Full Length Research

Internet access and usage patterns as teaching and learning facilities among lecturers and students of Modibbo Adama University of Technology, Yola, Nigeria

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ABSTRACT: The study assessed internet access and usage patterns as teaching and learning facilities among lecturers and students of Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria. Descriptive survey research design was used to collect data from a sample of 583 respondents, comprising 231 lecturers and 352 students. The instrument for data collection was a structured questionnaire developed by the researcher. Test re-test method was used to determine the reliability coefficient of the instrument using Pearson Product Moment Correlation Coefficient (r) which was found to be 0.83. Mean and standard deviation were used answered the research questions. It was found that Wi-fi, cybercafé, laptop and the phone were the main internet access points. Internet usage patterns found by the study were sending and receiving messages, web pages and chatting with colleagues, among others. The study found only daily use of the internet as the only viable frequency of internet usage by respondents. Inadequate skills, irregular power supply, few computers and poor network were found as the challenges faced by respondents in the use of the internet at MAUTECH. Inadequate projectors and solar systems were found to be among the major challenges of internet facilities at the institution. The study suggested among others, cost of access to the internet and printing of materials on the internet should be made affordable for average students, the university should subscribe to a bigger bandwidth to speed the rate of downloading and browsing and internet facilities be installed in all schools.

Keywords: Computers, internet access, lecturers, learning, students, teaching.

INTRODUCTION

There are many challenges associated with internet usage in universities in Nigeria. Olaniyi (2012) opined that internet access in Africa especially Nigeria is through a foreign gateway, shortage of skilled manpower, companies and institutions are reluctant to invest in training of staff due to the likelihood that trained staff will be employed by other institutions and companies. Lack of qualified personnel who would take care of routine maintenance and manage the internet services are lacking, hence Igun (2012) opined that network failures and crashes that affected the workstations and network drivers after installation was due to unavailability of skilled

manpower to maintain and manage the systems after the initial installation. To date, the problems are still there, the computers are just being used at the moment for word processing. Apart from the library automation that crashed mainly because of lack of adequate skilled manpower to maintain and manage the infrastructure and the software.

Funding has always been a problem and an obstacle in universities in Nigeria which affects internet access. Internet facilities are capital intensive as such fund is required for maintenance and provision of internet infrastructures. Lack of financial support to build the required infrastructure and to provide learning materials

still remains a challenge. Olufunke (2012) noted that the use of internet in education is still faced with myriads of constraints which have restricted its efficient and effective use. Internet infrastructures which include computer hardware and software, bandwidth/access, connectivity are grossly inadequate, and have constituted constraints on its effective usage.

There is a poor maintenance culture in Nigeria. Universities, particularly the first generation have very poor maintenance. Ya'u (2003) noted, however, inadequate internet skills and the financial implication of connectivity, bandwidth and access to electronic database are a hindrance to use of internet in Nigeria. Ogunsola (2005) identified shortage of manpower, frequent computer breakdown due to electric power surge, and lack of spare parts as the major problems the Nigerian universities face in the implementation of internet.

According to the National Policy on Education (Federal Republic of Nigeria, FRN, 2013), university education is one type of tertiary education which is given to individuals after secondary education. The National Policy on Education pointed out that university shall make contribution to national development by intensifying and diversifying its programmes for the development of higher level manpower within the context of the needs of the nation, among other objectives. Buttressing this objective, Okike (2013) pointed out that the purpose of a university is to train individuals to acquire, conserve and transmit knowledge and its application towards the betterment of the living condition of man.

Management of a university can achieve better results when modern technological devices like computers are used. According to Okike (2013), a computer will be required for the purpose of record-keeping and filing of staff and students' information which is easily retrieved when needed. In other words, the drive to promote the use of information and communications technology (ICT) in higher education is highly dependent on the internet. According to Omotayo (2010), the internet provides scientists, lecturers and students, access to on-line resources for teaching and research in higher education.

The internet is a globally interconnected set of computers through which information could be quickly accessed (Omotayo, 2010). Internet has become an invaluable tool for learning, teaching and research. The internet could be regarded as a technology evolved in furtherance of the concept of paperless society. It is a super high way invention, which is already advancing the cause of humanity to the greatest height especially in this millennium (Onatola, 2013). The internet provides services such as e- Mail, Telnet, On-line Searching, Electronic Publishing, User Group/Listen, Usenet, Archie, Gopher, File Transfer Protocol, Veronica, Mosaic and World Wide Web (www) (Steijn and Tijdens, 2005). The internet, sometimes simply called "the Net", is a worldwide system of computer network- a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers). It was conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first known as the ARPANET (Isaac, 2011). The original aim was to create a network that would allow users of a research computer at one university to be able to "talk to" research computers at other universities (Adekunmisi et al., 2013).

