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**Electronic Information Resources Utilization among Physical
Sciences Postgraduate Students in Federal University Libraries,
South West, Nigeria**

BY

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Abstract

The study is on Electronic Information Resources Utilization among Physical Sciences Postgraduate Students in Federal University Libraries, South West, Nigeria. The research design used for this study is descriptive survey design. This is because it is a design that allows a population to be studied by collecting and analyzing data from only a sample considered to be representing the entire population. The area of the study is South Western zone of Nigeria. South Western geo political zone is made of Ondo, Osun, Oyo, Ogun and Lagos state respectively. The electronic resources are in raking order as institutional (university) website, computer, internet, computer connected to internet, photocopies, projector screen, printer, multimedia digital projector, functional email, telephone, floppy disk and others. It can therefore be concluded that electronic resources are integral part of library resources. Therefore, it should be acquired professionally and systematically. The resources need to be made accessible to the users for the goal of the library organisation to be achieved. It can therefore be recommended that users should acquire the skills needed for the purpose of utilizing the resources.

Introduction

A huge amount of information is being generated daily from all parts of the globe in this digital age making access and utilization difficult. The generation, storage, dissemination and utilization of information have gone far beyond the traditional style or method. Therefore, various technologies have been created to ease the entire system, thus, making it modern. The utilization of electronic information resources is concerned with the use of computer and telecommunication with various software or programme written to perform specific functions.

Postgraduate (PG) students are information dependent for their academic activities. Who then are postgraduate students? They are students who already hold first degree and who are doing advanced study or research. PG students carry out theoretical and practical works, of course, these need information resources to express their idea, notion, concepts and thoughts. Physical science courses are physics, chemistry, statistics, mathematics, computer science and so on. Ron Kurtus stated that physical sciences consist of the studies of astronomy, chemistry, physics and earth sciences. Physical sciences are concerned with physical properties as opposed to the characteristic of living things done in life sciences. The academic work of a postgraduate student involves such activities as writing proposal, developing theoretical model, designing experiments and collecting data, analyzing data, communicating with colleagues, studying research literature, reviewing colleagues' work and writing a report.

Statement of the Problem

University libraries are the reservoir and gateway to unlimited knowledge in the world. ICT resources in the library have helped to deepen the depth of the information resources available in the library of the 21st century. With the proliferation of information resources in this digital age, library being information provider should be more concerned on how to capture, process, use,

preserve and disseminate information. As ICTs have helped in the generation and management of information; and as such could be assessed with relative ease, researchers need to explore the facilities more. Postgraduate students dwell so much on research which constitute 60% of their academic work. ICTs have helped in their research work in the area of searching for information, cross fertilization of idea and experiment, data gathering, analysis and discussion of findings and many other areas; the importance of ICT in research work is becoming more prominent. In this regard, university libraries need to make all effort to provide electronic users-friendly environment.

Despite the high involvement of stake holders in building ICT facilities for students use in the library, and particularly the post graduate students, the researcher observes that most of them do not normally use ICT resources especially in the library and many still focus on manual method of data gathering. Based on this, Jagboro, (2003) affirmed that some post graduate students are yet to fully integrate ICT into their academic activities. Specifically, researchers in physical sciences need to engage in research to make discovery of new properties in sciences; this stresses the reason why they need ICT resources more in carrying out their researches, however, reverse is the case.

Hence, the study considers it appropriate to find out the extent of ICT utilization among postgraduate students in physical sciences in the Federal Universities Libraries in South Western Zone of Nigeria to enable the researcher suggest appropriate remedies.

Objectives of the Study

The objectives of the study are:

- 1) To find out the available electronic information resources in federal university libraries in south western zone of Nigeria.

- 2) To investigate the purposes of e-resources utilization among physical science postgraduate students in university libraries.
- 3) To examine the extent of utilization of e- resources by physical science postgraduate students in university libraries.
- 4) To verify the challenges facing physical science postgraduate student on e-resources utilization.
- 5) To find out the strategies to enhance effective utilization of e-resources by physical science postgraduate students?

