

Assessing the impediments to e-learning utilization by higher institution students

Adekunle Thomas Olutola¹, Rafiu Ademola Olatoye², Olufunke Omotoke Olatoye³

^{1,2}Department of Educational Foundations, Faculty of Education, Federal University, Dutsin-Ma, Katsina State, Nigeria

³Department of Science and Technology Education, Faculty of Education, Olabisi Onabanjo University, Ogun State, Nigeria

Article Info

Article history:

Received Aug 31, 2020

Revised Apr 20, 2021

Accepted May 8, 2021

Keywords:

E-learning

Electricity supply

Empirical analysis

ICT

Money to purchase

Tertiary institution

ABSTRACT

This study assessed the impediments to e-learning utilization by higher institution students in Katsina State, Nigeria. Survey type of descriptive research design was used in the study. There were 381 students randomly selected in four higher institutions. A questionnaire with test-retest reliability coefficient of 0.88 was used to gather data from the respondents. The researchers used Frequencies, percentages, means and t-test to analyze the data collected for the study. Findings revealed that all the fifteen impediments investigated in this study affect the e-learning utilization by higher institution students in Katsina State, Nigeria in varying degrees. The foremost factor is money to purchase e-learning resources followed by limited electricity supply. Moreover, significant difference was not found in the impediments to e-learning utilization by higher institution students on the basis of gender ($t=-.796$, $Df=397$, $P>0.05$) but significant difference was found in the factors affecting the use of e-learning by students' of Universities and Colleges of Education ($t=-2.969$, $P<0.05$). It was recommended that all the identified impediments affecting the e-learning utilization by higher institution students in Katsina State, Nigeria should be addressed by the government.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Olutola, Adekunle Thomas

Department of Educational Foundations

Faculty of Education, Federal University, Dutsin-Ma

PMB 5001, Katsina State, Nigeria

Email: aolutola@fudutsinma.edu.ng; olutolatola@gmail.com

1. INTRODUCTION

E-learning has become an important instrument that can be used for enhancing educational goals globally. E-learning is an instrument that can be used to enhance the objectives of 'Education for All' which will increase the literacy and numeracy of the people. It will also assist in the development of our nation in all ramifications. Through e-learning, learners will be able to carry out research independently and gain more knowledge and skills in their various disciplines [1]. E-learning covers different approaches, processes and learning techniques. E-learning can also be described as the use of technologies to enhance the access to online learning/teaching resources and to provide learners with cooperative surroundings and instruments which is supported by Web 2.0 applications. Web 2.0 offers a set of instruments and utilities that influence communication and its social impact [2]. A typical e-learning can be described as an innovative platform that enhances the learning situation for learners at their own convenient time [3]. Furthermore, Oblinger [4] defined e-learning as new learning methods in which the interactions among students and lecturers are online using internet facilities. E-learning is the use of electronic media for a variety of learning purposes that range

from add-on functions in conventional classrooms to full substitution for the face-to-face meetings by online encounters [5]. However, e-learning is described as ICTs used to help learners to enhance their learning [6]. According to Suo [7], e-learning is an enhanced and efficient method of learning by utilization of multimedia and hypermedia technologies. It limits the expenses such as stationary cost consumed by learners every day in the classroom. Bates [8] and Wang [9] opined that e-learning is an innovative platform that offers students another learning environment. The technology and internet driven education have led to a paradigm shift in learning from teacher centeredness through to learner centeredness [10]-[12]. E-learning as opposed to distance learning refers to all information and communication technologies (ICTs), networks, internet connectivity and other forms of electronic media that can be used to facilitate teaching and learning [10]. Moreover, Farrel [13] opined that there are common beliefs that ICT can be an essential tool to which can be used to sustain the education reform agenda in Africa. 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. Narrowed down further, it becomes any learning that is Web-based or Internet-enabled. Instruction over the Internet is perceived by many to be a significant breakthrough in teaching and learning [14], [15]. Liaw [16] defined e-learning based on the summaries of its characteristics. E-learning helps the tertiary institution students to study while at the same time pursuing their careers [17], [18]. Despite the numerous merits of e-learning in higher institutions, several challenges are affecting the use of it in the tertiary institutions.

