January 2014

Attitude of Students Towards E-learning in South-West Nigerian Universities: An Application of Technology Acceptance Model

Egbe Adewole-Odeshi
Covenant University, egbe.osazuwa@covenantuniversity.edu.ng

Attitude of Students Towards E-learning in South-West Nigerian Universities: An Application of Technology Acceptance Model

ADEWOLE-ODESHI, Egbe
egbe.osazuwa@yahoo.com
egbe.osazuwa@covenantuniversity.edu.ng
CENTRE FOR LEARNING RESOURCES
COVENANT UNIVERSITY
CANAAN LAND, OTA,
OGUN STATE, NIGERIA.

ABSTRACT

The study examined the attitude of students towards e-learning in selected south-west Nigerian universities. Specifically the study looked at the relationship between attitude and e-learning with the application of Technology Acceptance Model (TAM). Questionnaire was used to collect data from a sample of 387 postgraduate and undergraduate students. Statistical techniques used for the analyses of data were frequency distribution, simple linear regression, One-Way ANOVA and paired T-test was used to test the hypotheses. Findings showed that students have a positive attitude towards e-learning because they find the system
easy to use and useful for their course work. Also, attitude influences the intention to use an e-learning system.

Keywords: Attitude, E-learning, Technology Acceptance Model,
Nigerian Universities, Technology

INTRODUCTION

Students learning in tertiary institutions all over the world have undergone tremendous transformation, especially since the advent of information and communication technology (ICT) (Bassey et al, 2007).There is a shift from traditional approach of teacher directed to modern methods where computer technology plays a significant role. ICT has promoted learning and made it more meaningful, where students can stay even in their homes or Classrooms and receive lectures without seeing the lecturer. The aspect of ICT that has brought about this revolution in students' learning is e-learning. (Bassey et al, 2007). E-learning in its broadest sense refers to any learning that is electronically enabled.

In a slightly narrower sense, it is learning that is enabled by the application of digital technologies such as web pages, video Conference systems and CD-ROMs. Many higher education institutions adopt web-based learning systems for their e-learning courses. However, there is a limited empirical examination of the factors underlying the adoption of web-based learning systems (Abbad, 2009). Successful implementation of a system and adoption by learners requires a solid understanding of user acceptance processes and ways of persuading students to engage with these technologies (Abbad, 2009). Measuring attitudes has an important role in analyzing consumer behaviour because it is a known fact that there is a strong connection between attitude and behaviour. Specialists have discovered that attitude indicates in a certain degree, the possibility of adopting certain behaviour (Bertea, 2009).

Talking about e-learning, a favourable attitude shows a greater probability that learners will accept the new learning system. Factors such as patience, self-discipline, easiness in using software, good technical skills, abilities regarding time management impact on students attitude towards e-learning. Thus, the attitude can be positive, if the new form of education fits the students' needs and characteristics, or negative if the student cannot adapt to the new system because he does not have the set of characteristics required (Bertea, 2009). Bad e-learning perception may be due to lack of understanding, lack of communication, and lack of trust or conflicting agendas in appropriate use of technology. Some goal coaching and awareness exercises are probably needed to strengthen people's perception. It is important to realize that learners are both emotional and intellectual; and emotions have much effect on people's perception and what they do (Ndume, 2008). Technology acceptance is defined as "an individual's" psychological state with regard to his or her voluntary or intended use of a particular technology". Developers and deliverers of e-learning need more understanding of