Today, the internet is a public, cooperative, and self-sustaining facility accessible to hundreds of millions of people worldwide. The internet has broken down barriers of communication and information access from anywhere in the world. It is often referred to as the "Information Highway" because of its capacity to transmit a vast amount of information to anybody anywhere in the world (Osang, 2017). It is fast, reliable and does not have much restriction on content, format or geographical location. It also has a wide range of facilities which assist users to access the almost infinite information on the net. It thus offers the opportunity for access to up to date research reports and knowledge globally.

There are a number of networking initiatives in the country to interconnect all the research and academic sectors. The National Universities Commission which supervises and coordinates the activities of all universities in Nigeria has launched the National Universities Network (NUNET) programme aimed at connecting all the universities in a network (Omotayo 2012). While some Nigerian universities are waiting for the full take-off of this project to link them with the internet, some others, such as Modibbo Adama University of Technology, Yola, have gone on to establish their own independent link to the internet. The university currently has one VSAT at Jibril Aminu ICT Centre, covering almost the entire campus, with some subnets based on wireless (radio) technology. Access to the internet services is purely commercial and access codes are given for access to the internet services.

A key difficulty faced by educational institutions in Nigeria, especially universities, is the question of access to available internet facilities. According to Torruam (2012), because computers are costly and available ones appear to be poorly maintained, accessibility to internet services in the institutions has been limited. This development has hampered the objectives of e-learning and e-teaching in educational institutions across Nigeria, as spelt out in the National Policy on Education (FRN, 2013). More so, this has prevented the realization of the objectives of Nigeria's internet policy which, among others, is to ensure that internet resources are readily available to promote efficient national development (Torruam, 2012). The means of accessing internet facilities has remained a serious challenge to developing countries.

The benefits derivable from the internet appears not to be well articulated and appreciated by universities and others users. According to Egomo et al. (2012), internet contributes greatly to accelerating, enriching and deepening skills. It has the potential to contribute to radical

changes in the school system and in providing opportunities for connection between the school and the global community (Egomo et al., 2012). On an individual level, Yusuf (2012) held that internet helps students to carry out more independent work and as well provides opportunity to teachers to focus on teaching higher level concepts in the classroom. However, Haddad and Draxler (2002) argued that internet can only contribute to effective learning by expanding access and promoting efficiency.

Internet as a tool has strengthened teaching and learning as it provides powerful resources and services for lecturers and students, thereby enabling them meet their educational needs, it also allows for networking among students and teachers to facilitate exchange of ideas and improve opportunities for connecting schools to the world as learning is expanding beyond the classroom (Etim et al., 2013).

The use of Internet plays a major role in helping researchers' access large number of materials from different parts of the world, with its advent, lecturers and students can work together without physical interaction between each other and achieve the same objective. Lecturers exchange ideas and communicate effectively since teaching, learning and research is now made easy with the Internet (Fasae and Aladeniyi, 2012).

In addition, policy makers and users of internet must be able to select which kind of internet facilities is appropriate for teaching and learning. Universities should buy the internet facilities that meet their needs. Many university administrators do not even know that a lot of products or brands exist for a given purpose (Michael et al., 2012)

Therefore, to derive maximum benefit from the increasingly electronic library use environment, the user of Nigerian university libraries needs to be computer literate so as to use internet facilities in the learning environment effectively (Emwanta and Nwalo, 2013). A lot of research has been conducted on internet access and usage amongst staff and students of Nigerian universities. However, no available studies on internet access and usage patterns among lecturers and students in MAUTECH have been carried out. This shows that there is a missing link or gap in the existing body of knowledge. This gap needs to be filled. It is against this background that this study therefore, seeks to investigate internet access and usage patterns as teaching and learning facility among students and lecturers in Modibbo Adama University of Technology, Yola.

