

Use of Electronic Resources by Undergraduates in Two Selected Universities in the Niger Delta Region of Nigeria

Biokuromoye Fyneman, Victor O. Idiedo & Loveth Ebhomeya

Abstract

The purpose of this study is to know the extent of use of electronic resources and identify the type of electronic resources used by undergraduates in universities in Nigeria. Questionnaire was used for data collection. The study population includes all undergraduate students in the faculty of engineering in Niger Delta University (NDU), Bayelsa State and Rivers State University of Science and Technology (RSUST) in the Niger Delta Region of Nigeria. The study revealed that students in Niger Delta University and Rivers State University of Science and Technology (RSUST) use electronic resources very regularly. The study revealed that the undergraduate students use electronic resources such as NUC virtual library, HINARI, E-journals, CD-ROMs, AGORA, and EbscoHost. The results also shows that students are not very satisfied with use of electronic resources as a result of slow internet connectivity and poor infrastructure. Findings from this type of study may prove useful to librarians, students, ICT units in universities. It will enable librarians to make electronic resources more accessible to students and intensify efforts to overcome the challenges.

Keywords: electronic resources, internet, information resources, undergraduates, e-materials.

Introduction

Information technology has influenced all aspects of librarianship and information service delivery. Information is the life-wire of any society especially the university environment and its use is as old as man. The evolution of information technology in the twentieth century has influenced students' use of information resources. Today, many students access information electronically via the Internet using desktop, laptop, palmtop and mobile phones. Electronic resources supply all the information that a library provides through computer network. These include electronic books, electronic journals, bibliographic databases, library web pages articles from magazines, encyclopedias, pamphlets and other resources that are accessed on electronic devices. Oduwole and Akpati (2003) noted that CD-ROM, electronic mail and Internet browsing constitute electronic resources. In developed countries, studies have shown that students prefer electronic resources to print materials. Bar-Ilan, Peritz, and Wolman (2003) remarked that the use of electronic resources is wide spread in Israel. These resources are updated more often than printed materials. In addition, especially for distant learners, electronic resources can be accessed from outside the university library.

These information resources may be restricted to students due to finance and geographical location. Furthermore, in developed countries like United Kingdom, students get access to

electronic information in their classes, hostels, homes and offices but the reverse is the case in Nigeria. Although, some Nigerian university libraries have these electronic resources but students normally access them more through the commercial cybercafés. According to Baro and Asaba (2010) out of the 104 universities in Nigeria in 2009, only forty have Internet connectivity, so sixty- seven percent of the universities in Nigeria are not Internet connected. Consequently, majority of the students get access to electronic resources through the commercial cybercafés. But these electronic resources are indispensable in this 21st century in our universities. Therefore, academic libraries are encouraged to provide and make these facilities available and accessible to students, although the challenges are enormous. In academic libraries in Nigeria, lack of funds, lack of formal training, slow Internet connection, insufficient printing facilities and insufficient computers are some of the problems encountered in the use of electronic resources by students.

With the introduction of Information Communication Technology (ICT), undergraduates in the universities under study are expected to make maximum use of electronic resources as one of their major sources of information for learning and research. Hence, this study is to investigate the use of electronic resources of undergraduate students in Niger Delta University (NDU) and Rivers State University of Science and Technology (RSUST) in the Niger Delta Region of Nigeria.

Research Questions

Specifically, the following questions were addressed in this study:

- RQ1. What is the extent of use of electronic resources by undergraduate students in the universities under study?
- RQ2. What is the rate of accessibility of electronic resources in the universities under study?
- RQ3. What are the types of electronic resources used in the university libraries under study?
- RQ4. What are the likely challenges that students encountered in the use of these resources in the universities under study?

Literature Review

The introduction of Information and Communication Technologies (ICT) has greatly influenced how students search and retrieve information. It has also influenced library services. The third law of Crawford and Gorman is relevant to this research; they submitted that technology should be used intelligently to enhance service. Osif (2008) citing Frey's (2007) article states that we have transitioned from a time where information was scarce and precious, today information is vast and readily available and in many classes. So with the explosion of information by technology, information is accessible anytime and anywhere with the use of the computer. Information is no longer restricted to the library building. So for students to use technology intelligently, they should use electronic resources that make information available and accessible to all. Electronic resources are information resources that are gotten from computer anytime and anywhere provided you have the necessary facilities. Electronic resources are relatively fast and are accessible twenty-four hours in a day, seven days in a week and you can use it from your own computer (Jagboro, 2003).