how students perceive and react to elements of e-learning along with how to most effectively apply an e-learning approach to enhance learning (Park, 2009).In addition, knowing students intentions and understanding the factors that influence students belief about e-learning can help academic administrators and managers to create mechanisms for attracting more students to adopt this learning environment (Park, 2009). According to (Olaniyi, 2006), in Nigerian universities such as Obafemi Awolowo university (OAU) and National Open University of Nigeria (NOUN), the commonest type of e-learning adopted is in form of lecture notes on CD-ROM which can be played as at when the learners desire. The challenge of this method is that the number of students per computer in which these facilities are available are un-interactive as compared to when lectures are being received in the classroom. These universities mentioned above adopted the use of intranet facilities; however, this is not well maintained because of incessant poor electricity supply challenge and high cost of running generating set. Most students in Nigeria go to the cyber café but because
there are people of diverse intentions on the net at the same time, and the bandwidth problem, a multimedia interaction cannot be done. In spite of these and other challenges facing e-learning in Nigeria, institutions such as University of Ibadan, OAU, University of Benin, University of Abuja, University of Lagos, NOUN among others have the facilities for e-learning. The number seems very low compared to other parts of the world. This is because of location of most institutions, bandwidth issue and the challenge of erratic/poor electricity supply as well as issues relating to students attitude to technology. Studies about elearning in Nigeria have mainly focused on distance education, challenges of e-learning and student's access to e-learning technology. Some of these studies include: E-learning and distance education (Ajadi et al, 2008); access to e-learning technology (Bassey et al, 2007); adoption issues (Olaniyi, 2006); Modelling adoption of e-learning (Awoleye, 2008); etc. Because students are a major playoff in the advancement of e-learning in Nigeria, it is important to synthesize what their attitude towards it is and would be. It is important to know how students use and experience e-learning/technology in their learning activities as this will aid in the development of tools, pedagogy and teaching
Practice. This study examined the attitude of students towards elearning in selected universities in south-west Nigeria using the technology acceptance model. TAM is an intention-based model. developed specifically for explaining or predicting user acceptance of computer technology (Hu et al., 1999). It has been used as the theoretical basis for many empirical studies of user technology acceptance (Adams, 1992; Mathieson, 1991; Davis et al, 1989; Davis, 1989). This study examined TAM in an academic setting, investigating the

factors affecting students' acceptance of e-learning technology. The specific objectives of the study were:

1. To find out if perceived ease of use has a positive effect on universities students' attitude towards using elearning

System in southwest Nigeria.

2. To determine if perceived usefulness has a positive effect on universities student's attitude towards using e-learning

System in south-west Nigeria.

3. To ascertain if the university students attitude towards using e-learning system will have a positive effect on their intention to use the system.

RESEARCH MODEL

Several models have been developed with the intention of explaining and predicting usage of information technology they include the theory of reasoned action, theory of planned behavior- TPB, technology acceptance model-TAM, theory of diffusion of innovation-DOI. This study used the Technology Acceptance Model (TAM) to explain students' attitude to e-learning in selected Nigerian universities. TAM adapted TRA by replacing several of its measures with two key constructs: perceived usefulness (PU) and perceived ease of use (PEOU)**.** TAM has been widely used to predict user acceptance and use, based on perceived usefulness and ease of use. Davis (1989) and Davis et al. (1989) developed TAM by adapting the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), to understand the causal chain linking external variables to IT usage intention and actual use in a workplace. TAM was developed under contract with IBM Canada Ltd. in the mid-1980s where it was used to evaluate the market potential for a variety of then-emerging PC-based applications in the area of multimedia, image processing, and pen-based computing in order to guide

investments in new product development (Abbad, 2009). Many IT studies have replicated TAM or used TAM instrument (which has empirically proved to have high validity) extensively to investigate a range of issues in the area of user acceptance (Vainny et al, 2008) conclude that the TAM is one of the simplest, easiest to use, and most powerful computer usage models

According to the TAM, PU and PE are primary motivational factors for accepting and using new technologies. Based on the variables in TAM. the following hypotheses were formulated:

Ho1: There is no significant relationship between perceived ease of use and attitude of students towards using e-learning.

Ho2: There is no significant relationship between perceived usefulness and attitude of students towards using e-learning.

Ho3: There is no significant relationship between university students' attitude towards using the e-learning system and their intention to use it.

Ho4: There is no significant relationship between Age and students intention to use an e-learning system.

