjustment was introduced, experimental material was generalized, comparative analysis was performed, and inferences were drawn.

The logic of the research secured consistent progress of our scientific search from a hypothetical idea of the ways of preparing elementary school teachers for DL in lifelong education system towards modeling the process as a holistic system, the experimental verification of which presupposed theoretical conclusions and practical recommendations.

In our previous research, the status of primary school teachers' preparedness for DL within the system of lifelong education was checked:
1. Components of primary school teachers' preparedness for DL within the system of lifelong education were identified and substantiated (motivation and value, cognitive and operational) (Mukoviz, 2015).
2. Levels of primary school teachers' preparedness for DL within the system of lifelong education were identified and substantiated (low, average, sufficient, high) (Mukoviz, 2015).
3. The status of teachers' preparedness for tutor activities in higher educational institutions of 3rd-3th accreditation levels was checked (Mukoviz, 2015).
4. The status of primary school teachers' preparedness for DL within the system of lifelong education was checked (Mukoviz, 2016).
However, one of the key objectives of our research is to experimentally test the efficiency of the DL model within the system of lifelong education of primary school teachers.

RESEARCH FINDINGS

At this stage of research, the training of qualified teachers was conducted within the period from January 20 to June 21, 2015 at the Central Post-Diploma Pedagogic Education Institute of the Education Management University of the National Academy of Pedagogic Sciences of Ukraine. 134 teachers of Pavlo Tychyna State Pedagogical University of Uman underwent career advancement training, 48 of which comprised our experiment group (EG) (they teach at the Elementary Education Department).

The training of tutor teachers (organizers) in DL within the higher educational institutions of 3rd-4th accreditation levels is detailed in publication (Mukoviz, 2014 b).

In the control groups (CG), such activities were not undertaken.

In the training of tutor teachers (organizers) in DL within the higher educational institutions of 3rd-4th accreditation levels, it was also taken into account that they are higher educational institution teachers possessing life and professional experience. Therefore, in organizing career advancement training efforts, the specific features of andragogy (a branch of pedagogic dealing with the system and methodology of adult education).

The analysis of testing results has demonstrated that over, the career enhancement training period, teachers from the EG developed the following skills in the domain of organizing DL in higher educational institutions:
1) organizing skills: the ability to organize the DL of students;
2) information skills: the aptitude to develop distance learning curricula in the DL system;
3) communication skills: the ability to communicate with students within the DL system;
4) development skills: the ability to activate the cognitive activities of students in the DL system.
At the final stage of career advancement training, all EG teachers received a Teacher-Tutor (Organizer) in DL of Higher Educational Institutions certificate that entitles them to organize DL in the system of lifelong education of elementary school teachers.

To assess the performance of career advancement training under the Teacher-Tutor (Organizer) in DL of Higher Educational Institutions category, the constative experiment toolkit was employed (Mukoviz, 2015) and the maturity levels of teachers' preparedness for tutor activities in higher educational institutions of 3rd-4th accreditation level following the completion of the experiment were determined. Having received, as a result of the summary assessment, data regarding the changes in the maturity levels of the core elements of preparedness in EG and CG teachers, we have assessed the significance of these changes and drew inferences as regards the efficiency of the implementation of the given model.

Thus, after the statistical processing of the experiment results based on the maturity levels of the elements of teachers' preparedness for tutor activities, we have come to be reassured of considerable achievements on the part of the EG. This is attested to by the consolidated experiment data presented in Table 1.

Table 1. The status of teachers' preparedness for tutor activities by maturity levels (final assessment)

Preparedness Element	Preparedness Levels	Experiment Group				Control Group			
		BEFORE		AFTER		BEFORE		AFTER	
		q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty
Motivational and Value-Based	High	4.17	2	20.83	10	2.08	1	2.08	1
	Sufficient	6.25	3	66.66	32	6.25	3	6.25	3
	Average	27.08	13	8.34	4	31.25	15	31.25	15
	Low	62.5	30	4.17	2	60.42	29	60.42	29
Cognitive	High	4.17	2	22.92	11	2.08	1	2.08	1
	Sufficient	4.17	2	62.5	30	4.17	2	4.17	2
	Average	29.16	14	12.5	6	31.25	15	33.33	16
	Low	62.5	30	2.08	1	62.5	30	60.42	29
Operational	High	4.16	2	25	12	2.08	1	2.08	1
	Sufficient	6.25	3	62.5	30	6.25	3	6.25	3
	Average	31.25	15	10.42	5	33.33	16	35.42	17
	Low	58.34	28	2.08	1	58.34	28	56.25	27

The above mentioned results, in terms of the motivational and value-based component, have shown that 4.17% of EG teachers lack a lasting cognitive interest in tutor activities at higher educational institutions of 3rd-4th accreditation level; these teachers do not understand the advantages that DL technologies deliver to them compared to traditional teaching methods. Moreover, they are not endeavoring to capitalize on modern opportunities of DL in organizing their professional activities. However, the number of teachers with the sufficient level of preparedness (EG – 66.66% compared to 6.25% in CG) and high level of preparedness (20.83% in EG against 2.08% in CG) increased considerably.

The dynamics of preparedness in terms of the motivational and value-based component in the CG is much lower in comparison to EG. The graphic interpretation of results prior to and following the experiment are presented in Figure 1.

The next performance indicator of the research and experiment work we considered were positive changes with regard to the levels of preparedness of EG teachers for tutor activities in terms of the cognitive component.
As was the case with studying the motivational and value-based component of preparedness for tutor activities in higher educational institutions of 3rd-4th accreditation level, we observe significant dynamics under the cognitive component within EG compared to CG.

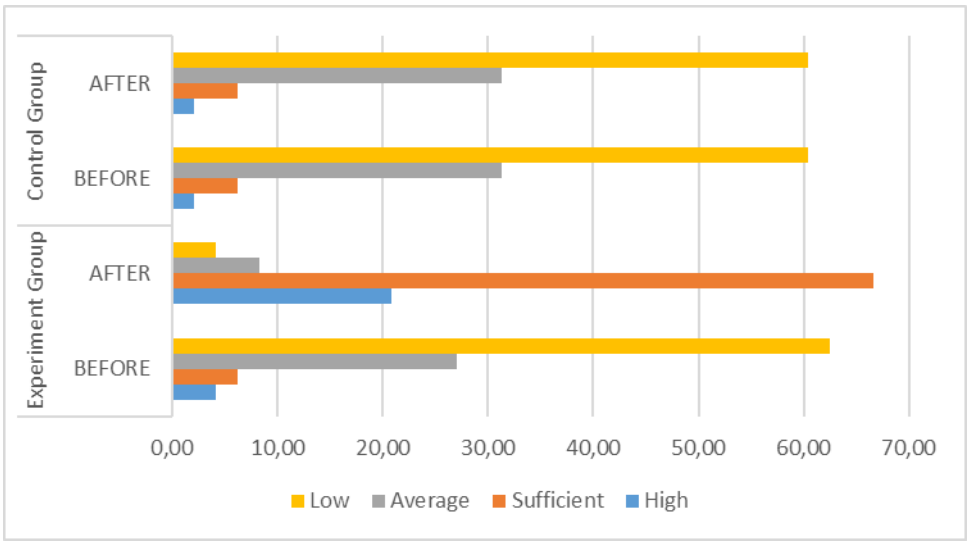

Figure 1. The status of teachers' preparedness for tutor activities by maturity levels of the motivational and value-based component (final assessment, %)

The analysis of data from Table 1 demonstrated that upon the implementation of a respective model 2.08% of EG teachers have nearly zero knowledge of the theoretical foundations of DL. However, the number of teachers with the sufficient level of preparedness (EG – 62.5% compared to 4.17% in CG) and high level of preparedness (22.92% in EG against 2.08% in CG) increased considerably.

Statistical data of initial and final evaluation based on the cognitive component have clearly demonstrated that the model we implemented is rather efficient. The quantitative findings of the research before and after the experiment are presented in Figure 2.

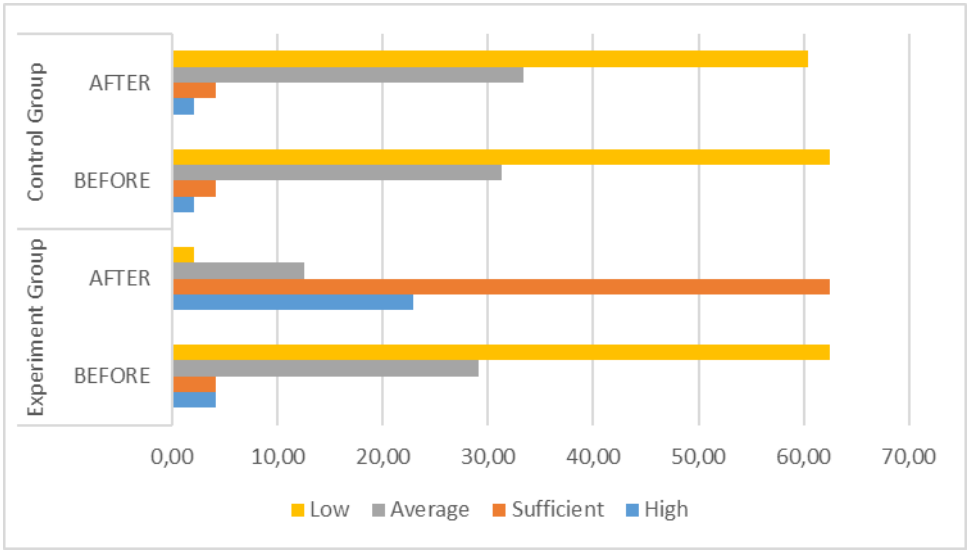

Figure 2: The status of teachers' preparedness for tutor activities by maturity levels of the cognitive component (final assessment, %)

The study of the status of teachers' preparedness for tutor activities by maturity levels of the operational component attested to the increase of the number of respondents with sufficient and high levels. This is attested to by the consolidated data presented in Table 1.

Thus, EG teachers, following the implementation of the respective model, not only deepened their knowledge and improved skills in utilizing different forms and methods of DL arrangement in a higher educational institution, but also learned to work in the information and education environment of Pavlo Tychyna State Pedagogical University of Uman (http://dls.udpu.edu.ua). According to data analysis, the number of teachers with the sufficient level of preparedness (EG – 62.5% compared to 6.25% in CG) and high level of preparedness (25% in EG against 2.08% in CG) increased considerably.

The histogram presented in Figure 3 reflects the dynamics of teachers' prepared for tutor activities by maturity levels of the operational component before and after the experiment.

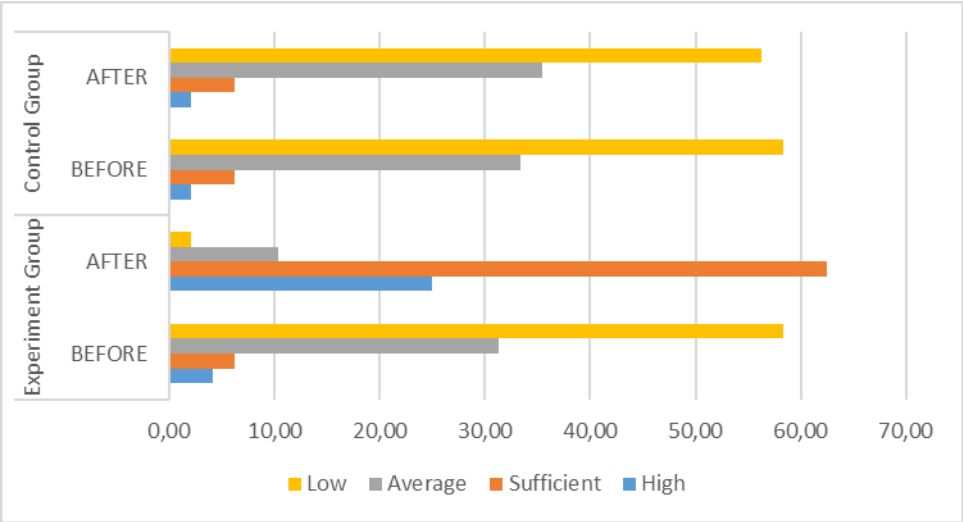

Figure 3. The status of teachers' preparedness for tutor activities by maturity levels of the operational component (final assessment, %)

Therefore, the results of the pedagogic experiment have demonstrated that based on the motivation and value-based component of preparedness, almost all EG teachers' attitude to the issue of DL organization in higher educational institutions of 3rd-4th accreditation level and organizing continuing education changed for the better. Correspondingly, based on the cognitive indicator of preparedness, EG teachers formed durable knowledge of the theory of DL, the use and development of DL technologies in work with students, as well as organizing continuing education. Based on the operational indicator of preparedness, necessary knowledge and DL technology development and implementation skills for the respective functional competence.

Data presented in Table 1 and Figures 1-3 manifest the advantage of the high and sufficient preparedness level for tutor activities of EG teachers based on all the defined components, which attests to the efficiency of implementing teacher-tutor (organizer) training methodologies in higher educational institutions of 3rd-4th accreditation level.

The overall level of teachers' preparedness for tutor activities in higher educational institutions of 3rd-4th accreditation levels was checked and calculated as the arithmetic mean of all criteria. The final maturity level of teachers' preparedness for tutor activities was determined. The generalized findings of the experiment are consolidated in Table 2, and the graph interpretation is shown in Figure 4.

Table 2. The overall level of teachers' preparedness for tutor activities in higher educational institutions of 3rd-4th accreditation levels (final assessment)

Preparedness Levels	Experiment Group				Control Group			
	BEFORE		AFTER		BEFORE		AFTER	
	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty
High	4.17	2	22.92	11	2.08	1	2.08	1
Sufficient	6.25	3	64.58	31	6.25	3	6.25	3
Average	29.16	14	10.42	5	31.25	15	33.33	16
Low	60.42	29	2.08	1	60.42	29	58.34	28

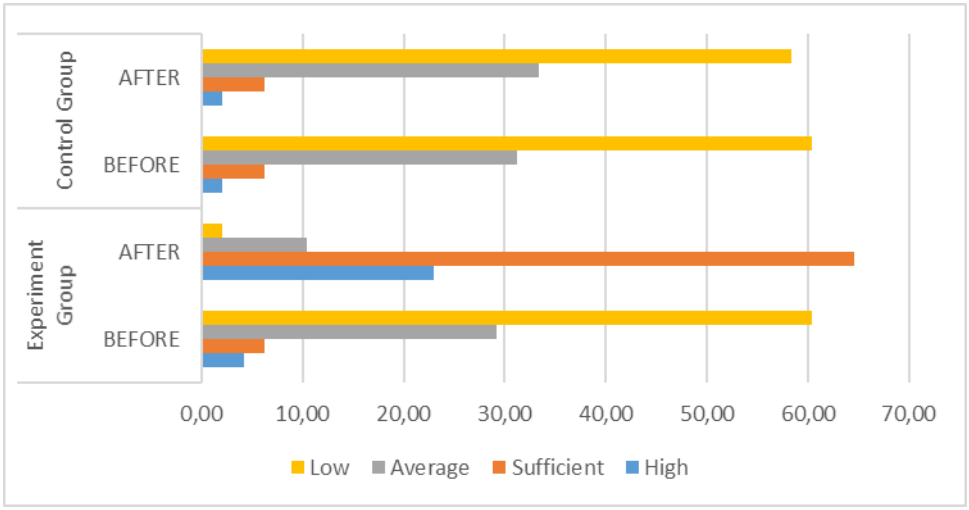

Figure 4. The overall level of teachers' preparedness for tutor activities in higher educational institutions of 3rd-4th accreditation levels (final assessment, %)

The efficiency of the training methodology to secure EG teachers' preparedness for tutor activities is attested to by the efficiency component that was calculated under the following formula ($K = R_{after} / R_{before}$,) where R_{after} is the average, sufficient and high indicator of preparedness of teachers for tutor activities in the aftermath of the experiment (percentagewise); R_{before} is the average, sufficient and high indicator of preparedness of teachers for tutor activities prior to the experiment (percentagewise).

One can speak about the efficiency of the designed model in the case when $K > 1$.

In our study, $K = 95.83 / 37.5 \approx 58.33$ (motivational and value-based preparedness component); $K = 97.92 / 37.5 \approx 60.42$ (cognitive); $K = 97.92 / 41.66 \approx 56.26$ (operational); $K = 97.92 / 39.58 \approx 58.34$ (overall preparedness level).

The final stage of the experiment has demonstrated that the overwhelming majority of EG teachers ascended to a higher level of preparedness to tutor activities. Based on the results of the statistical processing of participants' questionnaires, a significant increase was noted of the parameters of the indicators of all levels measured.

The data attest to the efficiency of the proposed methodology of the training of teachers-tutors (organizers) in DL within the higher educational institutions of 3rd-4th accreditation levels.
For the final statistical verification of the high performance of the experiment, it is necessary to compare the experimental data of EG and CG, having calculated the Pearson's criterion based on the data in respect of the motivational and value-based, cognitive, operational components and the overall level of preparedness. The empirical value of criteria equals approximately to 61.27, 63.51, 62.08, 62.29, which exceeds the critical value $\chi_{crit.}^2 = 7.81$ for the degree of variance $v = 3$ and $\alpha = 0.05$. The discrepancies between EG and CG can be considered verifiable.
Therefore, the effectiveness of the proposed methodology was statistically proven; the methodology can be used to form the motivational and value-based, cognitive and operations constituents of teachers' preparedness for tutor activities in higher educational institutions of 3rd-3th accreditation levels was checked.

The experimental model has proved to be effective and gives grounds to continue work on the improvement of the professional competence of present-day teachers of pedagogic higher educational institutions and to replicate the experience that we have gained.

On the next stage of the study, the methodology of securing primary school teachers' preparedness for DL within the system of lifelong education was implemented (throughout the academic years from 2014 to 2016).
Overall, 423 respondents from six educational institutions participated in the experiment, of which: 342 are students doing training on the Elementary Education domain and 81 elementary school teachers.

In the course of the formal experiment, the training process in the EG was performed in the conventional manner, within the curricula of higher educational institutions and differed from that of CG in terms of the mastery of the study subject titled The Fundamentals of Distant Learning in elementary education (Mukoviz, 2014 a).

In order to assess the performance of the model of DL implementation in the system of lifelong education of elementary school teachers, a forming experiment was conducted with the aim of checking high-performance changes in maturity levels of the motivational-value based, cognitive and operational components of primary school teachers' preparedness for DL within the system of lifelong education. This verification can be formed on the basis of qualimetric indicators aligned with the questions from our survey. Based on the responses given in the participant questionnaires at the forming stage of the experiment, their score was counted. The results of this activity are presented in Table 3.

Table 3. The status of primary school teachers' preparedness for DL within the system of lifelong education by component maturity levels (final assessment)

Preparedness Element	Preparedness Levels	Experiment Group				Control Group			
		BEFORE		AFTER		BEFORE		AFTER	
		q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty
Motivational and Value-Based	High	1.88	4	9.39	20	1.91	4	1.43	3
	Sufficient	7.05	15	15.02	32	7.62	16	7.62	16
	Average	28.63	61	51.64	110	29.05	61	29.53	62
	Low	62.44	133	23.95	51	61.42	129	61.42	129
Cognitive	High	1.88	4	4.69	10	1.91	4	1.91	4
	Sufficient	6.58	14	13.14	28	7.15	15	7.62	16
	Average	17.37	37	51.65	110	16.66	35	17.14	36
	Low	74.17	158	30.52	65	74.28	156	73.33	154
Operational	High	2.35	5	10.33	22	2.38	5	2.38	5
	Sufficient	8.92	19	23.95	51	9.52	20	9.52	20
	Average	39.91	85	51.64	110	39.53	83	40	84
	Low	48.82	104	14.08	30	48.57	102	48.1	101

The analysis of data in terms of the motivational and value-based component shows that 23.95% of EG teachers lack a lasting cognitive interest in DL in lifelong education system; these teachers do not understand the advantages that DL technologies deliver to them compared to traditional teaching methods. Moreover, they are not endeavoring to capitalize on modern opportunities of DL in organizing their professional activities. However, the number of teachers with the average level of preparedness (EG – 51.64% compared to 29.53% in CG) and sufficient level of preparedness (15.02% in EG against 7.62% in CG) increased considerably.

The dynamics of preparedness in terms of the motivational and value-based component in the CG is much lower in comparison to EG. The graphic interpretation of results prior to and following the experiment are presented in Figure 5.

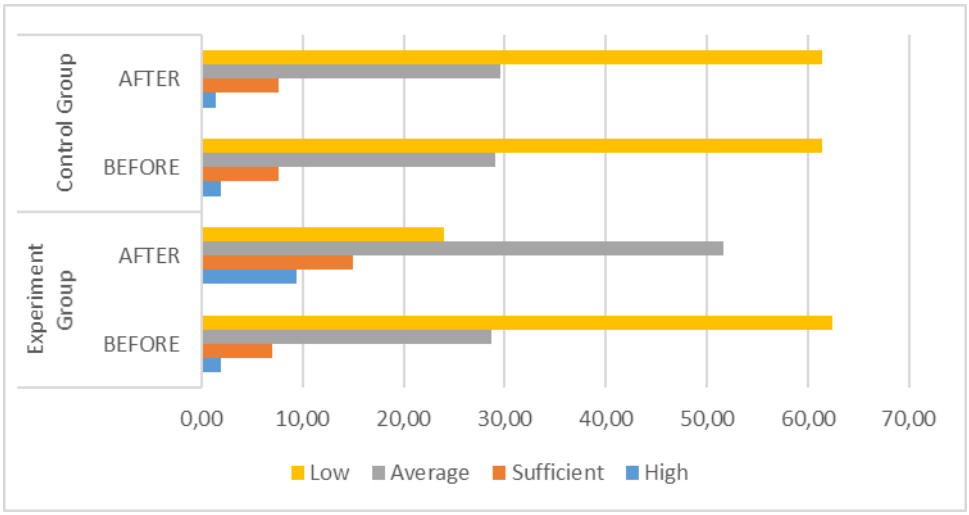

Figure 5. The status of primary school teachers' preparedness for DL within the system of lifelong education by the maturity level of the motivational and value-based component (final assessment, percentagewise)

The next performance indicator if the research and experimental work that we incorporated were positive changes in maturity levels of primary school teachers' preparedness for DL within the system of lifelong education by cognitive component maturity levels.