LITERATURE REVIEW

Internet access is the key to accessing Internet resources and services. When there is effective internet access provided by universities, usage by lecturers and students will be high and users very satisfied. In Africa, Echezona and Ugwuanyi, (2010) opined that African universities use various types of connectivity to link to the internet service providers, and low internet bandwidth is depriving lecturers and students from deriving maximum satisfaction using the Internet. Despite these drawbacks, internet can now be accessed and used virtually anywhere in Nigeria by numerous means such as libraries, internet cafes, modem, mobile phones etc. where computers with internet signal is accessible. This view was supported by Osang (2012) that the main internet access points for Nigerian youth are cybercafé, offices, homes, mobile and wireless internet modems. Investigating the use of web-based resources for medical education and research by lecturers at the University College Hospital (UCH), Ibadan, Erah and Dairo (2008) findings showed that access to the internet was over 82 percent through various sources – personal desktop (17%), Odeku medical library (31%), ETF cybercafé (24%) and mostly sources outside the university community (64%). This implies that institutional access to internet is low, that is why the lecturers and students had to use personal computers possibly with a modem and outside sources to access internet. In a similar study of three private universities – Convenant, Babcock and Bellstech - in Southwest Nigeria, Utulu (2008) findings revealed that internet access is very readily available, reliable, and accessible to over 79% of the lecturers; mostly through their offices (81%) and cybercafé (51%) within the universities than through commercial cyber cafes outside the campuses. Impressive as this result may be, there is still need for more internet access in these universities if over 51% use cybercafé and over 11% access Internet through their PCs and laptops. At the University of Benin, Erah and Dairo (2008) evaluated 165 pharmacy students' perception of the application of learning management system (LSM) and the result revealed that 16% of the students had their own computers, 84% of the students had access to the internet, while 82% of them used cybercafé to access internet. It means that Internet access in their faculty is lacking. Unfortunately, the student could not use their own computers to browse internet due to cost. This may be different for the lecturers who may continue to use their PCs not minding the cost. In another study, Anyira (2011) findings on Internet use by lecturers at Western Delta University, Oghara revealed that there is limited internet access in the university thus staff and students access internet from personal laptops or at cybercafé occasionally and when the need is severe.

The point of internet access influences the frequency of Internet usage. Also, Owolabi and Agboola (2010) found Internet access at cybercafé for sending email and web browsing by most academic staff surveyed. Findings from Madonna University, a private university in South-South Nigeria, revealed that lack of information technologies was a major impediment to information access by lecturers, and therefore call for the provision of ICTs facilities in the university (Nnadozie and Nnadozie, 2008). Similarly, Aliyu (2011) recommended that free internet services should be made available to lecturers at Modibbo Adama University

of Technology, Yola, to encourage the lecturers to access and use internet facilities. Overall, internet access was through cybercafé. There is a growing interest in providing internet access in Nigerian universities through mobile devices such as 3G modem, blackberry and mobile phones to ameliorate the problem of internet access using PCs and laptops.

Lister (2013) opined that 3G modem is a device that allows a computer to connect to the Internet via a high-speed broadband mobile wireless connection anywhere there is internet reception, much like a cell phone. In a similar vein, Mittal et al. (2010) opined that Blackberry or smartphones can now be used as a modem to connect your laptop or computer to the Internet. At the Zimbabwe Open University, Richard and Dzimano (2011) reported that 83% of their full-time lecturers had 3G internet connectivity used to access the library Dialup internet connection. Nkomo and Mugwisi (2010) study of ICTs access and use at the University of Zululand revealed that the dominant internet connection type for both students and staff as at 2009 was the cable modem connection with little wireless access. To boost Internet access in the university, individual lecturer now takes the initiative to connect using 3G giving full access to all staff, and 29% have both home and office internet access. In Nigeria, Globacom introduced high speed 3G internet modems into Nigeria in 2009 (Hall, 2009) while Adetoro and Nkiko (2009) reported that internet usage by academic staff of Covenant University ranked second while the use of modem ranked ninth which is low. Mobile phones are another source of internet access. Mobile phones have been integrated into university education system and they are used by students and lecturers. Brock and Sulsky. (1994) reported the use of 3G GSM wireless mobile phones to facilitate fast internet access for communication between lecturers and students through file sharing, networking, online discussion and email as well as an instruction tool to conduct electronic quizzes and tests. In South Africa, Brown et al. (2009) research result indicated that cell phone use is widely pervasive, but the use of cell phone as a modem in homes is considered costly that is why many customers still use dial-up connections despite the many varieties of internet access. Similarly, Liebenberg et al. (2012) investigation found that affordability is the main determinant of Internet access among University of South Africa students. The mobile phone was their third most popular option for online internet access, and it has reduced their usage of public internet access facilities such as cyber cafe. In Nigeria, internet facilities have been widely accepted and used for various purposes as a veritable teaching and learning. At the Abubakar Tafawa Balewa University, Isyaku (2010) study revealed that the students use cell-phone mainly for communication purposes, to check time, send text messages, browse internet among other things. Also, Atsumbe et al. (2012) investigation showed that lecturers and students of Federal University of Technology, Minna

both have computers and laptops and can access the internet with them.