Research Questions

This following research questions will guide the study:

1. What are the available electronic information resources in federal university libraries in south western zone of Nigeria?
2. What are the purposes of e-resources utilization among postgraduate physical science students in university libraries?
3. What is the extent of utilization of e- resources by postgraduate physical science students in university libraries
4. What are the challenges facing postgraduate physical science student on e-resources utilization?
5. What are the strategies to enhance effective utilization of e-resources by postgraduate physical science students?

Literature Review

In the recent years, Information and Communication Technologies have developed very rapidly in line with the growth and convergence that occurred in telecommunication technology. The convergence of computers and telecommunication technology has popularized the electronic generation and access to information. Consequently, different technological applications are now created in order to support the operational activities of human life and organization. As a result of this, users are now expected to be computer literate to enable them explore information

resources in the library. ICT is mainly concerned with the storage, retrieval, manipulation, transmission or receipt of digital data. It includes all types or components of technological tools used to provide, store, disseminate and retrieve information for effective library service delivery. The tools include internet, personal computers, scanners, printers, CD-ROMs, flash drives, floppy diskettes, photocopies, fax machines, audio/video tape players, digital projector/screen digital camera and T.V (Anyaogu, 2007). Similarly E-resources was explained as

Combination of computers, ancillary equipment, software, hardware services and resources inter-connected together to form network that is fused in the acquisition, storage, manipulation, management, movement control, interchange, transmission or reception of information. It is an umbrella term that includes all the manipulation and communication of information. Information and Communication Technologies encompass any medium to record information (magnetic disk/tape, optical disk, CD/DVD, flash memory etc and arguably paper records); technology for communicating through voice and sound image microphone, camera, loud speakers and telephone to cellular phone. It also includes a range of technological equipment such as computers, mobile telephones; MP3/MP4/WMA, storage devices, file transfer protocols, satellites, World Wide Web etc are used for information exchange among people for different purposes. These devices are capable of both synchronous and asynchronous communication format, and the most advanced of these technological application is the concept of multimedia, which refers to teaching and learning devices that include a combination of data manipulator e.g. video, CD ROMs, floppy disks e.t.c which facilitate interactive communication between and among researchers (Akinola, 2011; 99).

In this digital age, university libraries and other academic libraries are shifting from traditional to electronic library services. Libraries now make use of ICT to capture, process, store and disseminate information for users' satisfaction. Students, staff and other researchers make use of web pages, e-mail, CD ROM, electronic journal in library for research and other activities. Obviously, the present demand of a good research student has transcended the norms

of black and white (paper) only. Researchers are becoming advanced in retrieving information from electronic medium. Definitely the use of ICT has been of immense help in successful completion of a good research. In the light of this, accelerated, adoption and use of information and communication technology (ICT) has resulted in the globalization of information and knowledge resources (Islam and Islam, 2007).

Globally, university libraries are embracing the use of information and communication technology (ICT) because their collections are large, information demand is high; users are diverse and fast service delivery is expected of them. The avalanche of information sent online daily are the ingredient for research and university libraries should no longer operate without ICT due to the volume of the information. In essence, any university that wants to be relevant and up to date in this information age must be ICT-friendly. However, any attempt to sideline ICT will render such a library archaic. Thus, it is very important for universities to ensure that their library maintain credibility in the provision of ICT to meet the researchers' needs. With installation of ICT in the library, there will be simultaneous access for many users and self-service might become encouraged. And for library users to explore the ICT resources that are available in the library, they need to possess the required skills. Essentially, it is the skill they possess that will complement the technology the library has provided for maximal result and satisfaction. More so, the acquisition of such skills can be of immense benefit to them later in life.

Tella...et al. (2007) in Okello-Obur and Ikoja-Odongo (2010) affirmed that the students' ability to find and retrieve information effectively is a transferable skill useful for their future life as well as enabling the positive and successful use of the electronic resources while at school. They noted that in this digital era, any student at higher level who intends to be an achiever

should have the ability to explore the digital environment. Postgraduate students especially, are increasingly expected to explore electronic information resources while at the university because they are the pacesetters in research among the generality of students. Therefore, students who are using the growing range of electronic resources must acquire and practice the skills necessary to explore them. They must have the ability to surf web and know the relevant websites that are useful to them. They are also expected to have the basic knowledge of computer applications. Equally, other technological tools must not be strange to them. This has a lot to do with their research work or other basic academic exercises.