Thus, Anene [19] investigated the challenges and prospects of e-learning in Nigerian universities. They discovered that one of the challenges to the use of ICT was inadequate facilities; the learners complained that Nigerian Universities do not have sufficient e-learning library domain, online interactions with lecturers and online tests. In addition, the findings of Eze [20] in their study on the utilization of e-learning facilities in the educational delivery system of Nigeria: a study of M-University revealed that attitude of users, inadequate internet facility and inadequate training of partakers affect the successful adoption of e-learning facilities. Moreover, Aboderin [21] studied revealed that the learners major problems in using e-learning included inadequate computers, inadequate internet facilities, learners' inadequate access to e-learning instruments and tools, costly software and poor power supply. The outcome of study of Chiaha [22] revealed that about 42.9% of the learners had opportunity to use e-learning tools; some learners have privilege to use only email and the some impediments to the use e-learning tools by learners include poor power supply, slow network connectivity, among others. Furthermore, content and infrastructure development have not been sufficient for successful implementation of e-learning systems [23]. Both the lecturers and students in Nigerian higher institutions have been facing a lot of problems that make the use of e-learning not to be effective and efficient. Hence, this study investigated some impediments to the utilization of e-learning facilities by higher institution learners

Two research questions were raised to guide the study: 1) What are the impediments to e-learning utilization by higher institution students in Katsina State, Nigeria; 2) What is the ranked order of impediments to e-learning utilization by higher institution students in Katsina State, Nigeria.

Two research hypotheses were formulated for the study: 1) No significant difference exists in the impediments to e-learning utilization by higher institution students based on gender; 2) No significant difference exists in the impediments to e-learning utilization by higher institution students based on institutions.

2. RESEARCH METHOD

The researchers adopted the descriptive research design in the study. All the learners in higher institutions in Katsina State constituted the study population and the target population consisted of all the students in higher institutions in the state (i.e. two Colleges of Education and two Universities). The researchers selected three hundred and eighty-one participants using a simple random sampling technique. Questionnaire titled: "Impediments to E-Learning Utilization Questionnaire" (IEUQ) designed by the researchers with four-point Likert-type scale and five points was used to collect relevant data for the participants. Both validity of the instrument was done. The test-retest reliability coefficient of 0.88 was obtained. Frequencies, percentages, means and t-test were used to analyze the data collected at 0.05 alpha level. The variables that had a mean of 2.5 (Midpoint) and above represented 'agree' while mean below 2.5 represented 'disagree'. It was used to indicate the extent of variability of the participant responses were determined using standard deviation (SD). A SD that is less than 1.0 shows low variability.

3. RESULTS AND DISCUSSION

3.1. Answers to research questions

The two research questions raised in this study were answered using frequencies, percentages, means and standard deviation.

3.1.1. Research question one: What are the impediments to e-learning utilization by higher institution students in Katsina State, Nigeria.

Table 1 shows that 178 (46.7%) of the respondents strongly agree to item 1 (No money to purchase e-learning resources), 120 (31.5%) agree, 44 (11.5%) disagree, 18 (4.7%) strongly disagree and 21(5.5%) respondents did not answer item number 1. There are 88(23.1%) of the respondents strongly agree to item 2 (Skilled manpower is inadequate), 164 (43.0%) agree, 74(19.4%) disagree, 28(7.4%) strongly disagree and 27 (7.1%) respondents did not answer item number 2.