As was the case with studying the motivational and value-based component of elementary school teachers' preparedness for tutor activities in continuing educational system, we observe significant dynamics under the cognitive component within EG compared to CG.

The analysis of data from Table 3 demonstrates that upon the implementation of a respective methodology 30.52% of EG teachers had a low level of cognitive component maturity. However, the number of teachers with the average level of preparedness (EG – 51.65% compared to 17.14% in CG) and sufficient level of preparedness (13.14% in EG against 7.62% in CG) increased considerably.

Statistical data of initial and final assessment based on the cognitive component have clearly demonstrated that the model we implemented is rather efficient. The quantitative findings of the research before and after the experiment are presented in Figure 6.

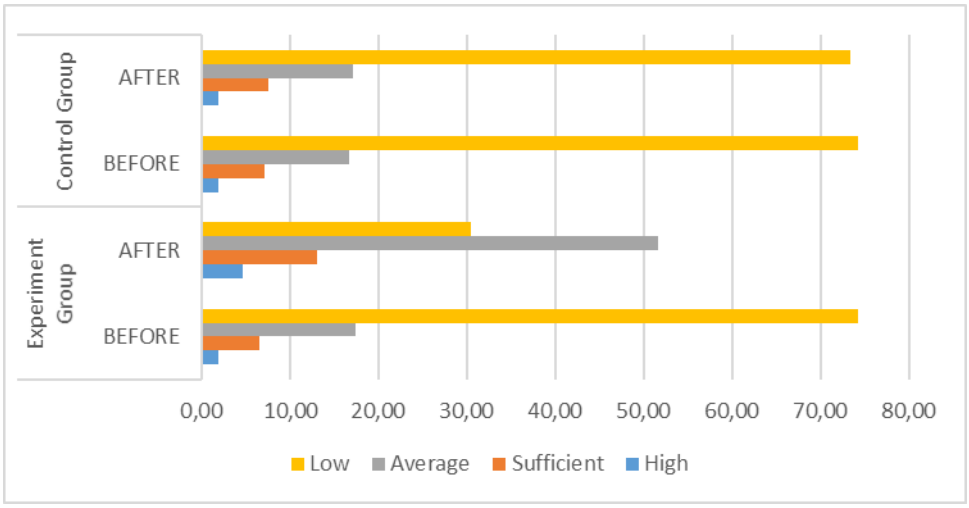

Figure 6. The status of primary school teachers' preparedness for DL within the system of lifelong education by cognitive component maturity levels (final assessment, percentagewise)

The study of the status of elementary school teachers' preparedness for DL in lifelong education system by maturity levels of the operational component attested to the increase of the number of respondents with average, sufficient and high levels. This is attested to by the consolidated data presented in Table 3.

Thus, EG teachers, following the implementation of the respective methodology, not only deepened their knowledge and improved skills in utilizing different DL technologies, but also learned to work in the information and education environment (http://dls.udpu.edu.ua) and in the lifelong education system of elementary school teachers (http://sno.udpu.edu.ua) of Pavlo Tychyna State Pedagogical University of Uman (http://dls.udpu.edu.ua).

Based on data analysis, the number of teachers with the average level of preparedness (EG – 51.64% compared to 40% in CG) and sufficient level of preparedness (23.95% in EG against 9.52% in CG) increased considerably. However, the low level accounts for 14.08% with EG and for 48.1% with CG. This points to the presence of experience of working with DL platforms in elementary school teachers.

The histogram presented in Figure 7 reflects the dynamics of elementary school teachers' prepared for DL in lifelong education system by maturity levels of the operational component before and after the experiment.

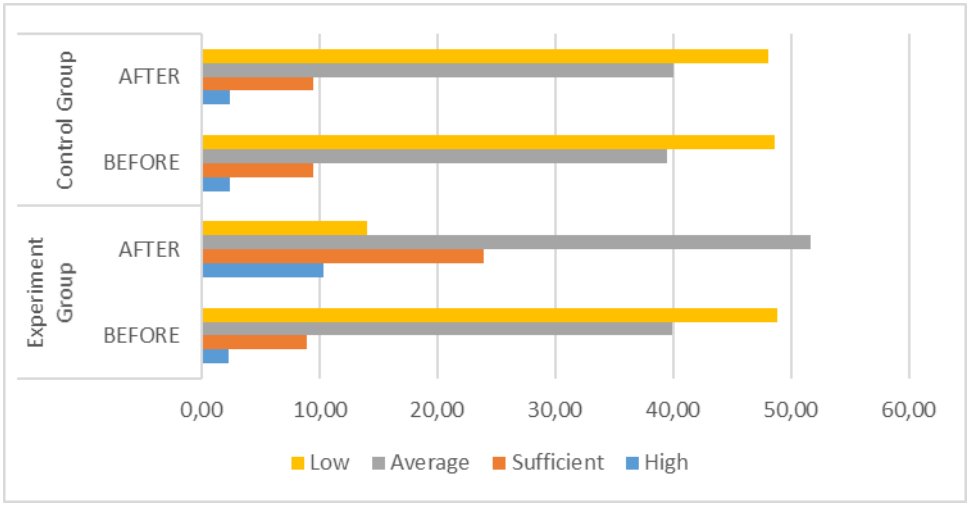

Figure 7. The status of primary school teachers' preparedness for DL within the system of lifelong education by operational component maturity levels (final assessment, percentagewise)

Therefore, the results of the pedagogic experiment have demonstrated that based on the motivation and value-based component of preparedness, almost all EG teachers' attitude to the issue of organizing DL in higher educational institutions and in lifelong education system changed for the better. Correspondingly, based on the cognitive indicator of preparedness, EG teachers formed durable knowledge of the theory of DL, the use and development of DL technologies in higher educational institutions and in the lifelong education system. Based on the operational indicator of preparedness, necessary knowledge and DL technology development and implementation skills for the respective functional competence were formed in higher educational institutions and in lifelong education system.

Data presented in Table 3 and Figures 5-7 manifest the advantage of the average and sufficient preparedness level of elementary school teachers for DL in lifelong education system based on all the defined components, which attests to the efficiency of the implementation of the proposed model.
The overall level of preparedness of primary school teachers' preparedness for DL within the system of lifelong education was calculated as the mean of all criteria under formula ($\sum = (a_1 + a_2 + a_3):n$) where $\sum$ is the overall level of preparedness, a is the number of participants of the respective level in the preparedness component, n – number of preparedness components (motivational and value-based, cognitive an operational).

The final status of the maturity of primary school teachers' preparedness for DL within the system of lifelong education was determined. The generalized findings of the experiment are consolidated in Table 4, and the graph interpretation is shown in Figure 8.

Table 4. The overall level of primary school teachers' preparedness for DL within the system of lifelong education (final assessment)

Preparedness Levels	Experiment Group				Control Group			
	BEFORE		AFTER		BEFORE		AFTER	
	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty	q-ty in %	absolute q-ty
High	2.04	4	7.98	17	1.91	4	1.91	4
Sufficient	7.52	16	17.37	37	8.1	17	8.1	17
Average	28.63	61	51.64	110	28.57	60	29.04	61
Low	61.81	132	23.01	49	61.42	129	60.95	128

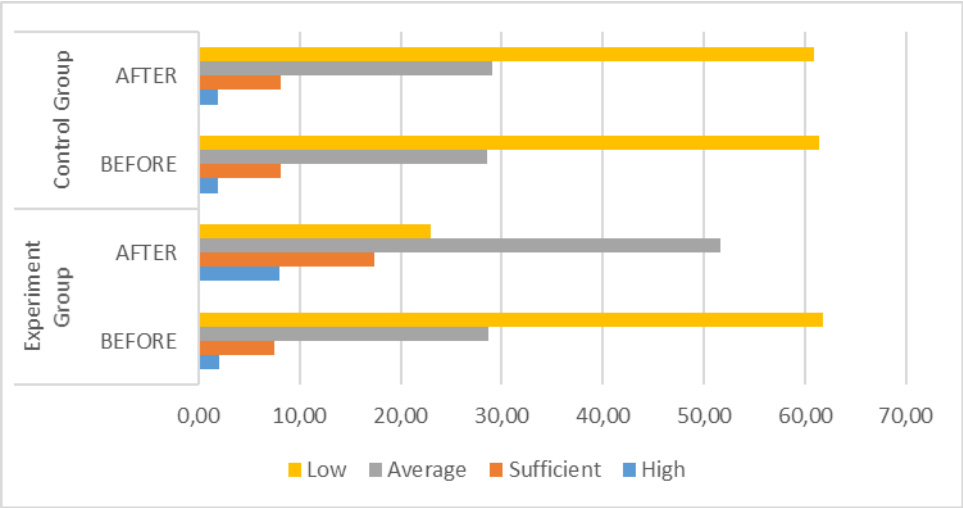

Figure 8. The general characteristic the levels of primary school teachers' preparedness for DL within the system of lifelong education (final assessment, percentagewise)

The efficiency of the DL model within the system of lifelong education of primary school teachers is attested to by the performance indicator that was calculated under formula ($K = R_{after} / R_{before}$,).
In our study, $K = 76.05 / 37.56 \approx 38.49$ (motivational and value-based preparedness component); $K = 69.48 / 25.83 \approx 43.65$ (cognitive); $K = 85.92 / 51.18 \approx 34.74$ (operational); $K = 76.99 / 38.19 \approx 38.8$ (overall preparedness level).

Data point to the efficiency of the DL model within the system of lifelong education of primary school teachers that we have designed.

For the final statistical verification of the high performance of the experiment, it is necessary to compare the experimental data of EG and CG, having calculated the Pearson's criterion based on the data in respect of the motivational and value-based, cognitive, operational components and the overall level of preparedness. The empirical value of criteria equals approximately to 65.07, 79.50, 66.18, 64.73, which exceeds the critical value $\chi_{crit.}^2 = 7.81$ for the degree of variance $v = 3$ and $\alpha = 0.05$. The discrepancies between EG and CG can be considered verifiable.

Therefore, the pedagogic experiment that involved 423 elementary school teachers from six educational institutions has attested to the efficiency of the designed DL model in lifelong education system.
The final stage of the experiment has demonstrated that the overwhelming majority of elementary school teachers ascended to a higher level of preparedness to DL in lifelong education system. Based on the results of the statistical processing of participants' questionnaires, a significant increase was noted of the parameters of the indicators of all levels measured.

CONCLUSIONS

Determination of the formation levels of primary school teachers readiness to distance learning in the system of continuing education at the end of the experiment according to certain criteria and indices allowed to obtain the results that certified the following: the introduction of the developed distance learning system and the related theoretical positions in the educational process of experimental groups enabled positive dynamics of the levels of primary school teachers readiness to develop their own professional and pedagogical competence in the conditions of distance learning. In the experimental groups of primary school teachers, in comparison with the control groups, the increase in the indices of high readiness for distance learning in the system of continuing education was observed under all the criteria, namely the motivational-value, cognitive, and operational ones.
The conducted study does not exhaust all the aspects of the selected problem solution.
The prospects for further research are seen in the in-depth study of the ways, methods, means and features of the preparation of primary school teachers and university teachers for their professional and pedagogical activities in the field of organizing distance learning of the teachers and practitioners, taking into account the needs of the child for moral, mental and physical health.

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INVESTIGATING THE ATTITUDE TOWARDS THE USE OF MOBILE LEARNING IN OPEN AND DISTANCE LEARNING: A CASE STUDY OF UTTARAKHAND OPEN UNIVERSITY

Dr. Jeetendra Pande
Assistant Professor-Computer Science, School of Computer Science & IT,
Uttarakhand Open University, Haldwani, INDIA
Email: jpande@uou.ac.in

ABSTRACT
The mobile devices are increasingly used by the students for educational activities. This paper is an attempt to assess students' self-efficacy and attitudes towards mobile learning through a baseline survey and fine out the students' attitude towards mobile learning. The baseline study conducted a survey for students of Uttarakhand Open University(UOU) with special reference to their attitude towards Mobile learning. The data was gathered through online and 283 valid responses were accepted for the analysis. The result of this study may provide insights for researchers into research trends in mobile learning.
Keywords: Mobile Learning, M-Learning, Mobile Assisted Language Learning(MALL), E-Learning,

1.0 Introduction

The use of wireless, mobile, portable, and handheld devices are gradually increasing and diversifying across every sector of education, and across both the developed and developing worlds(Traxler, Defining, Discussing, and Evaluating Mobile Learning: The moving finger writes and having writ… ., 2007). As mobile devices are becoming increasingly ubiquitous, many researchers and practitioners have incorporated the technology into their teaching and learning environments(Park, 2011).

Mobile learning can be described as "the learning activity on mobile devices or learning anytime and anyw-here"(Zhang, 2016). (Traxler, Defining Mobile Learning, 2005) has defined mobile learning as 'any educational provision where the sole or dominant technologies are handheld or palmtop devices'. Mobile learning has been defined by (Schelur, Winters, & West, 2012) as the process of learning mediated by handheld devices such as smart phones and tablet computers.

Researchers have investigated the impact of M-Learning at PK-12(Crompton, Burke, & Gregory, 2017), K-12(Christensen & Knezek, 2017) (Hwang & Chang, 2011), Vocational education(Nordby, Knain, & Jónsdóttir, 2017), higher education(Heflin, Shewmaker, & Nguyen, 2017), (Motiwalla, 2007) and various specialization of higher education like medical education(Briz-Ponce, Pereira, Carvalho, Juanes-Mendez, & García-Penalvo, 2016), teacher education(Gunter & Reeves, 2017), (Seppälä & Alamäki, 2003). (Kukulska-Hulme & Shield, 2008), (Chinnery, 2006) have also explored the use of m-learning for Mobile Assisted Language Learning(MALL).

The applications of mobile learning range widely, from K–12 to higher education and corporate learning settings, from formal and informal learning to classroom learning, distance learning, and field study(Park, 2011). (Hsieh & Tsai, 2017) has investigates the teachers' conceptions of mobile learning and suggested that teacher educators would like to see mobile devices used to their fullest potential, it is necessary to cultivate more sophisticated conceptions of mobile learning among teachers.

However, there are many inherited challenges in the adoption of M-Learning technology. Lack of self-efficacy to integrate technology, classroom management issues, attitudes toward technology and lack of pedagogical strategies contribute to the barriers and challenges to the successful integration of mobile learning(Christensen & Knezek, 2017).

The purpose of the current study is to assess students' self-efficacy and attitudes towards mobile learning through a baseline survey and fine out the students' attitude towards mobile learning. Section 2 discusses the methodology and tools required for the study. Section 3 discuss the profile of the respondents and students' responses on baseline survey. Section 4 contains the result and the last section contains the conclusion.

2.0 Methodology

The tools and techniques used in the present baseline study included the document analysis, questionnaire for students. The students' views have been undertaken on an online questionnaire developed on Google form for analyzing their status, ICT skills as well as their attitude towards M-learning. The data was gathered with the sample of 283 students who have responded to the questionnaire.

The data have been analyzed quantitatively by implying statistical measures. The frequency measures were used to present the demographic as well as other data along with mean, range and standard deviation wherever needed. The analysis was done in SPSS 22.0. The tables and figures are presented for visual presentation of data wherever appropriate. The Data analysis and interpretation is presented further in details.

3.0 Students' responses on Baseline Survey

The present baseline study conducted a survey for students of Uttarakhand Open University(UOU) with special reference to their attitude towards Mobile learning. The data was gathered through online and 283 valid responses were accepted for the analysis.

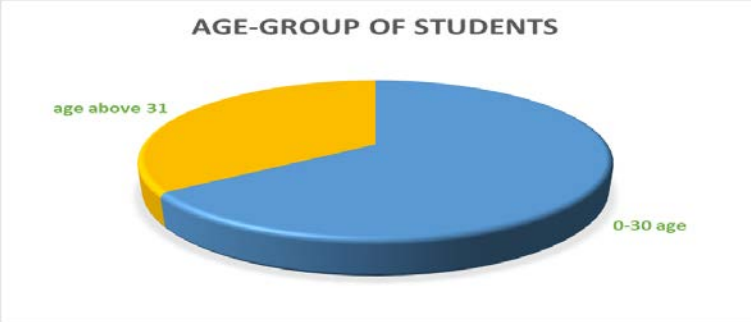
The baseline survey data analysis is classified into following sections:

a) Demographic information of the students
b) ICT skills of students
c) System of getting University updates for students
d) Attitude towards M-learning

Demographic information of the students

The demographic information of the students presents a broad picture of students' profile of UOU. The demographic variables present in study are age, gender, caste categories, course enrolled, ICT devices at home, and internet connection.

The data revealed that most of the students are in the age group under 30 (65.4%), while about one third are between 31-60 age group. However, there were 69% female and 31% male students in the survey.



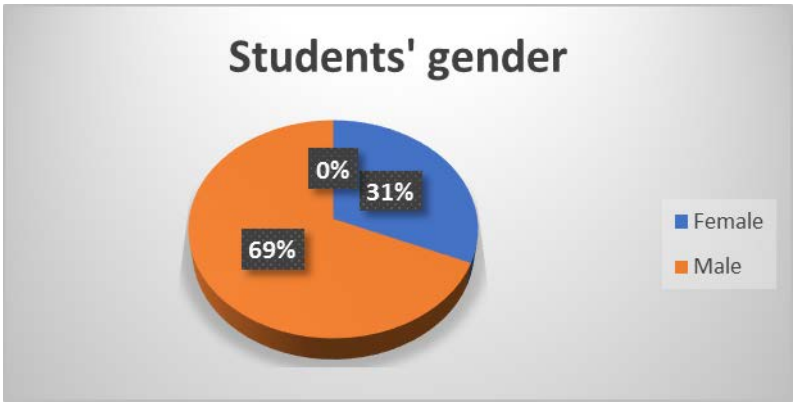
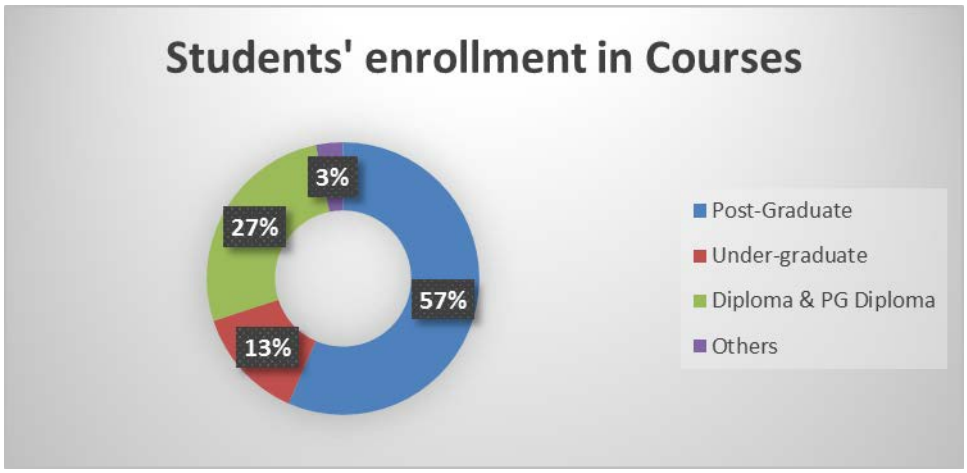
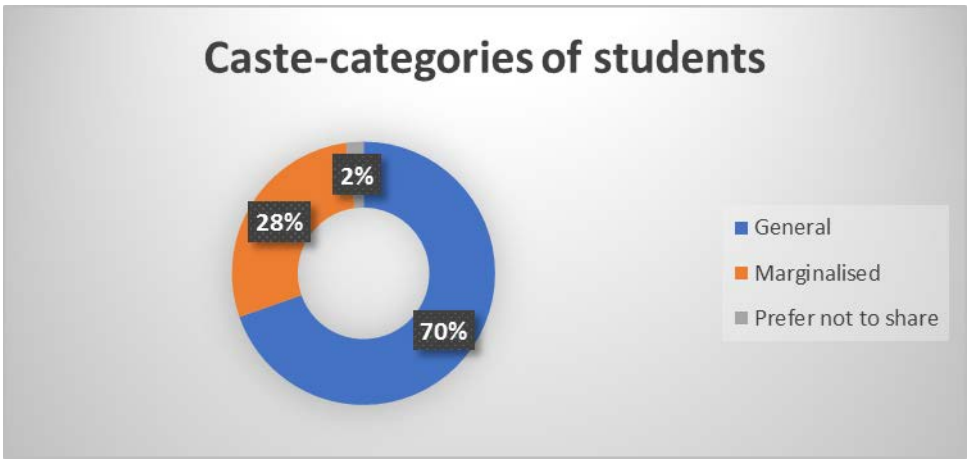
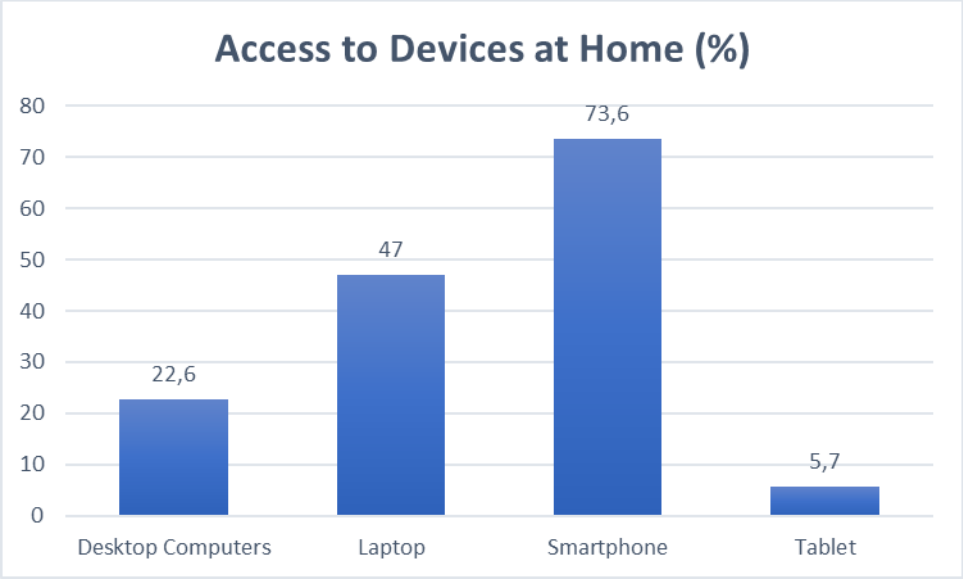


Figure on student enrolment reveals that more than half of the respondents were enrolled in post-graduate courses. On the other hand, 27% were doing diploma and post-graduate diploma courses in various streams provided by the UOU, while only 13% were registered for under-graduate courses. Among these enrolled students, majority of them were from general or unreserved category, while 28% covered under marginalised section of society including schedule caste, schedule tribe, and other backward classes.