Awareness of the internet has been seen to influence the use of the internet. Owolabi and Agboola (2010) study of the use of internet by academics and scholars showed high level of Internet awareness and usage in Nigeria while Erah and Dairo (2008) recorded low internet usage in spite of high awareness level in Nigeria.

On the frequency of internet use, Ukpebor (2011) surveyed internet use by lecturers and students in engineering faculties in Edo State and found that the frequencies of internet use by the respondents was significantly encouraging and about 48% of them used the internet daily against the drawback of the inadequacies of internet infrastructures in the engineering faculties. Aliyu (2011) investigation showed that majority of the lecturers at Modibbo Adama University of Technology, Yola, use internet occasionally to access information to get support or sponsorship for studies rather than for research. There are various Internet services that students and lecturers can use for their daily activities such as e-mail, discussion groups, bulletin board, e-journals and databases, e-publishing, web surfing etc. Aina (2004) opined that the www is one of the most rapidly developing facilities on the Web.

The literature reviewed above has shown that internet use by lecturers and students in Nigeria is encouraging and they use internet daily. Therefore, there is need to investigate internet access and usage among lecturers and students for teaching and learning purposes in MAUTECH, Yola.

Purpose of the Study

The general purpose of the study is to determine internet access and usage patterns as teaching and learning facilities among lecturers and students of Modibbo Adama University of Technology (MAUTECH), Yola, Adamawa State, Nigeria. Specifically, the study set out to:

1. Identify internet access points used by lecturers and students in MAUTECH for teaching and learning purposes.
2. Identify internet usage patterns among lecturers and students in MAUTECH for teaching and learning.
3. Identify the internet services frequently used by lecturers and students in MAUTECH for teaching and learning purposes.
4. Identify challenges of internet access by lecturers and students in MAUTECH for teaching and learning.

Research questions

The following research questions are stated to which answers were sought:

1. What are the internet access points used by lecturers and students in MAUTECH for teaching and learning?
2. What are the internet usage patterns among lecturers and students in MAUTECH for teaching and learning?
3. What are the internet services frequently used by lecturers and students in MAUTECH for teaching and learning purposes?
4. What are the challenges of internet access by lecturers and students in MAUTECH for teaching and learning?

METHODOLOGY

Area of the study

The area of the study is Modibbo Adama University of Technology (MAUTECH), Yola, in Adamawa state. MAUTECH is located in Yola, the Adamawa state capital. It is located on latitude 9.2300^0N and longitude 12.4600^0 E. Adamawa is one of the six states which make up the North-East Geopolitical Zone of Nigeria. It shares an international boundary with the Republic of Cameroon to the east and interstate borders with Borno State to the north, Gombe State to the northwest and Taraba State to the west. Its capital is Yola.

Design of the Study

Descriptive survey research design was used in conducting the study. According to Osuala (2001), descriptive survey research design normally employs questionnaire and interviews, among others, to collect data.

Population/sampling technique

The population of the study comprised 4833 students and 605 lecturers. Altogether, the population of the study was 5438 respondents. Proportional random sampling techniques and Taro Yamane formula were used for determining the sample size which were distributed in proportion to the population of the respondents across the schools in the university. The sample size was drawn from 300L and 500L registered students and as well as lecturers. The 300L and 500L were selected for the study because they were the ones that spend longer time in the university and have experience of the ICT Center in the university. 400L students were not selected for the study because in some schools, notably School of Technology and Science Education, 400L students were on teaching practice at time of carrying out the research. Using the Yaro Yamane formula, the sample size obtained was 231 for lecturers and 352 for students. Altogether the sample size for the study was 583 respondents.