Table 1. Percentages of responses on impediments to e-learning utilization by higher institution students in Katsina State, Nigeria

S/N	Factors affecting the use of e-learning	Strongly agree	Agree	Disagree	Strongly disagree	No response	Mean	SD	D
1.	No money to purchase e-learning resources	178 (46.7%)	120 (31.5%)	44 (11.5%)	18 (4.7%)	21 (5.5%)	3.092	1.124	A
2.	Skilled manpower is inadequate	88 (23.1%)	164 (43.0%)	74 (19.4%)	28 (7.4%)	27 (7.1%)	2.677	1.121	A
3.	Limited electricity	152 (40.0%)	115 (30.3%)	56 (14.7%)	31 (8.2%)	27 (7.2%)	2.884	1.217	A
4.	Lack of training on use of e-learning	120 (31.5%)	119 (31.2%)	79 (20.7%)	30 (7.9%)	33 (8.7%)	2.690	1.235	A
5.	Appropriate e-learning software is lacking	140 (36.7%)	96 (25.2%)	66 (17.3%)	40 (10.5%)	39 (10.2%)	2.562	1.256	A
6.	Lack of good quality of education content on e-learning	110 (28.9%)	102 (26.8%)	88 (23.1%)	47 (12.3%)	34 (8.9%)	2.522	1.253	A
7.	Poor networking	126 (33.1%)	123 (32.3%)	68 (17.8%)	37 (9.7%)	27 (7.1%)	2.738	1.209	A
8.	Cost of buying data	133 (34.9%)	112 (29.4%)	73 (19.2%)	35 (9.2%)	28 (7.4%)	2.753	1.230	A
9.	Fear of e-learning resources usage	97 (25.5%)	85 (22.3%)	83 (21.8%)	81 (21.3%)	35 (9.2%)	2.305	1.280	DA
10.	Cost of working in cyber cafe	142 (37.3%)	108 (28.3%)	60 (15.7%)	40 (10.5%)	31 (8.1%)	2.672	1.220	A
11.	Download delay	131 (34.4%)	127 (33.3%)	59 (15.5%)	36 (9.5%)	28 (7.4%)	2.769	1.216	A
12.	Problem with credibility of information	124 (32.5%)	92 (24.1%)	78 (20.5%)	55 (14.4%)	32 (8.4%)	2.423	1.204	DA
13.	Inability to find information	110 (28.9%)	103 (27.0%)	77 (20.2%)	61 (16.0%)	30 (7.9%)	2.375	1.198	DA
14.	Inaccessibility of some websites	146 (38.3%)	94 (24.7%)	81 (21.3%)	33 (8.7%)	27 (7.1%)	2.648	1.150	A
15.	Poor skills for operating e-learning resources	126 (33.1%)	93 (24.4%)	79 (20.7%)	56 (14.7%)	27 (7.1%)	2.530	1.208	A

Key: SD=Standard Deviation; D=Decision, A=Agree, DA=Disagree

Table 1 also reveals that 152 (40.00%) of the respondents strongly agree to item 3 (Limited electricity), 115 (30.3%) agree, 56 (14.7%) disagree, 31 (8.2%) strongly disagree and 27 (7.2%) respondents did not answer item number 3. In addition, 120 (31.5%) of the respondents strongly agree to item 4 (Lack of training on use of e-learning), 119 (31.2%) agree, 79 (20.7%) disagree, 30 (7.9%) strongly disagree and 33 (6.66%) respondents did not answer item number 4. On the other hand, 123 (32.26%) of the respondents strongly agree to item 4 (Poor networking), 126 (33.07%) agree, 68 (17.65%) disagree, 37 (9.71%) strongly disagree and 27 (7.09%) respondents did not answer item number 7. There are 133 (34.9%) of the respondents strongly agree to item 8 (Cost of buying data), 112 (29.4%) agree, 73 (19.2%) disagree, 35 (9.2%) strongly disagree and 28 (7.4%) respondents did not answer item number 8. Hence, 131 (34.4%) of the respondents strongly agree to item 11 (Download delay), 127 (33.3%) agree, 59(15.5%) disagree, 36 (9.5%) strongly disagree and 28 (7.4%) respondents did not answer item number 11.

3.1.2. Research question two: What is the ranked order of impediments to e-learning utilization by higher institution students in Katsina State, Nigeria.

