EXTENT OF UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY- BASED LIBRARY RESOURCES BY POSTGRADUATE RESEARCHERS IN UNIVERSITIES IN SOUTH EAST NIGERIA

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DEDICATION

This work is dedicated to God the Father, God the Son, and God the Holy Ghost.

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ABSTRACT

This study was conducted to evaluate the ICT-based library resources in Nigerian universities. This is with the aim of investigating the extent of utilization of ICT-based library resources for postgraduate research in Nigerian Universities (federal, state, and private). Six objectives and six research questions guided the study. A sampling technique was used in carrying out the work. A total number of five hundred and ten (510) respondents were used for the study. The instruments for data collection were questionnaire and observation checklist. Five hundred and ten (510) copies of the questionnaire were distributed to the postgraduate researchers in the three universities in the South East Nigeria and three hundred and sixty-six (366) were returned representing 72% return rate. The following statistical measures were employed for the data analysis: frequency table, mean (X) and Standard deviation (SD). The findings revealed that there was a significant difference in the mean ratings of postgraduate students in Federal, State and Private universities on the utilization of ICT-based library resources for research. However, the researcher observed that faculty of Education postgraduate researchers were predominant users of ICT-based library resources. The findings also revealed that postgraduate studentôs lack of fund, high cost of internet use, incompetence of library staff, lack of access to ICT resources, lack of ICT skills by users and lack of awareness of ICT-based library resources are some of the challenges affecting the use of ICT-based library resources. Based on the findings, it was recommended that university libraries should make the cost of ICT-based library resources affordable; update the skills of librarians on ICT-based resources; educate the postgraduate research students on the use of ICT-based library resources and make university websites freely available to the postgraduate student researchers.

CHAPTER ONE

INTRODUCTION

Background of the Study

Information and Communication Technology (ICT) is a merger of computing and telecommunication technologies for information acquisition, storage, retrieval, and dissemination (Alhassan, and Afolabi, 2013). ICT has become a global tool often used by individuals, organizations, governments and intergovernmental organizations for personal or official activities. Its application cuts across all fields of human endeavour like medicine, commerce, engineering, architecture, education, library services, and agriculture. According to Aina (2004), Information Technology (IT) is an omnibus term that combines computer and telecommunication technology, hence it is sometimes called Information and Communication Technology (ICT). It is concerned with the technology used in handling, acquiring, processing, storing, and disseminating information.

The computer is useful for processing information while the telecommunication facilities provide means for information communication or transfer using networks. However, for computers to be able to communicate with one another there has to be a network which provides a link, and when this link is across the globe, an international network called the internet results. The internet is a connection of millions of computers all over the world by networks (Ogbomo, 2004, Ibegwam, 2002). The availability of the internet as a major component of ICT has improved access to information by information users tremendously.

Libraries are established on university campuses to serve primarily the students and staff of that university and other institutions. The main function of university libraries is to provide educational and information resources and research support for students and staff of the institution. Some university libraries are accessible to members of the general public as a

whole. In the university, the library plays a major role in making the university achieve its objectives of teaching, research, and community service through the provision of information resources for undergraduate instruction as well as postgraduate research needs (Ifidon, 1999). The library is a key player in education, research, and information provision; it has thus been in the forefront in ICT application to its services. Libraries are repositories of information in whatever format it may appear. A library is primarily set up to acquire, organize, store and make accessible to users within the quickest possible time all forms of information materials which they require (Nwalo,2003). Libraries use ICT for information acquisition, processing, and provision to library users. Madu and Adeniran (2005) summarizes the values of ICT to libraries and library users to include better access to information, encouraging active library co-operation, encouraging resource sharing, efficient and effective delivery of service and providing access to international databases.

ICT is a convenient tool for research activities. According to Ifidon and Ifidon (2007), research is manôs systematic and empirical investigation into existing but hidden elements in nature with a view to unearthing, understanding, and explaining such elements for the purpose of development. Specifically, it is a human activity whereby answers are sought, with as great an approximation of truth and accuracy as human knowledge makes possible, to basic or fundamental questions concerning the phenomena of the universe (Alhassan, and Afolabi, 2013). This perception of research cuts across all fields of human pursuit like education, arts, social sciences, medicine, engineering, and agriculture.

In the university system, there are specialists (postgraduate) in these various subject areas who are involved in teaching, research and community service. Researches in the various fields of science education, arts and social sciences are imperative for the development of any nation and the world in general in view of the strategic importance of education to man and its contribution to the economy of many nations.

However, it is worrisome to note that Nigerian universities are lowly rated in terms of research within Africa and the world over (http://www.webometrics.info/en/Africa) (http://www.webometrics.info/en/world). This fact is evident in various authentic world rankings of universities. One then begins to wonder where the problem lies, if the university libraries in Nigeria are no longer functioning to provide the needed support for postgraduate students to improve their research, or if ICT facilities are not sufficiently used to further research activities as is the case in other countries. It is against this backdrop that this study examines the extent of utilization of ICT for postgraduate research in Nigerian federal, state and private universities. It specifically examines the types of ICT facilities used, the extent of utilization and constraints on their utilization.

Statement of the Problem

Over the last few years, enormous progress has been made in fast-tracking post graduate studies and research in Nigerian universities. The information on designation of UNN as intensive computer is given by (Ezeani and Ezema, 2011). This has resulted in the need to ensure that postgraduate researchers in Nigerian universities can access the ICT-based library resources. Support has been provided in acquisition of relevant hardware and software and setting up the necessary networked infrastructure. Negotiation with publishers by the librarian has resulted in scholarly electronic publications being made available free or at heavily discounted prices through programmes like OPAC, JSTOR, AGORA, HINARI, EBSCHOST, and PERI (Ogbomo, 2013). These initiatives in Nigeriaôs university system are a recent development and are changing the culture of research, knowledge production and dissemination. This development seems to pose serious challenges (such as ability to use computer in accessing, manipulating, and evaluating electronic information resources and

devices) to post graduate students in their utilization of ICT-based library resources in Nigerian universities. Hence experts have suggested that the use of ICT-based library resources by postgraduates is low in Nigerian universities.

Besides the problem of inaccessibility, other factors like ownership status of the university and influence of area of study may also contribute to rate of use of ICT by postgraduate students. These challenges call for an empirical study to analyze the situation for in-depth understanding of the issues at play with a view to devising appropriate measures to be taken to address observed deficiencies. Consequently, this study will investigate the influence of university ownership status and influence of area of study as predictors of postgraduate studentsô utilization of ICT-based library resources for research in selected federal, state, and private universities in South-East Nigeria.

Purpose of the Study

The purpose of this study is to investigate the extent of utilization of ICT-based library resources for postgraduate research in Nigerian universities (federal, state, and private). Specifically, the study intends to:

(1) ascertain the ICT-based resources available for utilization by postgraduate researchers in Nigerian university libraries.
(2) determine the extent of utilization of available ICT-based library resources for postgraduate research.
(3) find out the extent to which university ownership status (federal, state, and private) affect the extent of utilization of ICT-based library resources for postgraduate research.

(4) ascertain the extent to which area of study specifically the Faculties of Education, Social Science, and Arts affect the extent of utilization of ICT-based library resource for postgraduate research.

(5) Determine the problems associated with utilization of ICT-based library resources for postgraduate research.

(6) Ascertain ways to enhance the utilization of ICT-based library resources for postgraduate research in the libraries.

Research Questions

In the light of the foregoing discussions and purpose of study, the following research questions were formulated to guide the study:

1) What are the ICT ï based library resources available for postgraduate research in Nigerian Universities?
2) To what extent do postgraduate students utilize the available ICT-based library resources in research?
3) To what extent does the University ownership Status (Federal, State and Private) affect the extent of utilization of ICT-based library resources for postgraduate research?
4) To what extent does area of study represented by faculties (Faculty of Education, Faculty of Social Science and Faculty of Arts) affect the extent of utilization of ICT-based resources in postgraduate research?
5) What problems are encountered in the utilization of ICT-based library resources for postgraduate research?

6) What are the possible ways to enhance utilization of ICT-based library resources for postgraduate research?

Hypotheses

The following null hypotheses have been formulated to guide the study and will be tested at 0.05 level of significance.

Ho_1: There is no significant difference in the mean ratings of postgraduate student in Federal, State and Private Universities on their utilization of information and communication technology-based library resources in universities in South-East Nigeria.