Instrument for data collection

The instruments for data collection was a structured questionnaire developed by the researcher titled "Internet Access and Usage Patterns as Teaching and Learning Facilities among Students and Lecturers of MAUTECH, Yola (INAUPTELASS-MAUTECH)" The structured questionnaire consisted of 42 items and was divided into four sections. Section A dealt with items on internet access in MAUTECH. Section B sought information on the most used internet services in MAUTECH. Section C was concerned with the frequency of internet usage patterns among lecturers and students in MAUTECH. While Section D dealt with the challenges of internet access by lecturers and students in MAUTECH. All the four sections were treated on Likert's five-point rating scale.

The 42-item questionnaire was validated by five experts. Three of the experts were drawn from the Department of Technology Education, Modibbo Adama University of Technology, Yola. The experts were required to check the instrument in terms of clarity of items, the appropriateness of the language used in the questionnaire and the appropriateness of the instructions to the respondents (Akuezuilo and Agu, 2013). To obtain a reliable instrument, the clean copy of the questionnaire was trial tested on 12 respondents, made up of five lecturers and seven students from University of Maiduguri. The test re-test method was used to determine the reliability coefficient of the instrument (Akuezuilo and Agu, 2003). The first and the second test was separated by a space of two weeks. However, both types of test had the same content and structure. The results of the two tests were correlated using the Statistical Package for Social Sciences to obtain the Pearson Product Moment Correlation Coefficient (r), and the correlation coefficient was 0.83 which indicated that the instrument had a high degree of consistency.

Method of data analysis

Mean ($\bar{x}$) and standard deviation (SD) were used to answer the research questions. The z-test was used to test the hypotheses at 0.05 level of significance. The Statistical Package for Social Sciences Version 17 (SPPS 17) was used to compute the mean and standard deviation as well as the z-test statistics. The mean was considered appropriate for the study because, according to Nworgu (2006), it was the most accurate and representative measure of central tendency. The z-test was also considered appropriate for the study because it would test data that involve a population that were more than 30. Likert's five point rating scale was used.

To effect decision, any mean value equal to 3.50 and above is regarded as agree (A) while mean value less than 3.50 is regarded as disagree (DA). For the Z-test, where Z calculated (Z-cal) was less than Z critical (Z-crit), the hypothesis was accepted. However, where Z-cal was

Table 1. Mean and Standard Deviation of the responses of lecturers and students on the internet access points used by lecturers and students in MAUTECH for teaching and learning.

S/N	Items	$\overline{X}_L$	SD_I	$\overline{X}_S$	SD_S	$\overline{X}_G$	Remarks
		n_L=231		n_S=352			
1	I access internet through Wi-Fi	3.53	1.38	3.72	1.31	3.64	Agree
2	I access internet through cyber Café	3.48	1.34	3.64	1.24	3.58	Agree
3	I access internet through Hotspot	3.44	1.34	3.45	1.33	3.45	Disagree
4	I access internet through phones	3.82	1.07	3.95	1.14	3.90	Agree
5	I access internet through university e-Library	3.40	1.26	3.44	1.31	3.42	disagree
6	I access internet through colleague's laptop using Modem	3.51	1.16	3.51	1.28	3.51	Agree
7	I access internet through Bluetooth	3.38	1.14	3.17	1.33	3.25	Disagree
8	I access internet through university ICT Centre	3.44	1.16	3.60	1.32	3.54	Agree
	Grand Mean	3.50		3.56		3.54	Agree

n_L= No. of lecturers; n_S = No. of students; $\overline{X}_L$ = Mean of lecturers; SD_L = Standard deviation of lecturers; SD_S =standard deviation of students; $\overline{X}_S$ = Mean of students; $\overline{X}_G$ =Grand mean.

Table 2. Mean and Standard Deviation of responses of lecturers and students on the internet usage patterns among lecturers and students in MAUTECH for teaching and learning.

S/N	Items	$\overline{X}_L$	SD_L	$\overline{X}_S$	SD_S	$\overline{X}_G$	Remarks
		n_L=231		n_S=352			
9	Use of internet services for sending and receiving e-mail	3.51	1.24	3.80	1.14	3.69	Agree
10	Use of internet services to access web pages	3.73	0.96	3.73	1.16	3.73	Agree
11	Use of internet services to exchange information	3.51	1.18	2.91	1.63	3.15	Disagree
12	Use of internet services for chatting with colleagues	3.52	1.06	3.74	1.05	3.61	Agree
13	Use of internet services for publication	3.48	1.02	3.46	1.15	3.41	Disagree
14	Use of internet services for research	3.56	1.31	3.69	1.21	3.60	Agree
15	Use of internet services for entertainment	3.46	1.09	3.57	1.16	3.53	Agree
16	Use of internet services for teaching and learning	3.36	1.09	3.17	1.39	3.25	Disagree
	Grand Mean	3.49		3.52		3.51	Agree

greater than Z-crit, the hypothesis was rejected

RESULTS

The results of the findings were presented based on the research questions.