Electronic resources are indispensable information resources in institutions of higher learning especially the university in this digital age. All academic libraries are expected to have these resources to promote greater teaching, learning, research and Communication. Moreso, the National Universities Commission (NUC) accreditation team is interested in the installation and use of electronic resources in Nigerian University libraries. The transition from print to electronic medium, apart from resulting in a growth of electronic information, has provided users with new tools and application for information seeking and retrieval (Ani, 2008). In addition, Narayana and Goudar (2005) states that print medium is increasingly given way to the electronic form of materials. Sharma (2009) also added that availability of electronic gadgets is common in India universities and majority of the teachers and students depend on electronic resources to get their desired and relevant information.

Okiki and Asiru (2011) remarks that libraries all over the world make a wide variety of electronic information sources available for use by the undergraduate, post graduate, researchers and staff in their respective institutions. In their studies, it was revealed that the Internet is the major source of accessing information and it has made possible access to electronic books, journals databases and search engines. They are the most popular tools for research and academic activities (Chirra et al, 2009).

Before the introduction of electronic resources in the twenty first century in our universities and libraries, we have printed resources such as textbooks, journals, newspapers, reports etc and non-printed resources such as audio-visual formats, audio-visual equipment etc. These resources are available in the library but most students were not using them. It is expected that all students must register with university library before using the library. More also, in all visits to the library student also show their library identity cards to the library security before entering the library. Some students with limited time and distance learners were not using the library. Staff attitude, noise in the library, lack of user's education, poor collections, etc are some of the factors that affect student's use of the traditional library. The traditional library setting has opening and closing hours. More so, some of our academic libraries do not open on weekends, how much more on public holidays. Students have limited access to use the traditional library resources in our universities but electronic resources are always available and accessible for use via the Internet, CD-ROMs, OPAC etc. Presently you do not need a desktop, palmtop or laptop, most students use their mobile handset to browse, check e-mail, and other academic activities.

In foreign universities, the use of electronic resources is wide spread. Bar-Ilan, Peritz and Wolman (2003) reported the wide spread of the use of electronic resources in Israel. Similarly, Borrego, Anglada, Barrios and Corellas (2007) conducted a survey in Spain, the result showed that a high proportion of teaching and research staff were aware of the collections of electronic journals and there was an increasing preference for electronic resources. They added that collections of electronic resources are highly valued and most users expect to increase their use of them.

In addition, Madhusudhan (2008) reported that sixty-nine percent of engineering students use electronic journals for research, and twenty-four percent use electronic resources to update knowledge. Buttressing this fact, Dilek-Kayaoglu's (2008) study in Turkey revealed that universities supported the transition from print to electronic only. Bar-Ilan and Finka (2005) also added that more than eighty percent of their respondents frequently use and prefer electronic resources.

Students generally prefer and use electronic resources because they make their work easier and give them information that they need (Hamade & Al-Yousef, 2010). Ray and Day (1998) also asserts that ninety-six percent of students use electronic resources and are aware of their benefits but majority of them still like to use printed materials to complement the electronic resource. At Columbia about ninety nine percent of students use electronic resources for the research work. Eqbal and Khan (2007) also noted that speedy and ease of accessibility of information make users to use electronic resources more than the print media.

Obaje and Camble (2008), Oduwole and Akpati (2003), Hamade and Al-Yousef (2010), Jagboro (2003), found in their studies that there is high use of electronic resources in Nigerian universities especially at university of Jos, Amadu Bello Uuniversity, Zaria, Lagos State university and Bayero University. Egberongbe (2011) also states that the use of electronic resources leads to increased productivity of work, learning, teaching and research. His studies about university of Lagos, on use and impact of electronic resource revealed that despite the usefulness and proliferation of information technology students still use traditional sources of information more. Kaur and Verma (2006) asserts that students use all the electronic information resources available to them regularly such as CD-ROMs, online databases, web sources and audio-video tapes. Furthermore, studies also revealed that although they use all the available electronic resources, they prefer and use some of them than others. Several studies have observed that students prefer and use the Internet more followed by CD-ROMs and e-mail (Ojo & Akande, 2005; Ray & Day, 1995; and Ebgerongbe, 2011).