Table 2 reveals that out of 15 impediments to e-learning utilization by higher institution students in Katsina State, Nigeria listed above; money to purchase e-learning resources ranked first followed by limited electricity which is ranked second; download delay ranked third, followed by cost of buying data; poor networking; lack of training on use of e-learning; skilled manpower is inadequate; cost of working in cyber cafe; inaccessibility of some websites; appropriate e-learning software is lacking; poor skills for operating e-learning resources; lack of good quality of education content; problem with credibility of information; inability to find information and fear of e-learning resources usage.

The least of the impediments to e-learning utilization by higher institution students is fear of e-learning which means higher institution students in Katsina State did not have fear of using e-learning resources. Therefore, all other problems ranked 1st to 14th should be solved by governments and each institution management so that higher institution students in Katsina State, Nigeria can make use of e-learning resources adequately. This will facilitate their progress in teaching and learning processes.

Table 2. Mean and ranked order of impediments to e-learning utilization by higher institution students in Katsina State, Nigeria

Item	Factors affecting the use of e-learning	N	Mean	Std. Deviation	Rank
1	Money to purchase e-learning resources	381	3.0919	1.12365	1 st
3	Limited electricity	381	2.8842	1.21654	2 nd
11	Download delay	381	2.7690	1.21577	3 rd
8	Cost of buying data	381	2.7533	1.22990	4 th
7	Poor networking	381	2.7375	1.20934	5 th
4	Lack of training on use of e-learning	381	2.6903	1.23486	6 th
2	Skilled manpower is inadequate	381	2.6772	1.12073	7 th
10	Cost of working in cyber cafe	381	2.6719	1.22043	8 th
14	Inaccessibility of some websites	381	2.6483	1.15037	9 th
5	Appropriate e-learning software is lacking	381	2.5617	1.25635	10 th
15	Poor skills for operating e-learning resources	381	2.5302	1.20842	11 th
6	Lack of good quality of education content	381	2.5223	1.25348	12 th
12	Problem with credibility of information	381	2.4226	1.20412	13 th
13	Inability to find information	381	2.3753	1.19795	14 th
9	Fear of e-learning resources usage	381	2.3045	1.28009	15 th

3.2. Hypotheses testing

3.2.1. Hypothesis one: Significant difference do not exist in the impediments to e-learning utilization by higher institution students in Katsina State, Nigeria based on gender.

The result in Table 3 shows that no significant difference exists in the impediments to e-learning utilization by higher institution students in Katsina State, Nigeria based on gender. ($t = -.796$, $Df = 397$, $P > 0.05$). Thus, the null hypothesis one is therefore accepted. This implies that both male and female students faced the same impediments in the use of e-learning.

Table 3. T-test summary of comparison of impediments to e-learning utilization by higher institution students in Katsina State, Nigeria based on gender

Variable	N	Mean	SD	SEM	Df	Cal. t-value	Sig. of t-value	Remark
Male	232	39.2371	11.61093	.76229	379	-.796	.427	P>0.05 (NS)
Female	149	40.2297	12.22860	1.00518				

NS= Not Significant

3.2.2. Hypothesis two: Significant difference do not exist in the impediments to e-learning utilization by higher institution students in Katsina State, Nigeria based on institutions (Universities and Colleges of Education)

From Table 4, the researcher discovered that significant differences exist in the impediments to e-learning utilization by higher institution students based on gender of Universities and Colleges of Education ($t = -2.969$, $P < 0.05$). Therefore, hypothesis two is rejected. This implies that students of Universities and College of Education are significantly different in the problems they faced in the use of e-learning. Colleges of Education students (Mean=41.3452, SD=12.30450 & SEM=.87666) faced more problems in the use of e-learning than their counterparts in the Universities (Mean=37.7705, SD=11.07575 & SEM=.81874) in Katsina State, Nigeria.

