

**UTILIZATION OF E-LEARNING TECHNOLOGIES IN BUSINESS
EDUCATION INSTRUCTIONAL DELIVERY IN COLLEGES OF
EDUCATION IN DELTA STATE OF NIGERIA**

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Abstract

This study was carried out to determine the extent of utilization of e-learning technologies in business education instructional delivery in Colleges of Education in Delta State of Nigeria. A descriptive survey research design with a sample of 45 lecturers of business education in the Colleges of Education, through simple random sampling was used. A structured questionnaire was used for data collection using a five-point rating scale. Data obtained were analyzed using mean and standard deviation to answer the research questions, while the null hypotheses were tested using t-test statistic. Findings revealed that e-learning technology resources were not extensively utilized in teaching business education in the colleges of education due to many challenges which include shortage of qualified staff with e-learning application, lack of e-learning facilities and infrastructure in the colleges of education. Training and retraining of lecturers to acquaint them with the development of new technologies, among others, were recommended.

Keywords: E-learning, Technology, Instructional Delivery, Information and Communication Technology, Business Education, Constraints.

1. Introduction

Electronic learning, popularly referred to as e-learning, is increasingly becoming acceptable in tertiary institutions all over the world (Evest and Laura, 2011). This is as a result of the opportunity provided by institutions and more students that are taking part in it (Organization of Economic Co-Operation and Development (OECD, 2005). Electronic learning is basically the use of information and communication technologies (ICTs) to enhance and support learning/teaching and research (Eteng and Ntui, 2009).

In this age of Information and Communication Technology (ICT), there is growing concern for the use of ICT resources such as the computer, scanner, printer, Intranet, Internet, e-mail, videophone systems, teleconferencing devices, wireless application protocols (WAP), radio and microwaves, television and satellites, multimedia computer and multimedia projector, among others in instructional delivery method (Nwana, 2012). With e-learning, there is a shift from the traditional approach of teacher-directed didactic to modern methods where computer technology plays a significant role, thereby improving the quality, efficiency and effectiveness of teaching, learning, research and educational management.

E-learning as a sub-system within ICT, is the electronic process which enhances the delivery and administration of learning opportunities and support via computer, networked and web-based technology to help individual performance and development. The basic principle of e-learning is connectivity – the process by which computers are networked to share information which can connect people. This is provided for by what is often called the e-learning landscape or architecture, which refers to the hardware, software and connectivity components required to facilitate learning (Okure, 2008).

The National Policy on Education (FRN, 2004.17) places emphasis on the provision and utilization of information and communication technology (ICT) when it states that “in recognition of the prominent roles of information and communication technology in advancing knowledge and skills necessary for effective functioning in the modern world, there is urgent need to integrate information and communication technology (ICT) into education in Nigeria”.

Educational institutions are getting much more interested in improving their programme with ICT tools and applications to introduce flexibility in the teaching and learning process. Nwagbo and Ugwuanyi (2011) cited in Agboeze, Ugwoke and Onu (2012) stated that many institutions around the world now utilize e-learning technologies as a complement for teacher-led

on-campus teaching and tutorials. They also observed that institutions in Nigeria have recognized the use of e-learning technologies as one of the essential alternative instructional delivery method for education.

Electronic learning technologies are becoming increasingly popular in tertiary institutions as they are used for tutoring, managing courses, providing simulations, enriching existing courses, programming and problem solving. The catalyst for growth in e-learning is its suitability for simulation and experiential learning through the internet and computer applications. The worldwide web is full of free experiential exercises that are ripe for effective application in education.

Gold (2001) stated that e-learning technologies are available in all functional areas of business education. The only limit, according to Gold, is the creativity of the teachers to access and use them in instructional delivery. The rapid growth in e-learning is also largely influenced by the high demand and supply of e-learning products and channels. E-learning technology is highly demanded by teachers and students because of its cost-effectiveness, flexibility of access, elimination of distance barriers for globally distributed learners, the need for just-in-time training, allowance for individual differences and permission for alternative pedagogies like simulation, experiential, interactivity and self-paced learning (Gold, 2001).