Accessibility of Electronic Resources

The use of electronic resources is common in Nigerian universities. In Niger Delta University, these resources are available at the college of Health Sciences and the main library. A part from libraries, there are some areas within the campus that student also get access to electronic resources. Rivers State University of Science and Technology also have these resources within and outside the university environment. More so, in Tsinghua university library, Beijing, students can access the library electronic resources more conveniently and safely at anytime and anywhere (Min & Yi, 2010). Madhusudhan et al (2009) also reported that eighty six (86%) percent of students accessed e-journals from the university environment. In foreign universities, students get access to electronic resources on and off-campus. It can be at the dormitory, class, home, office etc whether the university library is open or not (Min & Yi, 2010).

In Nigerian universities, Jagboro's (2003) study revealed that students access electronic resources from cybercafés due to proximity to users. Agreeing with him Oduwole (2004) concurred with Jagboro's and also offered that, the reason is that students can visit these cybercafés around their hostels at any time to seek information. This is not possible with the university libraries as opening and closing hours are not favourable. Undergraduate students get access to electronic resources on and off campus; from the university library, faculty libraries, ICT centers and also commercial cybercafés. Kaur (2006) opines that electronic resources can be good substitutes for conventional resources if access speed is fast and more computer terminals are installed to provide access to electronic resources. With the introduction of mobile handsets, it is much easier to access the internet. Even though forty four percent of Nigerian university libraries have Internet connectivity, some of the system development units in these libraries are like commercial cybercafés. They do not subscribe to electronic journals; such as emerald journals (Jagboro, 2003). It is one thing to have Internet connection in the libraries and it is another thing to subscribe to these quality journal publications.

In the Niger Delta University, students get access to electronic resources free of charge in the main library and faculty libraries (Law, College of Health Sciences and Engineering) but pay for the cost of printing. Internet facilities are also accessible by students in Rivers State University of Science and Technology.

Challenges encountered in the use of electronic resources.

Electronic resources have contributed immensely to teaching, learning, research and communication but there are challenges that affect the effective use of these resources, such as:

Lack of Skills and Knowledge

It is a fact that the major problem in the use of electronic resources is lack of skills and knowledge. Students, research scholars and staff lack skills and knowledge for effective search, retrieval and evaluation of information (Baro, Eze & Nkanu, 2013). Many students and research scholars depend on library staff, friends, cybercafé assistants for their assignment. Chisenga (2000) among others identified general shortage of skilled IT human resources in libraries as one of the factors hindering Internet connectivity. He also identified lack of consistent training for new ICT services and inadequate knowledge. Navjyote (2007) says that lack of training in the use of electronic resources is a deterrant in the usage of e-journals.

Lack of subscription to relevant e-journals

Majority of the relevant journals and books on the Internet can only be accessed through subscription. Many universities have Internet connectivity in their libraries but do not subscribe to journals. For instance majority of articles in emerald journals on the Internet are not accessible unless you subscribe to them. Dilek – Kayaoglu (2008) observed the lack of subscription of electronic resources of discipline in the universities also cause problems in the use of electronic resources.

Lack of maintenance and poor infrastructure

According to Baro and Asaba (2010) our universities lack maintenance culture. They lack the skilled manpower to maintain and manage the system after the initial installation. They added that the Delta State University library Internet connectivity that was scheduled to be fully connected in 2001 failed as a result of system crash that affected the workstations and network drivers; after installation and some of the work station could not access the server. Sharma (2009) also comments that infrastructure is inadequate.

Poor power supply and slow Internet connectivity

This is one of the biggest problems in the use of electronic resources. Okiki and Asiru (2011) states that slow Internet connectivity, incessant power outage and lack of IT skills are the problems that affect the use of electronic resources. Similarly, Ojokoh and Asaolu (2005) also asserts that insufficient training, slow Internet connectivity and frequent power failure in Nigeria are problems that affect the use of electronic resources.

Inadequate Finance

Finance is indispensable in the use of electronic resources in our universities. Finance is needed to train the staff and maintain the infrastructure. Subscription of e-journals and e-books also depend on finance. Some university management does not see the need to adequately finance the library. The money given to the library is not sufficient to provide these resources. Bozimo (2005) submitted that inadequate funding and support to procure and maintain equipment, retrospective conversion of library documents into digital formats, training of skilled manpower in computer literacy and Internet training, inability to subscribe to relevant online databases or renew the existing ones are some of the problems that affect the effective use of ICT/electronic resources in libraries.