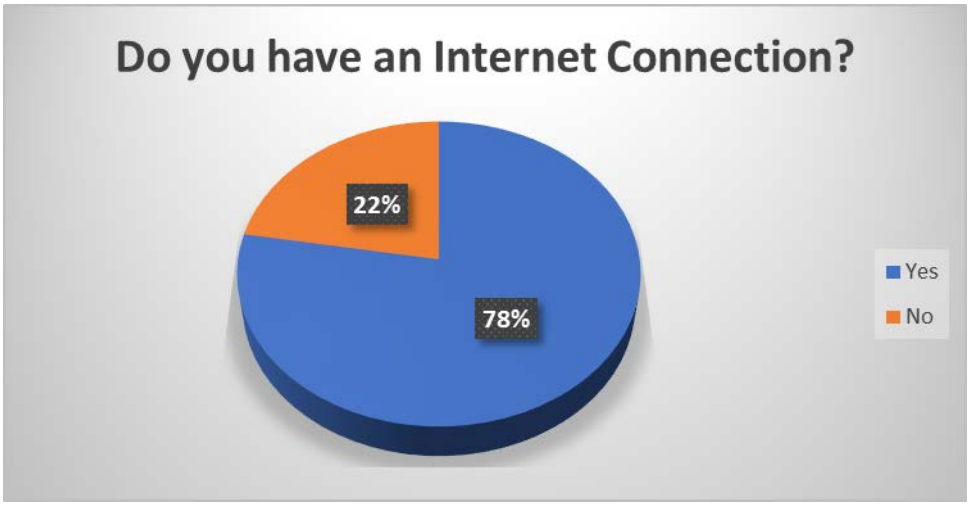




In terms of availability of devices at home, majority of students have smartphones (73.6%), while about 50 % of them have their own laptops. Similarly, 22% of students have desktop computer at their homes and only 6 % have access to tablets. Interestingly, it is revealed that students have digital access to support their learning as well as other purposes. However, it is interesting to know about their attitude towards M-learning as most of them have access to smartphones. The study has shown positive attitude of students towards M-learning which is discussed under further section in detail.



Having access to digital devises are not enough, we need to know about internet accessibility also. Most of the students have access to internet (78%), while rest of them (22%) do not have internet connection available.



ICT Skills of the Students

The respondents were asked about their ICT skills and the item were analyzed on 5-point scale from1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree.

Table 1 presents the average of scale related to students' ICT skills. The average of ICT skills ranged from 4.15 to 3.73 is indicating that, overall, student is able to use ICT in various contexts including functioning of devices to its academic uses for self as well as with others. The students agreed that they are able to log in to websites on their mobile phones (M = 4.15, SD = .830) without the help of others (M = 4.14, SD = .888). They responded positively that they can download any figure through internet on their mobile device (M=4.13, SD =.842), check and search hyperlinks to enter another website (M=4.05, SD = 0.799) and surf internet (M = 3.92, SD = 0.344). Apart from mobile devises, students also agreed that they are used to with computers (M = 3.88, SD =.424). The students are somewhere between neutral to agree with statements related to things like doing searches, setting bookmarks, and

downloading files (M = 3.87, SD .482) along with installing software and changing configuration settings on the computer (M = 3.73, SD = 5.76).

Overall, the results indicate that students are notably comfortable in using mobile and computer devices for surfing internet and websites, downloading resources including software, using hyperlink, setting bookmarks and configurations of their devices.

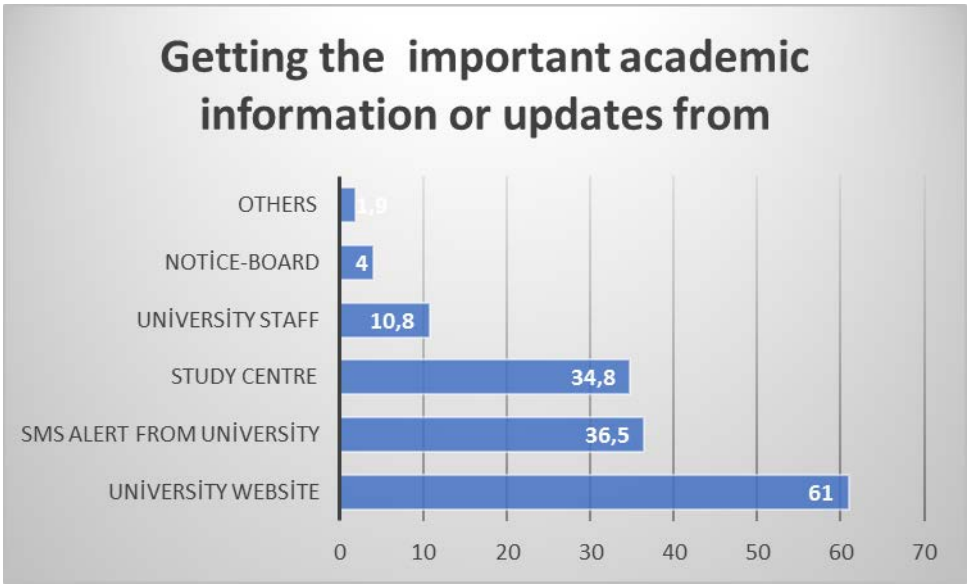
Table 1: ICT skills in students of UOU

	N	Minimum	Maximum	Mean	Std. Deviation
1. I can log on to the website on my mobile device	283	1	5	4.15	.830
2. I can use my mobile device without the help of others	283	1	5	4.14	.888
3. I can download a figure from the internet using a mobile device	283	1	5	4.13	.842
4. I can check a hyperlink to enter another website using my mobile phone	283	1	5	4.05	.799
5. I am comfortable surfing the Internet.	283	2	5	3.92	.344
6. I am pretty good at using the computer.	283	2	5	3.88	.424
7. I am comfortable with things like doing searches, setting bookmarks, and downloading files.	283	2	5	3.87	.482
8. I am comfortable with things like installing software and changing configuration settings on my computer.	283	2	5	3.73	.576

University Information and Updates

It is important to understand from students' perspective about how they get information and updates related to academics. Majority of students with 61% get these information and updates from the university website. On the other hand, about one-third of the students receive the SMS alert from the university and the same number of students get the updates physically through their study centres. Rest of the students (about 15 %) admitted that university staff and the notice board of university are the sources from where they get information and updates about their academics.

Interestingly, majority of the students receive these academic updates and information from ICT platforms which are university website and SMS alert on mobile phones. It indicates that the UOU is using technology for connecting with their students actively.



Students' Attitude towards M-learning

The students' responses on attitude towards M-learning were gathered using a 5-point scale in the questionnaire. There were 13 items considered for this analysis.

The following Table 2 presents the attitude of students towards M-learning. The attitude scores ranged from 4.30 to 3.89, indicating that UOU's students are positive towards M-learning. The item with highest mean score reflected that students agreed on use of video animations for making the audio/video lecture more attractive and understandable (M = 4.30, SD = .647). Similarly, they accepted that their mobile device can help them to attain more ideas in learning and the digital lectures (audio-video) are more suitable for distance learning (M = 4.29). Furthermore, these lectures motivate the learners as well (M = 4.27, SD = .667). The features such as graphics, pictures, and diagrams enhance the learning, therefore the mobile devises can be helpful for learning (M = 4.24). Notably, the audio-video contents and lectures are more useful and relevant for present generation of digital learners (M = 4.22, SD = .655) as mobiles enhanced their desire to learn (M = 4.12, SD = .747) without time and space constraints (M = 4.03, SD = .887). Students can interact with peers through mobile devices for discussion and learning (M = 4.00, SD = .894). They also felt that mobile use in learning is full of fun (M = 3.89, SD = .935) as well as ideal (M = 3.98, SD = .877).

Table 2: Students' attitude towards Mobile-learning

	N	Minimum	Maximum	Mean	Std. Deviation
1. Video animation makes the Audio/ video lecture attractive and understandable	283	1	5	4.30	.647
2. A mobile device can help me to attain more ideas in learning	283	1	5	4.29	.714
3. Audio/ video lecture is a good use of technology for learning at a distance	283	1	5	4.29	.709
4. Audio/ video lectures motivate learners to learn effectively	283	1	5	4.27	.667
5. A mobile phone is helpful for my learning	283	1	5	4.24	.742
6. Pictures, diagrams and graphics in the Audio/ video lectures enhance learning	283	1	5	4.24	.682
7. Use of Audio/ video lecture is more effective as a	283	1	5	4.22	.655

learning tool with today's learners than previous generations of learners					
8. A mobile phone can enhance my desire to learn	283	1	5	4.12	.747
9. It saves time when I use mobile because I can learn without time and space constraints	283	1	5	4.03	.887
10. I love to use mobile device in learning activities	283	1	5	4.01	.879
11. I can use mobile device to discuss with my peers about the learning materials	283	1	5	4.00	.844
12. I think mobiles are very ideal for learning	283	1	5	3.98	.877
13. It is quite fun to use a mobile device for learning	283	1	5	3.89	.935

Result and discussion UOU Students' Attitude towards Mobile-Learning

1. As per the survey of 283 students of UOU, they have expressed positive attitude towards M-learning.
2. The item with highest mean score reflected that students agreed on use of video animations for making the audio/video lecture more attractive and understandable.
3. They accepted that their mobile device can help them to attain more ideas in learning and the digital lectures (audio-video) are more suitable for distance learning.
4. Furthermore, these audio-video lectures motivate the learners as well.
5. They reported positively that the features such as graphics, pictures, and diagrams enhance the learning, therefore the mobile devises can be helpful for learning.
6. For them, the audio-video contents and lectures are more useful and relevant for present generation of digital learners as mobiles enhanced their desire to learn without time and space constraints.
7. Students agreed that they can interact with peers through mobile devices for discussion and learning.

They also felt that mobile use in learning is full of fun and ideal as well.

Conclusion

The university is keen to support ICT at various level. Along with internet infrastructure, it facilitates the learners with e-Learning, OER, MOOCs, and other audio- resources. Interestingly, majority of the students receive these academic updates and information from ICT platforms which are university website and SMS alert on mobile phones. The results indicated that the UOU is using technology for connecting with their students actively. In terms of students' attitude towards M-learning, it was reported that they are comfortable in using mobile and computer devices for surfing internet and websites, downloading resources including software, using hyperlink, setting bookmarks and configurations of their devices As we know that the stakeholders positive attitude directs the success of any policy implementation, the present result indicates a positive efficacious potential of ICT specially M-learning in forthcoming years.

Acknowledgement

This work is a part of a joint Project "Integrated Open and Distance Learning through ICT at Uttarakhand Open University for Sustainable Development" of Uttarakhand Open University, Haldwani and Commonwealth Educational Media Centre for Asia, New Delhi.

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QUALITY OF BLENDED LEARNING EDUCATION IN HIGHER EDUCATION

Dr. Subrahmanian Muthuraman
Assistant Professor, Faculty of Business Studies, Arab Open University, Sultanate of Oman
subrahmanian.m@aou.edu.om

ABSTRACT
Higher Educational institutions are increasingly using blended learning strategies to deliver course content to diverse and dispersed student cohorts. Blended learning is a mixture of online and face-to-face learning. In the literature, blended learning is also known as 'hybrid learning' or the 'flipped classroom'. The reason for this happening is that it creates a potential to provide flexible access to content and instruction at any time, from any place and cost-effectiveness for HEIs. Implementing a blended learning program requires coherent and coordinated planning to be successful. The literature suggests that continuous evaluation of blended learning programs is essential. With this view, this paper is focus on assessing the quality of blended learning education at Arab Open University, Oman Branch. The success of blended learning programs inevitably relies on students' equitable access to technology. Ozkan & Koseler in 2009 developed a Hexagonal E-Learning Assessment Model (HELAM) a conceptual e-learning success evaluation model which is also validated by the authors for assessing learner satisfaction with both internet-based LMS and blended learning. It contains six dimensions such as Supportive factors, Learner perspective, Instructor attitudes, System quality, Information (content) quality and Service quality. This research, is trying to explore the importance of each dimensions of HELAM which directly affects the overall success and learner's satisfaction at AOU, Oman. HELAM, focusing on understanding the learners' perceived satisfaction from an e-learning environment. The data has been gathered from survey questions, informal interviews from the students of AOU, Oman Branch. Descriptive analysis has been used to analyze the data. Blended learning in HEIs programs improved retention and correlated with improvements in students' attainment. It also improves attendance at face-to-face classes, in self-report measures of student satisfaction, and in examination performance. The students' attitude toward blended learning is positive. Effective blended learning is in making students active learners in their area of specialization. The learning management system definitely aids blended learning.

Key words
Blended Learning, Learning Management System, HELAM, Higher Educational Institution, online learning

Introduction

During the past three decades, education in general, and modes of learning in particular, are changing and developing dramatically leaving major impacts on the educational process as a whole (Dweikat & Amer, 2017). Educational institutions are increasingly using blended delivery strategies to deliver course content to diverse and dispersed student cohorts (Meyer et. Al., 2014). Blended learning is a mixture of online and face-to-face learning. In the literature, blended learning is also known as 'hybrid learning' or the 'flipped classroom' (Bowyer, 2017). In recent years, blended learning has become a popular teaching strategy because of the development of data analysis and computation (Lu, et al, 2018). Schrum (2011) avers that technological advances have exceeded even the most optimistic expectations. She also states that technology has had a positive impact on education, even if it has not yet resulted in wholesale educational transformation. As a result new modes of education and trends have emerged to cope with such ongoing changes in the field of education and the different modes of education are Open Learning, Distance Education, E-learning and Blended Learning. These trends, on the other hand, have expanded and shifted their focus to the extent that a large number of academic institutions are now concerned with blended learning programs. One of these institutions is Arab Open University (AOU) in Oman, which believes that the time has come to meet the needs and expectations of its learners who are working in the context of increased responsibilities and time pressures. Arab Open University has its headquarters at Kuwait and the number of students in Arab Open University is around 29,000 attending 8 branches in all the GCC countries. Under these conditions, there is an apparent, compelling demand and a dire need to shift from face-to-face meetings and lectures to ones that involve a more flexible blend of face-to-face and e-learning activities. One of these trends recently applied is blended learning which aims at skillfully combining e- learning with face to face instruction so as to create a positive experience for both of the instructors and the students (Dweikat & Amer, 2017).

Literature Review

Boelens, Van Laer, DeWever, and Elen (2015) define blended learning as "learning that happens in an instructional context which is characterized by a deliberate combination of online and classroom-based interventions to instigate and support learning" (p.5). Blended learning appears to be most commonly used in Higher Education. There is some evidence that the introduction of blended learning can lead to improved

course outcomes, in terms of higher student retention as well as increased pass rates. Studies by López-pérez, pérez-López, and Rodríguez-Ariza (2011) and Boyle, Bradley, Chalk, Jones, and pickard (2003) found that the introduction of blended learning in HE courses improved retention and correlated with improvements in students' attainment. Agreeing with these definitions but with a little twist, Hartman et al. (2007) defined it as courses that combine face-to-face classroom instruction with online learning and reduced classroom contact hours. Valiathan (2002) stated that blended learning combines online learning with face-to-face learning. The goal of blended learning is to provide the most efficient and effective instruction experience by combining delivery modalities. In the following paragraphs we highlight some of the research that has addressed the global trend of blended learning.

A Delphi study including experts from around the world (North America, Asia Pacific, Europe and beyond) considered how blended learning could support collaborative learning. These experts generally agreed that blended learning "offers unique opportunities for international collaboration". They also suggested that new adopters will need examples of international collaboration to effectively navigate this and other complexities of blended learning. Though it is encouraging that experts are positive about international collaboration, this and other research omits both specific examples of BL collaboration and explanations as to why it is possible and advantageous (Spring & Graham, 2017).

In this respect, Sharpe et al. (2006) offered three distinct models for the purpose of thinking about blended learning from a historical perspective. The first model is blended learning as a supplement to traditional programs, e.g. the provision of additional materials and guidance through a virtual learning environment, e-mailing PowerPoint slides to delegates, use of online communication tools such as chat rooms or discussion boards, use of social software such as wiki or blogs, use of online quizzes, or additional resources provided via CD-ROMs or DVDs. In such a model we can notice that the face-to –face activities encompass e-activities or e-resources and vice versa. The second model is a transformative approach where new programs are designed or previously existing programs are redesigned to integrate a wide range of approaches to learning and teaching relevant to the learners and the context of learning. The third model is the learner-led one, which is holistic and typified by the use of a wide range of technologies, including mobile phones, iPods ,emails, social networking software such as MySpace or Facebook, weblogs and message systems. These are tools that are commonly used on day-to-day basis, e.g. for social reasons, and they are often the preferred communication tools of different groups of learners (Dweikat & Amer, 2017).

According to Moebs and Weibelzahl (2006), blended learning (BL) or hybrid learning describes a learning environment that either combines teaching methods, delivery methods, two media formats or a mixture of all these. It also refers to the integrated learning activities such as a mixture of online and faceto-face learning. Blended learning , however, is usually referred to as a hybrid model at university practices, which are courses in which a significant portion of the learning activities have been moved online, and time traditionally spent in the classroom is reduced but not eliminated.

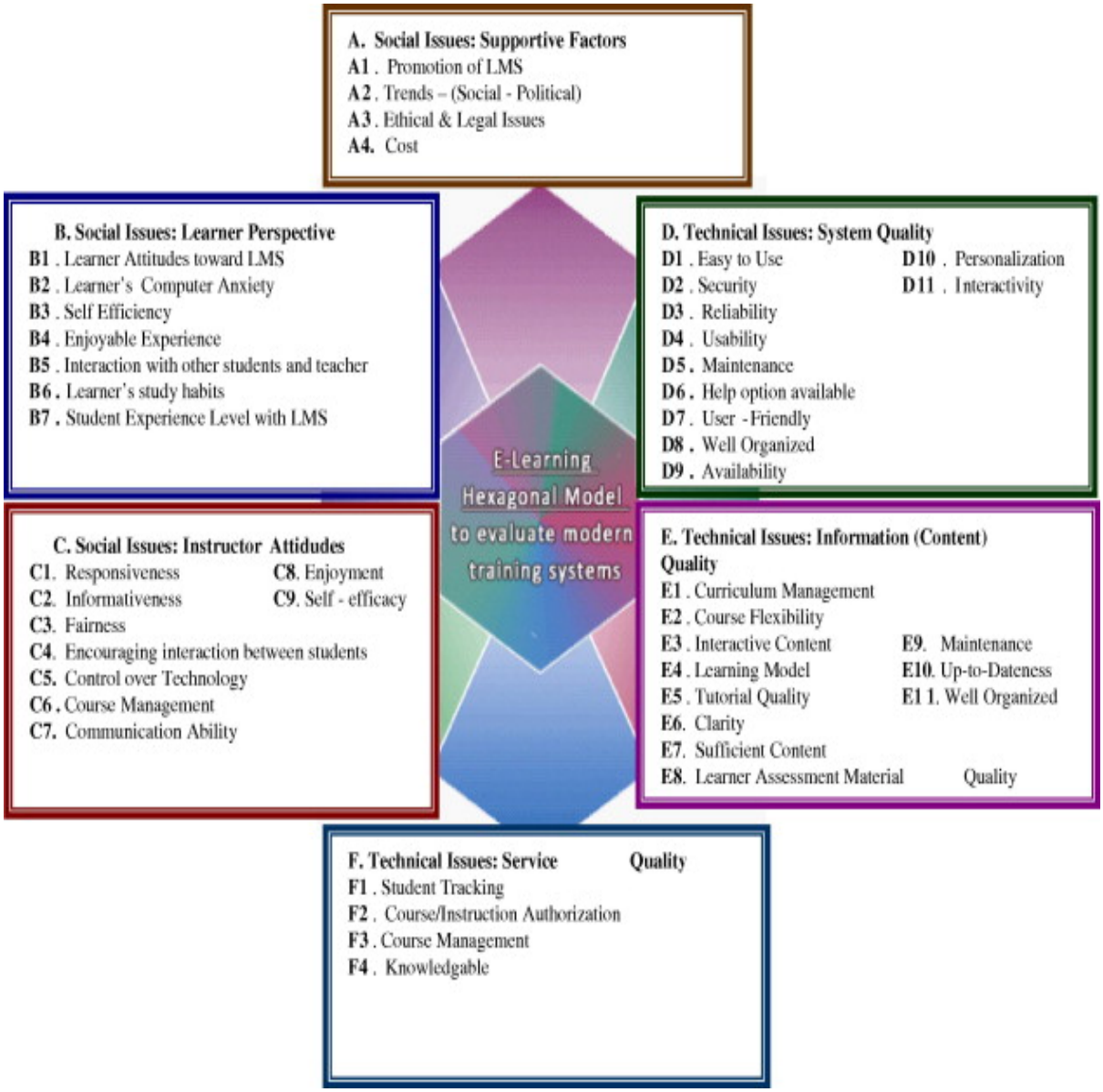
In a nutshell, blended learning is based on a wise and balanced rated combination of traditional learning with web-based online approaches, which in turn, involves a combination of media and tools deployed in an e-learning environment and the combination of a number of pedagogical approaches (Dweikat & Amer, 2017).

