ASSESSING THE MAINTENANCE OF E-LEARNING FACILITIES FOR QUALITY UNIVERSITY EDUCATION IN RIVERS STATE, NIGERIA

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Abstract

The study focused on assessing the maintenance of e-learning facilities for quality University education in Rivers State. The descriptive analytic survey design was adopted. Three research questions and two hypotheses guided the study. The population of the study was 245 management staff of the three public universities in Rivers State. The sample was also all the 245 management staff of the universities, which was purposefully considered manageable. The Instrument used for data collection was a self-structured questionnaire titled E-Learning Facilities Maintenance Assessment Questionnaire (EFMAQ). The instrument was validated by experts in the field while the reliability was obtained using test-retest method and adopting the Pearson product moment correlation statistic the coefficient of 0.79 was obtained. Out of the 245 copies of the EFMAQ administered, 240copies were successfully retrieved and used for analysis. The mean and standard deviation statistics were applied to answer the research questions and the t-test statistic to test hypotheses at 0.05 alpha level. The results obtained indicated a good stock of e-learning facilities, low maintenance actions, and high maintenance challenges of the e-learning facilities in universities. The test of hypotheses discerned no significant relationship between each of the variables investigated. Thus, e-learning facilities had not received appropriate maintenance actions because of maintenance challenges in universities. The stock of e-learning facilities, therefore, should be complemented with appropriate maintenance actions for quality university education.

Keywords: Assessing; Maintenance; E-learning; Facilities; Quality University Education

Introduction

The advent of e-learning in the world of academics is considered a development in right direction, especially for the promotion of teaching and learning at a faster rate more than the former methods. There may be no doubt that e-learning will be facilitated by its facilities when it is provided enough and in good condition. Being enough and in good condition demands that the users of these facilities must care

and keep them safe at all times, and as much as possible avoid obsolesce and decay, that degenerate such facilities into waste.

However, from a pure economic rationalization, like other facilities for teaching and learning, e-learning facilities in universities are relatively scarce when compared to demand for it. To serve the need of the user, the stock available ought to be maintained or properly managed and used prudently to serve the purpose of the university education industry. Sometimes, its scarcity derives from a state of no provision at all culminating in a lack, or from its low provision relative to the number of users, or as a result of reckless abandonment of the available stock, thus, inhibiting the purpose for which it is procured for the school. To check issues arising from low provision and reckless abandonment of e-learning facilities in the midst of dire need in the university education, compels the need for assessing the maintenance of e-learning facilities for quality university education in Rivers State. The outcome of the study propels the development of appropriate maintenance actions (culture)necessary to guide the management of e-learning facilities' stock in the university education system in Nigeria.

Theoretical Framework
The theoretical framework for this study is hinged on the theory of adequacy of educational resources propounded by Castaldi in 1987. The theory states that adequacy of facilities is measured on the extent it satisfies both the qualitative and quantitative requirements of a school programme. By this theory, Castaldi in Owhondah (2007) asserts that the stock of facility must be enough to accommodate the planned educational programme. Therefore, the basic condition for achieving quality educational objectives is adequacy through maintenance of facilities. Since the expectation for establishing the university education is to achieve quality delivery of its output, it suggests that the facility inputs should be enough through regular and proper maintenance actions. It is therefore important that the e-learning facilities planned for and provided must be maintained through appropriate actions for it to be enough at all times. To that effect, Owhondah (2007) states that the planned educational programme must be achieved at a minimum cost when the existing facilities are regularly maintained.

However, the achievement of quality university educational programme at a minimum cost should not result in high cost of maintenance of its facilities. Based on these, when the universities' e-learningfacilitiesare effectively maintained it will result in a longer life span. This study on assessing the maintenance of e-learning facilities in universities in Rivers State corroborates the theory of adequacy as it seeks to demand that university stock of e-learning facilities be regularly maintained to ensure their adequacy towards attaining a qualitative university education since inadequacy affects the university system negatively.