Okoro (2008) indicated that students' learning in business education was significantly enhanced through the use of e-learning technologies. Organization of Economic Co-Operation and Development, (OECD, 2005), however, stated that e-learning technology is still proving slow in terms of taking-up by many institutions of learning. Nwagbo and Ugwuanyi (2011) cited in Agboeze, et' al (2012) lamented that the pace of development and utilization of e-learning technologies and application for educational purposes, including the teaching and learning of business education in developing countries like Nigeria, is still very low.

In the colleges of education, business education is offered under the options of accounting education, secretarial education and general business education. For the products of business education to maintain technological leadership, they must be equipped with technological competencies to meet up with the tremendous surge and demands of the ever-changing technologies in the world of work. Osuala (2009) recognizes new technologies as a developing force. According to Haag, Cummings and McCubbrey (2002), the relatively new technologies are what are referred to as e-learning technologies.

Technology has radically and positively impacted on education and training globally by transforming teaching and learning. The whole process of education, particularly the way teachers and learners gain access to knowledge and information in this 21st century, has been greatly affected by technology; especially ICT. The integration of ICT into the teaching and learning process has introduced a new system of learning which is globally referred to as e-learning. This new system of learning is accessed and delivered electronically with multimedia products. Institutions are now witnessing a paradigm shift from teacher-centred to learner-centred learning with the development of e-learning technology.

E-learning technology has the potential to transform how and when learners learn. Learning will become more integrated with work and will use shorter, more modular, just-in-time delivery systems. E-learning delivers contents through electronic information and communications technologies (ICTs). According to Ajayi (2008), the use of these facilities involves various methods which include systematic feedback system, computer-based operation network, video conferencing and audio conferencing, internet worldwide websites and computer assisted instruction. This delivery method increases the possibilities for how, where and when learners can engage in lifelong learning. Lecturers are especially excited about the potential of e-learning for just-in-time learning delivery.

2. Statement of Problem

The call for utilization of e-learning technologies in business education instructional delivery is to infuse and inject efficiency and effectiveness in curriculum implementation. However, in developing countries like Nigeria, e-learning is challenged with the problem of material devices such as computer, computer laboratories, internet and e-mail facilities, videophone systems and teleconferencing devices, fax and wireless applications, digital library, digital classrooms, multimedia systems and the problem of multimedia courseware development among others. Other studies indicated that there is dearth of trained teachers for e-learning, lack of facilities, infrastructures and equipment (Jegade and Owolabi, 2008).

The problem is that e-learning in colleges of education; particularly in business education, is challenged by the new technologies in terms of availability and utilization. It is against this background that the present study is carried out to determine the extent of utilization and constraints to effective utilization of e-learning technologies in instructional delivery in Colleges of Education in Delta State.

3. Purpose of the study

The study examined:

1. The extent of utilization of e-learning technologies by business education lecturers in Colleges of Education in Delta State, and
2. The constraints to effective utilization of e-learning technologies by business education lecturers in Colleges of Education in Delta State.

4. Research Questions

1. To what extent are e-learning technologies utilized in business education instructional delivery in Colleges of Education in Delta State?
2. What are the constraints to effective utilization of e-learning technologies in business education instructional delivery in Colleges of Education in Delta State?

5. Null Hypotheses

1. There is no significant difference in the mean responses of business education lecturers in federal and state Colleges of Education in Delta State on the extent to which e-learning technologies are utilized in business education instructional delivery.
2. There is no significant difference in the mean responses of business education lecturers in federal and state Colleges of Education in Delta State on the constraints to effective utilization of e-learning technologies in business education instructional delivery.

6. Literature Review

The development of information technologies makes the increasingly wider application of multimedia in education possible. According to Tamas and Vauthier (1996), despite the high cost of the systems and their use, multi-media education builds on the basic principles of individual learning, interactivity and freedom of learning in terms of time space and pace.

E-learning is defined by OECD (2011), as the use of ICT to enhance and support learning in tertiary institutions. They argued that e-learning covers a wide range of systems, from students using e-mail and accessing work on-line while following a course on campus to programmes offered entirely on-line.

According to Stockley (2006), e-learning is the delivery of a learning training or education programme by electronic means. Stockley (2006) argued that e-learning involves the use of a computer or electronic device (for example, a mobile phone in some way to provide training,

educational or learning materials). It also involves the use of internet; an intranet. CD – ROM and DVD can be used to provide learning materials.