Research Question 1: What are the internet access points used by lecturers and students in MAUTECH for teaching and learning?

The result on Table 1 shows the mean responses of the respondents. The result shows that the major access to internet service among students and lecturers is the use of cell phone (3.95) and (3.82), respectively. The result also shows that use of Wi- Fi (3.72), Cybercafé (3.64) and ICT center (3.60) are the next means of access used by students to access the internet services. While, use of Wi-

Fi (3.53) rank the next major access to internet services for lecturers. The Table further indicate that use of laptops with modem (3.51) for accessing the internet were common among students and lecturers. While use of Hotspot (3.45), e-library (3.44) were rarely used by students for accessing the internet services for their academic purposes. It was concluded that the internet access points used by lecturers and students in MAUTECH for teaching and learning include Cybercafé, Hotspot, ICT Center, e-library and Bluetooth (3.17)

Research Question 2: What are the internet usage patterns among lecturers and students in MAUTECH for teaching and learning?

Answers to research question 2 are presented in Table 2. The result shows close similarities in the patterns of internet usage among lecturers and students. The result

Table 3. Mean and Standard Deviation of responses of lecturers and students on the internet services frequently used by lecturers and students in MAUTECH for teaching and learning.

S/N	Items	n_L=231		n_S=352		$\overline{X}_G$	Remarks
		$\overline{X}_L$	SD_L	$\overline{X}_S$	SD_S		
17	I use internet services daily	3.71	1.19	3.76	1.33	3.74	Agree
18	I use internet services weekly	3.25	1.40	3.02	1.36	3.11	Disagree
19	I use internet services as the need arises	3.53	1.22	2.88	1.38	3.14	Disagree
20	I use internet services on lecturers' request	3.35	1.26	2.76	1.33	2.99	Disagree
21	I use internet services some times	3.23	1.24	3.16	1.45	3.19	Disagree
22	I never use internet services	3.13	1.26	2.70	1.49	2.89	Disagree
	Grand Mean	3.37		3.05		3.18	Disagree

Table 4. Mean and Standard Deviation of responses of lecturers and students on the challenges of internet access by lecturers and students in MAUTECH for teaching and learning.

S/N	Items	n_L=231		n_S=352		$\overline{X}_G$	Remarks
		$\overline{X}_L$	SD_L	$\overline{X}_S$	SD_S		
23	Lack of adequate skills	3.51	1.21	3.79	1.10	3.55	Agree
24	Slow internet connectivity	3.81	1.31	3.71	1.24	3.75	Agree
25	Irregular power supply	3.69	1.36	3.62	1.22	3.65	Agree
26	Lack of computer laboratory	3.69	1.33	3.63	1.21	3.65	Agree
27	Lack of adequate computers	3.58	1.44	3.65	1.21	3.62	Agree
28	High cost of data subscription	2.34	1.37	3.76	1.22	3.20	Disagree
29	Poor network reception	3.39	1.19	3.79	1.20	3.63	Agree
30	High cost of computers	2.56	1.24	3.62	1.20	3.20	Disagree
	Grand Mean	3.32		3.70		3.55	Agree

clearly shows that the common usage is for e-mail services among the lecturers (3.51) while web side browsing (3.80) is the most common pattern among students. The result also shows that chatting with colleagues (3.74) and website browsing (3.73) are the next most common patterns among the lecturers, while exchange of information and use of e-mail services rank the same for the lecturers and students at mean of 3.51 respectively. It was further showed that the internet usage patterns among lecturers and students in MAUTECH for teaching and learning are e-mail services, web browsing and chatting with colleagues.