Ho_2: There is no significant difference in the mean ratings of postgraduate researchers in Education, Social Sciences, and Arts on their utilization of Information and communication Technology-based library resources for research in universities in South-East Nigeria.

Ho_3: The university status (Federal, State, and Private) and Faculty affiliation (Education, Social Sciences, and Arts) have no significant difference in the mean ratings of postgraduate researches in Federal, State and Private universities in South-East Nigeria on the problems that hinder utilization of ICT-based library resources for research.

Significance of the Study

The findings from this study of postgraduatesô use of ICT-based library resources in their research would be significant in the formulations of ICT-based library resources use policy. Policy making institutions usually rely on research data, such as the one to be generated from this study. The data will assist the policy makers in making sound policies

regarding ICT research usage by reflecting valuable ideas generated from there. Furthermore, the National Information Technology Development Agency (NITDA) will benefit from the findings of this study. This important federal agency which has the responsibility for successful implementation of the National Information Technology (NIT) policy in Nigeria will gain one or two useful insights from the facts and analysis in this work to improve on its performance. The results of the study will also serve as an evaluation tool to the commission, a reference point to crosscheck and validate prior assumptions. It will also show data on the level of utilization, problems hindering the utilization and strategies for enhancing ICT-based library resources in research.

The results of the study would reveal the factors that influence ICT-based library resources adoption and use in the context of university education in Nigeria. This would provide facts that will enable the ministries of education, the National Universities Commission, university administrators and libraries to formulate appropriate ICT-based library resources use policy.

The incentives to invest in ICT-based library resources could be a likely benefit of this study. By revealing the extent of adoption and use of ICT-based library resources in Nigerian universities and the challenges involved, the study will create incentives for university funding bodies, universities management, external donors and the individual researchers to invest in ICT-based library resources.

The supervisors and lecturers of postgraduate students are also expected to find the outcome of the study useful. Effective supervision of a research implies effective utilization of modern resources and current information at the right time. The research outcome will further inform both the lecturers and supervisors of postgraduate researchers about the challenges faced by the students regarding ICT-based library sources of data for research and how to address those challenges.

Curriculum experts will also benefit from the results of this study. As curriculum experts review curriculum occasionally, irrelevant contents are discarded while novel and relevant ones are introduced. The study will provide data for evaluating existing curricula on the utilization of ICT-based resource for teaching and research in Nigerian Universities.

Parts of the findings of the study will reveal the available ICT-based library resources in each of the universities (federal, state, and private) and this may form the basis for consortium formation agreements among the universities or revision of existing consortium agreements to enhance information resource sharing.

It is also expected that the findings of the study would add to the data pool on this topical subject. This is a major significance of the study as data to be generated from the study will add to the pool on ICT research in respect of the usability and utilization of ICT resources in research. Researchers and other scholars interested in ICT-based library resources usage will also find it useful for their study.

Scope of the Study

This study will cover utilization of ICT-based library resources by postgraduate researchers in three faculties (education, social sciences and arts) of three categories of universities as selected (federal ï University of Nigeria, Nsukka, in Enugu State; State ï Ebonyi state University, Abakiliki, in Ebonyi State; Private ï Madonna University, Okija in Anambra State) in the south-east of Nigeria. ICT-based library resources included in the study are: Google, viable Computers, E-mailing, World wide web (www), Reprographic resources, CD-ROM resources, E ï library and Eï book, Library website, internet banking, Catalogue searchable online, Machine readable resources, Information technology assisted project based learning (PBL), Auditing web document, Collaboration on projects,

Digitization of books, Amazon website, Telnet, E-learning/discussion group, Tele-access, Tele-presence, Usenet news group, and Tele-mentoring/tele-sharing. Research is the only aspect of postgraduatesô functions covered.

Variables covered are influence of university ownership status, influence of area of study and utilization of ICT-based library resources.

CHAPTER TWO

LITERATURE REVIEW

The literature review is organized under the following sub-headings:

A. Conceptual Framework

- Concept and Importance of University Library
- Concept of ICT-based Library Resources
- Concept of Utilization and PG Research
- Problems of Utilization of ICT-based Library Resources
- Strategies for Enhancing the Utilization of ICT-based Library Resources

B. Theoretical Framework

- Operant Conditioning Theory by B. F. Skinner
- Errant and Holes Theory of Collaboration
- Drive-Reduction Theory by Hull
- Diffusion of Innovation Theory

C. Related Empirical Studies

D. Summary of Literature Review

Conceptual Framework

Concept and Importance of University Library

The main functions of an academic library are to provide resources and research support for students and Faculty of the educational institutions. Specific courseï related resources are usually provided by the library such as copies of text-books and articles. Such materials for general class reading could be held on reserve on request for easy accessibility to all concerned. Relatively recently, academic libraries are becoming increasingly digitally oriented (Mostfa, 2005). This means that the library provides ógatewayô for students and researchers to access various resources, both print/physical and digital (bells, 2005).

Academic libraries are subscribing to electronic journals and data bases, providing research and scholarly writing software, and usually offering computer work stations or computer labs for students to access journals, library search databases and portals, institutional electronic resources, internet access, or task related software (i.e. word processing, and spread sheet software). They are increasingly acting as repositories of electronic information and service providers for retrieving and interpreting information. Libraries often provide public facilities for access to their electronic resources and the internet (Kenny, 2004). Modern libraries are increasingly being redefined as places to get unrestricted access to information in many formats and from many sources. They are extending services beyond the physical walls of a building by providing materials accessible by electronic means, and by providing the assistance of librarians in navigating and analyzing very large amounts of information with a variety of digital tools.

In the present study, the extent of utilization of ICT facilities provided in academic libraries to postgraduate research students will be examined. Academic libraries are generally located on the campuses for institutional scholarly research and academic work, such as the collection and creation of digital copies of studentôs thesis and dissertations (cohen, 2007). The present study will investigate the extent of utilization of ICT-based library resources by postgraduate students in conducting research in universities in South East Zone of Nigeria. In

doing so, the extent of availability of ICT-based library resources in the universities will also be ascertained.

Concept of ICT-based Library Resources

The term Information and Communication Technology (ICT) denotes a convergence of interests between electronics computing and telecommunications, all of which are leading to the rapid development of microelectronics. Osuagu (1999) explains that ICT refers to the convergence of microelectronics, telecommunications and computers. Also, Lucey (1997) explains that ICT refers to the process of acquisition, processing, storage and dissemination of vocal, pictorial, textual and numeric information. Okike and Iperen (2006) lists the components of ICT to include computer systems, communication systems and reprographic systems. ICT as a generic term refers to the technologies used in collecting, storing, processing and passing information on various forms. This implies that ICT includes communication satellites, radio, television, telephone, video, tape recorder and microphone, among others.

Information and Communication Technology (ICT), according to Patherson (2005), conveys the notion of the application or handling of technologies that allow various forms of information to be processed, transmitted, manipulated, stored and retrieved with speed, accuracy and efficiency. The ease of data processing and transmission provided by these technologies has enhanced the flow of information across borders. ICT is daily giving birth to new concepts, new products, and new ideas. It transforms not only industries and business but also other aspects of life activities such as educational research. In the present study, the extent of utilization of ICT ï based library resources for postgraduateôs research in Nigerian universities will be investigated. For the purpose of the study, the term ICT ï based library

resources shall connote all Information and Communication Technology-related resources including internet facilities that are useful in facilitating research.

People have given various definitions and explanations of library resources. Encarta (2009) describes resources as a source of help for information. It also explains it as a backup supply, a reserve supply of something such as money, personnel, or equipment. Hence, we can say that resources are valuable to the person in need of such things. Such things could be goods, personnel, materials or information. In this context the concept of resources is focused on those materials that supply information. From this explanation it can be deduced that a resource is anything that helps in the supply of information while such information is kept in reserve to be supplied to anyone in need of it.

Wikipedia (2009) also explains resources as access available and anticipated for operations. These include people, equipment, facilities and other things used to plan, implement and evaluate. It is something that can be used for support or help. A resource is an available supply that can be drawn from when needed. Therefore, the concept of ór esourcesô that serves the purpose of this work is that which explains resources as information assets available for use to plan, implement, evaluate and execute, and which are kept in reserve for future needs and uses.

Awolola (2000) sees resources as both human and material devices which can be used for effective communication. Going by these definitions of resources, it means any resources that supply information which are to be used in future, must be reserved or stored somewhere from where it can be assessed anytime it is needed. The fact that resources are of different types like financial resources, military resources, mineral resources, economic resources, information resources etc. makes where each type of resources is reserved to depend on the type of resources in question. Information resources are however kept in libraries and information resource centres.