Table 4. T-test analysis of impediments to e-learning utilization by higher institution students based on institutions

Variable	N	Mean	SD	SEM	DF	Cal. t-value	Sig. of t-value	Remark
Universities	183	37.7705	11.07575	.81874	379	-2.969	.003	P<0.05 (S)
Colleges of Education	198	41.3452	12.30450	.87666				

S=Significant

3.3. Discussion of findings

The findings from research questions revealed that all the respondents agree that (Money to purchase e-learning resources; Limited electricity; Download delay; Cost of buying data; Poor networking; Lack of training on use of e-learning; Skilled manpower is inadequate; Cost of working in cyber café; Inaccessibility of some websites; Appropriate e-learning software is lacking; Poor skills for operating e-learning resources; Lack of good quality of education content; Problem with credibility of information; Inability to find information and Fear of e-learning resources usage) affects their use of e-learning in Katsina State. The findings are supported by Aboderin [19] study which found that the Open University students' major challenges in using e-learning included inadequate computers, inadequate internet facilities, learners' inadequate access to e-learning instruments, costly software and poor power supply.

The findings from hypothesis one shows that significant differences do not exist in the impediments to e-learning utilization by higher institution students in Katsina State, Nigeria based on gender ($t=-.796$, $Df=397$, $P>0.05$). This implies that the impediments faced in the use of e-learning by male and female higher institution students are not different. The findings were supported by the findings of Olutola [24] but the findings of this study is contrary to the study by Amkpa [25], which revealed that students' gender significantly differ in attitudes towards computer applications.

The result of data collected shows that significant differences exist in the impediments to e-learning utilization by higher institutions ($t=-2.969$, $P<0.05$). This implies that students of Universities and Colleges of Education are significantly different in the challenges they faced in the use of e-learning. Chiaha [20] study disagrees with the findings of this study because they reported no significant difference between the mean scores of two higher institutions to the extent students have access to e-learning facilities.

4. CONCLUSION

Most of the factors considered (Money to purchase e-learning resources; Limited electricity; Download delay; Cost of buying data; Poor networking; Lack of training on use of e-learning; Skilled manpower is inadequate; Cost of working in cyber cafe; Inaccessibility of some websites; Appropriate e-learning software is lacking; Poor skills for operating e-learning resources and Lack of good quality of education content) except three (Problem with credibility of information; Inability to find information and Fear of e-learning resources usage) serves as impediments to e-learning utilization by higher institution students in Katsina State, Nigeria in varying degrees.

In other words, respondents generally agreed that 12 out of the 15 factors considered in this study are the factors affecting the use of e-learning. Therefore, there is an urgent need for the government, University and Colleges of education managements and relevant education stakeholders to arise to tackle the impediments to e-learning faced by higher institution students in Katsina State and Nigeria in general.

The researchers recommends that: 1) All the identified impediments to e-learning utilization by higher institution students affect the students in study state and Nigeria should be addressed by the government; 2) Adequate e-learning resources should be provided by the government to all the Universities and Colleges of education in the study state in order to enhance students' performance; 3) There should be adequate power to facilitate the use of e-learning in our universities and colleges of education.

REFERENCES

- [1] A.T. Olutola and O.O. Olatoye, "Challenges of e-learning technologies in Nigerian university education," *Journal of Educational and Social Research*, vol. 5, no. 1, pp. 301-305, 2015.
- [2] P.G. Rossi, "Learning environment with artificial intelligence elements," *Journal of E-learning and Knowledge Society*, vol. 5, no.1, pp. 67-75, 2009.
- [3] S. Odunaike, O. Olugbara and S. Ojo, "E-learning implementation critical success factors," *Innovation*, vol. 3, no. 4, 2013.
- [4] D. G. Oblinger and B. L. Hawkins, "The Myth about E-Learning," *Educ. Rev.*, vol. 40, no. 4, pp. 14-15, 2005.
- [5] S. Guri-Rosenblit, "Distance education' and 'e-learning: Not the same thing," *Higher Education*, vol. 49, no. 4, pp. 467-493, 2005.