Ho5: There is no significant relationship between level of computer experience and intention to use an e-learning system.

METHOD

Social survey was used to assess the attitude of students towards e-learning in Nigerian universities. The population under study is undergraduate and postgraduate students in six universities in South-west Nigeria namely: University of Lagos (UNILAG), OAU, Lead City University, Covenant University, University of Ado-Ekiti (UNAD) and Adekunle Ajasin University. Three hundred and eighty-seven students were randomly selected from six universities comprising two private, two state and two Federal Universities. Questionnaire was used to collect data. The reliability statistics of the sample variables ranged between 0.604 and 0.891 for Cronbach's Alpha, therefore the data set is reliable since the values were above 0.5. Hence, the data is sufficiently reliable to be used for further analyses. There was full recovery of questionnaire copies distributed in UNILAG and Leadcity University. At UNAD, (92.8%) were returned, Adekunle Ajasin (95.4%), O.A.U (98.1%) and Covenant (93.9%). The overall response rate from the questionnaire survey was 96.7%. Frequency counts, cross-tabulation, simple linear regression, and ANOVA were used for data analysis. The age of respondents between 20 and 30 constituted over two-third (67.7%). Although male respondents did not constitute a majority in some institutions; nonetheless, male students constituted a majority of 53% of the total respondents. On the level of computer experience, those with intermediate level of computer experience constituted the highest percentage (50.6%)

Table 1 Use and Frequency of Use of E-learning Tools

E-learning tools		Frequency of Use				
	%No Response	%Always	%Occasionally	%Seldom	%Never	%Total
Video Conferencing	14.5	6.7	23.8	11.1	43.9	100.0
Electronic Mail(E-mail)	6.2	48.6	27.6	9.3	8.3	100.0
Search Engines	11.9	37.0	20.4	8.0	22.7	100.0
Audio/Video tapes	11.4	38.8	22.0	14.7	13.2	100.0
Virtual Classroom	16.8	18.9	23.5	14.0	26.9	100.0
CD-ROM	13.4	24.5	32.6	14.5	15.0	100.0
WebCT	19.9	11.4	17.8	14.5	36.4	100.0

Key: NR = No response; Alw= Always; Occ = Occasionally; Sel = Seldom; N = Never; T = Total

Table 2 Intention to Use e-learning

ATTITUDE TOWARDS E-LEARNING TOOLS	%Disagreed	%Agreed	%No Response	%Total
If available, I intend to use e-learning tools during the semester	12.7	82.9	5.2	100.0
If available, I intend to use e-learning tools as frequently as possible.	13.4	80.4	6.2	100.0

If available, I intend to use e-learning tools whenever possible for my coursework.	7.8	88.6	3.6	100.0

Table 3. Attitude towards using e-learning system

ATTITUDE TOWARDS E-LEARNING TOOLS	%Disagreed	%Agreed	%No Response	%Total
I dislike the idea of using e-learning tools	82.2	12.7	5.2	100.0
I have a generally favourable attitude towards using e-learning tools	13.4	80.4	6.2	100.0
I believe it will be a good idea to use e-learning tools	7.8	88.6	3.6	100.0
Using e-learning tools is a foolish idea	83.9	9.3	6.7	100.0

In determining the frequency of use of e-learning tools among students in the selected institutions, Table 1 shows that 43.9% of respondents indicated that they had never used Video conferencing while 36.4% had never used Web-CT, while 26.9% and 22.7% of respondents had never used Virtual classrooms and Search Engines respectively. Electronic Mail (E-Mail) had the highest percentage use with 48.6%. Results in Table 2 reveal that 82.2% and 83.9% of the respondents disagreed that they dislike the idea of using e-learning tools and that using e-learning tools is a foolish idea respectively. However, 80% agreed that they have a generally favourable attitude towards using e-learning tools. While 88.6% believe that it will be a good idea to use e-learning tools. This suggests that students have a positive attitude towards elearning since they believe that it is a good idea making use of them. Table 3 reveals that 82.9%, of the respondents agreed that if available they intend to use e-learning tools during the system,80.4% agreed that they intend to use e-learning tools as

Frequently as possible if available. While 88.6% agreed that if available they intend to use e-learning tools whenever possible for their course work. This suggests that if these systems are made available in these institutions the students would be willing to take advantage of using them as frequently as possible.