Conceptual Clarifications
In this study the concepts of e-learning, stock of e-learning facilities, maintenance actions for e-learning facilities, challenges of e-learning facilities, and quality university education have been succinctly clarified.

E-learning and the Types
The concept of e-learning is difficult to define in a single sentence. The type of organization prompts it meaning and usage. However, e-learning is a broad-set of applications and processes which includes web-based learning, computer-based learning and virtual classrooms. It is the type of learning that is facilitated and supported through the Information and Communication Technology (Audu, Kamin, & Balash, 2013). E-learning is usually delivered through the internet, intranet, and audio videotape, satellite broadcast, interactive Television (TV) and CD-Room (Bakere, 2009; Asiyai, 2012).

It involves electronic means of communication, education and training. It is the application of technology to bring teachers and students who are distanced away to teach and learn. In this arrangement such facilities as mainframe computers, floppy diskettes, multimedia CD-ROM and interactive video disks as well as web-technology inform of internet and intranet may be used (Mgbere, 2016; Akinsolu, 2004).

There are two types of e-learning, which Olojo, Adewumi and Ajisola (2012) identified, they are, namely: the synchronous, which means "at the same time", it involves interaction of participants with an instructor via the web in real time. In this case, VCRs or virtual classrooms, which are real classrooms online, enable participants to interact with each other and instructors; through instant messaging, chat, audio and video conferencing all the sessions can be recorded and played back. This type of e-learning requires the ability to log or track learning activities and makes continuous monitoring and correction possible. It creates possibilities of global connectivity and collaboration opportunities among learners, and ability to personalize the training for each learner (Oluwuo& Asodike, 2016; Audu, Umar& Idris, 2013).

On the other hand, there is the asynchronous which means "not at the same time". This type allows participants to the web-based training (WBT) to learn at their own pace without live interaction with the instructor. In this case, information is accessed on a self-help basis 24/7. This type of e-learning helps the learner to obtain the information they need at any time, and also offers interaction among participants through message boards, bulletin boards, and discussion forums. These include computer-based-training (CBTs) modules on CD-ROM, web-based training accessed through intranet (WBTs) or through well written articles and others write-ups (Emetarom, 2004; Aduke, 2008; Marcus, 2008).

Essentially, the university educational systems are under increasing pressure to adopt the use of information and communication technologies to teach the student quality knowledge and skills needed in the 21st century. Similarly, the Nigerian

universities ought to prepare lecturers to produce quality graduatesfor engagement in job creation for themselves.

Stock of E-Learning Facilitiesin Universities
E-learning facilities are the required equipment, infrastructure that enhance teaching and learning from a distance.The stock is the available e-learning facilities, of course, they are many and are variously described.Mgbere (2016) and Sunday (2014) described e-learning facilities in the form of laptops/computers, teleconferencing, electronic white board, the e-mail, CD-ROM, and virtual classroom.

Laptops/computers: The form of electronic machines that are capable of receiving, strong, manipulating and retrieving data (information) speedily and efficiently. Computers is the best educational technology medium for individualizinginstitutions **(**Agbo**,** 2001; Agi, 2005**).**

Teleconferencing: An emerging electronic office communication, which uses the video and audio communication to hold conferences and meetings with participants that may be scattered across a globe or country. It is beneficial because it saves both students and employees time, thus increasing productivity. It reduces the travelling tendencies to and fro meetings, school learning centres, and expenses and energy consumption.

Electronic white board: The internet service device that is controlled by the computers. In this case, the computer uses data projectors, electronic pens and erasers and a small notebook that contains buttons for different operations appear immediately. The electronic whiteboard is connected to the computer, which saves anything written on the whiteboard and such things can also be printed if so desired. The electronic whiteboard enhances effective classroom interaction and other activities like workshop, seminars and staff training.

The e-mail: One of the most important and widely used internet facility. It is fast in informationexchange, very cheap to use, reduce physical distance between people and increase in personal capabilities to explore and communicate with press around the world.

CD-ROM: An acronym for "Compact Disc Read Only Memory". This facility can be read by a computer with an optical drive. The ROM part of the term means the data on the disk is 'read only" which means it cannot be altered or erased. CD-ROM contains a huge amount of information that can be played or replayed from time to time.