- [6] R. A. Ellis, P. Ginns and L. Piggott, "E-learning in higher education: Some key aspects and their relationship to approaches to study," *Higher Education Research & Development*, vol. 28, no.3, pp. 303-318, 2009.
- [7] Y. Suo and Y. Shi, "Towards blended learning environment based on pervasive computing technologies," *Hybrid Learn. Educ.*, pp. 190-201, 2008, doi: 10.1007/978-3-540-85170-7_17.
- [8] S. R. Bates and L. Jenkins, "Teaching and learning ontology and epistemology in political science," *Political Studies Association*, vol. 27, no. 1, pp. 55-63, 2007.
- [9] T. Wang, "Rethinking teaching with information and communication technologies (ICTs) in architectural education," *Teaching and Teacher Education*, vol. 25, no. 8, pp. 1132-1140, 2009.
- [10] J. P. Kasse and W. Blunywa, "An Assessment of E-learning Utilization by a Section of Ugandan Universities Challenges, Success Factors and Way Forward," *International Conference of ICT for Africa*, Harare, Zimbabwe, 2013.
- [11] Q. Zhang, C. Lu, and R. Boutaba, "Cloud computing: State-of-the-art and research challenges," *Journal of Internet Services and Applications*, vol. 1, no. 1, pp. 7-18, 2010.
- [12] M. Markus and D. Robey, "Information technology and Organizational change: Causal structure in theory and research," *Management Science*, vol. 34, no. 5, pp. 583-598, 1998.
- [13] G. Farrel and I. Shafika, *Survey of ICT and Education in Africa: A Summary Report, Based on 53 country surveys*. Washington DC: infoDev/WorldBank, 2007.
- [14] C. Keller and L. Cernerud, "Students' perception of e-learning in university education," *Learning, Media and Technology*, vol. 27, no.1, pp. 55-67, 2002.
- [15] R. LaRose, J. Gregg and M. Eastin, "Audio graphic tele-courses for the Web: An experiment," *Journal of Computer Mediated Communications*, vol. 4, no. 2, 1998.
- [16] S.S. Liaw and H.M. Huang, "Exploring the World Wide Web for on-line learning: a perspective from Taiwan," *Educational Technology*, vol. 40, no. 3, pp. 27-32, 2003.
- [17] P. C. Borstorff and S. L. Lowe, "Student perceptions and opinions toward e-learning in the college environment," *Academy of Educational Leadership Journal*, vol. 11, no. 2, pp. 13-30, 2007.
- [18] C. P. Kartha, "Learning business statistics vs. traditional," *Business Review*, vol. 5, no. 1, pp. 27-33, 2006.
- [19] J. N. Anene, H. Imam, and T. Odumuh, "Problem and Prospect E-learning in Nigerian universities," *International Journal of Technology and Inclusive Education (IJTIE)*, vol. 3, no.2, pp.320-327, 2014.
- [20] S.C. Eze, V.C. Chinedu-Eze and A.O. Bello, "The utilization of e-learning facilities in the educational delivery system of Nigeria: a study of M-University," *International Journal Educational Technology in Higher Education*, vol. 15, no. 34, pp. 1-20, 2018.
- [21] O. S. Aboderin, "Challenges and prospects of E-learning at the National Open University of Nigeria," *Journal of Education and Learning*, vol. 9, no. 3, pp. 207-216, 2015.
- [22] G. T. U. Chiahia, J. U. Eze and F. O. Ezeudu, "Education students' access to E-learning facilities in universities south-east of Nigeria," *Information and Knowledge Management*, vol. 3, no. 10, pp. 32-41, 2013.
- [23] N. O. Ndubisi, "Factors influencing e-learning adoption intention: Examining the determinant structure of the decomposed theory of planned behaviour constructs," *Proc. HERDSA Conf.*, 2004, pp. 252-262.
- [24] A. T. Olutola, O.O. Olatoye and R. A. Olatoye, "Assessment of E-learning Resources Utilization by Students of Tertiary Institutions in Katsina State, Nigeria," *Human and Social Studies: Journal of Alexandru Loan Cuza*, vol. 7, no. 2, pp. 51-66, 2018.
- [25] S. A. Amkpa, "Gender and age difference in computer use and attitude among students of University of Maiduguri," *The Information Technologists*, vol. 4, no. 1, pp. 60-67, 2007.