Research method

The descriptive survey research design was used for this study. Questionnaire was used for data collection. The study covers all the undergraduate students in faculty of engineering in Niger Delta University (NDU) and Rivers State University of Science and Technology (RSUST) in the Niger Delta Region of Nigeria. Furthermore, the breakdown of the total number of students in the faculty of engineering Niger Delta University is: Civil Engineering 242, Mechanical 328, Electrical 160, Agricultural 182, Chemical 178, and Marine 4, making a total of total 1,138. While, RSUST are: Civil Engineering 539, Mechanical Engineering 476, Elect/Electronic Engineering 209, Agricultural Extension Engineering 239, Chemical / Petroleum Engineering 492, Marine Engineering 142, making a total of 2,097.

Therefore total population for this study is 3,235 students.

Since it has finite population, Yaro Yamenne's (1969) statistical formula was used. The formula is expressed as.

$$n = \frac{N}{1 + N(e)^2}$$

- Where n = the sample size required
- N = the total known population
- e = level of significance or
= limit of tolerable error = 0.05
- 1 = constant.

$$\begin{aligned}
 n &= \frac{3235}{1 + 3235(0.05)^2} \\
 &= \frac{3235}{1 + 3235(0.0025)} \\
 &= \frac{3235}{1 + 8.0875} \\
 &= \frac{3235}{9.0875} \\
 &= 355.98 \\
 &= 356.0
 \end{aligned}$$

In selecting the number of respondents in the two universities, from the sample size of 356, proportionate random sampling technique was used. Uzoagulu's (1998) formula was applied.

It is expressed as follows:

$$X = \frac{n}{N} x \frac{P}{I}$$

Where; x = Proportionate figure to be derived.
n = Sample size =356
N = Total population =3235
P = figure for each school

Therefore;

$$\begin{aligned}
 \text{NDU} \quad X &= \frac{356}{3235} X \frac{1138}{1} \\
 &= 125.2 \\
 &\quad N = 125.2 \\
 \text{RSUST} \quad X &= \frac{356}{3235} X \frac{2097}{1} \\
 &= 230.76 \\
 &\quad N = 230.8
 \end{aligned}$$

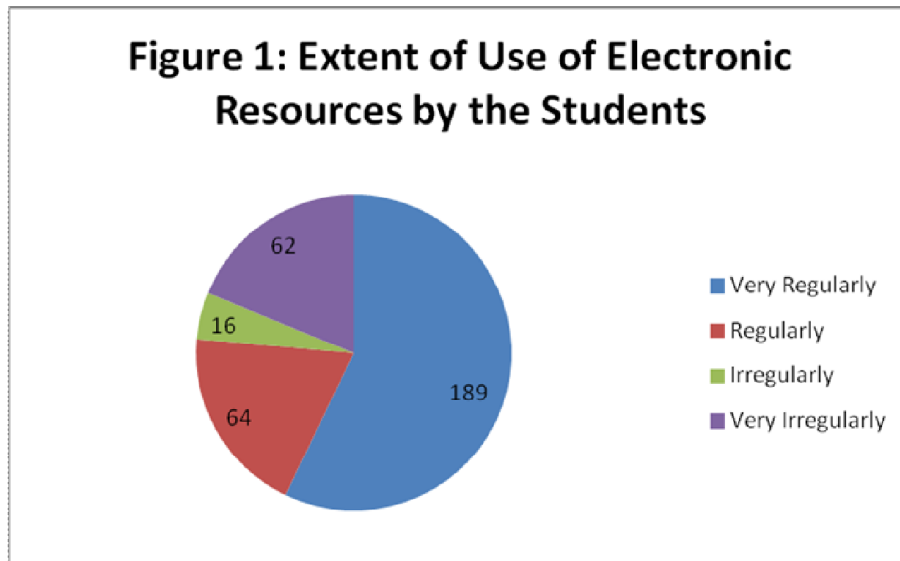
The sample size for the study is 356, with 125 NDU and 231 RSUST. The data collected from the questionnaires were analyzed to answer the research questions using descriptive statistics and chi-square statistical technique. The descriptive statistics involved the use of percentages, tables, and pie charts.

A questionnaire tagged "Electronic Resource Use Questionnaire (ERUQ)" was designed by the researchers to collect data for the study. The questionnaire contained items covering the four research questions. The questionnaires were distributed to them in the faculty libraries using convenient sampling technique. On the whole, 340 completed and returned copies of the questionnaire were used for data analysis with 121 respondents from NDU while 219 responded from RSUST.