TEST OF HYPOTHESES

Hypothesis One

H01: There is no significant relationship between perceived ease of use and attitude of students towards using e-learning.

Table 4 Simple Linear Regression analysis of the Relationship between perceived ease of use and attitude of students towards elearning

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.729	.415		13.802	.000
	Perceivedeaseofuse	.262	.034	.370	7.826	.000

Table 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.370(a)	.137	.135	2.33323

a Predictors: (Constant), Perceived ease of use; b Dependent Variable: attitude

Results in table 4 show that there is a significant relationship between perceived ease of use and attitude of students towards e-learning,
that is, the P-value of 0.000 in this relationship is less than the pre-set level of significance in this study which is 0.05 (P=0.00<0.05).The Beta value (r = 0.370) shows that there is a weak correlation between attitude and perceived ease of use. The R Square reveals that 13.7% of the total variation of attitude is being explained by perceived ease of use. On this premise therefore, the null hypothesis is rejected, and the alternative accepted.

Hypothesis Two

H02: There is no significant relationship between perceived usefulness and attitude of students towards using e-learning.

Table 5a: Simple Linear Regression analysis of the relationship between perceived usefulness and attitude of students towards elearning System

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.087	.434		11.722	.000
	perceivedusefulness	.295	.033	.416	8.982	.000

Table 5b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.416(a)	.173	.171	2.28405

a Predictors: (Constant), perceived usefulness; b Dependent Variable: attitude

Results in table 5 show that there is a significant relationship between perceived Usefulness and attitude of students towards the use of e-learning system, that is, the P-value of 0.00 in this relationship is less than the pre-set level of significance in this study which is 0.05 (P=0.00<0.05). The beta value (r = 0.416) also reveals that there is a weak relationship between attitude and perceived usefulness. The R Square reveals that 17.1% of the total variation of attitude is being explained by perceived ease of use. Thus, it can be concluded that there is a relationship between Attitude of students and their perceived usefulness of e-learning systems. On this premise, the null hypothesis is rejected and the alternative accepted.

Hypothesis Three

Ho: There is no significant relationship between university students attitude towards using e-learning system and their intention to use it.

Table 6a.Simple Linear Regression Analysis of the relationship between University students attitude and their intention to use e-learning.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	5.287	.398		13.280	.000
	Intentiontouse	.383	.041	.429	9.332	.000

a Predictors: (Constant), Intentiontouse
b Dependent Variable: attitude

Table 6b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.429(a)	.184	.182	2.26850

The results presented in Table 6a show that there is a significant relationship between attitude and the intention to use an elearning system. That is, the P-value of 0.00 in this relationship is less than the pre-set level of significance in this study which is 0.05 (P=0.00<0.05). The beta value (r = 0.429) in table 6b reveals that there is a weak relationship between attitude and the intention to use an e-learning system. The R Square value reveals that 18.4% of the total variation of attitude is explained on the intention to use an e-learning system. The null hypothesis is therefore rejected and the alternative accepted.

Hypothesis Four

Ho4: There is no significant relationship between Age and the intention to use an e-learning system

Table 7: One-Way Anova Test between the Age of the Respondents and their Intention to use e-learning

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	12.499	4	3.125	.392	.814
Within Groups	3044.663	382	7.970		
Total	3057.163	386			

Age Group	N	Mean	Std. Deviation
Below 20	85	9.1882	2.94996

20-30	262	9.2824	2.77999
30-40	32	9.5938	2.57606
40-50	7	8.8571	3.89138
Above 50	1	12.0000	.
Total	387	9.2868	2.81427

The results in Table 7 **s**how that there is no significant relationship between Age of respondents and their intention to use an e-learning system. Since the P-value of 0.814 is greater than the pretest level of significance (P =0.814 > 0.05) according to the decision rule we are expected to accept the null hypothesis and reject the alternative hypothesis. The Age group (Above 50) has the highest mean of 12.0000 while the age group of (40-50) has the lowest mean of 8.8571.