Virtual classroom: An online learning environment; the environment can be web-based and accessed through a portal or software-based and require a downloadable file. A students in a virtual classroom participates in synchronous instruction which means the teacher and the students are logged into the virtual learning environment at the same time. This e-learning facility can be used to coordinate meetings,

workshops and seminars (Oluwuo & Asodike, 2016).

In whatever form and type the e-learning facilities may take, they are obviously indispensable for the rapid growth of the university education in Rivers State in particular and Nigeria at large in terms of quantity, quality and dissemination of educational experiences in the competitive and global village in this era of information and communication technology.

Maintenance (Actions) for E-Learning Facilities in Universities
The maintenance of e-learning facilities refers to their upkeep so that they can be durable and used to actualize the purpose for which they were procured. It is also a cost saving mechanism which a prudent organization adopts especially in a down-turn economy. Perhaps, accounts for the reason why e-learning facilities maintenance is described as involving housekeeping, security maintenance, and general administration, transportation within the specified budget and in timely manner.

Planning as a process is the first logical step in e-learning facilities maintenance. Of course, planning focuses on preparing a set of decisions for action in the future directed at achieving goals by optimal means. E-learning facilities maintenance plan starts with the educational philosophy that serves the needs of the individual in a dynamic knowledge-based economy and so e-learning facility maintenance plan should therefore give meaning to the educational philosophy (Sunday, 2014).

An aspect of school management that is generally overlooked is facilities maintenance. When new facilities are brought in and taken over by the appropriate authorities, practically no attention is paid to the maintenance of the old ones. Several e-learning facilities have never undergone maintenance of any sort in order to still keep it in shape. The following types of maintenance should be adopted in the facility maintenance plan:

Preventive Maintenance: This type of maintenance carried out on e-learning facilities is to avoid breakdown and ensure optimal performance of the facilities. This type of maintenance saves cost and time and is usually an integral part of the maintenance practice in societies where maintenance is well established.

Routine Maintenance: This is carried out periodically as scheduled by school administrators. The e-learning facilities may be serviced monthly, quarterly and so on depending on the agreed schedule.

Emergency Repairs: This is very common in the maintenance of e-learning facilities as well as other school facilities in societies where maintenance culture is not well established. It takes place when a facility breaks down and urgent measures or steps had to be taken to remedy the situation. This type of maintenance may be expensive because due to lack of maintenance, the extent of damage may require total replacement of the facility or high cost of repair.

Predictive Maintenance: This involves the use of computer software to predict equipment failure based on age, user demand and performance measures.

Challenges of E-Learning Facilities in Universities
These are challenges the problems that inhibit or limit the e-learning facilities in the university education. They are among others problems of relevant staff development through workshops, conferences and seminars; other problems include indiscipline, poor internet connectivity, irregular and interrupted power supply, corruption and greed, lack of skilled and trained personnel, and inadequate funding.

Workshop challenge: the Government or school authorities' inability to carry out seminars, conferences, and workshops on facilities management for administrators from time to time is also a challenge.

Indiscipline challenge: Indiscipline among students and lecturers in the use of e-learning facilities in the universities is a serious challenge to administrators on how to maintain these facilities. Indiscipline is the lack of controlled behavior of people which makes them behave badly. Bello in Yarson (2004) also defined indiscipline as the rule and regulations of an institution. It is the inability of a person to live in accordance with the rules and regulations. Utilization of e-learning facilities requires discipline but unfortunately many students of public institutions are not disciplined, students are often in the habit of over-utilizing and misusing the available e-learning facilities which in turn makes these facilities not last as long as expected. Some students also end up stealing these available e-learning facilities home which is an act of indiscipline.

Internet Connectivity Challenge: The cost of accessing the internet in Nigeria is still on the high side and so some students find it challenging to afford. Aduke (2008) and Nwabueze (2011) suggested that the government should make internet connectivity a priority for higher education to be able to leverage on the promises and opportunities ICT presents.