Purpose of the Study

The primary objective of this study is

- To assess the quality of blended learning education at Arab Open University, Oman Branch
- To investigate students attitude towards the blended learning education and its impact on learning.
- To analyze and describe the possibilities of improving blended learning education in Arab Open University, Sultanate of Oman
- To investigate the effect of using the Hexagonal E-Learning Assessment HELAM Model on students' attitudes toward blended learning at Arab Open University, Oman Branch

Hexagonal E-Learning Assessment Model (HELAM)



HELAM (Hexagonal E-Learning Assessment Model) (Ozkan, et al, 2008)

HELAM is a conceptual multidimensional model for evaluating learning management systems in terms of perceived learner satisfaction (Ozkan & Koseler, 2009). It contains six dimensions (see Figure 1) assessed via a questionnaire. The instrument has been validated and all six dimensions were found to be important. The authors note the model is based on student perceptions only and does not consider the perceptions of other stakeholders such as teachers, system developers and administrators.

Hexagonal E-Learning Assessment Model (HELAM) is a conceptual e-learning success evaluation model for assessing learner satisfaction with both internet-based learning management systems and blended learning. HELAM has been developed for assessing the e-learning effectiveness according to 6 dimensions of e-learning: Technical Issues: System Quality, Technical Issues: Service Quality, Technical Issues: Content Quality, Social Issues: Learner Perspective, Social Issues: Instructor Attitudes, and Supporting Issues (Ozkan, et. al. 2008).

In the HELAM model, user satisfaction is the main point of the evaluation. It is defined by two different variables one of which is expectation from LMS, and the other one is confirmation of these expectations. If the level of user satisfaction realized is below than the expected net benefits, then the LMS can be regarded as unsatisfactory and unsuccessful. Vice versa, if the level of user satisfaction realized is above or equal to the expected net benefits, the LMS can be regarded as satisfactory and successful (Ozkan, et. al. 2008).

Methodology

The focus of this research is to assessing the quality of blended learning education at Arab Open University, Oman branch in relation to its factors. The posttest survey questionnaires were developed in conjunction with the literature review aimed at understanding quality of blended learning education. The study adopted the survey research design using structured questionnaire that collects demographic data. The questionnaire also collects data on the six dimensions such as Supportive factors, Learner perspective, Instructor attitudes, System quality, Information (content) quality and Service quality which will assess the quality of blended learning education.

Research Instrument and its Reliability

The major instrument for collecting data is the questionnaire. The questionnaire was developed to assessing the quality of blended learning education at Arab Open University, Oman branch. The questionnaire consists of few questions on demographic variables and remaining questions on various dimensions to measure the quality of blended learning education at Arab Open University. In this research, the respondents were required to indicate their opinion on each statement on a five point Likert type scale: 1=strongly agree to 5=strongly disagree.

The questionnaire was submitted to the experts in the field of blended learning for getting feedback. Based on their feedback minor changes has been made on the questionnaire and distributed to few sample population for the pilot study and the reliability was calculated with the help of cronbach alpha (Hair et al., 1998). Cronbach Alpha value was calculated and it was found to be 0.946 and the total numbers of questions were 30. The values were found to be in the range of 0.60 and 0.90, hence it might be suggested that all the scales met the reliability condition (Hair et al., 1998, p.118).

Sampling

The survey population of this study consists of students of Arab Open University, Oman branch. Convenience sampling method was used to draw 261 samples from various departments of the university. The respondents were clearly explained about the purpose of this research before collecting data. At the final stage, 246 questionnaires, which consist of the measurement, was distributed among students of Arab Open University, Oman branch. 231 completed questionnaires were returned. Due to some limitations, the sample size was 226 students, but accuracy is not compromised, all the samples were thoroughly evaluated and on the other hand it was found that there were few errors in 5 samples; they were not valid, so it got removed and finally 221 samples were taken for the final analysis.

Discussion & Results

The data that was collected for this study was processed manually through coding and then entered electronically. The Microsoft Excel and Statistical package for Social Sciences (SPSS) were used for the analysis. The use of statistical distributions such as tables showing frequencies and percentages were adopted in the study. Descriptive analyses were used to compare the demographic data of the study participants. The weighted average method was adopted for all the six dimensions such as Supportive factors, Learner perspective, Instructor attitudes, System quality, Information (content) quality and Service quality.

Descriptive Analysis

Table 1 presents the demographics data based on age, gender, student status and department of respondents with their description range and frequency.

Description		Respondents	Percentage
Age Group	Below 20	10	5%
	21 -30	160	72%
	31 - 40	47	21%
	41 - 50	4	2%
Gender	Male	84	38%
	Female	137	62%
Student Status	Full Time	106	48%
	Open Learning	115	52%

Department	Business	112	51%
	Information Technology	62	28%
	Education	29	13%
	Language Studies	18	8%

The analysis reveals that majority of the respondents 72% were in the age group of 21 – 30, 21% fall between the age bars of 31 – 40. In respect to the gender, 38% of the students are men and 62% of the respondents are female. This is because of the full time ministry students. In respect to the student status in the university, 48% of them are full time students sponsored by the Ministry and the remaining 52% of the students are open learning students.

In order to understand the student affiliation to their specialization, the department in which they registered was enquired and it was tabulated and it was found that 51% of the student belong to the Business department, as it is one of the largest department in the university, so the weightage was given more to them, 28% of the students are belong to Information Technology department, 13% of the students are belong to Education department and the remaining 8% of the students are in Language Studies department which is one of the smallest department in terms of number of students enrolled.

Weighted Average Analysis

The weighted average analysis was conducted for six dimensions such as Supportive factors, Learner perspective, Instructor attitudes, System quality, Information (content) quality and Service quality. In each dimension, the researcher was trying to list out the important factor in rank order.

Table 2 Learners Perspective

Learners Perspective						**Average**	**Rank**
Face-to-face education is better than distance education in learning process	20	29	35	65	72	**3.63**	**1**
I can manage my "study time" effectively and easily complete assignments on time by using LMS & E.Library	19	56	89	52	5	**2.86**	**5**
I enjoy attending to the AOU program overall	26	46	68	61	20	**3.01**	**4**
LMS makes the communication easier with instructor and other class mates for me	31	26	58	68	38	**3.25**	**3**
In my studies, I am self-disciplined and find it easy to set aside reading and homework time	13	35	69	84	20	**3.29**	**2**

The above table presents the students perspective on the learning in the university and it was analyzed with the help of weighted average method and it was found that face to face education is better than the distance education, it shows that both the full time ministry students and the open learning students were very much interested in the face to face education followed by self-discipline, the student strongly agreed that they have intention to read and work at home as it is a blended learning system. They also agreed that LMS plays a major role in communication. The LMS is the major tool for the blended learning system. The effective use of LMS determines the effectiveness of blended learning in higher education. LMS makes the student life easier which act as a communication medium with the tutors. However the students find little difficult in complete their assignments as it demands lot of critical analysis and reflection with appropriate references. The university should think of providing additional training on the E.Library usage to the students to improve their quality of education and learning.

Table 3 Instructor Perspective

Instructor Perspective						Average	Rank
Tutors clearly informs the students about grading policy	35	19	54	77	36	**3.27**	**5**
Tutors frequently updates lecture notes & Presentation in the LMS	23	31	54	85	28	**3.29**	**4**
The Tutors responds promptly to questions and concerns	22	30	50	82	37	**3.37**	**2**
The Tutors are good at communication with students	12	28	49	65	67	**3.67**	**1**
Tutors are encouraging students to interact with other students by using Discussion Forums, chat rooms and other Online interactive tools	16	26	68	92	19	**3.33**	**3**

Table 3 presents the ranking of perspective of students on instructor, according to the students of Arab Open University, it was clearly found that the tutors in all discipline are good at their communication with the students; the students didn't face any difficulties. Students also agreed that they didn't find difficulties with the tutors as they respond to them promptly to their queries. This is one of most important culture in Arab Open University, which all the tutors are following their office hours and even after office hours they are ready to support the students and resolve all their issues in academics.

Another important aspect of the tutor is to encourage the students to interact with other students and encourage them to participate in discussion, forum, chat room to improve their communication skills, the students also acknowledged the same in their responses on the tutors. However the students felt that there is an improvement is expected on the grading policy, they expects that the tutor should give enough comments on what basis their paper or assignment was marked. All the tutors are working on improving the quality of the education in the university, it will be highly appreciated if they give appropriate comments and justification for their grading, so that the students will be able to overcome their mistake next time, it will be a good learning practice for the students to improve their knowledge.

Table 4 System Quality

System Quality						Average	Rank
LMS supports interactivity between learners and system by chat, forums, discussions	23	26	79	70	23	**3.20**	**3**
Navigation in LMS is very easy	23	45	59	57	37	**3.18**	**4**
I can find required information easily in LMS	25	48	57	57	34	**3.12**	**5**
LMS Online is easily accessible via internet	7	14	86	80	34	**3.54**	**1**
LMS -Online is a good educational portal and improve my learning	23	33	68	66	31	**3.22**	**2**

The students were asked to give their opinion on the system quality, after the analysis it was found that the student fully agreed that LMS online is easily accessible via internet, as the LMS is one of the important tool for the blended learning system, all the materials and the announcements will be uploaded in the LMS by the tutors, the students can access LMS from anywhere. Also the students acknowledge that the LMS is a good educational portal and it improves the learning of the students followed by LMS act as an interactive tool between the

students through chat, forums and discussions. Almost all the tutors initiate the discussion in the LMS and ask the students actively engage in the learning, this also helps the students to learn more from other students.

However there is need to improve the visibility of the information in the LMS, the tutors have more option to highlight the important information in the LMS which could be done by the tutors in the near future. It is suggested that even all the tutors should undergo additional training on LMS on how to effectively use it and how it is beneficial to the student in learning and improving their knowledge and skills. The navigation is yet another problem faced by the student; it is the high time to provide additional training on LMS and its usage to all the students from all the discipline so that the students will get the full benefits of the LMS and its usage. The important factor for the quality of blended learning is relay on its tool which is Learning Management System.

Table 5 Service Quality

Service Quality						Average	Rank
The service supported by AOU is good enough	28	46	79	56	12	**2.90**	**5**
I do not encounter any problems during communicating with AOU administration	10	44	99	50	18	**3.10**	**3**
I do not experience any problems during registrations	13	54	80	56	18	**3.05**	**4**
I can easily solve when I encounter a problem during admission to a course in registrations	19	45	69	61	27	**3.14**	**1**
AOU provides admission requirements information on-line	12	42	85	67	15	**3.14**	**1**

With respect to service quality, the students acknowledge that they find it very easy to solve their problems which they encounter during their registration to the courses for the new semester. The usual practice in Arab Open University is that all the tutors will be allotted with the specific number of students to advice, after the successful completion of the semester, the tutor will check the students plan and do pre-advising for them and this will largely help the student to register their course online from anywhere. Only if the students wish to change the course pre-advised or any issues in time clash, they will come in person and meet the tutor advisor for changes otherwise, the registration will be done smoothly and there is a very effective registration and admission department working in the university to support the students in all means.

The student's relationship with the admission and registration department is very smooth and no issues were found. However the student felt that if they come across some issues during their registration of the courses while they were outside, it makes them to come to the university in person and it consumes lot of time for them and sometimes they find it difficult to come in person, so it is advised that the tutors should take more care in providing pre-advising to students. The student felt that they need more support services from the university in terms of improving the service quality.

Table 6 Supportive Issues

Supportive Issues						Average	Rank
AOU Provides a pleasant environment for learning	22	52	87	49	11	**2.89**	**5**
AOU programs lecture notes are prepared by obeying the ethical and legal issues	7	28	87	82	17	**3.33**	**2**
I obey the ethical and legal issues in the course related testing, assignments	8	37	92	65	19	**3.23**	**4**
I am aware of the consequences of any forms of plagiarism	18	22	86	66	29	**3.30**	**3**
I am aware of the cheating policy of the university	8	22	92	53	46	**3.48**	**1**

Students were asked to provide their opinion on the supportive issues during their stay at Arab Open University. The student fully agreed that they were aware of the cheating policy of the university. The university management and all the tutors take more care on the creating awareness among the students on cheating policy. All the tutors in their respective classes, they educate student on plagiarism in the assignment. If the student gets more that 30% plagiarism in the assignment, they will be awarded zero, so the tutor is educating the students how to avoid plagiarism and the university keep lot of banners stating the importance of the avoiding the plagiarism in the assignment and also about the cheating policy. Students also acknowledge that they were aware of the consequences of the plagiarism and the cheating. Students agreed that the tutors lecture notes are prepared by obeying the ethical and legal issues.

The plagiarism is not only for the students, it is also for the tutors while they prepare the lecture notes. However the student felt that there is need for the improvement from the university management side to improve the pleasant learning environment for learning, they highlight that the space in the university is limited and is one of the constrain for them during learning. University is also looking alternative solution by adopting another building for rent and also working on the own building for the university, by which this issues will be solved and students will get a pleasant learning environment.

Implication

As a result of the frequent use of blended learning with its well-known popularity, especially in the last two decades, some educators now claim that blended learning has the potential to go hand in hand with the philosophy of distance and open learning to the extent that blended learning can supplement the objectives of such distance and open learning in many fields (Dweikat & Amer, 2017).

The finding revealed that the student attitude and the opinion towards the blended learning at Arab Open university was highly appreciated and they felt that they were able to learn better and reproduce during their preparation of assignment and the final exam. The merits of using this blended learning might be based on the fact that such strategy has the potential to offer more learning opportunities added to the face-to-face lectures so as to enable students who are often absent from the regular face-to-face lectures to be able to improve their course grade by viewing the lectures online or to use recorded supplementary materials at home.

From the findings, some important implications and recommendations can be given in this regard. First, since students have positive attitudes towards the proposed model of blended learning, teachers and instructors should try their best efforts to create a more flexible environment that employs a combination of resources and involves the provision of additional materials and guidance to enable learners to optimize their learning experience (Dweikat & Amer, 2017). Another implication is that if the instructors at AOU are the persons to be responsible for improving methods of delivery of the instructional materials, they must be trained and motivated to improve their skills and potentials in this regard.

It is also suggested by Polding (2007) study which suggests that keeping staff engaged with the process of integration is the most important aspect of e-learning as it leads them to feel confident and supported throughout the entire cycle causing the process of change run more smoothly and yield to better results. Taking into consideration the advantages of blended learning should not be the objective as the human element will always be the most dominant factor in running the process of learning. Blended learning can be used to support and supplement the human teacher and learner when enriching the educational setting and make it very relevant and appealing (Dweikat & Amer, 2017).

Conclusion

Considering the present research findings presented earlier, several implications are considered. This study contributed to the literature on blended learning in Sultanate of Oman. This study is the modest attempt to understand the student's attitude towards the quality of blended learning in Arab Open University, Oman Branch. The limitation is that this research employed convenience sampling to accomplish the research objectives. The limitations associated with the convenience sampling are applicable for this study. The sample size is yet another limitation to this study; the sample size is not enough to represent all the students of Arab Open University, Oman branch. Maybe in future there is a possibility of going an intensive research in the Oman branch and also it can be extended to all the branches of Arab Open University.

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QUESTION ANSWERING SYSTEM FOR DISTANCE EDUCATION USING E-LEARNING AND COLLABORATING LEARNING ENVIRONMENTS IN INDIA

Karpagam K
Department of Computer Applications, Dr.Mahalingam College of Engineering and Technology, Pollachi, 642003, India
karpagam80@gmail.com

Dr. Saradha A
Department of Computer Science and Engineering, Institute of Road and Transport Technology, Erode, 638316, India
saradha.irtt@gmail.com

ABSTRACT
Today, e-learning in education & distance learning is the most popular way to gain knowledge and share information between learning communities. In India, formal learning phase is hard-hitting to lower middle class people due to economic background. To resolve this issue and improve the life standards of people, distance education based on e-learning and collaborative learning paves a way. Information retrieval domain supports in this to display the specific answer for the user query which makes the learning easier. Question answering system returns sentence segment rather than returning list of documents. We present a mobile based question answering system that serves as a personal assistant in learning and providing information about computers, software and hardware, book reviews using natural language.QA models accept the query in natural language, analyze and compare it with information stored in the knowledge base. It displays the optimized response snippets which improves the efficiency of e-learning retrieval responses. The proposed system was developed to help the users to learn the subject knowledge at times of examination, technical interview and share answer for other users. This paper proposes a technique to find the type of question that in turn leads to a correct answer. The knowledge base created from the benchmark dataset such as Amazon Book Reviews, 20newsgroup, Quora, and Yahoo! Answer. This paper also focuses on the Indian education scenario, eLearning tools for easy learning through content preparation and presentation. The system interface has been evaluated using standard metrics such as Precision, Fetch, F1 Score, Inverse Precision, and Inverse Recall for the appropriate relevant response.
Keywords: Natural language processing, E-Learning, Education domain, Cosine similarity, Cuckoo Search Optimization, Collaborative Learning.

INTRODUCTION

Enduring learning for survival becomes essential in today's modern world. Electronic learning (or e-learning) and distance education is a technology-based education where the learning materials are available in internet where users can access and learn anywhere and anytime. According to the statics, distance education from the universities will approximately cost 35% of actual regular course university fee. In addition to that, E-learning provides a way to access high quality learning materials prepared by subject matter experts. The use of eLearning is to disseminate education in remote areas, the pros and cons of eLearning, and the future of eLearning in India in a cost saving mode. A few suggestions have been made to use e-learning for informal education, which is very effective for a developing country like India, where the majority of the population lives in rural / remote areas with less economical background. With low cost, the back warders have received neglected formal education. This e-learning also helps in rapid learning of the latest technical content in less span of time.

Due to the need of information at all instances within short response times, scenario for learning purpose has grown excessively and leads to solution of the mobile-based learning model. This leads to widespread mobile applications, smart phones and tablets for learning are being expanded with data connectivity. The question-and-answer system plays an important role in providing accurate information rather than long answers for learners. It categorized in an open domain question-answer and a closed domain question answer; the open-domain question-answer is able to answer dynamic data regardless of domain nature. The closed domain Question Answering system uses datasets /knowledge base /database /dumps for retrieving the answers.

Learners who need static data use closed domain QA systems such as content e-learning platforms, book reviews, product reviews, historical data, and education, etc. Because of the e-learning environment, students are more active and responsive to subject quizzes, assignments and tutorials, etc. The crowd-sourcing paradigm has been successful in evaluating answers and unanswered questions among the learning groups. The collaborative learning environment is used to exchange information with learning groups that consist of various technical and non-technical areas. It supports e-learning area to reach its level of efficiency.

RELATED WORKS

G.Manoranjithm el (2013) explores the area of Mobile Question Answering system that used the social network like Facebook, Twitter, and LinkedIn and experts answers for answering the user queries and rates them according to the accuracy. D.Aravind Gosh (2015) discusses the cloud technologies to apply in mobile based QA system to increase the performance with the response time and reduced the storage space of information. This Waheeb Ahmed et al (2017) proposes a automatic web based Question Answering (QA) system is a used for improving e-learning and education field. The user query accepts in natural language, which returns precise answer instead of hyper links documents to improve e-learning scenario.

Dr. M. Sikandar Hayat Khiyal(2009)," converse about the usage of Natural Language Annotations in Mobile Question Answering with answer pattern analysis the parse tree used to process and stores a sentence into an easy-to-understand format subject relation object. Xiin-She Yang and Deb (2010) &Nitisha Gupta, Dr.Sharad Sharma (2016) authors converse about comparison on various optimization algorithms with their parameters and benefits like Cuckoo-search, particle swarm optimization, differential evolution and artificial bee colony algorithms, Artificial Intelligent and all available nature Inspired Algorithms.

Sweta P. Lende and M. M. Raghuwanshi (2016) which describes the different methodology and implementation details of question answering system for closed domain QA System for handling documents related to education domain using NLP techniques to retrieve more precise answers. Tannaz Alinaghi et al(2013)discussed on validating the content of questions with all available resources including course materials, FAQS and rating from other learners using a recommender system. The most appropriate answer(s) with respect to several conditionals such as learner's knowledge, research background, history of previous questions, and the candidate answers relevant to the question will be preserved.