Findings and discussion

Extent of use of electronic resources by the undergraduate students

Figure 1: Extent of use of electronic resources by the students

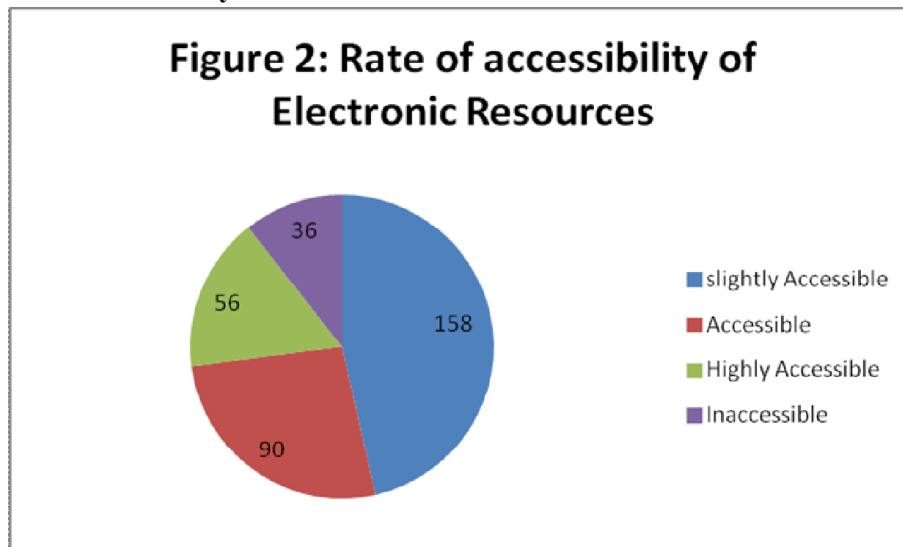


N= 340

Figure 1 shows the analysis of the degree of use of electronic resources by undergraduate students. One hundred and ninety-eight (58.5%) students claimed that they used electronic resources very regularly. Sixty-four (18.8%) respondents said that they used it regularly while sixty-two (18.2%) indicated that they used electronic resources very irregularly. An insignificant 16 (4.7%) said they used electronic resources irregularly. One can infer from the majority response of 58.5% favouring very regularly use of electronic resources that electronic resources are extensively used by the undergraduate students.

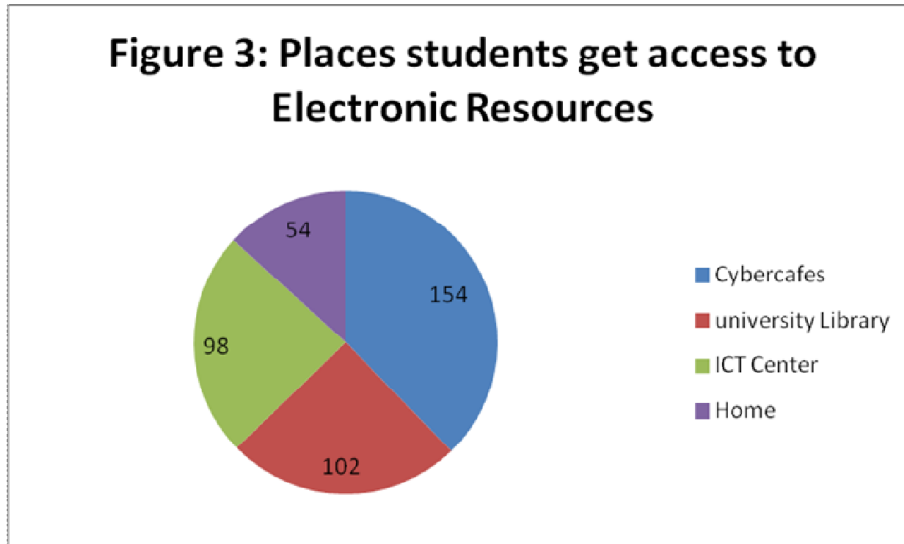
Rate of accessibility of electronic resource in the universities

Figure 2: Accessibility of electronic resources



From Figure 2 it could be deduced that 158 respondents representing 46.8% affirmed that electronic resources are slightly accessible followed by 90 respondents representing 26.5% indicated accessible. Then fifty-six (16.5%) respondents said that electronic resources are highly accessible whereas 36 respondents representing 11.6% indicated inaccessible. However from the analysis, it could be deduced from figure 2 above that electronic resources are slightly accessible in the universities under study. It is evident from the figure that electronic resources are available, but accessibility is a challenge to the students. This could be as a result of unstable internet connectivity.