The Library according to Ikegbune (1994) is a collection of written, printed or other graphic materials (including films, slides, photography, records and other tapes) housed, organized and interpreted to meet broad and varying needs of people for information, knowledge, recreation and aesthetics. Wikipedia (2009) defines, ólibraryô as a collection of books and other materials maintained for reading, consultation, study and research; and organized to provide access to a specific needs of its users without any discord. Library is also seen as the central unit of a dynamic system that involves information storage and retrieval (Olayinka, 2005).

From the above, the library can be explained as a collection of materials printed and non-printed that are housed and organized to meet information, knowledge, aesthetic and recreation needs of people by means of consultation, reading and research. Hence the basic purpose of a university library is to provide students and academic staff member with materials or resources, assistance and environment that facilitates teaching, learning and research. This implies that libraries must be equipped with the appropriate resources to make them functional and beneficial to those patronizing them. When a library is not stocked with adequate library resources, it leaves patrons dissatisfied and unfulfilled.

Library resources, as explained by Popoola (2008), is an organized collection of printed and other forms of recorded knowledge that satisfy the information needs of both present and future users. Such library resources according to the author include textbooks, journals, indexes and abstracts, monographs, theses and dissertations, newspapers and magazines, government publications, research and technical reports, encyclopedias, manuscripts, publications of international organizations, patents and standards as well as microforms. Moreover, utilization of library resources entails services such as lending, referral, microfilming, indexing and abstracting, creating awareness, document delivery, photocopying, E-mail, facsimile, bindery, translation, consultancy, on-line database

searching, user education, current contents listing, technical writing and selective dissemination of information. Data processing is dependent on the resources available at a library centre. Such library resources also include the caliber of staff and their information handling skills, available finance, materials and equipment for information acquisition, processing, storage and dissemination. Information is expected to be acquired and processed into retrievable form, and be made available to the academic community and the public at large who may require it for their various teaching and research activities.

In this context, library resources refer to the ICT-based resources for enhancing research works. They include equipments and technologies provided to enhance the resources available to the users.

Concept of Utilization and PG Research

Full utilization of ICT resources has not always been achieved in developing countries. Utilization of ICT library resources has always been accompanied with mixed reactions on the part of the users. While some people see library as a place for consulting different material which they cannot personally afford to buy, others see it as a place where someone can read and be free from distractions when preparing for exams. To others it is an exclusive and Spartan place where only a privileged few could go. These and many other uses to which ICT libraries are being put to are expressed by different authors. It is believed that the utilization of ICT-based library resources is limited to students who have; assignmentsô, term papers, researches and examinations to write. Nwokocha (1993) affirms that most of those who make use of ICT resources in Owerri and Umuahia are students preparing for their exams. The implication is that most of them visit to read their own books and do not borrow from the library. Only a few bother to consult reference and audio-visual materials, citing ignorance of their existence as the most common reason. Thus we find that

students in such area hardly visit the library when they have no assignments or exams to write.

The above view is further buttressed by the submission of Kramer, (2007) that users of online library resources are mostly graduate (the majority of them doctorate) ñmid-careerò students, of average age in the mid ï 40s; in other words, not a ñtraditionalò university students group. Meaning that it is those postgraduate students that have more assignments, seminars and research report to write that do make good use of the library resources than the undergraduate students who has less paper or research reports to write.

In another dimension, studentsô use of ICT-based library seems not to be limited to studying or for consulting books alone. These other forms of uses were reported by Nagata, Toda and Kytomaki (2008) that studentsô responses concerning their library use, vary from chatting to using PCs. They grouped learners through cluster analyses, into four groups as: a learner group, a strollers group, an extended use group, and a place and PC user group. The library usage patterns of these groups indicated that the topmost group utilized library resources for learning task. The next group came to the library from the time to time to look for (browse) interesting books. The third group showed the highest rate in using the ICT library as a place to chat with friends. With this group, the library was place to use in group or to use PCs rather than for its resources. The fourth group, tended to come to the library to use it as a place and to use PCs. This group is the second largest. The first group (learners), the third (extended use group, in other words socializes) and the fourth group (place and PC users) are easily identified in every day library settings and thus they were easily understand. The second group, the strollers group, however, happened to be a surprise, although the concept was conceivable as a possibility. Aina (2004) also had similar experience when explained that library users make use of a library for specific reading especially those

preparing for examinations, undergoing formal education and professional development, research and related needs. Others use library for recreation and entertainment.

Stressing more on the above assertions, Nagata (2008) stated that there are various types of studentsô ICT library use. Some thought that library was indispensable for their study and others used it as a place where they could rest; chat with friends or just to spend time. As for the library resources, some utilized them only for class assignments and others also for their own pleasure, their reading guided by their own whims. There were some who never checked out library materials, and others whose sole purpose of visiting library was to use the computers, while others used them for the preparation of presentations and conferences papers. Others mentioned book selection, easy communication through the internet, and acquisition of information on courses.

However, other opinions believed that good utilization of ICT library resources were being achieved in some libraries. Olivia and Madison, (2006) reported that the library is one of the most heavily-used buildings on their campus, and that students make substantial use of its collection, services, and study space. In addition to the physical collections, students have access through the internet to the ñe-libraryò whether they are in the library, in campus computer labs, at homes, or in residence halls or apartments. The author stated further that statistics collected showed that usage of both the e-Library and library building itself is substantial. Over 340, 000 items were circulated while approximately 310,000 were used in-house. Of these items, approximately 24,000 were loaded to other institutions, while 17,000 were borrowed from other institutions.

This same view of adequate utilization of ICT library resources was also shared by Ajayi and Adebayo (2005) based on their studies on staff and students of Obafemi Awolowo University. They discovered that library resources were maximally utilized in the library. According to the authors, there was a progressive increase in the number of books borrowed

and consulted from session to session. There is also an increase in the library user from 159134 in 97/98 session to 295121 in 2000/2001 session. The progressive increase in utilization of library books is an indication that the library is meeting its primary role of supporting the objective of its parentôs institution. The efficient utilization of library resource in this university could not be unconnected to proper orientation and a good knowledge of the use of library information retrieval systems. This is because Ojoada and Jagboro (2000) stated that the academic staff in Obafemi Awolowo University, Ile-Ife, Nigeria use subject catalogue in the library to locate and retrieved their needed information materials. However, the factor responsible for such adequate utilization was not reported.

Although, the above authors believed that ICT library resources were well utilized, this cannot be generalized to all institutions. The reason behind the success in the utilization of library resources in that institution may result from various factors which are not found in other institutions. Therefore comparability or generalization of such findings may be difficult until the underlining factors were extensively researched into. However, in spite of the fact most libraries could not boast of full utilization of all their library resources; there are still some aspect or forms of the library resources that are being utilized in those libraries.

Some libraries may attain full utilization of a particular or few types of resources while other resources may be having low patronage. Study conducted by Echezona (1997) revealed that academic staff in the natural sciences of the University of Nigeria, Nsukka frequently uses journals, conference papers and seminar; while social scientists consult books, journal, reference works more than other information sources. This shows that students and staff use of library resources depends on the sources from which they perceive will hold more information on their discipline. Thus, those library resources which such students and staff discovered hold more information for their discipline will be more patronized than other library resources. This point is also revealed by the findings of

Popoola, (2000) that, academic social scientists in the Nigerian Universities utilized the following library information services: current awareness, photocopying, referencing, statistical data analysis, E-mail, selective dissemination of information and on-line database searching, than other in their research activities. Moreover, Agaba (2005) revealed that users make use of electronic library resources mainly due to some of the benefits accruing from the use of these resources. Many of the respondents stated that they utilized these resources for research. This involved retrieval of currents literature reviews, personal research, and accessibility to latest research developments in the academic world. Some were using them for teaching purposes. Implying that their use of this particular type of library resources was informed by the benefits which they derive from it and probably they could not find in other type of library resources.

On the other hand, study by Nwegbu (1998) on the availability and utilization of audio-visual resources in Nigerian University libraries showed that lecturers did not make use of audio-visual library resources due to poor funding, non availability of resources and irregular supply of electricity. Although the author did not specify that other types of library resources are fully utilized but the tone of the report showed that the use of audio-visual resources is non existents at all. The experience of Okiy (2000) may not be different from that of the previous author because she reported that students and Faculty staff in Delta state university, Abraka, Nigeria made use of book materials such as newspapers, journals, textbooks, magazines, projects, dictionaries, encyclopedias and government document. This means that their utilization of other library materials like audio-visual, e-library and other forms of electronic resources is nothing to comment about.