In this paper Tilani Gunawardena (2015), a mobile based QA system for satisfying the user requirements in education field related to book through reviews and computers proposed. Thus the main challenge of the proposed scheme is to reduce the response time and negative ratios for smart devices. Liu, S., Liu, F., Yu, C., & Meng, W (2004) &Christos Bouras, Vassilis Tsogkas (2012), discussed on semantic similarity among mutual words are analyzed for finding the semantic relationship between them using the empirical formulas and Wordnet dictionary. Mansaf Alam, Kishwar Sadaf (2016) discussed the role and efficiency of k-means Clustering based on Cuckoo Search and Consensus Clustering for attainment of web search result and the results compared with the cuckoo search, k-means and Bayesian Information Criterion (BIC) method.

Richard Khoury (2012 a new clustering algorithm is proposed to cluster similar sentences automatically based on the sentences' part-of-speech. It demonstrates question type classification with positive or negative impact, syntactic similarity metric and clusters the need sentences. Prof. Kohei Arai (2013) proposed a collaborative learning with domain knowledge and answer quality predictor is used with the target information as a reference. The knowledge base will be enriched for future question answering by system and others users.

Waheeb Ahmed et al (2017) propose the goal of an intelligent answering system is that the system can respond to questions automatically. For developing such kind of system, it should be able to answer, and store these questions along with their answers. Our intelligent QA (iQA) system for Arabic language will be growing automatically when users ask new questions and the system will be accumulating these new question-answer pairs in its database. The various mobile applications are developed in IT industry are analyzed for further processing such as Light mobile app Q&A systems, +ask mobile app and Kiwi app.

Our proposed system combines several hybrid areas such as text and data mining, machine learning, information retrieval and natural language processing for building the intelligent interface for question answering system. And we interested in building scalable solutions in different application domains for text data related problems.

PROPOSED METHODLOGY

The proposed model is a mobile based QA which gets user query in natural language and displays precise answer on education based book reviews, computer hardware & software, general information with quick response. Recently, there are numbers of optimization techniques such as Particle Swarm Optimization, Cuckoo Search, Firefly, Bat algorithm, Bees algorithm etc are available. Optimization algorithms suffer from low-quality results& convergence rates, complex structures due to its nature in deciding input parameters. To overcome this proposed application achieves in extract answer from knowledge base and applies cuckoo optimization.

The system accepts the user query preprocess it to identify the type of question and judges the answer to be extracted. The knowledgebase is created with the bench mark datasets in a defined tree structure. In return helps

to show it in easy retrieval of answers from the huge sets. The relevant appropriate answer sentences are extracted and evaluate for the accurate answers. The accuracy has been calculated with the similarity score between the question and the answer generated.

The learner community will be benefited by the collobarative learning method with accurate answers and shares informations. Also learner can rate the answer generated by the other learners and system for promoting the correct answers to the learning community. The crowdsourcing concpet is applied for distance education for answer generation for systems unanswered question and to train the system for answer generation by inputing the human generated answers. The answer is displayed to the learners in the user interface. The propsoed system architecture is shown in Figure 1.

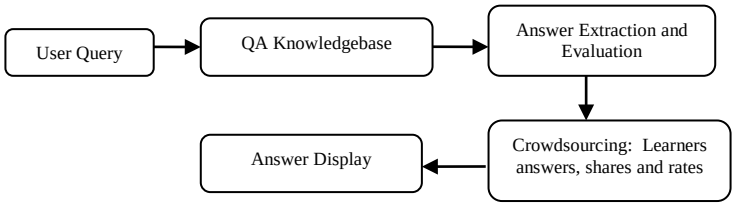

Figure 1: System Architecture

A. Question Analysis

Due to users with fat fingers, a chance occurring spelling mistakes like reciept with receipt, theater with theatre and cast with cats can solved with automatic corrections. The query pre-processing is done for removing stop words and stemming keywords. The query type is identifying with Stanford POS tagger which gives the grammatical structure of sentences. There are many Question types as Factoidal and non Factoidal. Question type pattern is framed to identity the question type to map exact candidate answer in the knowledge base. The Table1 gives the sample of the question.

Table 1: Question types

Question type	Description class	Sample Question	Tagging
Who/What	Person /place /values / Organization	What is the formula of calculating area of a cube?	Positive tag
When	Time/date	When was Groovy and Grail developed?	Positive tag
Where	Location/place	Where the Google office is located India?	Positive tag
Why	Reason	Why not RAM volatile in nature?	Negative tag
How many	Number	How many derived classes can be getting from base class?	Positive tag

Rita Wordnet used to provide various utility functions like semantic meaning of terms such as same word with different context meaning, different words gives same meaning like good, better, nice and best etc. It is used for finding similarity among the words like sing and sang. The questions analyzed for the positive and negative tagging for the production of the appropriateness of the resultant answers.

B. Knowledge base building and optimized information retrieval

The knowledge base is building using content based on Amazon book reviews like book title, star rating from reviewer, review and voting of book .The answers related to the computer software and hardware from Yahoo answer dataset & all technical and non technical from Quora dataset. It confers that building knowledge base through keyword matching and semantic similarity between query and document clustering for information searching Sanglap Sarkar (2015).

After finding the related sentence for the user query, the answer list if optimized with cuckoo search optimization. The cuckoo search optimization is population-based optimization techniques with limited parameters such as number of nests, number of eggs, fitness function value and number of iteration. The advantage of choosing the cuckoo search optimization by its stochastic nature, non-deterministic and fewer number of parameter for answer convergence. The extracted sentence has optimized using the cuckoo search optimization algorithm to reduce the mean square error rate. The fitness function is for average number of

mutual keywords among each sentence of paragraph and question. It also calculates and performs the search on retrieved sentences for best global best and local best.

The answer generation phase has 2 cases:
Case i) IF answer for user query is found in knowledge base, the system requests the user to select, rank the sentences for generating summaries according to the highest relevance score.
Case ii) IF answer for user query is not found in knowledgebase, the system accepts the significant answer from crowd user by applying their subject knowledge and experience.

Collaborative learning refers to methods and environments in which learners engage in a common task in which each individual relies on each other and is accountable to each other. It involves the use of small groups so that all students can maximize their learning and that of their peers. Peer learning supports to inculcate the knowledge sharing habit among the people with learning thrust. The teacher plays a role of facilitator in the peer collaborative learning environment to facilitate the learning. In developing country like India, this type of learning culture is needed to grow the education field, where maximum cannot afford the higher degree education.

EXPERIMENTAL RESULTS

The quality of answer validation is to review the returned answer by QA system for accurateness and related ones. In paper Ming Tan, Cicero dos Santos, Bing Xiang & Bowen Zhou (2016), discuss on the improved question and answer matching model is coined by developing a language learning model with the pattern identification.

The proposed learning model trained with 500 questions to learn question type and tested with 100 questions asked by learners. The test set consists of each 20 questions on “Wh” and “How” to type questions, which capable of retrieve candidate answers from relevant documents. Proposed system performance is analyzed in real world scenario by conducting pre-test with 50 students group (of 20-25 age) involved for acquiring user experience. The questionnaire list is framed to get the initial feedback for further improvement consists of questions on relevant and irrelevant answers for the user queries, User interface experience and overall user rating on a 4 point scale. In appendix A, the feedback form on user experience is shown for reference. At beginning of survey, the students/learners provided with a brief handout about

- What and how to interact with the system
- Domain area of QA knowledge base
- Total time duration 15mins

The result of query and response from above said datasets are shown in Table2:

Table 2: Query Request from User and Response

Type of Occurrences	Question Type with response ratio					
	What	When	Where	Why	How	Accuracy
Related Domain	83.2%	78.5%	85.4%	80%	75.4%	80.5%
unrelated domain	60%	45%	63%	52.5%	42.8%	52.66%
Repeated questions	67%	75%	68.5%	58.2%	73.5%	68.44%
Same Question asked in different Methods	56.2%	77%	62.5%	58.6%	48.6%	60.58%

EVALUATION METRICS

Gunnar Schröder et al(2011), discusses on various evaluation metrics used for retrieving the information along with the Precision, Recall, Inverse precision, Inverse recall and F1.Terms represents are TP as true positive, FP as false positive, FN as false negatives and TN as true negative used or calculating the accuracy of the generated answers.

Precision or true positive accuracy is calculated as the number of correct positive predictions to the total number of true positive predictions with false positive predictions of sentences. They evaluate and answers on how relevant are the retrieved results?

$$\Pr ecision = \frac{TP}{TP + FP} \quad (1)$$

Recall or true positive rate is the used to find the relevant sentence from the retrieved one to the relevant sentence. They evaluate and answer on retrieving many of the truly relevant documents. They evaluate and answers on did the system retrieve many of the truly relevant documents?.

$$\mathrm{Re}call = \frac{TP}{TP + FN} \quad (2)$$

The F1-Score is the combination of precision and recall into a single score by calculating different types of means on both metrics.

$$F1 = 2 * \frac{\Pr ecision * \mathrm{Re}call}{\Pr ecision + \mathrm{Re}call} \quad (3)$$

The inverse precision or true negativity accuracy is to compute for the ratio of certainly irrelevant sentences that are not selected to the total number of not selected sentences. This is the probability of the absolutely irrelevant sentence which is not selected is given by the formula

$$Inverse\ \Pr ecision = \frac{TN}{FN + TN} \quad (4)$$

The inverse recall or true negativity rate is to compute for the ratio of actually irrelevant sentences not selected to the total number of irrelevant sentences.

$$Inverse\ \mathrm{Re}call = \frac{TN}{FP + TN} \quad (5)$$

From the top 50 retrieved sentences of cuckoo search optimization technique applied for various questions types has analyzed with standard metrics for accuracy results. The results analyzed for the accuracy of the result with above metrics for different question and are shown in given table 3.

Table 3: Top N Sentence Retrieval

No. of Queries	Precision	Recall	F1	Inverse precision	Inverse Recall
10	0.8	0.64	0.7111	0.7	0.84
20	0.7	0.5185	0.5957	0.5666	0.7391
30	0.75	0.5	0.6	0.5	0.75
40	0.45	0.45	0.45	0.6333	0.6333
50	0.6	0.75	0.6666	0.8666	0.7647
60	0.9	0.5294	0.6666	0.4666	0.875
70	0.55	0.3793	0.4489	0.4	0.5714
80	0.5	0.625	0.5555	0.8	0.7058
90	0.55	0.6875	0.6111	0.8333	0.7352
100	0.5	0.4761	0.4878	0.6333	0.6551

Mean average precision is one of the popular performance measures of information retrieval field. It uses to evaluate the rank of retrieved relevant documents with the average precision values.

$$MAP = 1/n + \sum_{Q_i} \frac{1}{R_i} \sum_{Dj \subseteq Ri} \frac{j}{r_{ij}} \quad (6)$$

Where n is the number of test questions, r is the rank of the jth relevant document D_j in Q_i and R_i is the relevant document for Q_i. The result of sentence retrieval is shown in figure 2.

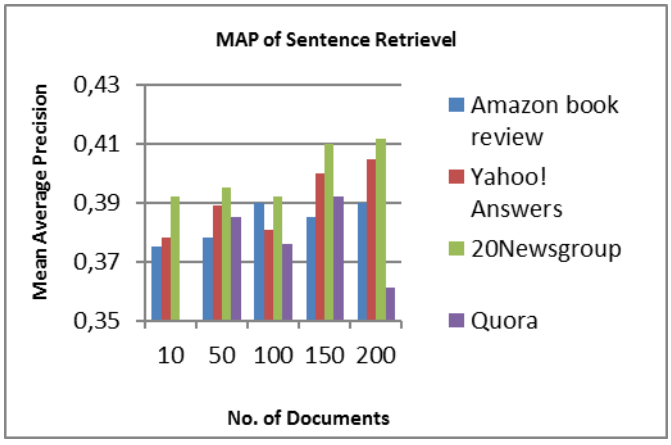

Figure 2 : Mean Average Precision of Sentence retrieval

CONCLUSION

The role of distance education, e-learning and collaborative learning methodologies is very high in supporting and educating learners of developing nations. This work motivated to develop an intelligent answering system as a mobile application that helps learning community for answer rating and sharing in e-learning and collaborative learning. The proposed framework evolves for optimized answer generation with cuckoo search optimization due to less complexity and best global optima. The benchmark datasets Quora, 20newsgroup, Amazon Book review and Yahoo! Answers are used to train and test performance of the proposed methodology. A pre-test is conducted with group of learners with general instructions for getting user experience for improvement. The collaborative learning and crowdsourcing concepts supports for system efficiency in answer sharing and learn together. From the above discussion and overall assessment, it is proved experimentally that the proposed approach is well accomplished for QA system in providing precise answers when compared to state of art works. The restriction on the proposed system is not much investigate and deep analysis on medical terminologies.

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Appendix A

Sample Mobile Question Answering System Application Survey Phase

Name of student / learner :	Date :

User rating (*****)	
Name the Similar apps you come across	
Time duration spent on application	
Functionality (UI Experience)	Excellent/ well accomplished / Good/ Poor
Performance (Responsiveness)	Excellent/ well accomplished / Good/ Poor
Load balancing of Mobile App	Excellent/ well accomplished / Good/ Poor
Deal with unrelated queries	Excellent/ well accomplished / Good/ Poor
Consistent way of content representation	Excellent/ well accomplished / Good/ Poor
Response time	Excellent/ well accomplished / Good/ Poor
Appropriateness of answer	Excellent/ well accomplished / Good/ Poor
Self assessment on subject	Excellent/ well accomplished / Good/ Poor
Network Balancing	Excellent/ well accomplished / Good/ Poor
Answer delivery	Excellent/ well accomplished / Good/ Poor
Is enough time duration for response?	Excellent/ well accomplished / Good/ Poor
With in small quantity of questions able to reach the expected answer?	Excellent/ well accomplished / Good/ Poor
Bottlenecks Faced	
Willingness to share with peers	Yes/ No
Suggestions for Feature Enhancements	

THE INFLUENCE OF CAREER DEVELOPMENT THROUGH E-LEARNING ON QUALITY OF WORK LIFE TO ENSURE THE JOB SATISFACTION OF EMPLOYEE WORKING IN AUTOMOBILE INDUSTRIES, CHENNAI

Mr. T. Chandrasekar
Assistant Professor
Department Of Management Studies, Kalasalingam Academy Of Research And Education, Krishnankoil, Tamilnadu, India
channotes@gmail.com

Dr.Jawahar Rani
Department Of Management Studies, St. Joseph College Of Engineering, Chennai, Tamilnadu, India

ABSTRACT
The quality of work life always depends on the skill set of an employee and their competitiveness in the working area. Now days the manufacturing companies are facing the problems to identify and develop the skill set of employee in the work centre. This paper is to find the influence of career development through E-learning on quality of work life to ensure the job satisfaction of employee working in automobile Industries, Chennai. The Importance of Human resource and their skill set for the industry growth is first discussed. The Quality of work life is connected with employee's job involvement and Job satisfaction. The job involvement and Job satisfaction always depends on the career opportunities and advancement. To improve the job satisfaction of employees, the automobile company should create and provide the career advancement opportunities for developing the employee's individual skill. This paper is intended to identify the relationship of Career development on the quality of work life of an employee. It also discloses various relevant constructs that are likely to support the career development influence on Job satisfaction and in turn Quality of Work life. Thereby this paper tries to portray the career development initiatives of the corporate sector with special reference to automobile sector for ensuring adorable quality of work life to their employees.
Keywords: Quality of Work Life, Career development, E-learning, Job Satisfaction.

1. INTRODUCTION

The Indian automobile industry is largest producer in the world. The country GDP is 7.1 percent. In that 80 percent of market share is hold by two wheeler manufacturers for attract the youth and lower income people. All over the world India is largest exporter for auto mobile products. In addition, lots of initiatives are taken by both central and state government towards two wheelers and four wheelers manufacturing company. The Indian automobile markets are expected to lead the world by 2020 in automobile industry.

Production over the passenger vehicles, commercial vehicles, three wheelers and two wheelers increased by 14.41 per cent year-on-year between April-February 2017-18. Nowadays the automobile industry turns to produce their products to safe guards the environments and modified version for mange the scarcity of resources. The manufacturers of auto industry are made innovations in production like electric vehicles, Safety related issues, Bharat Stage-VI emission, Compact vehicles for satisfy the consumers. The Government of India fix their vision is sixty lakhs electric and hybrid vehicles in India by 2020.

In India when compared to the major cities the Chennai is fast growing automobile market. Due to growth rate and major manufacturing plants of different standard company of auto products Chennai is also named as Detroit of Asia. In total 30 percent of four Wheeler vehicles and 35 percent of auto spare sparts are manufactured in Chennai city. In addition, the Heavy Vehicles Factory unit is established in Chennai-Avadi to manufacture the military vehicles for security. In Chennai-Avadi have a pride of testing the new engine facility of Combat Vehicles Research & Development Establishment.

In order to provide quality and innovative products, the manufacturers are attracted and retain the skilled employee. The skilled employee is core factor for creating competitive advantages in the business world. The every management has a detailed plan in work place of their employee for skill and career development.Salmadi (2005) states that the best practice to attract, retain the skilled employee and attain the superior performance on an work centre is through Quality of work life. The Job redesign , Career Development , flexible work schedule, job security are the techniques to improve the QWL (Reddy and Reddy, 2010).

"QWL is a process of work organizations which enable its members at all levels to actively;

Participate in shaping the organizations environment, methods and outcomes. This value based process is aimed towards meeting the twin goals of enhanced effectiveness of organizations and improved quality of life at work for employees (Chand, 2012)

2. CAREER DEVELOPMENT THROUGH E LEARNING

Before starting to the concept, it's important to understand the core difference between Learning and training. The training is the giving knowledge through word of mouth, materials or any other method to develop the trainee. Learning is the process of getting information to enhance the skills and capabilities by various techniques. The most of the employees have adequate self-confidence regarding their skills, their job distinctiveness, and opportunity to participate in decision making and relationships (Alzalabani 2017) .Nowadays every Management plans the learning com training program for their employee in order to attract and retain its workforce.

The plan will be used for create the Path for career development of every individual and the learning programs that will facilitate the employee to enhance the required knowledge and their skill set. E-learning process is a simple cost effective learning program. It will be strategy for a management to retain the workforce. It has following outcomes,

- Develop the skill level of an employee with respect to the requirements of job design.
- Create the positive impact among the employee towards organization.
- Helps the career and individual development of an employee.
- Help the organization to develop cost effective training methods and their training budget
- Retain the quality employee for the long period of time.

2.1 LEARNING IS A FUNDAMENTAL COMPONENT OF THE WORKPLACE

No person is a static position in their life, always they think to move forward. In order to retain the quality work force organization helps and motivate them to learn the new thing continuously. E Learning is one of the most convenient tools for career advancement. Learning is a continuous improvement process of an employee in the work centre and the each individual are positively take the responsibility of their own skill development. Learning process is not an easiest one in the work centre. The Continuous learning is essential for career development. But the resources and materials are not readily available to enhance their skill set. The above statement is true when it learned or assessed from various sources. It will be fulfilled by collecting information and material from internet facility.

2.2 E-LEARNING STRATEGIES AND ITS IMPACTS

E-Learning is the cost effective method in every organization. Nowadays it is core function to meet the demand for employee training. Peter Phillips of Unicorn Training stated, "The impact of reduced training budgets has actually had a positive impact on demand for e-learning.

E-learning is replaced the traditional way learning methods. Today, the present world move towards digitalization in all aspects. Everyone in the world they search, collect and learn unknown information, material through internet (E-learning). E-learning helps the person to visualize the fact of information and interpret that information based on their own requirement. In the advancement of technology and innovation in the mobile sector the e-learning is reached every one hands.

E-learning resources can be accessed globally and it will be a part of each and every employee for enhances their skill set. Nowadays E-learning process is used extensively in all industries to develop the career and skill set of an employee. The access of E-learning resources is increased continuously for the individual career development.

3. RESEARCH OBJECTIVES

- To find the influence of career development through E-learning on quality of work life to ensure the job satisfaction with reference to employees of automobile Industries, Chennai
- To find the interrelationship between factors of quality of work life and job satisfaction.
- To develop a model which integrates the determinants of quality of work life and job satisfaction at work constructs using Structural Equation Modeling (SEM) approach

4. RESEARCH BACK GROUND OF THE STUDY

The job satisfaction is important role to define the organization effectiveness. It reflects an individual work performance and organization growth.(Locke, E. A,1976).The individual job satisfaction always depends career development and job characteristic(Monis, S. H. and Sreedhara, T. N.2011).

There is a strong relationship between the job satisfaction and quality of work life with generation Y and generation Z (George 2017). The work place harmony is crucial role in quality of work life which will enhance the Organizational commitment and job involvement (Pradhan 2017). Adequate and fair compensations, working conditions, use of capacities, opportunities, social integration and constitutionalism at the work place are the dimensions of quality of work life (Fernandes et al 2017). Work Environment, Job design, Career development, Job Involvement significantly influence the quality of work life (Barkha Gupta 2016). The gender, marital status, experience will influence the quality of work life (Jnaneswar 2016).