Places of accessibility of electronic resources in the universities.



From figure 3 one hundred and two respondents representing thirty percent respondents indicated that they have accessed and used electronic resources at the university library. Fifty-four respondents representing 15.9% indicated that they had access and used electronic resources in their homes whereas 154 respondents (45.3%) stated cybercafés while 98 respondents representing 28.8% indicated university ICT centers. From their responses students in these universities get access and use electronic resources more from cybercafés than the university library.

Types of electronic resources that is available in the university libraries.

Table 1: Types of Electronic Resources Used by the Students

E- Resources	Responses	%
NUC virtual library	261	76.8
E-journals	230	67.6
CD-ROMs	180	52.9
AGORA	189	55.6
E-books	59	16.5
EbscoHost	196	57.6
Emerald journals	0	0
HINARI	265	77.9

N= 340

Table 2: Correlation of institution and use of electronic resources.

Institution	NUC Virtual lib.	e-journals	CD-ROMs	AGORA	e-books	EbscoHost	Emerald journals	HINARI	Total
NDU	129	74	80	61	21	99	0	113	121

	(49.4)	(32.2)	(44.4)	(32.3)	(35.6)	(50.5)	-	(42.6)	
RSUST	132 (50.6)	156 (67.8)	100 (55.6)	128 (67.7)	38 (64.4)	97 (49.5)	0 -	152 (57.4)	219
Total	261	230	180	189	59	196	0	265	340

Results in Table 1 confirms that the undergraduate students use electronic resources such as NUC virtual library, HINARI, E-journals, CD-ROMs, AGORA, and EbscoHost in the universities under study. Only e-books were not highly used and emerald journals not used in both universities at all. This might be as a result of lack of to pay subscription for the subscription-based e-journals like emerald journals. Correlation of institution and use of the e-resources shows that the undergraduate students in RSUST used NUC virtual library, HINARI, E-journals, CD-ROMs, AGORA, e-books, and EbscoHost more than their NDU counterparts (Table 2). This might be due to lack of knowledge about the e-resources and skills to use them through training provided in RSUST to students.

Table 3: Challenges encountered in the use of electronic resources

Challenges	Frequency	Percentage
Slow internet connectivity	246	72.4
Insufficient access time	114	33.5
Poor power supply	104	30.6
Poor infrastructure	148	43.5
Restricted access to some databases	128	37.7
High cost of printing	90	26.5
High cost of access time	94	27.7
Lack of IT skill and knowledge	104	30.6
Inappropriate search terms	64	18.8

Table 3 shows that slow internet connectivity which represents 246 (72.4%) is the major challenge of the use of electronic resources. Another challenge that ranked second is poor infrastructure with 148 (43.5%) respondents followed by restriction to some databases with 128 (37.7%) respondents, insufficient access time 114 (33.5%), poor power supply and lack of IT skills and knowledge 104(30.6%), high cost of access time 94(27.7%), high cost of printing 90 (26.5 %) and inappropriate search terms. From the analysis, it could be deduced that the major challenge in the use of electronic resources is slow connectivity and poor infrastructure.

The study revealed that students in the universities under study uses electronic resources very regularly. This is in accordance with Bar-Ilan and Finka (2005) that students frequently used and prefer electronic resources. The findings also agree with the studies of Obaje and Camble (2008), Oduwole and Akapti (2003), Hamade and Al-Yousef (2010) and Jagboro (2003) that there is high use of electronic resources in Nigerian universities. The inference of this is that electronic resources are available and accessible in the universities under study. This finding disagree with earlier findings by Baro, Endouware and Ubogu (2011) on information literacy among medical students in the College of Health Sciences in Niger Delta University that they rarely use electronic resources such as MEDLINE, HINARI, the Cochrane Library, and EbscoHost. The researchers attributed this to lack of awareness and skills necessary to search databases.