Hypothesis Five

Ho5: There is no significant relationship between level of computer experience & attitude towards using e-learning system

Table 8: One-way ANOVA Test between the Level of computer experience and intention to use e-learning

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42.576	4	10.644	1.349	.251
Within Groups	3014.587	382	7.892		
Total	3057.163	386			

Level of Computer Experience	N	Mean	Std. Deviation
No skill	12	8.7500	3.22279
Beginner	97	9.1649	2.72596
Intermediate	196	9.1276	2.94724
Expert	71	9.8169	2.53721
Advanced	11	10.3636	2.06265
Total	387	9.2868	2.81427

The results in Table 8 reveal that there is no significant relationship between level of computer experience and their intention to use an e-learning system since the P-value of 0.251is greater than the preset level of significance of 0.05.(P=0.251>0.05) Hence, we accept the null hypothesis which states that there is no significant relationship between level of computer experience and the intention to use an e-learning system and we reject the alternative hypothesis. The respondents in the advanced level of computer experience constituted the highest mean of 10.3636.While the respondents with no skill constituted the lowest mean of 8.7500.

DISCUSSION

Generally speaking, attitude indicates in a certain degree the possibility of adopting certain behaviours Bertea, (2010). Talking about an e-learning system, a favourable and positive attitude of students towards it suggests a greater probability that they will accept it. As revealed from the findings, it can be seen that there is a relationship between perceived ease of use and attitude. The respondents agreed that they found elearning tools easy to use; they also agreed that it would be easy to use these tools to find information. This means perceived ease of use has a positive effect on attitude. This was equally alluded to by Chung (2005) who did a study on applying the technology Acceptance model and flow theory to online e-learning user's acceptance behaviour. He found out that students attitude was determined by perceived ease of use. He also concluded that perceived ease of use was a significant predictor of perceived usefulness and eventual intention to use the e-learning system. The findings also agrees with Wong and Teo (2009) who carried out a study on the determinants of the intention to use Technology: Comparison between Malaysian and Singaporean female student teachers and found out that perceived ease of use is an important predictor of student teachers' acceptance of computer technology use. This is an indication that the likelihood of student teachers from both countries using computers was high when they perceive that they could use such tools with less effort (ease).This findings upholds Davies Technology acceptance Model that perceived ease of use influences attitude and the intention to use an e-learning system. Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance. This implies that an e-learning system with a high level of perceived usefulness is one for which a user believes that there is a positive user performance relationship. Findings from this study show that there is a relationship between perceived usefulness and attitude of students towards using e-learning system. The Students agreed that using e-learning tools would enhance their effectiveness in learning, they also agreed that using e-learning tools would increase their productivity in course work.

This means that the perceived usefulness has a positive influence on attitude of students towards using e-learning system. This position is congruent with the findings of Davis (1989), who suggest that the most critical belief underlying an individual's attitude towards the behaviour of adopting a new technology depends on the person's perceptions about the usefulness of the technology to such a person. The findings of this study is in conformity with earlier research findings such as Masrom (2007) who found out that perceived usefulness has a significant influence on students attitude and their eventual intention to use an e-learning system. He gave explanations that students might be willing to adopt beneficial applications