Energy Related Challenge: Irregular and frequent interrupted power supply in Nigeria is a perennial problem affecting almost every aspect of the economy. Most rural areas in Nigeria are not even connected to the national grid and the consequence of this is that students who reside in such areas may find it difficult to use ICT effectively.

Corruption and Greed Challenge: The challenge of greed and corruption from the grassroots to the top in the system is a general challenge. Even in our universities sometimes these e-learning facilities that are needed to increase the standard of learning in schools and the students potentials elevated are made available by the government but when they are commissioned, keep these e-learning facilities to themselves for their selfish and personal interest. Sometimes they are sold off or auctioned by the school heads and the money used for their personal needs (Horton, 2005; Asogwa, 2007).

Lack of skilled and Trained Personnel Challenge: the challenge of lack of skilled and trained personnel stands in the way of adequate maintenance of facilities as these e-learning facilities if provided cannot function on their own and so it needs trained personnel in that area to make it work.

Fund challenge: The challenge of inadequate finance is a major one to the management of e-learning facilities because these facilities cannot be maintained effectively without financial resources. Funding challenge in the educational system has resulted in non-payment of salaries of staff and that has led to uncountable strikes by lecturers, inadequate instructional materials etc. It is the government's responsibility to provide facilities such as computers and learning materials but approximately, according to Nwabueze in Oluwuo and Asodike (2016) eight out of ten universities lack these e-learning facilities.

Arising from the above scenario, the university management, lecturers and students must have firm knowledge of facilities maintenance planning. This being the case, maintenance should be duly planned and not only take place when existing facility breakdown.

Quality University Education

Quality university education is the form of education that produces a complete person in terms of being knowledgeable, intellectually sound, morally upright, physically fit, emotionally stable, socially developed and acceptable in any society.

Purpose of the Study

The study is focused on assessing the maintenance of e-learning facilities in universities in Rivers State. Specifically, the study seeks to:
1. Determine the stock of e-learning facilities available for quality university education in Rivers State.
2. Ascertain the maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State.
3. Determine the challenges of the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State.

Research Questions

Three research questions guided the study:
1. What is the stock of e-learning facilities available for quality university education in Rivers State?
2. What are the maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State?
3. What are challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State?

Hypotheses

The following hypotheses were tested for the study:

Ho$_{1:}$ There is no significant difference between the mean scores of federal and state universities on maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State.

Ho$_{2:}$ There is no significant difference between the mean scores of federal and state universities on challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State.

Methodology

The study adopted the descriptive analytic survey design. The population studied was 245 management staff, comprising Ignatius Ajuru University of Education (47) staff; Rivers State University (59) staff; and University of Port (139) staff (Convocation Brochure IAUE, 2015-2017; Uniport, 2014-2016; and RSU, 2016/2017). The Directors of Physical Planning, the Vice Chancellors, Registrars, Bursars, Deans, and Heads of Department were the respondents to the study. These categories of staff were closely related to issues of maintenance of e-learning facilities in the university. The sample of the study consisted of 245 staff of the one federal and two state universities in Rivers State. This figure included:(3) Vice Chancellors, (3) Registrars, (3) Bursars, 88Deans/Directors, and 148 Heads of Department of the Universities. The researcher decided to use all the institutions and their management staff because the number was very small and convenient for the researcher to handle. The institutions were stratified along the federal and state universities, hence, the adoption of the stratified sampling technique. The Instrument used for data collection was a structured questionnaire titled E-Learning Facilities Maintenance Assessment (EFMAQ). The reliability of the research instrument was obtained using test-retest method and with the Pearson product moment correlation statistic the index of 0.79 was obtained. Out of the 245 copies of the questionnaire distributed, 240 copies were retrieved and used for analysis using the mean and standard deviation to answer the research questions and t-test to test the hypotheses at 0.05 level of significance.

Analysis and Results

Research question 1: What is the stock of e-learning facilities available for quality university education in Rivers State?