The quality of work life always depends upon the working conditions, safety measures, welfare practices, career development opportunities, etc. The career development, continuous learning in the work place and building the commitment over the job will improve the productivity of the organization (Hosmani et al2014). The fair and sufficient payment, secure and sanitary working environment, supplying growth opportunity and continuous security, law observance in organization, social attachment of working life, general atmosphere of work life, social union and integrity in work and development of human capabilities are the strong positive relationship towards quality of work life(Asgari et al 2012). The new trends such as changing organizational structure , enhance the skill level at work, interdisciplinary collaboration, advanced technology in production is play a very crucial role in job satisfaction (Gayathiri and Lalitha Ramakrishnan 2013). The career growth opportunities and performance of an employee has a strong relationship in the organization which will lead the commitment over the job (Shalinisheel et al 2012).Learning opportunities and skill development have a positive impact towards job satisfaction and remove the work place stress that will improve the quality of work life. The opportunity to build and use of skill set are linked with continuous learning process. This applies especially when the job requires employees to deploy cognitive skills. With respect to learning, greater autonomy on job enhances the acquisition and utilization of knowledge whilst greater participation is held to promote cognitive growth via increased knowledge transfer among employees (Scully, Kirkpatrick and Locke 1995)

5. RESEARCH METHODOLOGY

In this paper the descriptive research is followed for analysis. This research is used for describing the perception of employees in automobile industries towards career development through E-Learning experiences. The total population is restricted to employees working in 27 member companies of Ambattur Industrial Estate Manufacturers Association (AIEMA) as automobile parts manufacturers. The Exploratory research used for find out the relationship between the quality of work life and job satisfaction.

The quota sampling technique is used to choose the appropriate number from different automobile company and by using convenient sampling technique. The total sample size of the survey is 504.

The structured questionnaire circulated to identify respondents and the survey was also taken by observation, interviews method to find the facts of research areas.

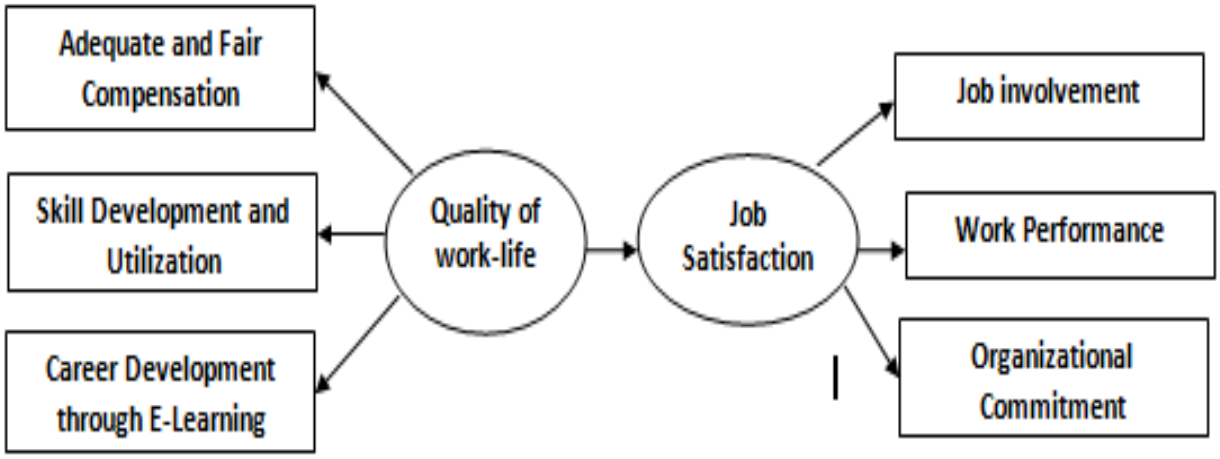
The analysis has been done with the primary data collected from shop-floor executives of the Automobile companies after appropriate coding, editing to avoid the missing data. The data was analyzed using software packages like IBM SPSS and IBM AMOS.

6. CONCEPTUAL MODEL

The conceptual model developed based on the review of literature. In the recent business development areas are concentrating the skill level and career development of employee and how it influences the quality of work life. The every management have effective plan for career development in a cost effective structure. In this model

that has been developed to study the influences of career development through E-learning, Skill development and utilization, adequate fair compensation of quality of work life to ensure the job satisfaction.

Figure1. Conceptual Model



7. DATA ANALYSIS AND INTERPRETATION

7.1 FREQUENCY ANALYSIS

TABLE 1. DEMOGRAPHIC PROFILE OF THE RESPONDENTS

S.No	Particulars	Frequency	Percentage
1.	Age Group		
	Up to 20 Years	97	19.2
	21 – 30 Years	182	36.1
	31 – 40 Years	143	28.4
	Above 40 Years	82	16.3
2	Experience		
	Less than one year	101	20.0
	1-10 years	190	37.7
	11-20 years	137	27.2
	Above 20years	76	15.1
3	Educational Qualification		
	SSLA/HSC	121	24.0
	ITI/DIPLOMA	277	55.0
	B.E/B.TECH	76	15.0
	OTHERS	30	6.0
4	Designation		
	Engineer	40	7.9
	Supervisor	177	35.1
	Skilled Employee	222	44.1
	Semi Skilled Employee	65	12.9
5	Marital Status		
	Single	176	34.9
	Married	328	65.1
6	Number of Promotion Received		
	None	95	18.8
	One	121	24.0
	Two	156	31.0
	More than Two	132	26.2
	Total	504	100

The demographic profile of the respondents are tabulated in table 1, Which indicate that 36.1 % of the respondents are belongs to the age group of 21-30 years and only 15.1% of the respondents are having more than 20 years of experience. Based on the educational qualification 55% of the employee were studied ITI/Diploma and 44.1 persons are skilled employee. Based on the marital status 34.9 % are unmarried and 18.R & of employee yet to receive promotion at the same time 31 % of employee received more than two Promotions.

7.2 CORRELATION ANALYSIS

TABLE 2. CORRELATION BETWEEN THE FACTORS

Correlations							
		Adequate and Fair Compensation	Skill Development and Utilization	Career Development through Learning	Job Involvement	Work Performance	Organizational Commitment
Adequate and Fair Compensation	Pearson Correlation	1	0.143	0.548	0.397	0.199	0.550
	Sig. (2-tailed)		0.001	0.000	0	0.000	0.000
	N	504	504	504	504	504	504
Skill Development and Utilization	Pearson Correlation	0.143	1	0.566	0.713	**0.931**	0.524
	Sig. (2-tailed)	0.001		0.000	0.000	0.000	0.000
	N	504	504	504	504	504	504
Career Development through E-learning	Pearson Correlation	0.548	0.566	1	0.793	0.641	**0.935**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
	N	504	504	504	504	504	504
Job Involvement	Pearson Correlation	0.397	0.713	0.793	1	0.753	0.734
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	N	504	504	504	504	504	504
Work Performance	Pearson Correlation	0.199	0.931	0.641	0.753		0.592
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
	N	504	504	504	504	504	504
Organizational Commitment	Pearson Correlation	0.550	0.524	0.935	0.734	0.592	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	504	504	504	504	504	504
**. Correlation is significant at the 0.01 level (2-tailed).							

Table 2 shows the intra-relationship between the factors. The “adequate and fair compensation “is having positive relations the factors Career Development through Learning and Organizational Commitment. The second factors Skill Development and Utilization is having strong relationship towards work performance (0.931), which indicates 93 % of positive relationship. The third factor Career Development through E-learning is having robust positive relationship with the factor Organizational Commitment with the correlation coefficient of 0.935. The other factor like on Job Involvement, Work Performance, and Organizational Commitment are positive relationship between the factors.

7.3 STRUCTURAL EQUATION MODEL

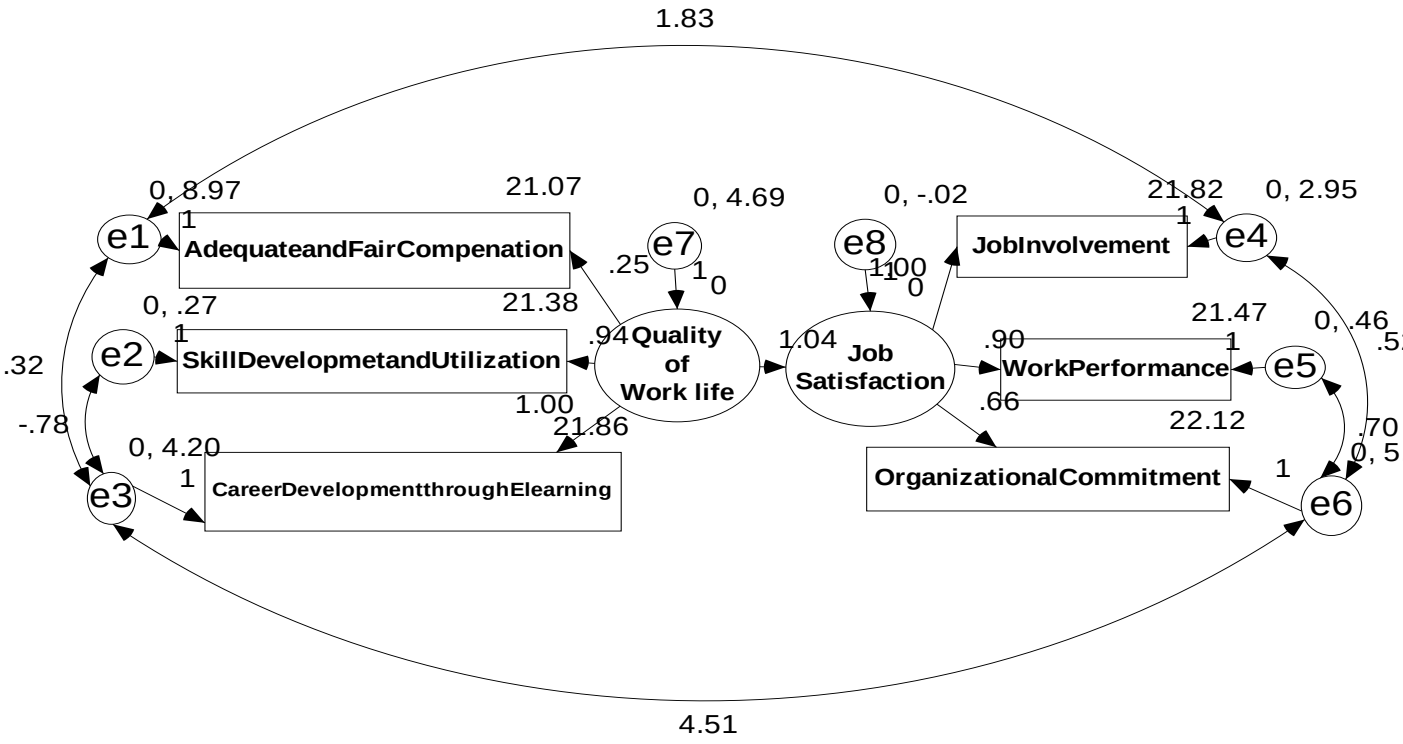


FIGURE 2: STRUCTURAL EQUATION MODEL FOR IMPACT OF QUALITY OF WORK LIFE ON JOB SATISFACTION

The Figure 2, explains the SEM model with standardized regression coefficients. The standardized regression coefficients between the observed variables and latent variables more 0.7 depicts the good relationship, whereas in the SEM model the regression coefficient between adequate and fair compensation and Quality of work-life is alone 0.25, all the other values are more than 0.7, which indicates robust relationship between the measured variables and latent variables. The figure 1 also indicates that the regression coefficient between quality of work-life and job satisfaction is 1.04, which means every one unit of increase in quality of work-life results 1.04 unit of increase in job satisfaction.

TABLE3. REGRESSION WEIGHTS OF THE RESEARCH MODEL

Regression Weights: (Group number 1 - Default model)							
			Estimate	S.E.	C.R.	P	**Result of Hypothesis**
Job Satisfaction	<---	Quality of work life	1.035	0.117	8.85	<0.001**	H7 Significant
Skill Development and Utilization	<---	Quality of work life	0.939	0.05	18.743	<0.001**	H2 Significant
Adequate and Fair Compensation	<---	Quality of work life	0.251	0.065	3.852	<0.001**	H1 Significant
Job Involvement	<---	Job Satisfaction	1				
Work Performance	<---	Job Satisfaction	0.901	0.034	26.578	<0.001**	H5 Significant
Organizational Commitment	<---	Job Satisfaction	0.66	0.051	13.061	<0.001**	H6 Significant
Career Development through E-Learning	<---	Quality of work life	1				

The table 3, represents the un-standardized and standardized estimates, standard error, critical ratio (C.R), p value and the result of hypothesis. Each arrow between the observed variable and the latent variable symbolizes the path, which intern presents the hypothesis, because the relationship between the variables needs to be verified through the execution of SEM model. From the table 2, it is observed that most of the hypothesis is significant at 1% level.

TABLE 4. STANDARDIZED DIRECT, INDIRECT AND TOTAL EFFECTS OF VARIABLES

Factors	Direct Effects		Indirect Effect		Total Effects	
	Quality of Work life	Job Satisfaction	Quality of Work life	Job Satisfaction	Quality of Work life	Job Satisfaction
Job Satisfaction	1.035	0	0	0	1.035	0
Career Development through E learning	1	0	0	0	1	0
Organizational Commitment	0	0.66	0.684	0	0.684	0.66
Work Performance	0	0.901	0.933	0	0.933	0.901
Job Involvement	0	1	1.035	0	1.035	1
Adequate and Fair Compensation	0.251	0	0	0	0.251	0
Skill Development and Utilization	0.939	0	0	0	0.939	0

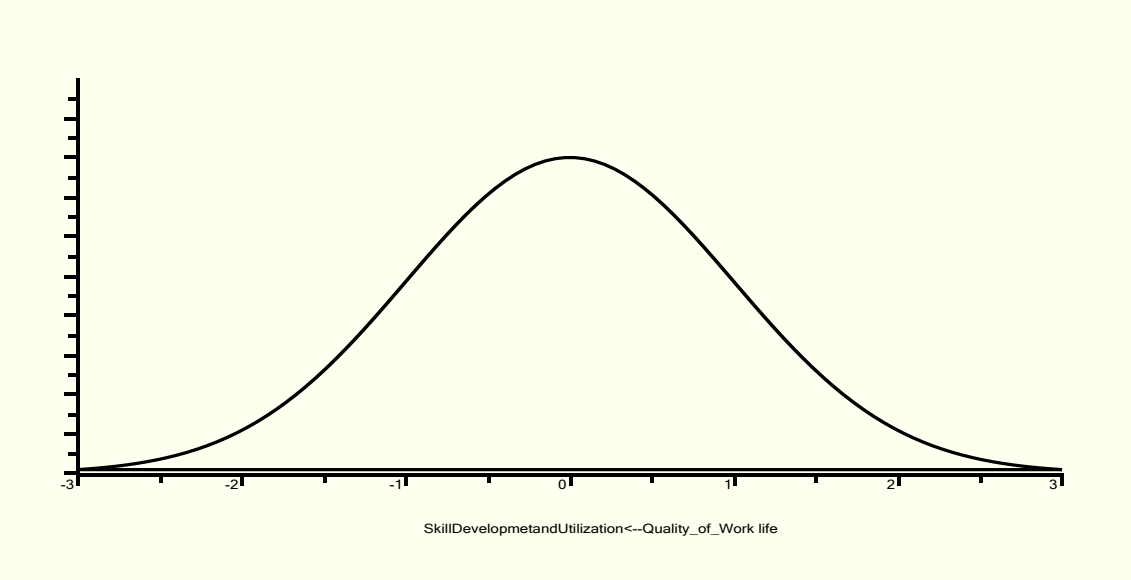
Table 4 shows the Standardized direct, indirect and total effects of variables. Quality of work-life is having direct effect on Career Development through E learning with the value 1. Skill Development and Utilization is having direct effect on quality of work-life with the regression coefficient of 0.939, and Adequate and Fair Compensation is also having direct effect on quality of work-life with the regression coefficient of 0.251. Job Satisfaction is having a direct effect on Quality of Work life with the highest regression coefficient of 1.035. The job involvement is having direct effect in job satisfaction with regression coefficient of 1,and also having the indirect relationship between the quality of work life with the highest regression coefficient of 1.035. The work performance is having direct effect in job satisfaction with regression coefficient of 0.901, and also having the indirect relationship between the quality of work life with the highest regression coefficient of 0.933.

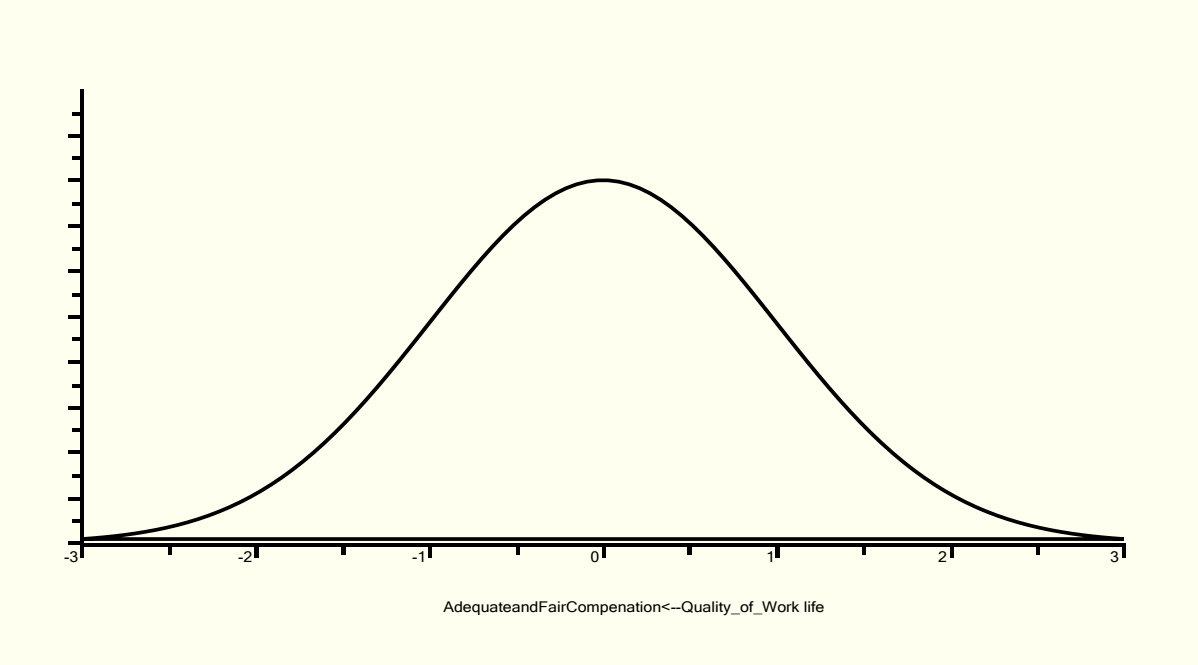
TABLE 5. BAYESIAN ESTIMATION

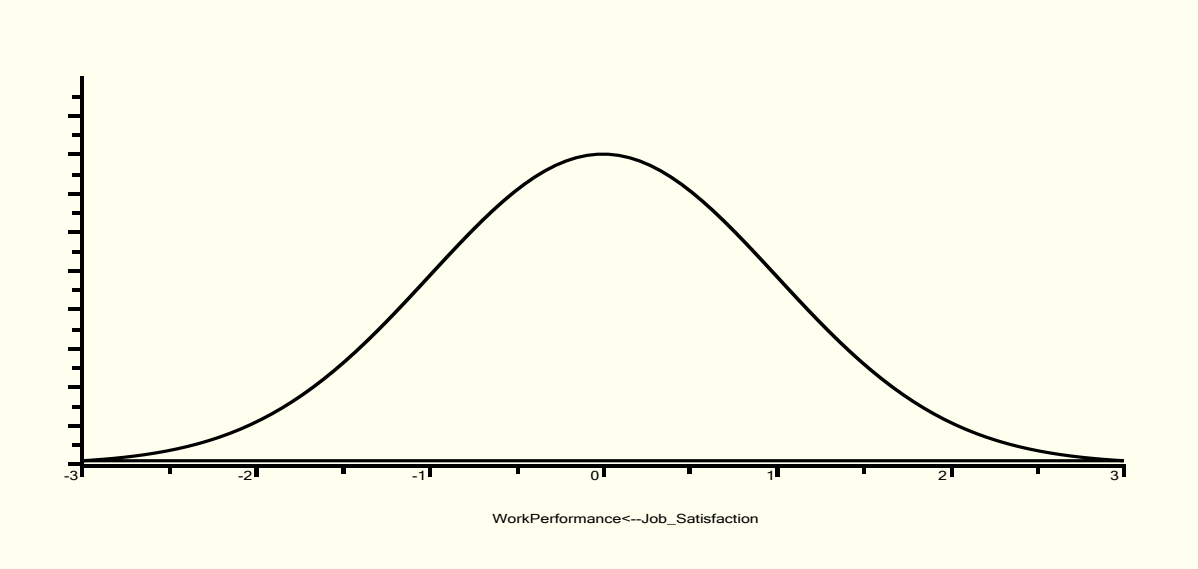
	Mean	S.E.	S.D.	C.S.	Skewness	Kurtosis	Min	Max
Regression weights								
Skill Development and Utilization <-- Quality of Work life	0.948	0	0.052	1	0.293	0.151	0.773	1.228
Adequate and Fair Compensation<-- Quality of Work life	0.243	0	0.063	1	0.066	0.006	0.015	0.519
Work Performance<--Job Satisfaction	0.906	0	0.035	1	0.211	0.117	0.773	1.076
Job Satisfaction<-- Quality of Work life	1.115	0.01	0.156	1	0.648	0.553	0.702	1.754
Organizational Commitment<--Job Satisfaction	0.666	0	0.053	1	0.063	0.04	0.466	0.902
Intercepts								
Career Development through Elearning	21.86	0	0.133	1	0.004	0.005	21.3	22.37
Skill Development and Utilization	21.38	0	0.094	1	0.005	0.021	20.98	21.78
Adequate and Fair Compensation	21.07	0	0.124	1	-0.007	0.014	20.53	21.58
Job Involvement	21.82	0	0.126	1	0.008	0.041	21.27	22.36
Work Performance	21.47	0	0.095	1	0.002	0.005	21.09	21.88
Organizational Commitment	22.12	0	0.125	1	-0.003	0.007	21.6	22.65

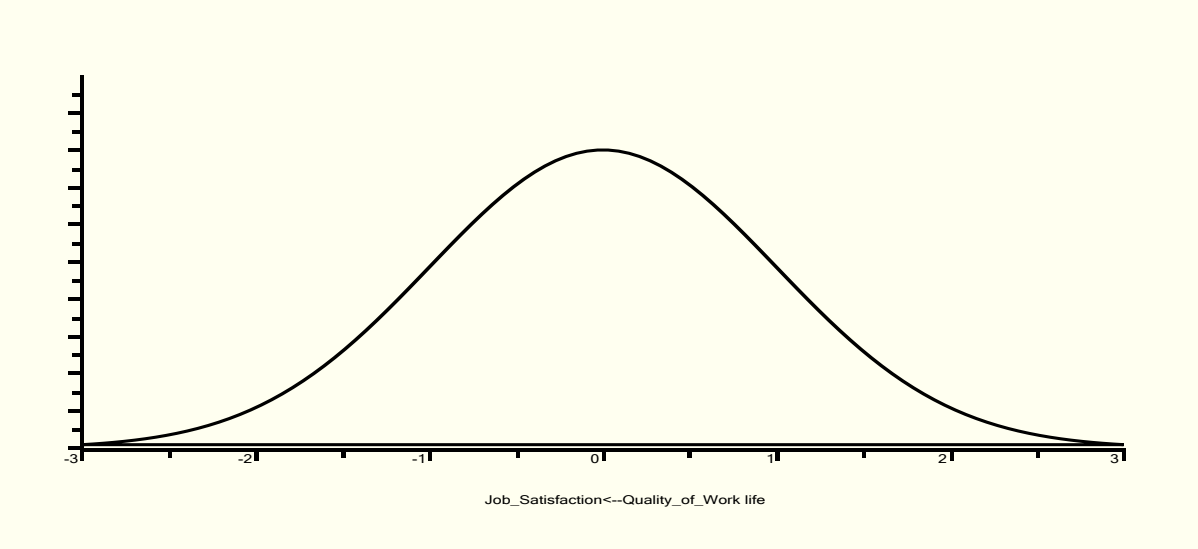
Table 5., Shows the Bayesian estimate of the research model , which consists of regression weights and Intercepts with Mean. Satndard error, Satndard deviation , C.S, Skewness, Kurtosis , minimum and maximum.