Practically, ICTs have made resource sharing and online academic friendship easier. Users always want to consult information from the online environment, particularly the World Wide Web (www) to unlimited sources of information globally and ICT has provided the solution for the problem of delay in information access and use. Subsequently, it has made information sharing effective and efficient. For instance, global satellite mobile (GSM) phone can be used for communication or information exchange among researchers to save the cost of traveling a long distance. In support, Aliyu (2007) stated that internet has made it possible for people to discuss and share information the same time regardless of time, space and distance constraints. The use of internet can help to avoid duplication of research work to be carried out on related disciplines and title. On the same note, Okiki and Asiru (2011) writing on the importance of internet stated that student offering correspondence course in Africa have the benefit of the use of e mail and world wide web to embark on postgraduate studies on line. Consequently, time and distance is no longer a barrier to research because at any time of the day, contact can be made to gather the needed information from anywhere in any part of the world.

In the university community, the faculty and other post graduate students are the major researchers that mostly use the available information resources for seminar, teaching and research. Hence, Omogbemi et al. (2004) in Okiki and Asiru (2011) affirmed that postgraduate students are researchers and they need variety of information from various sources. In a similar vein, Rasul and Singh (2010) stated that postgraduate students are the key producers of research in universities and an important element in their research is the access to information. However, students in science and technology will need more of online resources than those in the Arts due to the need of the currency of their research. The older an information, the better it is for researchers in the Arts but for those in sciences the more current the information the more useful it is, due to the latest events and discoveries in the field which call for continuous research.

It cannot be disputed that the major tool of electronic resources in terms of its use for downloading and uploading information is internet. Kumar and Kaur (2005) in Nwokedi and Amkpa (2011) affirmed that internet provides scientists, lecturers and students access to un-traditional sources of information at any points of the globe. Thus, access to current literature for research work has been made easier through the use of internet connectivity. The current information revolution and the increasing impact of information and communication technology have gone a long way in modernizing the process of teaching, learning and research in most universities. Postgraduate studies are basically dwelling on research and the report of the research is given for further research. Also, different publications are made available through the internet. Some libraries have their digital collections in the internet which can easily be accessed by users. Therefore, academic library as the gateway to information should offer high-quality vented internet search engine links, open access databases and journals, user guides / help sheets, and information literacy instructions on their websites.

The advances in ICT have progressively reduced the cost of managing information enabling individual, researchers and organization to undertake information related task much more effectively (Aliyu, 2007). OSTI, (2006) cited in Aliyu, (2007) expressed that the application of technology in teaching, learning and research is wide. For instance the use of e-prints is one of the major impacts of ICT on information network, access and use. E-print is very useful to researchers. They are scholarly and professional work electronically produced and shared by researchers with the intent of communicating research findings among colleagues pursuing common research objectives, between theoretical and experimental scientists, between those in basic and applied scientists, between scientists and engineers, between investigation and those in academic program. This is an indication that ICTs connect people. Thus the era of hoarding information is over! Information and communication technologies resources are good resources that facilitated cooperation's among information producers and users. This helps them in exchange of view, ideas and perceptions. Internet is a tool that really brings about the good information exchange and marketing. A research work that has been conducted in United State of America can be of assistance to related research that is taking place in Africa and this is made possible as the information is being displayed online through the internet access. Researchers cannot work without access to collaborators, to instruments, to information sources and sometimes to distant computers. Computers and communication networks are increasingly necessary for that access. Thus, three technologies are concerned with communications and collaboration: word processing, electronic mail, and networks. Word processing and electronic mail are arguably the most pervasive of all the routine uses of computers in research communication, electronic mail- sending text from one computer to another over the networks- is replacing written and telephone communication among many communities of scientists and is

changing the way in which these communities are defined. Large collaborative projects such as oceanographic voyages, use electronic mail to organize and schedule experiments, coordinate equipment arrival and handle other logistical details (National Academy of Science, 2000)