Table 1: Opinion of federal and state universities onStock of e-learning facilities for quality university education in Rivers State

S/no	E-learning facilities	Federal University (N=135)			State University (N=105)			Summary ofFacilities in Federal &StateUniversities			Good less Bad
		Total Stock	Good	Bad	Total Stock	Good	Bad	Total stock	Good (%)	Bad (%)	
1.	Laptops/computers	135	130	5	105	90	15	240	91.7	8.33	Good
2.	Teleconferencing	0	0	0	0	0	0	0	0.00	0.00	Bad
3.	Electronic whiteboard	135	100	35	105	105	0	240	85.6	14.6	Good
4.	E-Mail	135	135	0	105	105	0	240	100	0.00	Good
5.	CD-ROM	135	135	0	105	105	0	240	100	0.00	Good
6.	Virtual classroom	0	0	0	0	0	0	0	0.00	0.00	Good

15

Table 1 Continue

7.	Scanners/printers	135	120	15	105	80	25	240	83.3	16.7	Good
8.	E-libraries	135	135	0	105	105	0	240	100	0.00	Good
9.	Fax machines	2	0	2	0	0	0	2	0.00	100	Bad
10.	Computer laboratories	120	80	40	50	5	45	170	50.0	50.0	Bad
11.	Internet	135	135	0	105	105	0	240	100	0.00	Good
12.	Digital camera/camcorder	135	90	45	105	105	0	240	85.3	18.8	Good
13.	Mobile phones	135	135	0	105	105	0	240	100	0.00	Good
14.	Public address system	135	135	0	105	95	10	240	100	0.00	Good
15.	Webcam	5	3	2	0	0	0	5	60.0	40.0	Worse
16.	Assistive software	135	135	0	105	105	0	240	100	0.00	Good
17.	Radio/audio tapes	135	120	15	105	105	0	240	93.8	6.25	Good
	Grand Mean							**180.0**	**73.5**	**26.5**	**Good**

Table 1 shows the opinions of respondents on the stock of e-learning facilities in universities in Rivers State. The summary of responses shows that the stock of e-learning facilities was bad case for Teleconferencing, Fax machines, and Webcam and also for Computer laboratories in both the Federal and State Universities in Rivers State. The table further shows that majority of the stock of other e-learning facilities was good in both universities in the state. Hence, there was a good stock of e-learning facilities available for quality university education in Rivers State.

Research question 2: What are maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State?

Table 2: Mean and standard deviation analysis of maintenance actions in

place for effective functioning of the e-learning facilities for quality university education in Rivers State

S/no.	Statement	Federal University (N=135)		State University (N=105)		$\frac{X_1 + X_2}{2}$	Remark
		X_1	Sd_1	X_2	Sd_2		
18.	My institution avoids breakdown of e-learning facilities to ensure quality education.	2.10	.11	2.08	.13	2.09	Low
19.	My university prevents facility breakdown to ensure optimal performance.	2.25	.06	2.34	.04	2.29	Low
20.	There is integration of facility maintenance as part of management practice.	2.33	.03	2.16	.09	2.24	Low
21.	E-learning facilities, maintenance is periodically scheduled by my university.	2.17	.08	2.28	.05	2.22	Low
22.	E-learning facilities are serviced in my institution based on schedule.	2.34	.03	2.41	.02	2.37	Low
23.	E-learning facilities are repaired as soon as breakdown occurs.	3.75	.45	3.94	.60	3.84	High
24.	Regular measures are usually taken to repair facilities as soon as they breakdown.	3.90	.58	4.00	.66	3.95	High
25.	Computer software is regularly used to predict facility failure.	2.42	.01	2.15	.10	2.28	Low
	Grand mean	2.65	.16	2.67	.21	2.66	High