Figure 3. PRIORI ESTIMATION









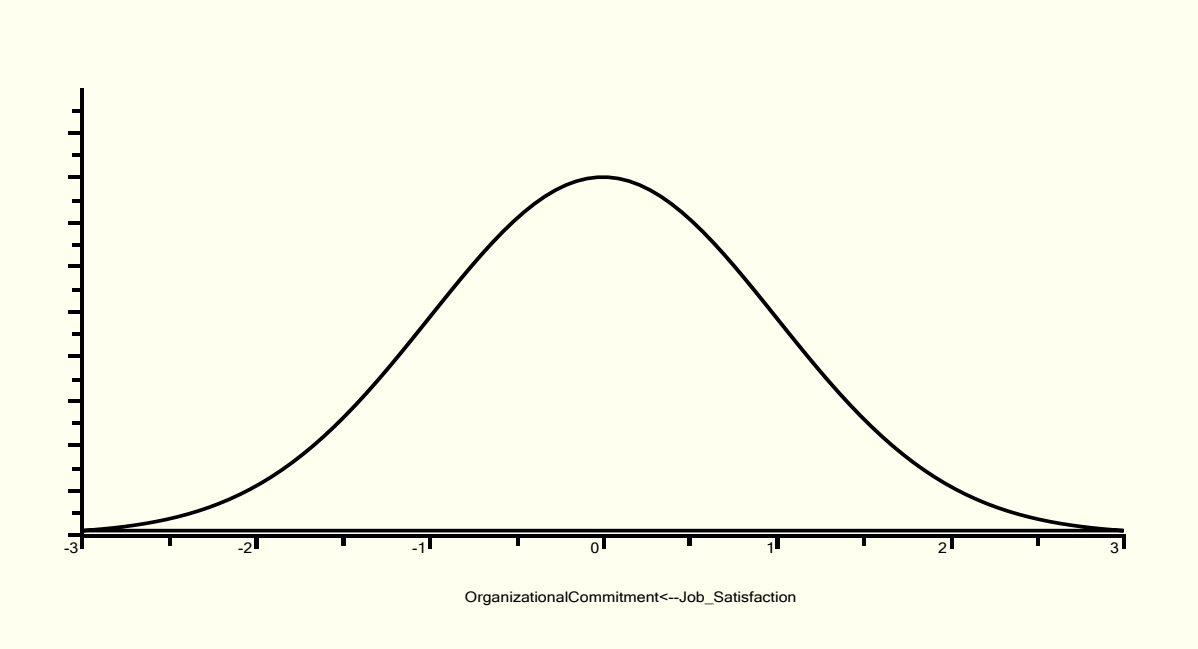


Figure 3 demonstrate priori estimation of the relationship between variables and it is found that all the relationship follows normal distribution.

Figure 4 POSTERIOR ESTIMATION

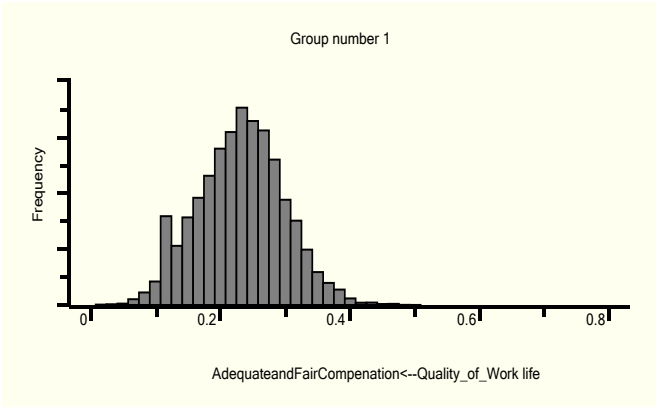


Figure 4 illustrates posterior estimation of the relationship between variables and it is found that all the relationship follows normal distribution.

7.4 MULTIPLE REGRESSION ANALYSIS

The regression analysis is used to analyze the influence of two or more independent variable on one dependent variable. Establishing the impact of one independent variable on one dependent variable is known as simple regression. One variable (i.e. independent), which causes the effect on the behavior of another variable (i.e. dependent). When there are more than two independent variables the used for the relationship is known as multiple correlations and the equation describing such relationship is called as the multiple regression equation. Here the dependent variable is the job satisfaction and independent variables are Adequate and Fair Compensation, Skill Development and Utilization and Career Development through E-learning.

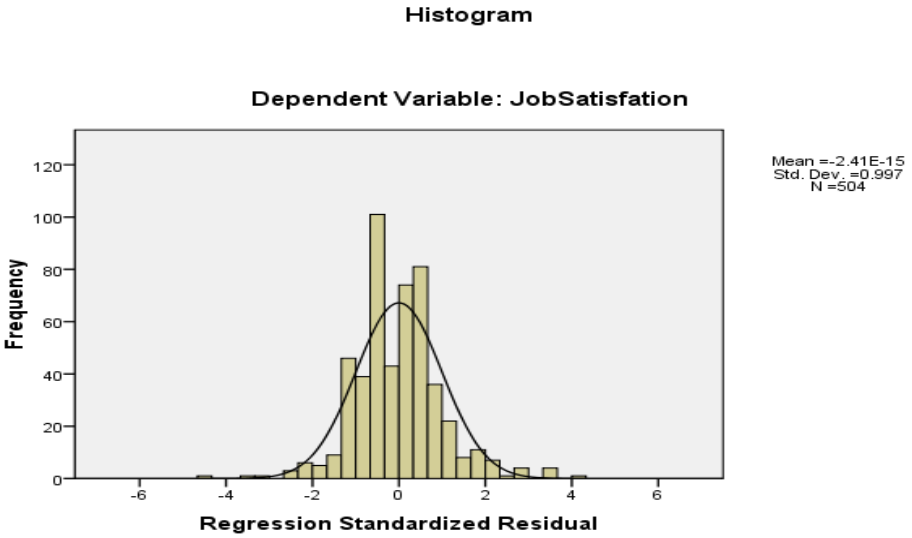
From the table, the β and t values for Career development through E-Learning and skill development and utilization are relatively higher when compared with the rest of the independent variable chosen viz. 0.896, 0.661, 0.639 are the β values with respect single and multiple regression for career Development through E-Learning and 0.415, 0.423 are the β values with respect single and multiple regression for skill development and utilization, 0.033 is the β value for adequate and Fair Compensation. From the scatter plots it has been observed that all the plots of different value are collinear. Thereby we can conclude that Adequate and Fair Compensation, Skill Development and Utilization and Career Development through E-learning are the factor that determines the job satisfaction of an employee.

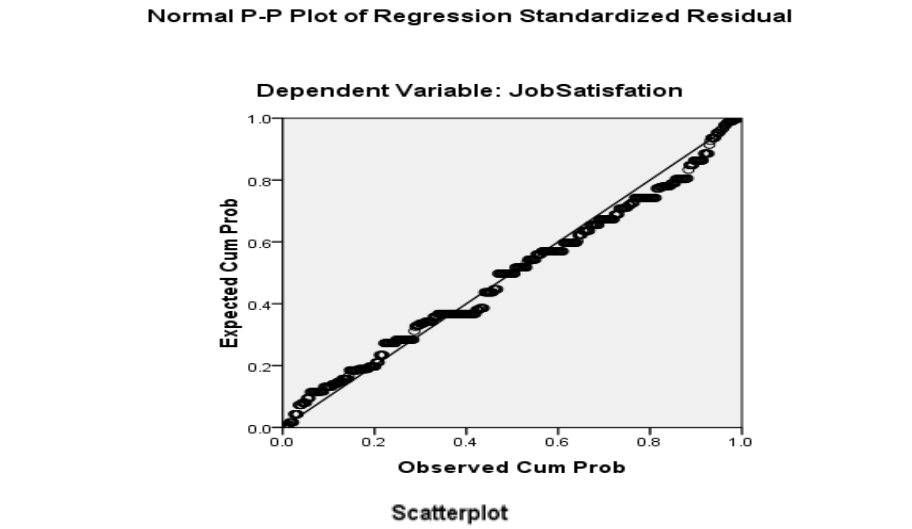
REGRESSION COEFFICIENTS

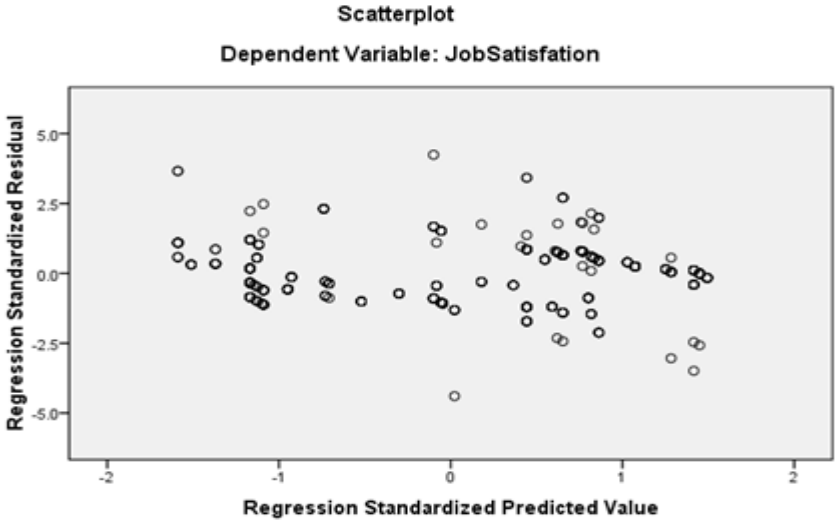
Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Co linearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	20.867	.994		20.995	.000	18.914	22.820					
	Career Development through E-learning	2.037	.045	.896	45.245	.000	1.949	2.126	.896	.896	.896	1.000	1.000
2	(Constant)	3.326	.904		3.681	.000	1.551	5.101					
	Career Development through E-learning	1.503	.035	.661	43.263	.000	1.435	1.572	.896	.888	.545	.680	1.470
	Skill Development and Utilization	1.367	.050	.415	27.183	.000	1.268	1.466	.789	.772	.343	.680	1.470
3	(Constant)	2.322	1.017		2.283	.023	.323	4.321					
	Career Development through E-learning	1.452	.042	.639	34.392	.000	1.369	1.535	.896	.838	.432	.457	2.186
	Skill Development and Utilization	1.394	.052	.423	26.980	.000	1.292	1.495	.789	.770	.339	.640	1.562
	Adequate and Fair Compensation	.074	.035	.033	2.121	.034	.005	.142	.443	.094	.027	.659	1.518

a. Dependent Variable: Job Satisfaction

TABLE 6. REGRESSION COEFFICIENTS







8. RESULTS AND DISCUSSION

From the analysis the following inferences has been gained by the researcher. The relationship between the identified parameter like adequate and fair compensation, Skill development and utilization and career

development through E-learning with quality of work life has been proven through regression and correlation analysis. Thereby the relevant hypothesis framed by the researcher has been favored by the results of the above analysis.

The results of Structural equation Modeling (SEM) explored that there is a robust relationship between the quality of work-life and Job satisfaction and the developed model found to be fit. The Implied correlation table also indicates that there is a considerable interrelationship between the components. The outcome of the research will be useful to key executives of the automobile industries to promote job satisfaction of the employees by providing better quality of work-life.

9. CONCLUSION

We never stop moving onward, as lifelong learning is a crucial part of this impetus. By embracing all the scope that E-Learning offers and skill development practices, one won't just feel more motivated and engaged with the job he/she love, they'll open up exciting new horizons in their career. This paper tries to explore appropriate reviews supporting the quality of work life and job satisfaction induced by career development through E-Learning in order to draw definite allusions for developing conceptual model linking the above two buzz words of the industrial arena. Thereby its tries to support the derived conceptual model through primary data analysis and structured equation modeling (SEM).The results depict the existing relationship between the identified factors like career development through E-learning, Skill development and utilization, adequate fair compensation, Job involvement, Work Performance, Organizational commitment and the quality of work life, Job satisfaction above the desirable level, which substantiate or justify suitable solutions that are likely to be evolved in consideration with above specified variable for solving human resource work-life related problems in the industry like automobile.

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THE ROLE OF ORGANIZATIONAL LEARNING IN EMPLOYEE ENGAGEMENT AND THE MEDIATING ROLE OF E-LEARNING RESOURCES QUALITY

Mr. I. Yabesh Abraham Durairaj, Research Scholar – Anna University /
Assistant Professor, Department of Management Studies, Panimalar Engineering College, Chennai.
yabesh.abraham@gmail.com.

Dr. T. Thiruvenkadam, Associate Professor,
SSN School of Management, Chennai.
thiruvenkadamt@ssn.edu.in

Dr. Mu. Subrahmanian, Assistant Professor,
Faculty of Business Studies, Arab Open University, Muscat, Sultanate of Oman.
profmusu@gmail.com

ABSTRACT
The banking sector India demands more highly dedicated employees to manage credit risk management in order to control rapid increase in Non-performing Assets (NPA). The Indian Banking industry spreads across its services to various geographical locations around the country, in order to meet the funding requirements of the various kinds of people in the society. The purpose of this research paper is to explore the role of organizational learning in employee engagement and the mediating role of e-learning resources quality in banks in Chennai city. The survey was conducted among the executives who have minimum of two years' experience in the present organization and works in selected branches of the selected banks in Chennai city. The sample size of the research is 250. The data collected were analyzed through IBM SPSS 23.0 and IBM AMOS 23.0. The confirmatory factor analysis and structural equation modeling with mediation analysis was used to analyze the primary data. The findings of the research evident that organizational learning positively impact on employee engagement and the quality of e-learning resources has positive partial mediation on boosting the impact of organizational learning on employee engagement in selected banks of Chennai city.
Keywords: organizational learning, employee engagement, e-learning resources quality, banking industry.

INTRODUCTION

The business scenario around the globe takes rapid change due to technological advancements and customer behavior. Banks in India play major role in meeting the funding needs of the people. Indian banking industry has various types of the banks to cater the different segment of the people in India based on their geographical location, economy level, purpose of banking, amount of fund required, etc. The banking industry in India comprises 27 public sector banks, 22 private sector banks, 44 foreign banks, 56 regional rural banks, 1,589 urban cooperative banks and 93,550 rural cooperative banks, which also includes cooperative credit institutions. In the end of Q3 FY17-18, commercial banks provided the total credit of US$ 1,288.1 billion, whereas the deposits they received increased to US$ 1,715 billion, and the assets of public sector banks raised to US$ 1,518 billion. Major problem facing by Indian banks are increase of Non-Performing assets in recent financial years. The gross non-performing assets (NPAs) of all the banks in the country together is Rs 8,40,958 crore in December 2017, which includes industry loans shadowed by services and agriculture sectors (source: economictimes. indiatimes.com), so in order to minimize the NPAs the banking sector increasingly focusing on adopting integrated approach to risk management. The employees of the banks plays an important role in controlling the NPAs and enhancing the performance of the banks. The well-being of the employees and their happiness must be the priority of every successful enterprise in order to satisfy the customers and achieve the best results. Employee engagement is a vital concept because today's organizations expect their employees to work proactively, collaborate with others, take responsibility for their own professional development and be committed to high performance standards, which means that organizations need engaged employees (Bakker and Schaufeli, 2008). The purpose of this paper is to examine the role of organizational learning in employee engagement and the mediating role of e-learning resources quality on selected banks in Chennai city.

RESEARCH PROBLEM

The bank industry undergoes several changes based on the changes in economic policies of the government, economic changes in national & international level, etc. The Reserve Bank of India (RBI) takes new initiatives in order to control the credit risk and NPA, and circulate these information in the form of circulars which must be followed by the bank employees while providing products & services to their clients. The banks in order to be competitive design, develop and offer various products & services to their customers, so the bank employees must aware about new products & services and changes in existing one, and should also be able to compare with

their competitors' products & services. The bank employees must also aware banks related ethical & security practices in order to educate their customers while doing transactions through ATM and online banking. Therefore, the banks are developing the e-learning resources to update their employees through continuous learning at their comfortable pace. The upgradation of knowledge of the bank employees is inevitable similar like any other industry. The quality of the services provided by the bank employees depends upon their ability to suggest suitable product or service to the customer according to their requirements. Similarly, answering the queries, resolving their grievances, providing the commitments to their clients also depends upon their ability and knowledge. Therefore, banks encourage their employees to update their knowledge through e-learning modules about products & services, rules & regulations of Reserve Bank of India, changes in banking industry, latest amendments in the acts, etc in regular manner. However, the banks don't have any proper mechanism, to know the employees' perception towards e-learning resources quality, and to assess their level of engagement towards their job and organization. Therefore, the researcher attempted to explore the impact of organizational learning and employee engagement, and the mediating role of quality of e-learning resources on selected banks in Chennai city.

THEORITICAL FOUNDATION

Organizational Learning

According to Lawrence & Dyer, 1983, the term 'Organizational learning' can be defined as "a learning system where organizations not only trying to influence their immediate members, but also transmitted knowledge to others by way of organization histories and norms and not simply transmitting the knowledge by forming the sum of each member's learning experience but has gone beyond that".

Organizational learning is "the process by which an organization continuously adjusts and/or changes itself by utilizing and enriching organizational knowledge resources in an effort to adapt to both external and internal environmental changes to maintain a sustainable competitive advantage" (Chen, 2005, p. 472). Organizational learning can be defined as a dynamic process of creation, acquisition and integration of knowledge aimed at the development of resources and capabilities that contribute to better organizational performance.

Tushman and Romanelli (1985) suggest that an organization has to change when there are certain developments that make existing strategies obsolete in organizations. Restructuring the relationships and learning new ways of working in organization are the ways for long run survival (Haveman, 1992).

Dimensions of Organizational Learning

Table 1. Dimensions of Organizational learning

S. No	Authors	Number of dimensions	Dimensions
1	Begoña Lloria and Moreno-Luzon (2014)	5	the ontological levels of learning, modes of knowledge conversion, learning sub-processes, types of learning, and feedback and feed-forward flows of learning
2	Shaw and Fairhurst (2010).	3	training, mentoring and coaching.
3	Jyothibabu et al. (2010)	3	learning enablers, learning results and performance outcome
4	Susana et al (2005)	5	Acquisition Internal, Acquisition External, Distribution, Interpretation, and organizational memory
5	Watkins and Marsick (1993)	3	Individual, team/group, and organizational level

Employee Engagement

The term 'Employee Engagement' refers to "the ability to capture the heads, hearts, and souls of your employees to instill an intrinsic desire and passion for excellence" (Fleming and Asplund, 2007). In other words, "Employee engagement is the level of commitment of an employee toward their organization and its values" (Azoury et al., 2013). Anyone can hire an employee for a work, but engage them in the work is not an easy task. The employee can give their best if and only if they are connected towards job & organization physically and mentally. An engaged employee accomplish the assigned task with his team and takes initiative to improve the performance of the organization through better products & services which enhance the brand image of the organization. Engaged people always execute their duties physically, cognitively and emotionally (Kahn, 1990). Hence, the

organizations are striving to develop various strategies to connect the heads, hearts, and souls of their employees towards the accomplishment of tasks, betterment of productivity, development of their organization by stimulating their desire and inculcating passion for excellence. According to Kahn (1990), physical engagement refers to the extent of effort employees put in while performing their work roles; emotional engagement is the emotional involvement and feelings employees have about their work; and cognitive engagement is the mindfulness and mental attention of employees towards with work. Various researchers have contributed their insights on employee engagement which was summarized below in Table 2.