Bassey (2007) cited in Eteng and Ntui (2009) investigated the Nigerian graduating students' access to e-learning technology in Universities in South-South Nigeria. Results of the survey indicate that the number of graduating students in Nigeria higher institutions who have access to e-learning technology was negligible.

Another survey was conducted by (Akuchie, 2008) in five universities in North Central Zone of Nigeria. The finding revealed that lecturers and students are not literate in the use of most aspects of information and communication technology (ICT). According to Akuchie, (2008), most e-learning facilities are not available in the universities and where they exist, they are either not functional or inadequate and lecturers and students do not employ ICT facilities for teaching and learning.

Kamba (2009), writing on the problem of implementing e-learning technologies in Nigerian institutions, argued that investment and commitment to develop an e-learning application is very poor and below expectations in the institutions.

Evarest and Laura (2011), in their study on learning electronically in Nigerian universities, revealed that the e-learning facilities were inadequate and students' access to these facilities is very negligible. They also revealed some inhibitors to the use of e-learning facilities which include power outages, obsolete e-learning facilities, lack of skilled manpower and poor infrastructure and recommended that government should show more political-will by increasing the financial resources available to the universities especially in the area of e-learning facilities which is capital intensive, among others.

Sam (2011), argued that e-learning is a logical and strategic approach to achieve the technological transformation of Nigeria, adding that the deployment of ICT is critical in the implementation of education road map, which is designed to revamp the education sector. According to Sam (2011), e-learning is expected to redefine education, for example, the classroom will no longer be demarcated by brick walls rather “students can communicate with their teachers from their bedroom or wherever they are, especially during strikes, while housewives can receive lecturers from their kitchen without having face-to-face interaction with their teachers. He also identified infrastructural unavailability as the bane of e-learning in Nigeria especially with the erratic power supply situation compounded by lack of access to technology.

In another study conducted by Agboze, Ugwoke and Onu (2012) in the universities in South-South and South-Eastern geopolitical zones of Nigeria on the utilization of e-learning technology resources in instructional delivery, it was found that e-learning technology resources were not extensively utilized in teaching due to many constraints which include shortage of qualified staff with e-learning application, lack of e-learning facilities and infrastructure in the university.

Nwana, (2012), writing on the challenges in the application of e-learning in secondary schools in Onitsha North Local Government Area, Anambra State, Nigeria, revealed that acute shortage of e-learning materials such as on-line/internet-connected computers, e-mail facilities, multimedia television, multimedia computer and digital library were major constraints. It was also revealed that the few available ones such as off-line/ordinary computers, scanners, printers and ready-made courseware are not utilized because the teachers lack the knowledge and skills of computer application. The only material identified as available and in use is the telephone. It was recommended, among other things, that government should embark on massive computer training programmes for teachers, and that teachers should be trained and retrained through in-service

training, seminars, workshops and conferences for the acquisition of the knowledge and skills needed for e-learning application in secondary schools in Nigeria.

7. Challenges to e-Learning Technologies in the Nigerian Tertiary Education

The unprecedented increases in students' enrolment at all levels in tertiary education in Nigeria have exposed the poor infrastructural situation in the country. This is evident in the unmanageable nature of the school systems, resulting from crowded classrooms, dilapidated and uninhabitable structure, poor and inadequate facilities that should support teaching, learning and research. The result of this is the production of low quality graduates that are not marketable in the world driven by technology.

The need for e-learning has now become important more than ever before as the objectives of institutions of learning in Nigeria as defined in the National Policy on Education (FRN, 2004) include the provision of high level manpower for national development and this is to be achieved through its programme of teaching, learning and research. Electronic learning can help adults in developing their literacy and in numeracy skills, while also building ICT skills for life and work (CILIP, 2005). With electronic learning, direct attachment to classrooms is reduced and the population is decongested.

Infinedo (2007) used a conceptual framework to illustrate the discourse on the challenges facing the diffusion of e-learning in the Nigerian tertiary education environment. It draws upon developmental reports of notable bodies, including the G8 DOT Force, UN ICT Task and UNPAN (2005). These bodies have used a similar framework to describe the problems faced by developing societies in spreading ICT-based initiatives (Appendix I).