Table 2 shows the mean and standard deviation on the responses of the federal and state universities on items 18 to 25 to determine the maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State. The highest mean maintenance action was that regular measures were usually taken to repair facilities as soon as they broke down with (M=3.90, SD=0.58 for Federal University and M=4.00, SD=0.66 culminating in Grand mean = 3.95). This was closely followed by the mean maintenance action that E-learning facilities were repaired as soon as breakdown occurred with (M=3.75, SD=0.45 for Federal University and M=3.94, SD=0.60 culminating in Grand mean = 3.84). The lowest mean maintenance action was that institutions avoided breakdown of e-learning facilities to ensure quality education with (M=2.10, SD=0.11 for Federal University and M=2.08, SD=0.13 culminating in Grand mean = 2.09). The overall result indicated that the mean maintenance action with Mean = 2.65, SD=0.16 for Federal and Mean = 2.67, SD=0.21 for State Universities culminating in Grand Mean = 2.66 indicating high mean maintenance action. Hence, emergency repairs were the maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State.

Research question 3: What are challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State?

Table 3: Mean and standard deviation analysis of challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education

S/no.	Statement	Federal University (N=135)		State University (N=105)		$\frac{X_1 + X_2}{2}$	Remark
		X_1	Sd$_1$	X_2	Sd$_2$		
26.	My school experiences inadequate workshop, seminars/conferences on facilities' maintenance.	2.33	.17	3.21	.03	2.77	High
27.	There is indiscipline among lecturers and students on facilities' maintenance in my school.	2.57	.08	3.40	.01	2.99	High
28.	The cost of accessing the internet in my school is still very high and this leads to poor internet connectivity.	3.25	.01	3.68	.00	3.47	High
29.	There is irregular and frequent interruption of power supply in my school resulting in poor maintenance action.	3.50	.06	3.69	.01	3.60	High
30.	My school administrators keeps e-learning facilities supplied to the school for personal gains.	3.30	.01	3.61	.00	3.46	High
31.	My school lacks enough skilled and trained personnel to carryout effective facility maintenance.	2.75	.03	3.37	.01	3.06	High
32.	Inadequate funding of the school educational programmes affect the effective maintenance of e-learning facilities.	3.81	.17	3.90	.03	3.86	High
	Grand mean	3.07	.08	3.55	.01	3.31	High

Table 3 shows the mean and standard deviation on the responses of the federal and state universities on items 26 to 32 to determine the challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State. The highest mean challenge was that inadequate funding of the school educational programmes affected the effective maintenance of e-learning facilities with (M=3.81, SD=0.17 for Federal University and M=3.90, SD=0.03 culminating in Grand mean = 3.86). This was closely followed by the mean challenge that there was irregular and frequent interruption of power supply in the school that resulted in poor maintenance action with (M=3.50, SD=0.06 for Federal University and M=3.69, SD=0.01 culminating in Grand mean = 3.60). The lowest was that the school experienced inadequate workshop, seminars/conferences on facilities' maintenance with (M=2.33, SD=0.17 for Federal University and M=3.21, SD=0.03 culminating in Grand mean = 2.77). The overall result indicated with Mean = 3.07 for Federal and Mean = 3.55 for State Universities culminating in Grand Mean = 3.31 indicating high challenge. Hence, there was a high challenge to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State.

Ho₁: There is no significant difference between the mean scores of federal and state universities on maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State.

Table 4: t-test analysis of no significant difference between the mean scores of federal and state universities on maintenance actions in place for effective functioning of the e-learning facilities for quality university education

Type of University	N	X	Sd	Df	t-cal	t-crit	Decision
Federal	135	2.65	0.16	238	0.02	1.96	Not. Sig.
State	105	2.67	0.21				

Table 4 shows that t-calculated (0.02) was less than t-critical (1.96) at df = (238) and 0.05 level of significance. The null hypothesis was accepted and alternative hypothesis rejected. We, therefore, state that there is no significant difference between the mean scores of federal and state universities on maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State.

Ho₂: There is no significant difference between the mean scores of federal and state universities on challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State.

Table 5: t-test analysis of no significant difference between the mean scores of federal and state universities on challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education

Type of University	b	ó	{d	5 ź	Ċcal	Ġcrit	5 śľ
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State	105	3.55	0.01				

Table 5 shows that t-calculated (0.02) was less than t-critical (1.96) at df = (238) and 0.05 level of significance. The null hypothesis was accepted and alternative hypothesis rejected. We, therefore, state that there is no significant difference between the mean scores of federal and state universities on challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State.