In furtherance of the above discussions Kemoni (2002) reported that the archival information utilized by researchers in University of Nairobi, Kenya are maps and atlases, gazettes, thesis and dissertations, newspapers, statistical abstracts, video films, political

record books, journals and conference papers. While in University of Botswana, Ojedokun and Owolabi (2003) discovered that academic staff had access to and used internet for teaching and research activities. The reports noted that the respondents used internet facilities for literature searching and to improve their teaching of students. Agaba (2005) also said something similar to this that respondents mentioned that CD-ROM databases were some of the resources that they utilized. Many used mainly electronic journals, and some electronic document delivery. All thus affirmed the fact that one or few types of library resources are being used while others suffers negligence where they are even available and accessible.

Furthermore, the kind of course which students are doing serve to determine their extent of ICT use. According to Lowa State University (2006), most courses have specific requirements or include learning activities that necessitate the use of the libraryôs resources. These activities range from reviewing current journal articles; preparing literature reviews and research papers on specific topics in the field; preparing team presentations; independent study projects; informational searches for take home examinations and review questions; and applied case study projects with theoretical bases. To complete the various activities noted, students are required to utilize a variety of resources in the library both current and historical and both theoretical and applied. This means that students in the department or course that require all these activities are likely to make full use of library resources than those courses or departments without such requirements. Thus, the nature or type of course which students undertake also serves to determine the level of studentôs library usage.

Commenting further on the factors that influences ICT library use, Maliki and Uche (2007) submitted that the home as well as the school background are bound to influence effective utilization of the library and its abundant resources among secondary school students and consequently reflect on their academic performance and achievement. This is because the type of home from which a student comes may determine his awareness of

library facilities, how to use them and their external value. Therefore, parents need to lay proper foundation for their childrenôs school learning, socio-economic strata notwithstanding. If the home provides the necessary level of cognitive stimulation which the learner requires at different stages of development, the reading culture will be cultivated early in life. The hunger for printed material will be created and utilization of the library and its abundant resources will just follow natural course, for the enhancement and intellectual development of the learners. This observation seems to believe in the Bile passage that says ñTeach a child in the way he should go and when his is old he will not depart from itò. Thus the authors believed that students that cultivate the habit of library usage childhood will make good use of library resources at the university even up to postgraduate level.

Another noteworthy issue that influences the use of ICT library resources by users is the inability to search for or retrieve information in library. This was noted by Osborn (1999) that the reasons that influences peopleôs active use of library as the intimidation people feel when they realized they have to learn how to search, organize and retrieve information in a system that is foreign to them. The author noted that most people do not feel comfortable asking questions which thus pose an obstacle to their library usage. Therefore, most people prefer to avoid the library resources entirely rather than face the intimidation of asking question on how to use them. The author also noted that demographic factors also have influence on library use. According to him, lower-income, uneducated people and minorities in the United States do not use libraries as often as they suppose. The reason given for this is that they do not feel libraries offer information for them or because they have never been exposed to the library environment. This issue seems to be related to the point earlier raised by the previous author that children need to be exposed to library at their tender age. However, this still boils down to the fact that students of low social economic status may not

have library resources at their disposal while those who have them may psychological feel inferior to approach the library.

The above issue was further confirmed by Sceppke (1994) when he was trying to find out the reason for non use of ICT library. The author discovered that walking into a library and realizing that you must define what you need, figure out where it might be, and go about using catalogue to find it scares many people. Asking a librarian seems to be scaring for many people because they feel they should know how to use the library or are just uncomfortable asking questions in the first place. Another issue raised by the author is that people may begin searching and not find what they need and begin to think their information is not available. Even worse, people may find few items related to their need and feel there is no more when in fact there is much more and even better source to use. This thus confirm the findings that not knowing how to use the library is the main reason while most non users do not go at all while most of these non user are in the lower income level and lower educated individuals.

Apart from the fact that libraries are being used or not, the way in which those who made use of ICT libraries put it is also a subject of controversy. The question here is that: can we regard all forms of library use as appropriate? And is it all forms of library use that enhance academic achievement? These issues was comprehensively researched into by Nagata, et al (2008) and they submitted that, using the ICT library as a place does not involve resource utilization, sometimes it is not considered a proper use. The author explained that opinion interviews, however clarifies studentôs reasons for such use. They believed it gives more motivation to study in the library than at home. Students perceive this type of library use somewhat positive as an act that led to ñFun of studying/learningò and ñdeveloped the habit of learning in youò. Using the library for its materials or research purposes is the most

likely usage that has a direct connects to studentsô achievements of educational outcomes. Thus there is a clear need for libraries to promote this kind of usage.

The author went further to assert that the type of ICT library use that is immediately beneficial for students to achieve relevant educational outcomes, however, is not necessarily predicable, as in using the library merely as a place. The most notable of such unpredicted usage is probably that of students routinely strolling among the stacks. Stroll users are found in all universities and in this usage pattern, there is a strong correlation between this activity and studentsôachievements of educational outcomes in some universities. Students are aware that the library is contributive to them when they use it in this manner. The act of strolling among sacks is also noteworthy in its voluntary attitude. Seen in the light of studentôs motives as a contextual element, the correlation coefficients of studentsô stroll in use of library show strong links to some motives like óacquiring general knowledgeô, óread interesting booksô and refresh the mindô. On the other hand using library for searching information (research use), for example, remained weakly co-related with a studentsô motives. What is more, the correlation coefficients of research use are about the same strength as a quite non-voluntary motive, e.g. óassigned by teacherô. This would seem to indicate that voluntary attitude plays a large role in positive use of and then the achievement of educational outcomes. In view of the above it is crucial for the development of outcomes assessment to understand studentsôtypes of library use in detail, including not only naturally envisaged uses like study and research purposes, but also unpredictable ones like strolling.

The author explained further that the other context of usage remained somewhat ambiguous. This element covered a wide range area, starting with studentsô courses, other background characteristics, conditions at each library, and educational methods practiced at each university. Also, the PCs and the group usage varied greatly depending on the library. The availability of computers within the library seems to have greatly influenced the use of

PCs. Group use also seems to have affected by whether group studies were encouraged in the university and whether students could early engage in the this kind of study activity in the library. In the future, as academic libraries further develops their services, especially as the supplier of place and information for or learning, this may bring considerable changes in the patterns of studentô library use.

The place where the library is situated may also influence the extent of use of ICT library resources. This has to do with the distance which the library user will have to cover before he/she could get to use library resources. Some people are discouraging the library when the libraries are very far from their department. This has been one of the reasons why most people prefer going to the internet rather than visit the libraries. Even in institutions where e-libraries are available most people would prefer accessing the resources with their own computers if given the access than going to the libraries. This situation was reported by Agaba (2005) that 57% of those who use electronic information resources, used University Library computers, while 38% make use of departmental internet facilities, and 20.3% respondents used those in their offices.

In research, the starting points for finding information in the internet are classified into three. Manning (2000) identifies them as the search engine, personal bookmarks and the web pages with links provided by others. The other additional options, in his view, are academic data bases and being part of a network that e-mail each other through links. Manning further outlined various ways by which the internet can be beneficial to researchers to include accessing and sharing information including bibliographies, research results, conferences, proceedings, research events, directories of research experts among others. For the senior researchers like the postgraduate students, follow up of research activities and results in a broad field; development of collaboration with other researchers or within a network, receive calls for proposals etc. For instance, education researchers in Nigeria can

log on to the website: http://www.education research and internet: sleepers awake.htm-e-learning/Discussion forum to collaborate with other researchers around the globe (Manning, 2000).

Education researchers hold discussion forum in the internet (White, 1994). Researchers in the same field or other fieldôs can respond to other researcherôs ideas. A researcher can join or start new discussion within the forum. News groups of internet could be found in this site: http://www.dya.com (Edafiogho, Ihedioha and Onugha, 2006). They identified e-learning as a special education services offered through the internet used by researchers, teachers and learners to interact effectively. They also indicated that researchers can access news and newspapers, and other communication facilities through the internet. Latest news and information can be communicated fast across wide geographical locations thus reducing the world to a global village. They identified other uses of the internet to educational research as the internet phoning, the cheapest form of telephone and electronic mail, which enhances communication of research results, among educational researchers in all parts of the globe.