In brief, the broad categories of factors believed to be hindering efforts of developing societies in using ICT (e-learning) products for instructional delivery method include the following:

1. Infrastructural problems, that is, poor information and telecommunication technologies facilities, inadequate power generation, poor internet access, international tariff and lack of circuit capacity,
2. Institutional problems, for example, awareness problem, lack of familiarity with the use of e-learning technologies and unwillingness to change from the status quo, among others; and
3. Human capital problems, that is, lack of qualified skilled IT professional, cost of procurement of internet access and lack of financial resources.

In fact, UNPAN (2005) cited in Archibong and Ugwulashi (2012) highlighted poverty, low level of literacy, inadequate infrastructure, high cost of ICT services, lack of investments, poor institutional structures, absence of international cooperation and lack of security (in that order) as the major barriers to achieving an information society in developing countries.

8. Methodology

The study employed a descriptive survey research design to determine the utilization of e-learning technologies in business education instructional delivery in Colleges of Education in Delta State. The population was all the lecturers in the (4) four colleges of education in Delta State, Nigeria, namely, Federal College of Education (Technical) Asaba, College of Education, Agbor, College of Education, Warri and College of Education, Mosogar . The sample for the study comprised 45 lecturers, that is, fifty percent (50%) of the lecturers in each of the institutions studied, who were randomly selected from the total population of 90 lecturers. The instrument for data collection was a self-developed 30-item questionnaire. It was structured on a five-point scale and has two sections (A-B) which sought information on the two research questions. Section A dealt with the extent of utilization of the e-learning technologies with the response categories as "Very

High Extent”, “High Extent”, “Moderate Extent”, “Low Extent” and “Very Low Extent”. Section B of the questionnaire dealt with the constraints to effective utilization of e-learning technologies in business education instructional delivery. The response options in section B were “Strongly Agree”, “Agree”, “Undecided”, “Disagree” and “Strongly Disagree”.

The face and content validation of the instrument were established by three experts, two from Measurement and Evaluation Department and one from Business Education Department of the Faculty of Education at Delta State University, Abraka. The reliability of the instrument was determined using the Cronbach’s Alpha method. A reliability coefficient of 0.88 was obtained, an indication that the instrument was reliable for data collection. The 45 copies of the questionnaire that were administered by the researchers were returned and used for computation. The data collected were analyzed using mean and standard deviation while the null hypotheses were tested using t-test statistics at 0.05 level of significance. Since the items were structured on a five-point rating scale, the decision rule was based on the mid-point of the scale, 3.0. Therefore, items with mean scores of 3.0 and above were regarded as high extent or agreed while items below 3.0 were regarded as low extent or disagreed.

9. Results

9.1 Research Question One:

To what extent are e-learning technologies utilized in business education instructional delivery in Colleges of Education in Delta State? The findings are presented in Table 1, Appendix II.

The findings in Table 1 showed the mean ratings and standard deviation of the responses. All the items, except Items 7, 10 and 15, had average mean rating from the two group of respondents ranging from 1.28 to 2.48 which implied low extent of utilization. The mean ratings of items 7, 10 and 15 ranged from 2.91 to 3.38 which were not up to high extent but implied that those items were moderately utilized. The overall mean of all the 15 items were 2.37 and 2.24 respectively from the two groups of respondents which also indicated low extent of utilization. The result from Table 1, therefore, indicated that the two groups of respondents were of the opinion that none of the e-learning technologies listed was utilized to a high extent in business education instructional delivery.

9.2 Research Question Two:

What are the constraints to effective utilization of e-learning technologies in business education instructional delivery in Colleges of Education in Delta State?. Table 2, Appendix III presents the findings of research question two.

Table 2 showed the mean ratings and standard deviations of responses by business education lecturers in federal and state colleges of education in Delta State on the constraints to effective utilization of e-learning technologies in business education instructional delivery. The table revealed that the average mean ratings on each of the items as well as the overall mean ratings for all the items ranged from 3.39 to 4.55 well above 3.00 which is the real limit on the scale. This implied that all the respondents agreed that each of the items listed is a constraint to effective utilization of e-learning technologies in business education instructional delivery.

10. Testing of the Null Hypotheses

10.1 Hypothesis One

There is no significant difference in the mean responses of business education lecturers in federal and state Colleges of Education in Delta State on the extent to which e-learning technologies

are utilized in business education instructional delivery. Table 3, Appendix IV, presents the t-test summary of hypothesis one.