Discussions
Stock of e-learning facilities available for quality university education
There was a good stock of e-learning facilities available for quality university education in Rivers State. However, the stock of e-learning facilities such as teleconferencing, fax machines, and webcam as well as stock of computer laboratories was bad in universities, and poses a source of concern. The fact that majority of the stock was good for all other e-learning facilities in universities will no doubt enhance quality university education system. This result corroborates the earlier finding of Nwabueze in Oluwuo and Asodike (2016) who stated that eight out of ten universities lack these e-learning facilities. However, this result may be reliable given the rapid technological development of our society on daily basis in modern times, that is to say, what is not provided today may be in place tomorrow.

Maintenance actions in place for effective functioning of the e-learning facilities for Quality University
It was also indicated that emergency repairs were the maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State. Further observations show that items 18 to 22 and 25 showed a low maintenance culture. A close insight would reveal that the universities gave a low action on preventive maintenance, routine maintenance, and predictive maintenance culture. The university management waited for a breakdown to occur before they swung into action. Adewumi and Ajisola (2012) contradicted this practice where they recommended that maintenance actions should be on-going and holistic in order to manage the life span of the facility. The test of hypothesis discerned thatthere wasno significant difference between the mean scores of federal and state universitieson maintenance actions in place for effective functioning of the e-learning facilities for quality university education in Rivers State.

Challenge to the maintenance actions for effective functioning of the e-learning facilities for quality university education
More so, there was a high challenge to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State. On table 3, all the items investigated had high mean scores above the criterion mean indicating that they were challenges to effective functioning of the e-learning facilities. It implies that there were challenges of inadequate relevant staff development programmes such as workshops, seminars and conferences on maintenance of e-learning facilities; indiscipline among lecturers and students on proper maintenance of e-learning facilities; poor internet connectivity; irregular and frequent power interruption; corruption and greed among school administrators; lack of skilled and trained personnel to handle maintenance actions; and inadequate funds to effectively take care of e-learning facilities' maintenance.This result corroborates the earlier finding of Body (2005) and Erah (2006) wherein issues of inadequate programmes of staff development on maintenance of e-learning facilities, indiscipline, poor internet connectivity, irregular and frequent power interruption, corruption and greed, lack of skilled

and trained personnel, and inadequate funding, were factored into challenges of maintaining e-learningfacilities in universities. On the other hand, the test of hypothesis discerned that there was no significant difference between the mean scores of federal and state universities on challenges to the maintenance actions for effective functioning of the e-learning facilities for quality university education in Rivers State. In fact funding challenge alone may distort maintenance actions and compound the existing challenge.

Conclusion

On the basis of the findings above, it could be safe to say that, there was a good stock of e-learning facilities available for quality university education. However, the worst state of teleconferencing, fax machines, and webcam as well as bad stock of computer laboratories were worrisome to universities' teaching and learning. The only maintenance action was emergency repairs, which alone could not make for quality university education. Besides, with a high challenge bedeviled maintenance actions, it is in doubt how the existing practice of school plant could promote quality university education. The implication therefore, is that the stock of e-learning facilities should be complemented with appropriate maintenance actions for quality university education.

Recommendations

The following recommendations are hereby made following the outcome of this study:

1. The university management should improve on the stock of e-learning facilities in schools through improvement in the maintenance of adequate and relevant staff development programmes for attainment of quality teaching and learning.
2. The stock of e-learning facilities should be complemented with appropriate maintenance actions to ensure durability and cost efficiency.
3. The university management should be conscious of the challenges to maintenance actions and design effective ways to check them through adequate and relevant staff development programmes such as workshops, seminars and conferences.

References

Aduke, A.F. (2008). Usage and challenges of information and communication technology (ICT) in teaching and learning. *Asian Journal of Information Technology*, 4(2): 290-295.