Education researchers can also communicate or send messages in form of pictures, programmers processed, and diagrams through the internet. These documents can be sent through attachments in the internet, through the researcherôs e-mail box. Research materials accessed in the internet can be downloaded using flopping disc, flash drive etc. The information and materials can be read with a computer (software) or printed as hard copy. Postgraduate research students should embrace these developments to enhance research in Nigeria.

Most of the Researchers all over the world employ Usenet newsgroup internet facilities for research (Yuen, 1999). A number of research findings and efforts are in the internet. People with the same interest can share ideas in newsgroups. Research methods and

tools are adapted to internet based procedures. McLaughlin and Oberman (1996) stated that anyone with access to newsgroup could post questions in a particular group or respond to someone elseôs post. One can also participate in international discussion about the latest area of educational research, in a distribution list. McLaughlin and Oberman explained that a restricted list of researchers receives messages or send messages. Researchers can also enhance their work through internet relay chat.

On-line group discussion is an internet facility that enables two or more people to participate in real-time on-line discussion (Yuen, 1999). This may include text, sound or video. Yuen stated that Usenet is used for carrying on discussion while e-mail message come directly to the researchers box. Yuen informed that Usenet newsgroup, on-line group discussion as well as internet relay chat can be reached through website: www.dya.com; and www.c://Documents and Setting/All user/ documents/ the internet Education.htm.

Tele-access, tele-presence, tele-monitoring and tele-sharing are other areas of ICT-based library information sources where researchers can benefit. Brenfeld (1996) described tele-access as the use of on-line resources in learning and research including on-line libraries, data bases, satellite data and virtual classrooms. Tele-presence according to Brenfeld enables researchers to experience events in remote sites. The researchers actually see and hear events as they happen remotely. Tele-monitoring on the other hand involves the use of professional groups and bulletin boards. By serving as mentors, researchers can generate and answer questions on area of interest. They provide classroom with resources beyond textbooks and individual researcherôs expertise. Tele-Sharing often begins with simple e-mail chat between researchers one to one. It advances from one to many and later to many researchers communication. It leads to sharing of resources, ideas, experiences, data and findings (Brenfeld, 1996). Nigerian researchers could share these resources through these websites: http://www.Teachknowlogia.org; http; www.learn.org and http://www.libertynet.org/lion.html.

Collaboration on project with national and international partners is anther ICT Library resources for researchers (ITSE, 2000). ITSE documented that International and Resource Network is a non-profit organization that facilitates research works through interactions on e-mail based projects. Nigerian researchers can link up with and use this websites to collaborate on project. http://www.iste@iste.org.

Another ICT facility for research is authoring web documents. Smith (1993) reported that research indicates that researchers can benefit from learning to author web documents in the internet. According to him, in process of developing an effective website that includes text, sound, graphics, video, color and interactivity, researchers develop an effective web skill that make them more effective users of websites. They also learn how to use the internet for their own research. The authoring web document can be accessed through the website: http://www.wikipedia.educational Research.htm.

E-library and e-book is yet another ICT library facility provided for research purposes. In many institutions, library media specialists help research students learn to access information through the internet and other sources. Wake (1998) revealed that e-libraries and e-book is now possible for educational researchers to have access to journals, articles, dissertations published and up graded in the net. E-libraries provide up to date information on a variety of educational research related topics unavailable from other sources. For information on e-library and e-book, researchers are enjoined to access the following website; www.ed.gov.database/Ericdigest/ed425743/.htm.

The Telnet is another ICT library based facility that is useful to research students. According to Yuen (1999), the internet offers a variety of tools that could be used in educational research and they include: e-mail, mailing list, newsgroups, Telent, file transfer protocol (FTP), internet relay chat and the World Wide Web. The telnet can be accessed through www.thomsonrights.com (Ugwuze & Umeifekwem, 2008).

Further, the World Wide Web (WWW) is the easiest and most popular way of accessing information and resources on the internet (McLaughlin and Oberman, 1996). The WWW site assist students, teachers, and researchers to find thousands of journal articles, projects, readings, porgrammes and curricular in the internet (Doty, 1995). The global school house web site, according to Doty, allows researchers around the world to work on collaborative projects. Information on WWW can be obtained by accessing the website: www.c/Documents and setting/all user/documents/internet and Education html (Doty, 1995).

This is to show that not everyone using the library is well disposed to covering long distances before he/she is able to make use of any library resources. As a result most people would prefer using their personal computers to access the electronic resources of the libraries rather going to the library to make use of other resources housed in the library building. In the present study, the extent to which postgraduate students utilize these outlined ICT library resources for their research will be investigated.

Problems of Utilization of ICT-based Library Resources

Numerous problems have been militating against the utilization of ICT-based library resources. Many reasons have been attributed to the non-availability and under utilization of ICT library resources in school and public libraries. Authors have given various reasons for these; however, each reason differs based on the situation surrounding each of the libraries. The top on the list of problems plaguing ICT library resources utilization has been the issue of fund. This was noted from Kisiedu (1999) account of a survey of the situation among University Libraries in Africa, undertaken by the London-based International African Institute (IAI). The report encapsulates a number of problems such as gross under-funding, inadequate ICT infrastructure, donor-dependency, poor collections and high postage/delivery charges as some of the constraints that have militated against document delivery as an

alternative to large core collections in sub-Saharan African University Libraries. The basic problem here is lack of fund because it is when funds are available that ICT infrastructure can be procured and high quality collections can be made. Funds form the basic requirements in order for the library to make available any resources before we now talk of its utilization. This is to say that lack of funds prevent collection of library resources.

The above obstacle to the use of library resources was noted by Erens (1996) when he said that inadequate library collections is a problem in the use of the libraries. He said as well that access to important journals is increasingly difficult. This has caused decline in satisfaction with libraries.

The general problems that are peculiar to developing countries as regards the procurement or collection of ICT-based library resources due to their poor nature were extensively discussed by Eze and Eze, (2006). They explained that some of the problems academic libraries in developing countries face in the course of collecting their resources are:

a) Foreign Exchange Problem:-This usually arises from the difficulty of obtaining materials published overseas as a result of difficulty obtaining foreign currency. Presently, getting foreign exchange poses a lot of problems and when one succeeds, the rate is often very high. The implication is that libraries pay at least thrice the publishers price to acquire foreign books.

b) Poor Management of Library Vote:-Financial management by the academic administrators and library management pose serious problems to library collection which in turn affect library utility. The library is usually handicapped when it comes to improving stock and staff strength due to financial mismanagement.

c) Inarticulate Collection Development Policy is also a major problem: - Some libraries do not have written or articulate collection development policy. They tend to take decision on the improvement of the library collection when the need arises. This leads

to subjectivity and misplacement of priority. It is important that every library should have a written collection development policy. This will make for effective and efficient development of library resources.

d) Poor Quality of Locally Published Materials militates against the buildup of standard collection:-The maxims publish and perish is well known in the tertiary institutions and accounts for a larger percentage of the sub-standard materials that abounds in our market and bookstall.

Towing the line of collection problems, Dipeolu cited by Ochogwu (1992), stated that lack of information as to what has been published; poor sales promotion and distribution techniques appear to be major problems of the African published materials by African University Libraries. That is, when libraries are unaware of published material as well as their marketing pattern the collection of such published materials as library resources is affected or difficult.

Going by the idea of those authors collection precedes availability and availability precedes utilization. So any problem that hinders collection will surely affect utilization. That is the reason why librarians need to face the problems of collection first, to ensure that the library resources are there in the library before thinking of utilization.

With regard to the problems affecting the use of library resources, Agaba (2002) studied that of electronic library resources and submitted that most of the respondents who has not utilized electronic information resources mentioned that they had no access to the services. Some indicated that they did not know what electronic information resources were, and hence could not use them. Other respondents mentioned lack of facilities to use and lack of time as limitations. Some categories of non-users were completely not aware of these resources and actually needed more information about them. Some had reasons like overcrowding in the library computer laboratory, failure to get password from the library

staff, lack of information about electronic information resources, and lack of familiarity with the resources as the hindrances they have in utilizing library electronics resources.