Table 3 showed that the calculated t-value at 43 degree of freedom and at 0.05 level of significance is 0.59 which is less than the critical table value of 2.01. It implied that both lecturers in federal and state Colleges of Education in Delta State are of the opinion that e-learning technologies are not extensively utilized in business education instructional delivery. It also implied that there is no significant difference in the mean ratings of the two groups of respondents. The little difference in their opinion in the mean ratings could be due to chance caused by sampling or standard errors. Therefore, the null hypothesis tested was accepted.

10.2 Hypothesis Two

There is no significant difference in the mean responses of business education lecturers in federal and state colleges of education in Delta State on the constraints to effective utilization of e-learning technologies in business education instructional delivery. The t-test summary of hypothesis two is presented in Table 4, Appendix V.

Table 4 indicated that the calculated t-value at 43 degree of freedom, at 0.05 level of significance is -0.28 which is less than the t-table value of 2.01. Since the calculated t-value is less than the t-critical table value, the null hypothesis two shows that there is no significant difference in the mean ratings of the respondents in federal and state Colleges of Education in Delta State on the constraints to effective utilization of e-learning technologies in business education instructional delivery. The little difference in their opinion in the mean ratings could be due to chance caused by sampling or standard errors. Therefore, the null hypothesis tested was accepted.

11. Discussion of Findings

The result of this study shows that there are many e-learning technologies and application that are available for utilization in education for instructional delivery in Colleges of Education in Delta State, Nigeria. However, the result indicated that all the e-learning technologies and applications studied were little utilized in business education instructional delivery with only few of them being moderately utilized. This implies that none of the e-learning technologies and application is utilized to a high extent in the instructional delivery of business education in the institutions investigated. The result is in line with Nwagbo and Ugwuanyi (2011) cited in Agboeze et al (2012) which stated that the pace of development and utilization of e-learning technologies for educational purposes including teaching and learning of business education is still very low in Nigeria.

The study also identified some constraints to effective utilization of e-learning technologies in business education instructional delivery. These constraints include poor perception and conservative attitude of lecturers on the use of e-learning technologies for instructional delivery, shortage of qualified staff with capacity in e-learning application, lack of training and retraining of staff and students in e-learning technologies and applications and inadequate time allocated to e-learning-related instructions, training and practice. Others are inadequate facilities and infrastructure for e-learning instruction and applications together with poor management and maintenance of available resources for e-learning training and practice. This result is supported by Gold (2001) who, in his study, stated that some of the constraints to effective utilization of e-learning technologies in instructional delivery are the quality and creativity of the teachers.

The respondents were similar in their opinions that e-learning technologies are not extensively utilized in business education instructional delivery. The subjects in the area covered by the study believed that effective utilization of e-learning technologies in business education

instructional delivery is limited by many constraints. The constraints, according to the two groups of respondents, also concern the quality of the teachers and the availability of facilities, equipment and infrastructure for e-learning technology training and practice.

12. Conclusion

This study examined the utilization of e-learning technologies in business education instructional delivery in Colleges of Education in Delta State, Nigeria. It revealed that e-learning technologies like e-lectures, e-examination, e-drill, e-books, e-library, among others, are available for use in instructional delivery, however, they are not extensively utilized in the colleges of education chosen for the study. The study also revealed that most of the e-learning technologies were utilized to a low extent with very few being moderately utilized, but yet utilized to a high extent or very high extent in business education instruction delivery because of constraints to effective utilization of the e-learning technologies by business education lecturers.

Constraints identified in this study include shortage of qualified staff with capacity for e-learning application, inadequate incentives and motivation of staff as well as inadequate facilities, equipment and infrastructure for e-learning purposes.