Students of the present dispensation see university libraries of this age as not just a collection of prints rather a place where information in non print format can also be found. That is, online information resources of present age are found in Nigerian university libraries and they are not restricted in use. The university libraries need to adequately rise to the challenge of providing the information resources. Therefore, the use of ICT in library has also generated many concepts such as digital library, automated library, electronic library, virtual library, community network, library 2.0., and so on. An automated library is the library that has converted all the normal manual routine to electronic system. It is the first stage in creating electronic library. When databases of information are built and they can be accessed through digital medium, they are regarded as the digital library. Virtual libraries are libraries in electronic form with no physical location and contain digital information that could be accessed through internet. However, automation is the first stage of computerization in the library and it is the term used when manual routine of the library are converted to electronic system. Library users have discovered the numerous advantages attached to the use of ICT. The use of ICT in the library has a sole aim of meeting the needs of users effectively, appropriately and timely.

Generally, the utilization of ICT has a lot of invaluable advantages to library users. (Siddiqui, 1997, Henderson, 1992) cited in Anyakoha (2005) itemizing the following benefits of ICT to library users: speedy and easy access; remote access; round the clock access; access to unlimited information; and facilitating the reformatting and combination of data from various sources. Ekere (2006) pointed out that university library is regarded as the heart of the

intellectual life of the university. Hence, it was stated that no university can exist without a library since a university is a place meant to teach and carry out research. University library is the apex reservoir of knowledge in the university environment where one can go at will and be exposed to the whole fields of knowledge and practices of life. It is established to support and promote teaching, learning and research. The library is the soul of the university because it is the information house of the academic activities. It must be realized that university libraries being integral academic part of the universities generally emerged simultaneous with their parent institutions. Thus, as the number of universities are increasing so also the population of postgraduate students are growing larger and the researches they conduct are increasing and ever since the problem of the literature explosion became noticeable in the 1970s, the developed world has devised various systems to facilitate the flow of information both within and across the countries (Ogunsola, 2004).

Over the past 25 years, academic libraries have been affected by changes in information technology. The rate of change is still accelerating in the area. The introduction of various ICT has brought significant change in the services repackaging and delivery (Okon, 2005). In other words, the concept of university library as a place you can go to retrieve only print information has drastically changed to services which provide access to the intellectual records regardless of time and space. In a related development, Ogunsola and Aboyade (2005) stated that it worth noting that both federal government of Nigeria and other international agencies are now interested in the general development of ICT in higher education in Nigeria. For instance, the Federal ministry of Education has embarked on the establishment of virtual library project. A model virtual library at National Universities Commission (NUC) will be the hub of the university-based libraries. The delivery of virtual library will be through the internet, CD

ROM, and wide area network (WAN). The importance of research in national development has made some international and national agencies to contribute immensely to the use of ICT. Some agencies like UNESCO, Carnegie Corporation, and Rockefeller support the establishment of Databases at the University of Ibadan, Nigeria. These databases are helpful to postgraduate students and other researchers for the research findings. With similar grant for academic development, the corporation is presently in collaboration with Obafemi Awolowo University, Ile-Ife, Nigeria and the University library is well positioned to gain the grant. Nigerian libraries are now gradually being computerized especially in the universities. In the past 5-10 years, many Nigerian libraries are now either computerizing some of their activities either through their respective university computer centers or installing these computers in their own libraries

Methodology

This section focused on the systematic approach taken by the researcher for this study. These include the research design, area of study, population, sample and sampling techniques, instrument for data collection, validation of the instrument, method of data collection and the method of data analysis.

Research Design

The research design that was used for this study is descriptive survey design. This is because it is a design that allows a population to be studied by collecting and analyzing data from only a sample considered to be representing the entire population. This design is considered suitable for this study because the population (postgraduate students in the physical sciences in universities in south western, Nigeria) is too large for the researcher to cover. Hence, a good sizeable number will be surveyed and a generalization will be made based on the findings. More

so, the design enabled the researcher to use a reliable technique to collect data from a defined sample of the population.