Research Question 3: **What are the internet services frequently used by lecturers and students in MAUTECH for teaching and learning purposes?**

Table 3shows the result that were used to answer research question 3. Table 3 indicated that both students and lecturers accepted that they use internet services daily with mean scores of (3.78) and (3.71), respectively. The result further shows that use of internet services as the need arises (3.53) were common among lecturers, while students rarely use internet services sometimes (3.16) for assignment and other academic purposes. It is also clear that the frequency of use of internet services for their assignment and other academic purposes decreases among students: weekly use of internet services (3.02), as the need arises (2.88), sometimes (2.76), and never use the internet (2.70) in that order. It was further showed that lecturers and students in MAUTECH frequently use internet for teaching and learning purposes

Research Question 4: **What are the challenges of internet access by lecturers and students in MAUTECH for teaching and learning?**

The result presented in Table 4 were used to answer research question 4. The result on Table 4 shows that, lack of adequate skill (3.79) and poor network reception (3.79) are the major challenges among students in addition to, high cost of data subscription (3.76), and slow internet connection (3.71), lack of adequate computers (3.65), lack of computer laboratory (3.63) and irregular power supply (3.62), were identified as the next challenges facing students from using the internet services for their

assignment, research, and learning among others. While lecturers look at slow internet connectivity (3.81), irregular power supply (3.63), and lack of computer laboratory (3.63), as the challenges to access the internet for teaching, research, and publication becomes a challenging task among lecturers. However, Table 4 also indicates that, high cost of data subscription (2.34), and high cost of computers (2.56) were not considered as a challenge among lecturers. It was further showed that challenges of internet access by lecturers and students in MAUTECH for teaching and learning include lack of adequate skill, poor network reception, cost of data subscription, slow internet connection, lack of adequate computers, lack of computer laboratory, and irregular power supply

DISCUSSION

The first research question was on the internet access points used by students and lecturers. The study revealed that lecturers and students access internet through Wi-Fi, cybercafé, cell phones, laptops using modem and the university ICT. From the result, cell phone was the most used Internet technology by both lecturers and students used in the survey while modem was the least used. This study is in line with the study conducted by Anyira (2011) who reported that majority of staff and students access the internet via cybercafés, Wi-Fi and personal laptops of which they have to pay for access. The study also reveals that majority of lecturers and students access the internet via cybercafés and personal laptops of which they have to pay for access. Only a handful of them use the university internet. Majority of lecturers and students use the internet because the library lacks adequate materials. Thus, internet users are motivated by the adequacy of information on the internet and the convenience that internet usage offers. In the same vein, Luke and Folajole (2013) studied the current trend in internet access and utilization using mobile devices among pharmacy lecturers in South-South universities in Nigeria. The aim of the study was to assess the current trend in accessing the internet using mobile devices and the utilization pattern among pharmacy lecturers in South-South universities in Nigeria. The findings revealed that 3G modem, Wi-Fi and laptop were mobile devices mostly used by pharmacy lecturers to access internet. The current trend in accessing internet among pharmacy lecturers in South-South universities in Nigeria is through the use of 3G modem together with laptop and mobile phones. A popular source of internet access in Nigeria is the use of mobile phones (Luke and Folajole, 2012). Mobile phone and Black Berry (BB) can be used to connect to the internet directly or indirectly. Mittal et al. (2012) opined that smartphones can be used as a modem to connect your laptop or computer to the internet. Most laptops, BB and mobile phones can browse the internet because of the wireless cards or Bluetooth

interface built into them. The use of these mobile devices facilitates access to the internet irrespective of location provided there is GSM network or signal.

The result related to research question two which is on the pattern of use of internet services in MAUTECH, Yola revealed that both lecturers and students use internet for sending/receiving e-mails, to access web pages, and chatting with colleagues. The respondents also agreed that internet is not used for information exchange, teaching and learning in MAUTECH. However, the respondents have divergent opinions on certain statement items. Lecturers agree that they use internet for research and publication while students disagree to this. This finding conforms to the study Atsumbe et al. (2012) who conducted a study on availability and utilization of e-learning Infrastructures in Federal University of Technology, Minna and posited that lecturers and students both have computers and laptops and can access the internet but, they do not use them for teaching and learning. To buttress this fact Anyira (2011) stated that majority of the students use the internet to enroll for online examinations, and lecturers use it for distant education. Most lecturers also use the internet to publish research papers and also to gather materials for literature review.