13. Recommendations

The following recommendations were made based on the findings and conclusion of the study:

- The government of Nigeria should embark on a massive computer literacy training programme nation-wide particularly for teachers and learners at all levels. This should be accomplished through in-service training for teachers, workshops, seminar, and conferences.
- All classrooms and auditoria in higher education institutions in Nigeria should be connected to the internet in order to enhance web-based instruction. The government should do this by paying internet connection fees to internet service providers (ISP) to provide internet services to all institutions of learning.
- Videophone, teleconferencing and multimedia systems, for examples, multimedia computers and multimedia projectors should be provided in adequate number by the government of Nigeria for effective e-learning technology use at all levels of education.
- Teachers in Nigeria should be motivated and encouraged to develop and use multimedia courseware and software relevant to teaching and learning. The government should motivate teachers through provision of adequate funds for courseware development.
- The government of Nigeria should provide digital libraries in every educational institution. The library is the best reservoir of knowledge and no educational institution can do without it. Each digital library should have a server for storage, retrieval, uploading and downloading of information.
- The government of Nigeria should employ technologists and technicians to take care of internet facilities and equipment and to carry out routine repairs.
- The government should set up standby generators and uninterrupted power supply (UPS devices) to tackle the problem of epileptic or inconsistent power supply in order to support the use of electronic equipment for e-learning.

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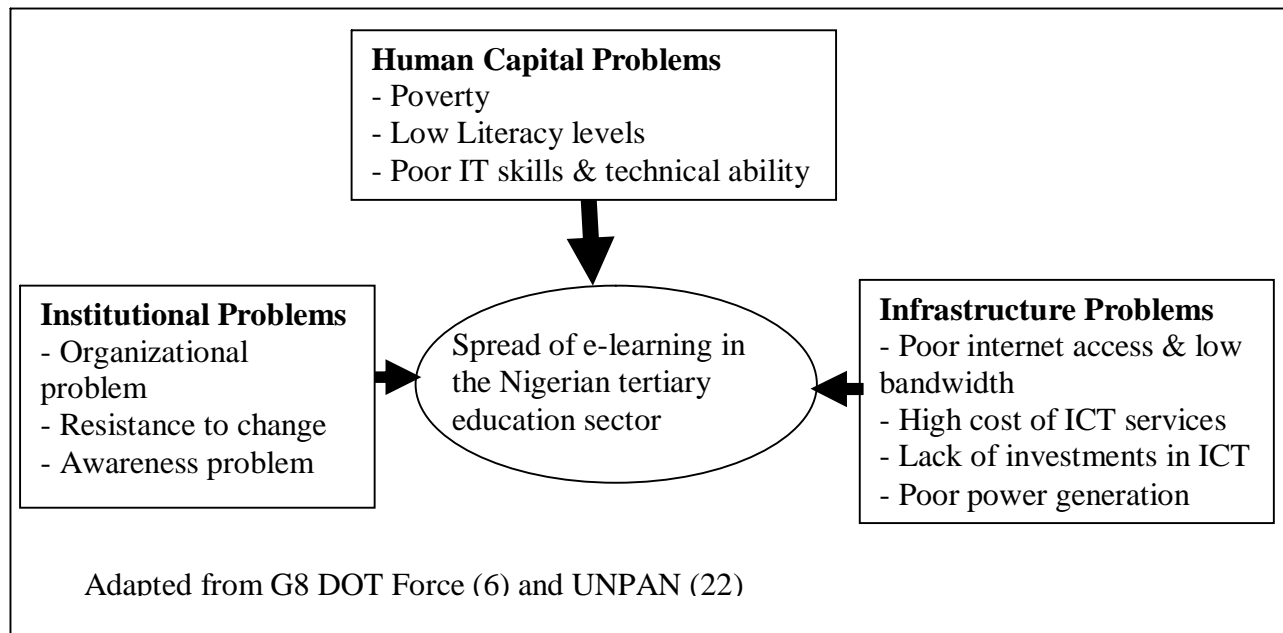
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15. Appendices:

15.1 Appendix I

Figure 1: Conceptual Framework of E-learning Challenges



15.2 Appendix II

Table 1: Mean ratings and standard deviation of respondents on the extent of utilization of e-learning technologies in business education instructional delivery.