Area of the Study

The area of the study is South Western zone of Nigeria. South Western geo political zone is made of Ondo, Osun, Oyo, Ogun and Lagos state respectively. It is bounded by Atlantic Ocean in the south and River Niger in the North. The people in the region are called Yoruba.

The study investigates utilization of ICT facilities by post graduate students in the physical sciences in the university libraries in the South Western Nigeria. The five libraries in the zone are University of Ibadan library, Obafemi Awolowo University Library, Ile Ife, Federal University of Technology, Library, Akure, University of Agriculture, Library, Abeokuta, and University of Lagos Library, Lagos.

Population of the Study

The population of the study consists of 937 post graduate students in the physical sciences in the five federal universities in the south western zone of Nigeria. These include: University of Ibadan (UI) Ibadan, Oyo State, Obafemi Awolowo University (OAU) Ile Ife, Osun State, University of Lagos (UNILAG), Akoka, Lagos State, Federal University of Agriculture, Abeokuta (UNAAB), Ogun State, Federal University of Technology, Akure (FUTA) Ondo State. The respondents include all the registered postgraduate students in physical sciences as at 2011. The population is homogenous in nature because it consists of only physical science students

S/N	Universities	PG Science Students(in physical
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		science)
1.	UI	205
2.	OAU	180
3.	UNILAG	290
4.	FUTA	150
5.	UNAAB	112
Total		937

Sources: from the PG College

Sample and Sampling Technique

The sample covered post graduate science students of five South Western Federal Universities of Nigeria. Due to the enormity of students' population and the fact that the researcher was not able to cover the entire population, quota sampling technique was used. Quota sampling is an improvement on accidental sampling. It is the study of only a selected group of people or object that belongs to the same class. Hence, only 33% representing one-third of the entire population was covered.

Sample of the Study

S/N	Universities	PG Students (in physical Science)
1.	UI	68
2.	OAU	60
3.	UNILAG	97
4.	FUTA	50
5.	UNNAB	37
Total		312

Method of Data Collection

The researcher will collect the data through face-to-face administration of questionnaire. This will involve the researcher going to the respective hostels and departments of the post graduate students to administer the questionnaires and collect all the responses at the same time. Also, the services of research assistants will be employed. They will be guided and helped to administer copies of the questionnaire to the postgraduate students in the physical sciences.

The researcher first of all will obtain permission from the librarians in order to observe the facilities. The right of the respondents will be respected and every respondent will remain anonymous.

Method of Data analysis

The researcher will use descriptive statistical methods to analyze the data. The descriptive statistics that will be used are: frequencies, simple percentages (%) and means score (x). Each item will be presented in the table for the purpose of clarity and simple percentage will be used to analyze the items in the questionnaire for the purpose of answering the research questions. For the responses, 4-point, likert type scale will be used with a criterion mean point of 2.5. The point will be chosen because the average of the individual means score is 2.5

Thus, mean score of 2.5 and above will be accepted and any one below 2.5 will be rejected. Also, any percentage that ranged from 50% and above will be accepted otherwise rejected.

Data Presentation and Analysis

Table 1: E Resources Availability in the Libraries

AF= Available Functioning ANRF= Available Not Regularly Functioning, ANF= Available Not Functioning NA= Not Available

E- Resources	AF (%)	ANRF (%)	ANF (%)	NA (%)
Computer	240 (85.7)	18 (6.43)	12 (4.26)	4 (1.43)
Internet	226 (80.7)	20 (7.14)	16 (5.71)	12 (4.29)
Comp.com to internet	218 (77.86)	18 (6.43)	22 (7.86)	16 (5.71)
Printers	118 (42.14)	18 (6.43)	8 (2.86)	48 (17.14)
Scanners	114 (40.71)	22 (7.86)	24 (8.57)	56 (20)
Microform reader	64 (22.86)	16 (5.71)	44 (15.71)	66 (23.57)
Photocopiers	198 (70.71)	14 (5)	12 (4.28)	34 (12.14)

Fax	54 (19.29)	18 (6.43)	50 (17.86)	84 (30)
Floppy Disk	146 (52.14)	14 (5)	28 (10)	52 (18.57)

The results presented in the table above indicate that out of nine ICT facilities mentioned, many were made available and functional. These are the facilities in raking order: institutional (university) website (87.14%), computer (85.78%), internet (80.7%), computer connected to internet (77.86%), photocopies (70.71%), projector screen (56.43%), printer (42.14%), multimedia digital projector (51.43%), functional email (52.14%), telephone (53.57%), floppy disk (52.14%) and others.