Agbo, J.C. (2001). Information and communication technology and business education in Nigeria. *European Scientific Journal,* 8(10): 1857-1881.

Agi, U.K. (2005). Determining resource management in an educational system. *African Journal of Education and Development Studies (AJEDS),* 2 (1): 173-179.

Akinsolu, R.A. (2004). Provision and management of facilities in Nigerian primary schools. In E.O. Fagbemiye, J.B. Babalola, M. Fabunmi and Ayeni, I. (Eds). Management of primary and secondary education in Nigeria. NAEAP Publications.

Asiyai, R. I. (2012). Assessing school facilities in public secondary schools in Delta State, Nigeria. *African Research Review International Multidisciplinary Journal*, 6(2): 192-205.

Asogwa, U.D. (2007). E-learning: A panacea for access, equity and quality higher education in Nigeria. *Access, Equity and Quality in Higher Education NAEP Publications,* 3(2): 497-504.

Audu, R., Kamin, Y. B. & Balash, F. (2013). Technical vocational education: As a veritable tool for eradicating youth unemployment. *International Organization of Scientific Research Journal of Humanities and Social Science*, 8(2): 10-17.

Audu, R.; Umar, I.Y.; & Idris, A.M. (2013). Facilities provision and maintenance: Necessity for effective teaching and learning in technical vocational education. *Journal of Research & Method in Education (IOSR-JRME) E-ISSN: 2320–7388, P-ISSN: 2320–737x 3(1) pp 28-32 www.iosrjournals.org*

Bakare, T. V. (2009). A consideration of the adequacy of teaching facilities in the universities of the South Western Zone of Nigeria. Retrieved March, 25th 2013 from ahero.uwc.ac.za/index.php?module=cshe&action...f.

Body, S.W. (2005). *The integration of information and communication technology in Scottish schools.* An Interim Report of HM Inspectors of Education. Scotland: Academic Publishing.

Emetarom, U.C. (2004). Provision and management of facilities in primary schools in Nigeria: Implication for Policy Formulation. In E.O. Fagbemiye, J.B. Babalola, M. Fabunmi and Ayeni, I. (Eds). *Management of Primary and Secondary Education in Nigeria*. NAEAP Publication.

Enyekit, E.O. & Enyenili, K.S. (2007). Projecting Nigeria into the end of the First Quarter (25) Years of the 21st Century in Vocational Technical Education. *African Journal of Education and Research Development:* 1(1): 2-8.

Erah, P.O. (2006). An introduction to e-learning protocols. *Paper Presented at EFT Capacity Building Workshop for Lecturers of Universities in Nigeria at University of Uyo*.

Horton, W. (2005). *Leading e-learning in higher institutions*. Retrieved June 23, 2008 from http://www.e-learningguru.com ASTD

Markus, B. (2008). *E-learning, Efficient and computer based*. Retrieved January 21, 2019 from http://www.hrmars.com/journals

Mkpa, A. M. (2001). Optimization of available teaching and learning

materials/facilities. In O. Nnoli & I. Sulaiman (Eds). *Reassessing the Future of Education in Nigeria*. Abuja: ETF Publication.

Nwabueze, A.O. (2011). *Schools' facilities utilization and maintenance in secondary schools: Enhancing the quality of education delivery*. Germany: Lambert Academic Publishing.

Olojo, O.J., Adewumi, M.O. & Ajisola, K.T. (2012). E-learning and its effects on teaching and learning in a global age. *International Journal of Academic Research in Business and Social Sciences*, 2(1): 14-23.

Oluwuo, S.O. & Asodike, J.D. (2016). *Managing schools productivity: Emerging perspectives*. Port Harcourt: Pearl Publishers International.

Sunday, D.P. (2014). *Managing educational facilities for quality public secondary education in Rivers State*. (Unpublished M.Ed. Thesis).

Yarson, M.C. (2004). Strategies for curbing indiscipline in Nigerian secondary schools. *A Paper Presented at the National Workshop on Developing Education: Issues of Standard and Sustainability in Secondary Schools in Nigeria*.