of e-learning and this suggest that students tend to dwell on the usefulness of the technology itself. He was also of the opinion that to improve students' attitude towards e-learning, training and information sessions on e-learning need to focus primarily on how the technology can help improve the efficiency, Productivity and effectiveness of students' learning process rather than on the procedures of actual use of the technology. The findings of this study also agrees with Wong and Teo (2009), he found out that perceived usefulness has a greater influence on behavioural intention (Intention to use). This indicates that these tools may not be perceived as useful when the student teachers do not understand how computers can be integrated into the teaching learning process. The findings from this study and other literatures reviewed falls in line with the Technology Acceptance Model which postulates that perceived usefulness influences attitude, behavioural intention and actual usage of a system. In addition, findings also showed that students attitude towards using the e-learning system has a positive effect on their intention to use it. It explains the positive effect of attitude and intention to use the system. It also agrees with Davies' Model that postulates that technology usage is determined by behavioural intention to use the technology and behavioural intention is in turn determined by attitude towards using the technology and by perceived usefulness. The intention to use the system means that even though a student might have a positive attitude towards the system he might still end up not using it. This could indicate that student's would like to use the system more but do not have the option, as the teacher might not fully utilize the system's potentials or that the system may not be readily available for use. The reverse case would be that a student does not appreciate the system but will still use it. This might be explained by the student perceiving it as necessary to using the system or even be forced to use it during the semester. In particular, while novice users or potential adopters without prior hands-on experience may have a favourable attitude toward system use, the favourable attitude is likely to be weak and would not significantly or solely affect actual use or behavioural intention. In contrast, users or potential adopters confident of their attitude toward the system use (i.e., strong attitude) because of prior hands-on experience would consistently engage in the behaviour directed by the attitude. Attitude is a major construct in the technology Acceptance Model. A positive attitude goes a long way to influence intention to use and actual usage. Furthermore, results showed that there is no significant relationship between the level of computer experience and the intention to use an e-learning system. This is contrary to the findings of Karl and Cappel (2006) who found that students with more experience with technology and e-learning rate it more positively. He suggested that computer users' prior experience with technology affects their attitudes about technology in general. He also found out the greater amount of experience users have with

technology the higher the levels of users' satisfaction in learning to use the new technology. In other words, the greater the amount of experience with technology, the higher the level of perceived ease of use, intention to use and actual usage. This agrees with the postulation of Davis (1989) though contrary to the findings of this study. The study also showed that 50% of the students were on the intermediate level of computer experience meaning that they have more than basic knowledge or skills but not yet advanced. This would go a long way to improve their intention to use e-learning system. Findings revealed that there is no significant relationship between Age and the intention to use an e-learning system but about 50% of the respondents were of the age group of 21-30 years which is the youthful age group when individuals can easily adapt to a new technology or have the right attitude towards it. A survey of older adults by Baack et al (1991) indicated that they are less likely than their younger counterparts to use a computer unless there is a perceived need (perceived usefulness). The same survey attributed the low usage rates to low levels of familiarity. It is also suggested that older individuals do not respond as well to rapid change as their younger counterparts unless the change is gradual over time (Linden and Adams, 1992). On the contrary, Morss (1999) found empirical evidence that older students who had more experience of technology used a learning management system more than younger students with less experience of IT.

CONCLUSION

Altogether the results of this study suggest TAM to be a useful model and applicable in this e-learning context. Also it can be concluded that university students in southwest Nigeria have a positive attitude towards e-learning because they perceive that it is easy to use and it is useful especially for their course work (perceived ease of use and perceived usefulness).It can also be concluded that if there is easy accessibility to e-learning system then there would be a more favourable attitude towards its usage. Due to the generalized focus of this survey, e-learning system was studied based on some variables such as perceive ease of use, Perceived usefulness, intention to use, etc. No attempt was made to study attitude of students towards e-learning based on anxiety towards computer, security, it will be important for future studies to determine if a significant relationship exist between attitude towards e-learning and these other variables.

REFERENCES

M. Abbad, and D. N. Morris, Looking Under the Bonnet: Factors affecting Student Adoption of e-learning systems in Jordan.*International Journal on Review of research in open and distance learning* 10(2),2009, pp1-23.