Table 2. Drivers of Employee Engagement

S. No	Authors	Number of dimensions	Drivers of Employee Engagement
1.	Choo et al. (2013)	3	Employee development, reward, and recognition
2.	Bhatla (2011)	2	Organisational culture and Organisational communication
3.	Mani (2011)	4	employee welfare, empowerment, employee growth and interpersonal relationships
4.	Towers Watson (2009)	3	Rational, Emotional, and Motivational
5.	Seijit (2006)	10	Connect, Career, Clarity, Convey, Congratulate, Contribute, Control, Collaborate, Credibility & Confidence
6.	Wallace et al (2006)	3	contributions, connections, growth and advancement,
7.	Hewitt (2004)	3	Say, Stay and Strive.
8.	Britt et al (2001)	2	employee involvement and commitment
9.	Kahn (1990)	3	Physical, Emotional, and Cognitive Engagement.

E-LEARNING RESOURCES QUALITY

Tremendous advancement in technology has impacted lot of positive changes in training and development industry in India. Now-a-days Indian organizations preferred to adopt online learning programs (Mittal, 2008), which brings attention of the professionals in the field of e-learning about the issue of quality and the ways to bridge the gap between learner's expectation and perception (Oliver, 2005). The business organization which invest huge money in developing e-learning resources for their employees at various level are more concern about its impact on employees performance, growth of the organization and return on investment. Even the education and training providers and national accreditation and quality agencies are also more concern about the quality of e-learning resources (Quality Assurance Agency, 2004; Western Cooperative for Educational Telecommunication, 2002). The earlier researches also evident that the quality issues related to the web site affect learners' attitude and learning process. The e-learning quality issues may be inappropriate content, the sequence and presentation of the content, audio/ video issues, poor connectivity, etc. So, its' mandatory for every organization which encourages updation of knowledge of their employees through e-learning resources to verify whether it is really useful and what are its positive and negative outcomes to the individuals and organization.

DEVELOPMENT OF HYPOTHESES

The hypothetical relationship was formed between the chosen variables of the study based on existing literatures.

Relationship between Organizational Learning and Employee Engagement

According to Bakker and Demerouti (2008), employee engagement has been identified as a strong driver for improving performance in an organization. Many empirical research studies have confirmed that employee engagement has a positive impact on performance (Bakker and Bal, 2010; Bakker et al., 2006; Salanova et al., 2005). Although little empirical research has been conducted to examine the direct relationship between learning organization culture and employee engagement, many human performance models describing the determinants of performance (Bichelmeyer and Horvitz, 2006; Gilbert, 1978; Harless, 1970) strongly support that organizational environment (e.g. learning organizational culture) has a large impact on employee behaviors (e.g. employee engagement), which in turn improves performance. Therefore, it is assumed that employee engagement plays a mediating role in the relationship between learning organization culture and team performance improvement.

H1: Organizational Learning is having positive impact on Employee Engagement

Relationship between Organizational Learning and E-Learning resources quality

Kijpokin Kasemsap (2016), in his book described the roles of E-Learning, Organizational Learning, and Knowledge Management in the Learning Organizations. He also quoted that the utilization of e-learning, organizational learning, and knowledge management leads to the improved organizational success in the growing knowledge economy. Quality of e-learning resources quality not only has impact on employee engagement, it also positively impact on organizational performance (Chien-Pei Ko and Chen-Chen Ko, 2012). E-learning development for enterprises is still in its infancy in that scholars are still working on identifying the critical success factors for e-learning in organizational contexts (Ying Chieh Liu et al, 2012). Apart from this, there are no specific studies which attempts to explore the relationship between Organizational Learning and quality of E-Learning resources, so the researcher wants to explore the relationship between the variables through the following hypothesis.

H2: Organizational Learning is having positive impact on E-Learning Quality

Mediating effect of E-Learning resources Quality

Now-a-days most of the learning of employees in the organizations happens through electronic networks through internet, intranet, e-learning softwares, etc, which means e-learning acting as a medium for organizational learning, so the researcher wants to find the mediating role of quality of e-learning resources in enhancing the impact of organizational learning on employee engagement, because in general the quality of learning depends on the quality of learning resources, so the researcher framed the following hypothesis as H3.

H3: E-Learning resources quality mediates the relationship between organizational learning and Employee Engagement.

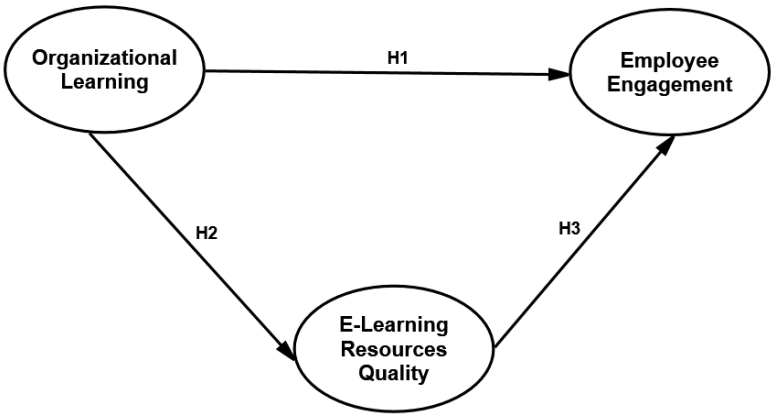

Figure 1. Conceptual Model

The conceptual model as shown in Figure 1 was developed in order to test the above mentioned three hypothesis, whereas Figure 2 represents the latent variables of the study with its factors/ dimensions.

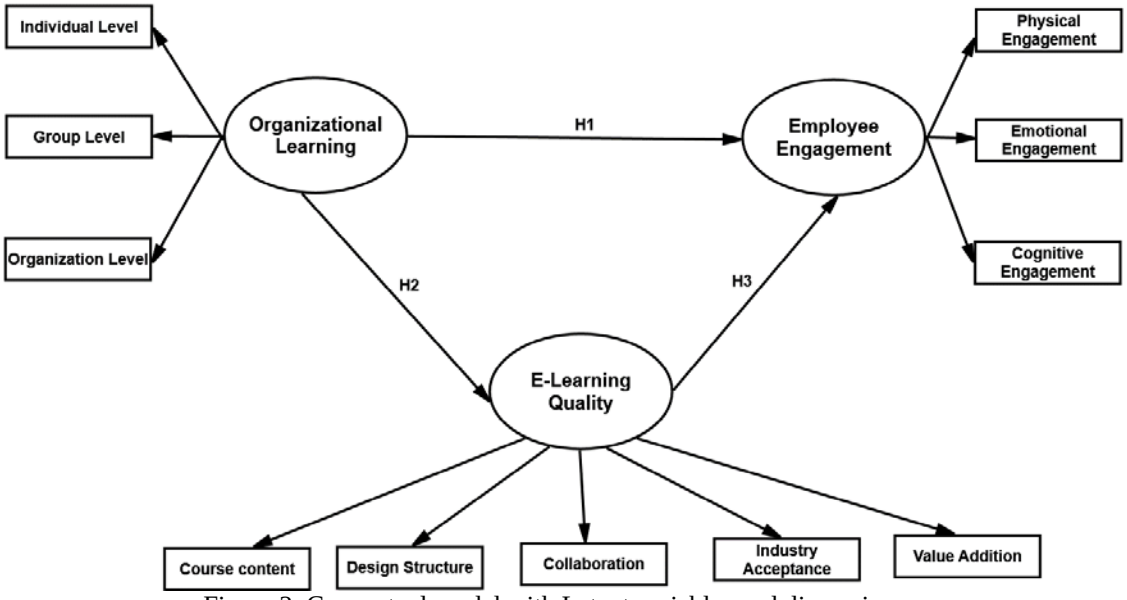

Figure 2. Conceptual model with Latent variables and dimensions

RESEARCH METHODOLOGY

This research followed descriptive research design in order to describe the role of organizational learning in employee engagement and the mediating role of e-learning quality in non-banking financial companies in Chennai city.

Sample and study procedure

The data for the research were collected from public and private sector banks in the Chennai city, India. The survey was conducted among the employees working as executives in selected banks who have minimum 2 years' experience in the present organization. As per the publication of Dun & bradstreet "India's Top Banks 2017", which includes public, private and foreign banks in India. However, the researcher has chosen only public and private sector banks from the list. The sampling unit of the research was listed in table 3.

Table 3. List of sampling Units

S. No	Name of the Company	Group	Rank	No. of Samples
1	Allahabad bank	Public	2	25
2	Andhra Bank	Public	4	25
3	Axis bank	Private	6	25
4	Bank of Baroda	Public	10	25
5	Bank of India	Public	11	25
6	Bank of Maharashtra	Public	12	25
7	Canara bank	Public	17	25
8	The Catholic Syrian Bank Limited	Private	18	25
9	Central Bank of India	Public	19	25
10	City Union Bank Limited	Private	21	25

(Source: http://www.dnb.co.in/Publications/topbanks2017/TopBanks2017.pdf)

From the above listed banks, the researcher has chosen five branches which is located in Chennai city and the branch manager who has accepted to conduct research was selected through convenience sampling technique. From each branch of the selected bank, five employees in different levels and sections were selected through judgmental sampling technique (non-probability sampling technique), because few employees refused to respond to the research questionnaire. Therefore the total sample size of the research is 250. The period of data collection of the study was from April 2018 to June 2018 (3 Months).

The questionnaire was used as data collection instrument, in which first section described information about the purpose of the research, section gathered the respondents' demographic profile, and third section includes the statements related to the variables of the study.

Demographic profile of the respondents

Out of 250 respondents surveyed from selected banks, 59.2% of them are Male and remaining (40.8%) are female. 19.6% of sampled respondents are belongs to the age group of less than 25 years, 42% of the respondents are 25-35 years, whereas 23.6% of them are 35 -45 years, and only 14.8% of them are above 45 years. With regards to their designation, 52.4% of them are junior executives, 33.6% of them are senior executives, and rest (14%) of them are Managers. 23.2% of them are having work experience of less than 5 years in the present organization, majority (i.e. 51.2%) of them are having 5-10 years, and rest (25.6%) of them are having more than 10 years in the present organization.

Table 4. Demographic profile of the respondents

S. No	Particulars	Frequency	Percentage
1	Gender		
	Male	148	59.2
	Female	102	40.8
2	Age Group		
	< 25 Years	49	19.6
	25 – 35 Years	105	42
	35 – 45 Years	59	23.6
	Above 45 years	37	14.8
3	Designation		
	Junior Executives/ Clerks	131	52.4
	Senior Executives / Clerks	84	33.6
	Managers	35	14
4	Work Experience in Present Organization		
	Less than 5 years	58	23.2
	5 – 10 Years	128	51.2
	Above 10 years	64	25.6
	Total	250	100

(Source: Primary Data)

Scale and Measures

The researcher adopted "Learning Assessment Map" instrument tool to measure organizational learning, which was developed by Van Buren and Lucadamo (1996) in American Society for Training and Development (ASTD). The questionnaire developed by Arun Kumar Agariya and Deepali Singh (2012) was used to assess e-learning quality which has two dimensions learners' perspective and faculty perspective, but the researcher used only learners' perspective to assess the employees' working in selected banks. The employee engagement of selected banks was assessed through Kahn (1990) questionnaire. The scales and its factors used in the study mentioned in table 5.

Table 5. Scales and its factors

S. No	Scale	Number of Items	Number of factors	Factors
1	Organizational learning	42	3	Individual (19), Group (12), and Organizational Level (11)
2	E-Learning Quality	17	5	Course content (4), design structure (4), collaboration (4), industry acceptance (2), and value addition (3).
3	Employee Engagement	15	3	Physical, Emotional, and Cognitive Engagement

DATA ANALYSIS

The primary data collected through the questionnaire were analyzed through IBM SPSS 23.0 and IBM AMOS 23.0 statistical analysis software. Before testing the hypothesis, Confirmatory Factor Analysis (CFA) was done to evaluate the fit of the measurement model. The researcher also adopted Harman's 1-factor test to verify the

common method bias, since all the variables of this study were collected from a single source. (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003). Structural Equation Modeling (SEM) was employed to verify the hypothetical relationships mentioned in the study. The researcher also executed the mediating effect of e-learning resources quality through Preacher and Hayes (2004) mediation analysis.

RESULTS

Descriptive statistics

The descriptive statistics and correlation among research variables are depicted in table 6. The results of descriptive analysis supports the kind of relationship mentioned in conceptual model of the research in figure 1.

Table 6. Descriptive statistics

S. No	Variables	Mean	Std. Deviation	Organizational Learning	E-Learning Resources Quality
1	Organizational Learning	3.59	0.563	--	--
2	E-Learning Resources Quality	3.78	0.752	0.341*	--
3	Employee Engagement	3.98	0.483	0.283*	0.427*

Note: * denotes significant at 1% level.

Reliability of the constructs

Table 7. Reliability of the constructs

S. No	Constructs	Cronbach Alpha	Result
1	Organizational Learning	0.742	Acceptable
2	E-Learning Resources Quality	0.893	Good
3	Employee Engagement	0.794	Acceptable

The Cronbach Alpha reliability coefficient of the constructs was presented in table 7. From the table 5, it is found that all the constructs used in the present research has Cronbach alpha value at acceptable level (i.e. more than 0.7).

Assessment of Measurement Model

Initially, the confirmatory factor analysis with all latent variables were performed as a full measurement model, comprising all latent variables (Hair et al., 2006). The model fit of full measurement model with all the three factors (74 items) such as organizational learning organization (42 items), e-learning quality (17 items), and employee engagement (15 items).

Table 8. Model Fit Summary

Model	χ^2 (df)	χ^2 /df	GFI	AGFI	CFI	NFI	RMSEA	RMR
Model 1 (3 factors) – 74 items	404** (138)	2.927	0.828	0.804	0.720	0.818	0.073	0.069
Model 2 (3 factors) – 69 items	328** (224)	1.464	0.934	0.921	0.914	0.927	0.032	0.028
Harman's One factor model	1467 (362)	4.052	0.535	0.458	0.368	0.584	0.137	0.225

Note: ** denotes significant at 1% level of significance

The model fitness summary depicted in table 8 indicates that the overall fit summary of the model I (74 items) full measurement model does not fit the data extremely well. Therefore, the researcher carefully examined the values of modification indices and standard residual co-variances and deleted three items from organizational learning and two items from employee engagement scales which results Model 2 with the same 3 factors (69 items) with enhanced model fit data (Hair et al., 2006) ($\chi2$ = 328, df = 224, Normed $\chi2$ = 1.464, GFI = 0.934, AGFI=0.921, CFI = 0.914, NFI = 0.927, RMSEA = 0.032, and RMR = 0.028).

In order to verify the common method bias, the researcher adopted Harman's single factor test, in which all the variables of organizational learning, e-learning quality, and employee engagement were loaded into one single factor (Hair et al., 2006). The result of the model indicated poor fit with following fitness indices values (i.e.) $\chi2$ = 1467, df = 362, Normed $\chi2$ = 4.052, GFI = 0.535, AGFI=0.458, CFI = 0.368, NFI = 0.584, RMSEA = 0.137, and RMR = 0.225 which evident that that a single factor did not explain majority of variance. Therefore, it is concluded that common method bias was not a problem in this research. Thus, model 2 with enhanced fitness indices was considered for further analysis.

Test of Hypotheses

The Model 2 was further used to test the hypothesized model. The researcher implemented Structural equation modeling (SEM) approach to test the stated hypotheses of the present research. The researcher has developed and tested three structural models namely direct effect, full mediation and partial mediation models, further direct effect model was tested against the fully mediated and partially mediated models.

Table 9. Model fit summary for structural equation model comparisons.

Model	χ^2 (df)	$\chi 2$ /df	GFI	AGFI	CFI	NFI	RMSEA	RMR
Direct effect model [a]	359** (215)	1.670	0.843	0.828	0.913	0.826	0.045	0.063
Full-mediation model [b]	483** (193)	2.503	0.845	0.828	0.792	0.834	0.064	0.073
Partial-mediation model [c]	328** (224)	1.464	0.931	0.917	0.937	0.949	0.028	0.024

Note: 1. ** denotes significant at 1% level of significance.
2. a denotes organizational Learning directly effect on employee engagement.
3. b denotes organizational Learning effect on employee engagement through e-learning quality.
4. c denotes organizational Learning effect employee engagement both directly and indirectly.

The model fitness indices of all the three models are presented in Table 9. The results of the above mentioned three models shows that partial mediation model has better fit while compared to other two structural models (i.e. direct effect and full mediation models. In addition to that, the researcher attempted to find the mediating effect of e-learning resources quality on the relationship between organizational learning and employee engagement through Preacher and Hayes mediation analysis (2004), which was executed using 1000 bootstrap samples with 95% confidence interval ranging from 0.05 to 0.17. Since zero is not confined in the 95% confidence interval for the indirect effect, the mediating effect of e-learning resources quality resilience was supported.

Table 10. Results of Mediation analysis

Variable	E-Learning Quality	Employee Engagement	Indirect effect
E-Learning Quality	--	0.752**	--
Organizational Learning	0.584**	0.694**	0.110**

The outcome of the mediation analysis of the research was presented in table 10, which explores that the existing hypothetical paths in the model were significant and support the hypotheses mentioned in this paper. H1 specified that organization learning would be positively associated with employee engagement. The standardized regression coefficient of 0.694 exists between organization learning and employee engagement confirms H1. Similarly, the coefficient of 0.584 exists between organizational learning and e-learning resources quality proves H2, whereas the standardized coefficient between e-learning resources quality and employee engagement is 0.752, which indicates positive association and support H3, and all these relationships are significant at 1% level. From the above mentioned results, it is confirmed that the e-learning resources quality partially mediates the effect of organizational learning on the employee engagement, because the effect of organizational learning on employee engagement (0.694, <0.001) diminishes with the presence of e-learning resources quality but still is significant (0.110, $p < 0.001$). Figure 3 presents the conceptual model with path coefficients.

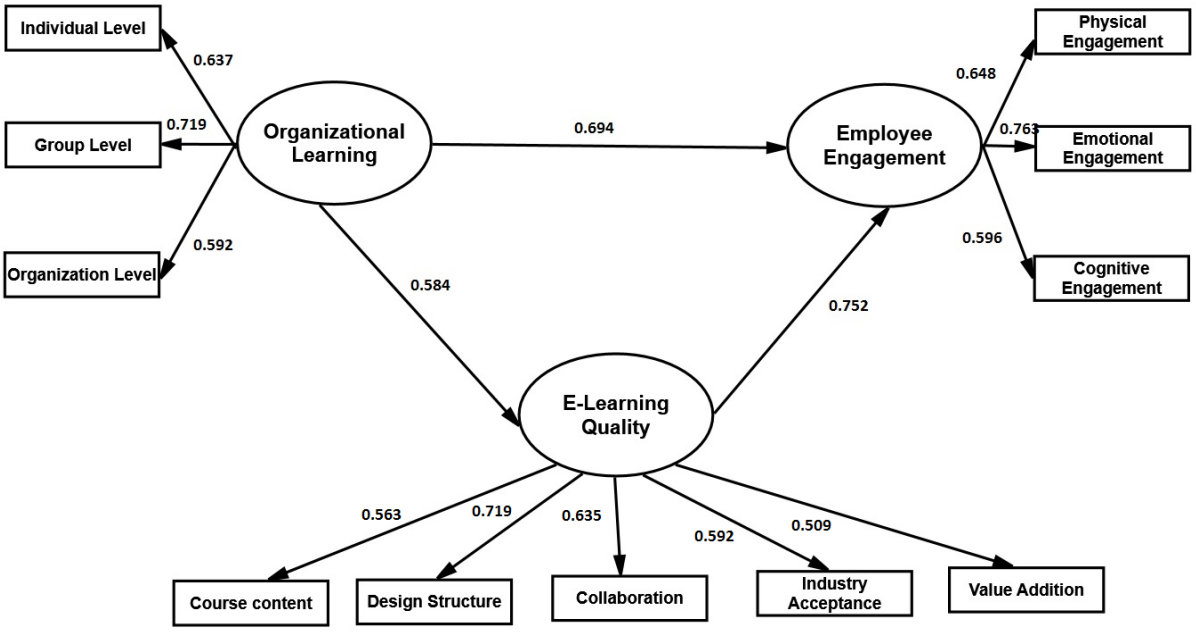

Figure 3. Conceptual model with path coefficients

DISCUSSION AND CONCLUSION

The results of the above mentioned hypotheses testing indicates that there is a significant relationship between organizational learning, e-learning resources quality, and employee engagement from the samples of employees from selected banks in India. In order to compete in the hyper competitive banking industry, it is essential to develop learning in the organization through good quality e-learning resources which enhances the engagement of the employees in the physical, emotional and in their cognitive level, so they will positively engage themselves in job and organization. The results of the previous researches indicates that better employee engagement leads to positive outcomes such as improved productivity and performance. Therefore, based on the results of the research it is concluded that organizational learning is having positive effect on employee engagement, however it can be further enhanced by having good quality e-learning resources which enriches the positive attitude of the employees towards e-learning resources and results in better employee engagement.

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