With respect to research question three on the frequency of internet usage in MAUTECH, Yola, all the respondents (both lecturers and students) agreed that they used internet on daily basis. This shows very good internet facilities usage because the percentage of students and lecturers that make use of internet facilities frequently are high, that is, all respondents use internet on daily basis. Thus, it is an indication that the students and lecturers frequently use internet facilities, which might not be unconnected with the fact that the facilities are available in the first instance. This finding is in contrast with Ezenwafor et al. (2015) findings on the extent to which technology and vocational educators in South-East Nigerian tertiary institutions utilize e-learning resources for instruction and found out that the respondents utilize e-learning resources to a low extent and lack of skills for utilizing the resources and their inadequate supply in institutions, are the major constraints. However, even though the facilities are much available and students and lecturers use it on daily basis, the usage is not channeled toward teaching and learning.

The findings related to the challenges of internet access in MAUTEGH, Yola, the result reveals that both lecturers and students agree that lack of adequate skills, slow internet connectivity, lack of computer laboratory, and poor network reception are the challenges to internet access in MAUTECH, Yola. In addition, students saw high cost of data subscription and high cost of computers to constitute part of the challenges to internet access while lecturers disagree to these. The cause of these difference in opinion could be due to the fact that lecturers earn salaries and can afford to buy computer and pay for data subscriptions. This study collaborates with the studies of Patrick and Azeez (2010), Quadri (2012) and Thomas and Raju (2012)

who found out in their individual studies that low bandwidth, lack of adequate skills, slow internet connectivity, lack of computer laboratory, and poor network reception amongst others are the challenges to internet access in most Nigerian universities. In this study the respondents agreed to low bandwidth as a challenge to internet access in MAUTECH Yola, this agree with the study conducted by Lawrence (2012) who posited that bandwidth procurement and sustenance has been a bane to most ICT installations in universities in Nigeria. About 136 (69%) of respondents indicated that their university cannot afford sufficient bandwidth required for their VSATs.

The effect of this is the unnecessary reduction in the speed of accessing most websites and delay in the provision of needed information for decision making process. The issue of limited bandwidth has made most universities in Nigeria hardly benefit from the abundant scientific and technical knowledge around world. A study of internet use in African universities by Steijn and Tijdens (2005) revealed that in some universities, connection was too slow to permit downloading a single research paper. This lack of access means that universities in Nigeria, lecturers, students and faculties cannot benefit from the knowledge they should have access to. Demand for university education in sub-Saharan Africa is exploding, with enrolments growing faster than anywhere else in the world. This new generation of university graduates should be drivers of African economies, but without access to information those lecturers and students will be cut off from knowledge in the remainder of the world.

Lack of power supply is also seen as a challenge to internet access in this study. This finding is in line with Bamigboye and Agboola (2011) who maintained that without regular power supply, adequate number of computers, adequate computer skills, the aim of installing and providing internet services would be defeated. Another challenge to internet access as indicated in this study is the high cost of access/printing. This is very important because students are not economically buoyant and could not access internet resources because of high cost of these services. Quadri (2012) recommends reduction in the cost of access, printing, and university support among others to enhance effective utilization of internet services to all categories of undergraduates could use them. Poor technical support also constitutes a challenge. The universities are not able to attract and retain experts in ICT due to poor conditions of service and unattractive working environment. Echezona and Ugwuanyi (2010) observed that 'growing and retaining ICT human capital still remain a major challenge for the African continent in general and the African universities in particular supports this finding.

Conclusion

Based on the findings, the study identified cell phones,

Wi-Fi and cybercafé as means of internet access in MAUTECH Yola. Lecturers utilize internet resources for publication and research, sending/receiving emails, access web pages and chatting with colleagues as the pattern of usage but it is not used for teaching and learning. The study also identified erratic power supply, slow internet connectivity, and high cost of access/printing, inadequate number of computers and lack of skills as the major challenges of internet access in MAUTECH Yola.

Recommendations

Based on the findings of the study, it is therefore recommended that:

1. An alternative source of power, such as generating set and solar battery inverter back-up systems should be provided to supplement public power system.
2. Students and lecturers should be given more computer education both practically and theoretical.
3. The university should subscribe to a bigger bandwidth to speed the rate of downloading and browsing.
4. ICT projects and are financially demanding, the universities therefore require increased and adequate funding from Government and their proprietors to enable them provide the needed facilities, logistics and technical support required by ICT projects. Such increased funding will also make available to university management the finances to train, develop and retain ICT experts in their institutions.
5. Deliberate and sustained approaches should be taken to address ICT staffing. This includes strategies for retention of ICT staff, and for knowing that those who leave must be replaced. Such strategies may include offering ICT training opportunities and good pay package.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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