S/N	ITEMS	Lecturers in Federal College Education (Technical)			Lecturers in State Colleges of Education		
		X1	SD1	Remark	X2	SD2	Remark
	E-learning technologies utilized						
1	E-lectures	2.46	0.56	LE	2.28	0.44	LE
2	E-workshop	2.39	0.49	LE	2.27	0.58	LE
3	E-drills	2.24	0.44	LE	2.15	0.68	LE
4	E-examination	2.18	0.85	LE	2.11	0.88	LE
5	E-books	2.48	0.93	LE	2.38	0.82	LE
6	E-library	2.19	0.48	LE	2.22	0.52	LE
7	E-mail and Fax	3.26	0.66	ME	3.38	0.61	ME
8	E-sound books	1.98	0.58	LE	1.66	0.83	LE
9	E-trackers	2.00	0.73	LE	1.89	0.87	LE
10	Personal Computer, Laptops	3.00	0.64	ME	2.91	0.73	ME
11	E-presentation (Power Point)	2.42	1.03	LE	2.16	0.83	LE
12	E-database	1.99	1.11	LE	1.78	0.77	LE
13	Cable satellite broadcast	1.66	0.84	LE	1.28	0.84	LE
14	Video/Teleconferencing	2.18	0.86	LE	2.10	0.47	LE
15	Internet and Web browsing	3.12	0.48	ME	3.06	0.94	ME
	Overall Mean	2.37	0.71		2.24	0.72	

Keys: X = Mean, SD = Standard Deviation, ME = Moderate Extent, LE = Low Extent

15.3 Appendix III

Table 2: Mean ratings and standard deviation of respondents on the constraints to effective utilization of e-learning technologies in business education instructional delivery.

S/N	ITEMS	Lecturers in Federal College Education (Technical)			Lecturers in State Colleges of Education		
		X1	SD1	Remark	X2	SD2	Remark
	Constraints to effective utilization of e-learning technologies						
1	Inadequate facilities and infrastructure for e-learning application	4.33	0.96	Agree	4.46	0.53	Agree
2	Shortage of qualified staff with capacity in e-learning application	3.78	0.89	Agree	3.39	0.76	Agree
3	Inadequate funding of programmes and e-learning related activities	3.65	0.85	Agree	4.16	0.48	Agree
4	Poor administration and supervision of e-learning related programme and instructions	4.27	0.77	Agree	3.80	0.87	Agree
5	High cost of acquisition of e-learning facilities	4.18	0.85	Agree	4.29	0.68	Agree
6	Poor perception and conservative attitude of business educator on the use of e-learning for instructional delivery	4.31	0.97	Agree	4.13	0.59	Agree
7	Lack of adequate incentives and motivation of staff	4.21	0.45	Agree	4.42	0.94	Agree
8	Incessant power failure, inadequate technical support from government and institutional administrators	3.98	0.64	Agree	4.24	0.95	Agree
9	Inadequate time allocated to e-learning related instructions	4.06	0.58	Agree	4.11	0.85	Agree
10	Lack of training and retraining programmes for lecturers on e-learning	4.24	0.98	Agree	4.51	0.71	Agree
11	Disruption and network failure	3.67	0.88	Agree	4.31	0.82	Agree
12	Poor management and maintenance of available resources for e-learning	4.28	0.57	Agree	3.98	0.72	Agree
13	Narrow band with limited area covered by internet connectivity	4.51	0.94	Agree	4.55	0.76	Agree
14	Curriculum inadequacies due to haphazard integration of e-learning applications into the curriculum	4.01	0.72	Agree	4.32	0.68	Agree
15	Lack of strong government policies of e-learning instructional delivery	4.36	0.73	Agree	4.21	0.71	Agree
	Overall Mean	4.12	0.79		4.19	0.74	

Keys: X = Mean, SD = Standard Deviation

15.4 Appendix IV

Table 3: T-test summary of the mean ratings of Business Education Lecturers in Federal and State Colleges of Education on the extent of utilization of e-learning technologies in Business Education Instructional Delivery

Respondents	N	X	SD	DF	Level of significance	t-cal	t-tab	Decision
Lecturers in Federal College of Education	21	2.37	0.71	43	0.05	0.59	2.01	Accepted
Lecturers in State Colleges of Education	24	2.24	0.72					

Keys: N = Number of Respondents, X = Mean, SD = Standard Deviation, DF = Degree of Freedom, t-cal = Calculated value of t-test, t-tab = Table value of t-test.

15.5 Appendix IV

Table 4: T-test summary of the mean ratings of Business Education Lecturers in Federal and State Colleges of Education on Constraints to effective utilization of e-learning technologies in Business Education Instructional Delivery

Respondents	N	X	SD	DF	Level of significance	t-cal	t-tab	Decision
Lecturers in Federal College of Education	21	4.12	0.79	43	0.05	- 0.28	2.01	Accepted
Lecturers in State Colleges of Education	24	4.19	0.74					