Other factors discovered by the same author (Agaba, 2002) as hindering the use of ICT library resources is the location of some faculties. The author gave an example of faculties of Veterinary and Human Medicine and others in their Institution that is far from the University Library. Other problems highlighted by the author include lack of fixed schedules for computer laboratories; centralization of the resources; lack of time; irrelevance of the databases; limited subscription to databases; poor packaging of information; libraryôs preference for cheaper electronic information resources; limited accessibility to databases through use of passwords; restriction in use of diskettes for information retrieval; and brevity of information. The least mentioned factors were laziness, inability to print from the library, and limited funding by the University to avail every department the needed facilities.

In view of the digitalization of library in higher institutions many studies were conducted on the use of electronic library resources. Thus in another study conducted by Agaba (2004) he reported that the challenges to the utilization of electronic information resources by academic staff are inadequacy of facilities for use. It was mentioned as the biggest problem users faced, leading to congestion. Poor computer communication systems were mentioned, with some respondents taking poor bandwidth as leading to poor utilization of the resources. The increased use of ICT for communication purposes and infrastructure were problems responsible for poor communication service of the E-library resources. The report also revealed that most respondents had not heard about electronic document delivery services. Centralized utilization of electronic information resources was cited as one of the issue inhibiting the use of those resources. Those interviewed suggested that the introduction of the Local Area Network would go a long way to solve this problem. Unstable internet facilities, limited access to some sites, inadequate time schedules for individual departments

that were accessing these resources from the University Library, were mentioned as some of the factors. Some lecturers for example mentioned that ñbiological abstracts relevant to their field of studyò were not available, concluding, ñThere were no relevant databases that suit information needsò. As mentioned earlier, the study revealed that few of the respondents were beginners in computer use. It is no wonder, therefore, that poor computer skills was of the problems cited. Some raised the issue of location of faculties, space limitations, poor publicity by the University Library, printing costs, restrictions on use of diskettes, unnecessary erasure of mails, and lack of time as the problems affecting their use of e-library resources.

Other reason users generally complained of for non-use of electronic journals are: non-availability of backup volumes in electronic journals and impossibility of using electronic journal physically at different places etc. Most users mentioned that they used electronic journal mainly from their libraries and preferred the print in libraries. There are problems like frequent changes in ICT and absence of technical support (Ikem and Ajala, 2000). The above have been an array of problems that are widely notable as associated with the use of electronic library resources. These problems are not limited to the surveyed university alone but almost all universities with electronic library resources.

However, problems that affects the use of ICT-based library resources in general was highlighted by Ikegbune (1994) as the hindrance to library resources by saying that academic libraries have many common characteristics which also implies that they have many problems in common about the use and availability of their resources. Among the problems he highlighted as facing the use of library resources are:

- The tremendous growth in student enrolment which place additional demand for materials, services and facilities on already overburdened library staff.

- The rapid expansion of knowledge, which has resulted in a deluge of new publications in many new forms and has produced problems of selecting the most useful materials from the great numbers which are available.
- The need for quicker and more effective means of bibliographical access to these publications.
- The increasing cost of library materials without comparable library budget.
- The many new course offerings and the resulting need for new kinds of materials and for the equipment for using them.
- The growing emphasis on high quality in education and on the fostering of independent study and inquiry, which has brought forth new programmes and methods of instruction calling for heavy use of library materials.
- The urgent need for larger numbers of professional librarians as well as for non professional supporting staff.
- The need for better facilities.
- The inadequacy of library resources to meet the need of current programmes.

Moreover, Echezona (2005) identified other problems militating against the effective use of library resources as poor use of information technologies, reliance on improper medium of scientific information and wrong search pattern.

The problems of utilization of ICT-based library resources is not only associated with the resources itself but, the environment where it is being made use of also contributes a lot to the success of the utilization of the resources. Therefore, the sitting, safety, lighting and other fixtures within the library environment plays a vital role. Libraries are not always safe and secure places and they are facing a wide variety of security concern which includes the theft and mutilation of library materials (Rathinasabapathy and Amudhavalli, 2003). Another aspect of the environmental factor that hindered the use of library resources was raised by

Alabi (1993). According to him, insufficient power supply, low quality telecommunications facility, lack of trained manpower with the required skills for library automation and acute shortage of fund which would have been used to ameliorate the impact of these problems.

Concerning environmental problems and starting with location problems, Attama (2005) explained some problems which are hampering the availability of ICT-based library resources in higher institutions in Nigeria. These are:

- The situation where libraries are housed in temporary and shanty quarter. The author noted that in this state of affairs, effective use of library resources cannot be guaranteed. Some of these buildings may equally be unsuitable located, some new workshops, student hostels and noise prone areas such as main roads and canteens. The consequence is poor concentration and understanding by users of the libraries and the performance of the staff in information service is also hampered.
- The negligence of many school administrators and their inability to appreciate the importance of libraries in the implementation of their institution goals. This has resulted to inability of the administrators to grant the basic needs of libraries in the area of staff. Thus, there are inadequately trained professionals and non professionals in libraries across the countries. This has caused offering of minimal service which are not compatible with the needs of users.
- The relegation of audio-visual facilities such as video tapes and video recorders, slides, radio-cassettes, television sets projectors etc to the background. Also many libraries do not have a unit or section for audio visual material.

Eze (2005) identified another form of problem confronting the use of ICT-based library resources by stating that there is a mounting but yet concealed problem of readership abuses of libraries, their resources and library reading environment. The abuse or mutilation of existing resources in the library will always make it not available, accessible and useful to

another user, apart from the fact that it leads to wastage of resources. Hence, the problem is a serious problem to contend with.

Another issue facing the utilization of ICT-based library resource is the problem of the librarians themselves not well acquainted with the resources. This problem was hinted in the statement of Marigold (2007) which complained that library managers and staff throughout Marigold are faced with the task of becoming familiar with e-resources. This problem pose a serious hindrance to the use of library resources in the sense that when the librarians who are suppose to assist the users are not well accustomed to the resources it will be difficult for them to help the users thus implying ineffective utilization of the resources in the library.

The list of problems confronting the use of library and its resources are inexhaustible, however an array of those problems have been discussed above with reference to the reports given by scholars. Thus, the problems of library utilization usually starts from the foundation of paucity of fund to provide the needed library facilities and resource, it from there proceeds to the various issues of ineffective of the resources to meet the need of the user due to one reason or the other. Therefore, the problem of utilization of library ICT resources is like a web which one problem links or generates the other. Owing to these enormous obstacles to the effective use of library resources, it is then necessary to seek for means of surmounting these problems to enhance the full utilization of library resources to the overall advantage of the users. This study will ascertain the problems that hinder the utilization of ICT library based resources in postgraduate research in Nigerian Universities.

Strategies for Enhancing the Utilization of ICT-based Library Resource

Owing to the numerous problems facing the utilization of libraries, authors have suggested various ways by which the problems affecting the use of ICT-based library resources can be reduced to enhance the use of libraries. The library environment is the first

motivator that will attract the users to the library. This gives the reason why Ajayi and Adetayo (2005) suggested that the library environment should be made more pleasant and comfortable.

A list of solutions to problems of ICT-based library resources utilization was given by Echezona (2005). He opined that both availability and access to library resources will be enhanced if the following were taken into consideration: - provision of both printed and electronic information resources.

- Provision of need based education programme by the library for easier exploitation of available resources.
- Provision of on-line materials in electronic format.
- Updating the skills of library staff to enable them to help users.
- Improving the funding of the library to enable it to purchase and maintain needed information technology, books, journals and audio-visual resources.

Ikegbune (1994) also gave the solution to the problems facing accessibility of ICT-based library resources to be ï provision of more space for libraryôs active collection and for storage of little used materials.

- Larger and better-trained staff member with more subject competencies to explain resources, prepare bibliographies, and locate materials in other libraries and
- Participation in more cooperative activities in the acquisition and dissemination of materials.

The problem of inadequate awareness was addressed by Popoola (2008) recommendation that library management in Nigerian Universities should create Faculty awareness about the available information product and services. This according to him could be done through planned public relation programmes, library week, study tours, user education programmes, library exhibitions, organization of seminars, symposia and workshops, library awards night,

librarian making contact with the Faculty staff and improve communication links with the latter. The author also suggested that library must constantly update and weed its outdated and non-useful collection. The update of library collection will make the library to be current in the information it provides for its users therefore enriching their knowledge. Commenting more on the need for proper orientation on library use Sheeppke (1994) asserted that librarians can help motivate the use of the library by advertising the library they worked in as ñlearner friendlyò to those who do not know how to search. The author believed that libraries should also try to appeal to users need by being more diverse and individualist. This will entails that the librarians recognize individual differences in the users that patronize their library and as such try to understand each user and be patient with them.