On the rate of accessibility of electronic resources, Figure 1 revealed that one hundred and fifty-eight respondents representing 46.8% indicated that electronic resources are slightly accessible, ninety respondents representing 26.5% indicated accessible, 56 (16.5%) respondents indicated highly accessible whereas thirty-six respondents representing 11.6% indicated inaccessible. Furthermore, the result of the analysis in figure two revealed that one hundred and fifty-four respondents representing 46.8% accessed and use electronic resources more in commercial cybercafés than other places. This agrees with the findings of Jagboro (2003) and Oduwole (2004) that students get access to electronic resources more from commercial cybercafés due to proximity. The findings also revealed that students also get access to electronic resources in the university libraries. This also in accordance with Min and Yi (2010) that students can access the library electronic resources more conveniently and safely at anytime and anywhere. The study also revealed that electronic resources are slightly accessible in the universities under study.

It was further revealed that all the universities have electronic resources such as internet, E-mail, CD-ROMS, EBSCO etc. In compliance with the studies of Ojo and Akande (2005), Ray and Day (1995) and Eberongbe (2011) that students prefer and use the internet more followed by E-Mail and CD-ROM. Kaur and Verma (2006) also acquiesced with the findings of this study that students use all the electronic resources available to them regularly such as CD-ROMs, online databases, web sources and audio-video tapes.

The challenges encountered in the use of electronic resources in the universities, two hundred and forty –six respondents representing 72.4% of respondents identified slow internet connectivity as one of the major challenges in the use of electronic resources. One hundred and forty-four respondents representing 43.5% indicated poor infrastructure. This study also agrees with Sharma (2009) that infrastructure is adequate. In addition one hundred and twenth-eight respondents or (37%) indicated restriction to some databases. It is also in line with Dilek-Kayaoghu that lack of subscription in the fields of discipline as one of the problems in the use of electronic resources. One hundred and four respondents (31%) indicated lack of IT skills.

Conclusion and Recommendations

This paper discusses the use of electronic resources by undergraduate students in two state universities in the Niger Delta Region of Nigeria and reported the use, accessibility, types of

electronic resources and the challenges encountered in the use of these resources. It can be concluded that undergraduate students in the universities under study used electronic resources to get faster and wider access to information. Students get access to electronic information more at commercial cybercafés. The study revealed that students are not very satisfied with use of electronic resources as a result of slow internet connectivity and poor infrastructure. Improvement of the existing infrastructure is necessary for optimal use of these resources in Niger Delta University (NDU) Wilberforce Island and River State University of Science and Technology (RSUST) Nkpolu, Port Harcourt.

For effective use and management of electronic resources, Afebende and Uyanah (2008) submitted that academic libraries should give priority to the development of Information and Communication Technology (ICT) in their libraries by installing internet/online facilities, subscribing to relevant educational database and speed up computerization of their libraries / retrospective conversion of the library's print materials to digital formats. The researchers suggested that the number of terminals, printers, and computers should be increased. They added that with adequate funding, the problems of the use of electronic resources will be solved and all academic libraries should have standby generators.

Based on the findings of this study, the following were recommended:

- The universities management should ensure that they pay for high bandwidth so that the electronic resources will be available and highly accessible everywhere.
- The universities management should provide adequate funds for subscription to electronic journals.
- University libraries should give proper orientation to students about the various electronic resources and free access in the university rather than patronizing commercial cybercafé with their limited funds.
- The university librarians should also create more awareness about the availability of e-resources in the library so that students will use the university library more than the commercial cybercafés.
- The existing infrastructures should be improved and more should also be provided.

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Biokuromoye Fyneman holds Masters degree in Library and information Science from Imo State University. She is currently working as Assistant Librarian at Niger Delta University Library, Amassoma, Bayelsa State, Nigeria. Postal Address: P.M.B. 71, Amassoma. She can be contacted at: biokuromoye.fyneman@yahoo.com

Victor O. Idiedo is currently pursuing his Doctorate degree in Library and Information Science at Nnamdi Azikwe University, Akwa. He is currently working as Librarian 11 at Niger Delta University Library, Amassoma, Bayelsa State, Nigeria. Postal Address: P.M.B. 71, Amassoma. He can be contacted at: evergreenvictor@yahoo.com.

Loveth Ebhomeya is currently pursuing her Masters degree in Library and information Science at Delta State University, Abraka. She is currently working as Assistant Librarian at Niger Delta University Library, Amassoma, Bayelsa State, Nigeria. Postal Address: P.M.B. 71, Amassoma.