Table 2:

S/N	Purpose of ICT Utilization in the libraries for users	SA	A	A	SD	X
1.	Checking e-mail through internet facilities	128	66	36	20	3.21
2.	Typesetting on word processing	98	80	54	12	3.08
3.	Storing and copying data into my flash drives, diskettes and CD-ROMs in the library	122	84	28	14	3.21
4.	Writing project / research work	166	70	14	4	3.57
5.	Uploading documents into text	120	80	38	4	3.31
6.	Browsing the websites of scientific publications for assignment, paper exams seminar,	152	74	16	14	3.42
7.	Accessing other universities libraries data base	98	84	32	12	3.19
8.	Retrieving information from storage and devices in the library	96	94	32	16	3.13

9.	Browsing to read dailies (newspapers)	90	78	42	30	2.95
10.	Using power point packages, projector screen, video or audio tape player from library to present for public presentation	72	86	66	22	2.85
11.	Accessing databases on CDs or DVD which belong to library or individual in the library	78	84	45	20	2.97

The above table shows the various purposes of ICTs utilization by post graduate science students. The entire eleven purposes were grouped under strongly agree, agree, disagree and strongly disagree. Four of the statement response were positively rated and accepted. They are as follow in ranking order. Writing project / research work (3.57), browsing the websites of scientific publications for assignment, papers, exams, seminar presentation (3.42) uploading document into text (3.31) storing and copying data into flash drives diskettes and CD ROMs, checking e-mail through internet (3.21), accessing other universities libraries database (2.97), retrieving information from storage devices in the library, typesetting on word processing (3.08) accessing database on CDs or DVDs which belong to library or individual (2.97), browsing to read dailies (newspaper), 2.95), using power point packages, projector screen, video or audio tape player from library to present for public presentation (2.85).

Table 3:

S/N	Challenges encountered	SA	A	D	SD	X
1.	Poor and uncondusive environment	66	54	22	44	2.76
2.	Unfriendly attitude of library staff	54	98	52	62	2.54
3.	Insufficient ICT facilities	70	106	50	28	2.86

4.	Inadequate infrastructures	62	96	56	36	2.74
5.	Slow internet connection	58	118	52	52	2.65
6.	Difficulty in locating websites	22	72	94	68	2.19
7.	Poor ICT knowledge / inability to use computers	38	64	74	80	2.23
8.	Time constraints	54	110	68	42	2.64
9.	Library location is far from lecture hall / hostels	50	100	70	52	2.54
10.	Erratic power supply	74	70	68	42	2.69
11.	Space constraints	62	70	82	60	2.49
12.	Restricted access to the facilities in the library	54	82	78	50	2.53
13.	Incompetence of library staff to help users in the use of the facilities	36	78	92	56	2.36

The above table shows the various challenges post graduate students in physical science encountered in utilization of ICT facilities in these university libraries. Few of these statements are positively rated and accepted as challenges. In ranking order they are: insufficient ICT facilities (2.86), poor and unconducive environment (2.76), inadequate infrastructure (2.74), time constraint (2.64), library location is far from lecture hall / hostels (2.54), restricted access to the facilities in the library (2.53). these were accepted as challenges according to the space constraint (2.49), incompetence of some library staff to help users in use of the facilities (2.36) poor ICT knowledge / inability to use computers (2.23) and difficulty in locating website (2.19) were not accepted as challenges because their mean score were below the criterion mean.

Conclusion and Recommendation

Electronic resources are integral part of library resources. Therefore, it should be acquired professionally and systematically. The resources need to be made accessible to the users for the goal of the library organisation to be achieved. It can therefore be recommended that users should acquire the skills needed for the purpose of utilizing the resources.

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