Maliki and Uche (2007) also found out that not only the learners but also their parents and the circumstances of their existence place a consideration impact on the learnerôs ability to utilize ICT-based library resources. They therefore encouraged parents to lay proper foundation for their childrenôs school learning, socioeconomic strata notwithstanding. They believed that if the home provides the necessary level of cognitive stimulation which the learner requires at different stages of development, the reading culture will be cultivated early in life. The hunger for printed materials will be created and utilization of the library and its abundant resources will just follow a natural course, for the enhancement and intellectual development of the learners.

The problem of inadequate fund was addressed by the suggestion of Igbo and Dike (2006). It is their believe that the problem of unavailability library resources was due to lack of high funds. They therefore advised that academic libraries be funded directly by the government instead of the libraries receiving their subvention from the university authority. This the author believed will make the university librarians to be accountable for the fund they receive. They also advised that libraries should engage in local income generating

venture to augment the government allocations which are never sufficient. This they believe can be done through production/sales of such items as bags, notebooks, T-shirt bearing library Logo. Also, the library bindery could undertake commercial binding ventures such as binding of studentôs projects and other materials as well as lamination of important documents.

In suggesting solutions to the non availability of ICT-based library resources due to mutilation and abuse by previous users, Eze (2005) stated that the best way to tackle this problem of abuse is to carry our public campaigns. The anti-abuse campaigns will include: - Posting signs with warning that any form of abuse of malpractices is a publishable offence.

- Creating awareness of the problem by using campus newspaper or any media outlets.
- Providing adequate photocopiers to dissuade users from mutilation and theft.
- Providing multiple copies of books that are hot demand.
- Encouraging reservation services.
- Use adequate security guards to man the materials and reading environments.

Education of the library users in the university system on the use of the library and bibliographic instruction. Actually if the campaign can be done, it will help to sensitize the users to the gravity of the offence they are committing because most users perform this act without regarding it as anything grievous.

Ogbonna (2005) also gave measures which can be to enhance the utilization of microforms which can also be adopted to enhance the utilization of other library resources. The measures the author gave are: putting into use the available microforms; the location and organization of microforms in the library should be user friendly; training and retraining of staff on the use of microforms should be practiced; and lastly funding of the libraries should be improved. The author concluded by encouraging the librarian to have a positive change of attitudes towards microforms as they noted that this would encourage the availability and use

of the resources in the librarians. The suggestions of the author lay much emphasis on the use of microforms; however, it is believed that any measures that can be used to curb the problem affecting the use of microforms can also be applied in solving the problems affecting the use of other library collections. As regards the training of staff, it is important that every library staff be trained and re-trained on the use of all library resources. In addition, library staff ought to be sent on improvement courses for them to update their knowledge on how to handle some modern library facilities and resources. This is especially necessary in this modern age where new information technologies are being developed every day.

Providing solutions to the problems affecting the usage of electronic library resources, Agaba (2004) suggested provision of adequate Information and Communication Technology (ICT), decentralization of service provision, increased marketing strategies, training staff in information and Communication among others.

Theoretical Framework

The theories reviewed in this present study includes: Operant conditioning theory by B.F. Skinner, Errant and Holes theory and Drive reduction theory by Hull.

Operant Conditioning Theory by B.F. Skinner

The operant conditioning theory was propounded by B.F. Skinner in 1904. He emphasized that the basic datum for the studentôs behavior is simply an observed correlation between stimulus response (S-R) connection. B.F. Skinner is a practical psychologist who conducted several experiments on different reflexes in rats and pigeons. He developed the principle of operant conditioning and other phenomena related to it. He outlined the four important operations involved in the process operant condition and they include: shaping, extinction, spontaneous recovery and reinforcement.

According to Skinner, the principles involved in shaping behavior are generalization, habit competition and linkage of segments. Skinner believed that people can learn more effectively if their environment is carefully controlled. He developed the principle of operant conditioning which basically states that if the occurrence of our operant is followed by reinforcement, the strength is increased (Skinner, 1938). This theory holds the same view that enabling environment permits better understanding of ICT skill and knowledge for enhanced job performance by library staff.

Errant and Holes Theory of Collaboration

The theory of collaborative learning was propounded by Errant and Holes in 1998. They concentrated on the principle of collaboration and group work using computers. The theory stressed the importance of teacher-pupil relationship and the importance of research need in collaborative exercise. Johnson (1986) held the same view when they provided evidence to suggest that collaborative learning rather than competitive or individualistic learning produced greater outcomes. In the same, very collaboration and consortium registration will go a long way in enhancing ICT training for library staff in universities in South-East Nigerian. The present financial problem in the nation may necessitate the use of collaborative drive in enhancing the ICT training for library staff in universities.

Drive–Reduction Theory by Hull

The drive-reduction theory was propounded by Hull in 1884. According to Hull, learning becomes meaningful only when it satisfies the needs of children. Hullôs story is explained in general rules as: the law of habit formation; the reaction potential; stimulus generalization; and primary motivation or drive among others.

Hullôs theory threw light on learning process. He related learning to the needs of the organism. Hull explained that the needs of categories of children should be incorporated in the curriculum. The most important contribution of Hullôs story is that it described learning in quantitative terms. In the present study the Hullôs story is relevant because, it has provided an understanding of the need examine the level of utilization of ICT-based library resources in University libraries for postgraduate research. Technologies (ICT) and effective communication of usernames and passwords. These measures if adopted will go a long way in ameliorating the problems associated to the use of e-library resources and help the users to make maximum use of them. The problems confronting the use of library resources will be reduced and users will gain the best advantage from the libraries if the suggestions can be well implemented. In like manner, the problems that confront the utilization of ICT-based library resources in postgraduate research will be examined in this study.

Review of Related Empirical Studies

The principal ways in which libraries and information services have sought to manage the equity of the services is through monitoring the statistical measures and by adoption of standards and nationally agreed guidelines. Basic statistics in the library operations, especially average number of readers visited daily; average number of documents issued and consulted daily and average numbers of quarries attended daily etc, have to be collected from each university library. The ideology behind the collection of this type of library statistics will reveal the strength and weaknesses and showing the utilization or under utilization of information resources and competences of library professionals (Ramesha & Kumbar, 2004). It is in recognition of the above that the following empirical review is done to explore the

state of research into the factors surrounding the availability and utilization of library resources.

Popoola (2008) carried out a study on the Faculty awareness and use of library information products and services in Nigerian Universities. The major objective of the paper is to find out the Faculty awareness and use of library information products and services in South-West Nigeria universities. Systematic random sampling method was used to select a sample of 446 Faculty members from a population of 4, 459 in the universities. Questionnaire formed the major instrument for data collection. The response rate achieved was 89.7 percent and the reliability coefficient of the questionnaire used was 0.72. The findings of the study revealed that there was a significant difference in Faculty awareness of available library information products and services pertinent to their teaching and research activities. The survey also revealed that the level of knowledge of Faculty staff has positive relationship with the frequency of use, consultation with the librarians, Faculty status and membership of library related communities. The study recommended user education programmers and planned public relations to improve Faculty awareness of library information products and services.

Toda and Nagata (2007) conducted a survey study which has the major purpose of finding out the relationship between studentôs library usage and learning outcomes. Three hypotheses were used to guide the study. Questionnaire was used for the study and these were mailed to the former students of Bunkyo to University Koshigaya campus. The findings of the study showed that ñbenefits of library useò ñlearning outcomesò are related and that the library contributes to this relationship.

Ajayi and Adetayo (2005) carried out a study on the utilization of library books to enhance academic excellence in Nigerian tertiary institution. The study was undertaken as a case study of Hezekiah Oluwasanmi Library, O.A.U., Ile-Ife. The major purpose of the study

was to provide an approximate estimation of the existing circulating population and to evaluate how books are used. The importance of the research was to aid in planning and justifying library activities. The data for the study was obtained using structured questionnaire which were administered to the users of the library to find out readerôs frequency in the library and to know the activities of the readers in the library. The data for this study was analyzed and presented using frequency count, percentages, bar charts and pie charts. The result of the study revealed that staff and students maximally utilized the library. It showed that there was a progressive increase of library users from 159, 134 in 1997/98 session to 295, 121 in 2000/2001 session. The researcher concluded that the progressive increase in the utilization of library books is an indication that the library is meeting recommendations made by the researcher which was that library resources should be made available on the shelves for readers. Moreover, the role of librarian should today be that of the evaluator and statistician.