M. Awoleye, *Modelling Adoption of e-learning in Nigerian universities (MOAELINU).* National Centre for technology management
(NACETEM), Federal Ministry of Science and Technology, Obafemi Awolowo University Ile- Ife, Nigeria, 2008.

T. Ajadi, O. Salawu & F. Adeoye, Turkish Journal: E-learning and distance Education in Nigeria. *The Turkish online journal of educational
technology 7(4), 2008, pp 61-70*

P. Bertia, Measuring students attitude towards e-learning A case study. *Proceedings of the 5th standing conference on e-learning and software for development* held in Bucharest from 09-10 April 2009 Bucharist Romania 1-8

S. Baack, T. Brown, and J. Brown, Attitudes Toward Computers: Views of Older Adults Compared with Those of Younger Adults. *Journal of Research in Computing*, 23, 1991, pp 422-433.

U. Bassey, G. Umoren, B. Akuegwu, L. Udida , P. Ntukidem, and O. Ekabua, Nigerian graduating students Access to E-learning technology:Implication for higher Education management .*Proceedings of the 6th International internet Education conference,(ICT-learn2007)* held in Cairo Egypt from 2-4 September 2007, pp59-76.

S. Chorng, and Y. Jung, Gender Differences in Perception and Relationships Among Dominants of e-learning Acceptance *Computers in
Human Behaviour, Computers in Human Behavior 22, 2006, pp 816–829.* Retrieved August 16, 2010 from www.sciencedirect.com

F. D. Davis, Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *Management Information
Systems Quarterly*, 13(3), 1989, pp318–339.

Karl, L., Cappel J. Students' Perception on online learning. *A Comparative study journal of information technology Education* 5(1),
2006 pp 201-219. Retrieved June 17, 2010 from .http://informingscience.org/jiteldocuments/vo15

C. Keller, and L. Cernerud, Students' Perception of E-learning in University Education. *Journal of educational media 27(1& 2), 2002,
pp56-67* R. C. Linden, and S. M. Adams, Technological Change: Its Effects on the Training and Performance of Older Employees., Advances In Global High-Technology Management. Greenwich, 1992, pp217-234

M. Masrom, Technology Acceptance model and E-learning. *Proceedings on the 12th standing conference on Education, Sultan Hassanal Bolkiah institute of education held in university Brunei Darussalem from 21-24 May, 2007, pp 1-10*

K. Mathieson, Predicting User Intentions: Comparing The Technology Acceptance Model with the Theory of Planned Behavior, *A journal onInformation Systems Research* 2(3)*,* 1991, pp173-191.

D. A. Morss, A Study of Student Perspectives on Web-based learning: WebCT in the classroom. *A Journal on Internet Research*, *9*(5), 1999, pp393–408.

V. Ndume, F. Tilya, and H. Twaakyondo, Challenges of Adaptive E-learning at Higher Learning Institutions: A case study in *Tanzania*
International Journal of Computing and ICT, 2(1), 2008, pp 47-59 Retrieved June 16, 2009 from http:www.ijcir.org/Volume 1-number2/article 6. Pdf

S. S. Olaniyi, E-learning technology: The Nigeria experience. *Shape the change XX111 FIG Congress Munich Germany October 8-13,2006. 1-11*

C. Sacks, Y. Bellisimo, and J. Mergendoller, Attitudes Toward Computers and Computer Use: The Issue of Gender. *Journal of Research on Computing in Education,* 26(1), 1993, 257-269.

T. Vainny, H. Muzaffar, S. Suaini and A. Hanudin, Assessing the Acceptability of Adaptive E-Learning System *Fifth International Conference on e-learning for Knowledge-Based Society, Held in Bangkok, Thailand from 11-12 December2008. Special Issue of the International Journal of the Computer, the Internet and Management,* 16 (3), pp1-13

S. Wong and T. Teo, Determinants of the Intention to use Technology: Comparison between Malaysian and Singaporean female student teachers *proceedings of the 17th international Conference on computers in education.* Held in Hong Kong Asia-Pacific Society, 2009, pp 784-791