Bellow and Musa (2003) also concluded a study on the information needs and information seeking behavior of postgraduate students in a Nigerian University. The study was carried out at the University of Abuja. The study has its major purpose to determine the information requirements and use by the postgraduate student. A survey research design was used for the study. Data for the research was collected using questionnaire administered to the total postgraduate students of two hundred and ninety-nine (299) in the University. The data from the study was analyzed by frequency count. The result of the study revealed that graduate students lack necessary knowledge on how to use available resources and source in the library. The study also found lack of awareness on the part of the student and inadequate basic information retrieval skills on how to use the library. The researcher therefore suggested the inclusion of basic skills in retrieval of information for postgraduate students and curriculum. Postgraduate students of library use should be assessed at the time of

admission, aggressive awareness should be created for postgraduate students on the available services and resources in the library and orientation on information search tools should be given to postgraduate students prior to proposal presentation.

Summary of Literature Review

The review of literature was done under the conceptual framework, theoretical framework and related Empirical studies. The conceptual literature explored the concepts of library, library resources, ICT utilization, and internet facilities for research in education. The review shows that library is an organized collection of books and other printed materials as well as ICT facilities. Library resources include both physical and electronic resources such as computer and other ICT facilities. ICT refers to the use of communication such as Satellites, radio, television, telephone, video, and internet facilities for research purposes. Internet and other ICT facilities are beneficial to research students in conducting their studies using different media. Some problems that hinder the utilization of library resources were also reviewed and highlighted.

The related empirical studies x-rayed some previous studies. There have been few empirical studies on how postgraduate researchers in Nigerian universities (federal, state, and private) utilize ICT-based library resources for research. Moreover, most of the existing empirical studies were conducted prior to the widespread acquisition and deployment of ICT resources in libraries of Nigerian universities. Hence, they do not show current ICT use.

Furthermore, few empirical studies have attempted to explain the relationship among university status, discipline of study and utilization of ICT-based library resources by postgraduates. There is a knowledge gap on the present situation of postgraduatesô utilization of ICT-based library resources in Nigerian universities (federal, state, and private). It seems obvious that a better understanding of the prevailing situation would enable university

administrators, librarians and other stakeholders to invest more on ICT-based library resources for postgraduate studentsô utilization in Nigerian universities. This is the gap the study is set out to fill.

The research model adopted for this study is based on the Diffusion of Innovation Theory (DOI). The proposed model is shown in Fig 2.1 of appendix A. The research model proposes that there exist some relationships and interactions between some variables and utilization of ICT-based library resources by postgraduate researchers in Nigerian universities. First, it is proposed that University status and discipline of study correlate with utilization of ICT-based library resources by postgraduate researchers.

Second, it is proposed that the relationship between University status and discipline of study would predict utilization of ICT-based library resources by postgraduate researchers in universities (federal, state, and private) located in south-east Nigeria.

CHAPTER THREE

RESEARCH METHOD

This chapter presents the research method employed in the study. It describes the design of the study, area of the study, population of the study, sample and sampling technique, instrument for data collection, validation of instrument, reliability of the instrument, method of data collection and method of data analysis.

Design of the Study

The design of the study is a descriptive survey design. The purpose of descriptive research is to describe the current state of affairs at the time of the study and the linear relationship between two or more variables without any hint of attributing the effect of one variable on another (Salkind, 2006). Also in descriptive research, the researcher has no control over the variables of interest and therefore, cannot manipulate them (Nworgu, 2006). This research design is considered adequate for the study because the purpose of the study is to identify and understand the relationship that exists between the independent variables (availability of ICT-based library resources) and the dependent variable (utilization of ICT-based library resources). This means that it is the researcherôs intention to explain the situation of postgraduate research in regard to the utilization of ICT-based library resources in selected faculties (Education, Social Sciences, and Arts) of federal, state, and private universities in South-East Nigeria.

Area of the Study

The study was carried out in South East Zone of Nigeria. The states in the South East include Abia, Anambra, Ebonyi, Enugu and Imo States. In the area, there are five (5) Federal Universities, five (5) State Universities and seven (7) Private Universities as shown in Table 3.1 of appendix A. The selected Universities are federalï University of Nigeria, Nsukka, in Enugu State; State ï Ebonyi state University, Abakiliki, in Ebonyi State; Private ï Madonna University, Okija in Anambra State in the south-east of Nigeria. The selection was done based on the universities that run postgraduate studies and availability of ICT-based library resources.

The extent of utilization of ICT-based library resource in these universitiesô libraries by their postgraduate or research students was investigated. The Universities considered here are federal (University of Nigeria, Nsukka), State (Ebonyi state University, Abakiliki), and private (Madonna University, Okija Anambra).

The area of study is considered appropriate because of the large number of postgraduate students and availability of ICT-based library resources in the universities within the area (See Appendix A).

Population of Study

The population of the study comprised of all the postgraduate researchers of the faculties (education, social sciences and arts) in the selected Universities (federalï University of Nigeria, Nsukka, in Enugu State; Stateï Ebonyi state University, Abakiliki, in Ebonyi State; Privateï Madonna University, Okija in Anambra State) in the south-east of Nigeria. The postgraduate students included those registered for masterôs degree and Doctorate degree programmes in the three selected faculties of the Universities. The population of the study

was considered appropriate because the information required for the study could be obtained from them.

Sample and Sampling Techniques

Three (3) universities comprising of one federal universities, one state and one private university each was sampled from the 17 (seventeen) universities in South East Zone. This was done using simple random sampling technique. The selected universities, their status and state of location are shown on Table 3.2. From each sample university, three (3) faculties were sampled using purposive sampling technique. The faculties of Education, Social Sciences, and Arts were sampled for the study. The choice of these facilities for the study was based on the fact that they (Education, Social Sciences, and Arts) generate the highest number of postgraduatesô in Nigerian universities (Ovute and Ugwuanyi, 2011). The sampled faculties yielded the following number of postgraduate student: Education - 96; Social Sciences - 155; and Arts - 115). These were postgraduate students who were registered and carrying out research in their respective universities at the time of the data collection. In all, three hundred and sixty-six (366) postgraduate students were sampled for the study (See Appendix A).

Instrument for Data Collection

The instruments used in data collection include a questionnaire called Extent of Utilization of ICT-based Library Resources Questionnaire ((EUICTBQ). It was developed by the researcher. The instrument is divided into two sections, A and B. Section A elicits information on the personal data of the respondents in respect of status of university (Federal, State or Private) and Faculty of the postgraduate students (Education, Social Science, or Art).

Section B is subdivided further into 4 parts as follows: Part 1 seeks information on the availability of some identified ICT-based library resources in the University; Part 2 seeks information on the extent of utilization of ICT-based resources available in the University; Part 3 seeks information on the problems that hinder the utilization of ICT-based library resources; while Part 4 is designed to collect data on the ways to enhance the utilization of ICT-based library resources in university libraries for postgraduate research. A four-point Likert type rating scale of very highly available/utilized (4), highly available/utilized (3) moderately availability/utilized (2) and not available/utilized (1) point was adopted in rating the extent of availability and utilization respectively. The statements in parts 3 and 4 which seek information on problems hindering the utilization of ICT-based resources and the strategies for enhancing the utilization of ICT library resources in the universities were framed on a four-point modified Likert ï type scale using responses of Strongly Agree (4), Agree (3), Disagree (2) and strongly disagree (1) point, respectively. (see Appendix B).

An observation checklist was also developed by the researcher and employed for data collection. The researcher visited the sampled university libraries and collected the necessary data on the availability and utilization of ICT-based resources for research by postgraduateô students.

Validation of the Instrument

The instruments were face-validated by three experts from University of Nigeria Nsukka. One expert was from the Department of Library and Information Science, the second from Measurement and Evaluation and the third expert from the Nnamdi Azikiwe Library (ICT Section). The experts were required to scrutinize the instruments in terms of relevance and appropriateness for the study. They curtailed ambiguity and ensure the

adequacy of the items and language of expression. The comments of the validators were utilized in producing the final version of the questionnaire and the observation checklist that were used in data collection (see copies of validated instrument) (Appendix B).

Method of Data Collection

Copies of the questionnaire were administered to the sampled postgraduate students in the sampled universities by the researcher and three research assistants. One research assistant was trained in each sampled university and he/she administered the copies of the instrument in the respective research assistantsô institutions. The research assistants were trained on how to interpret and administer the questionnaire. The completed questionnaire were retrieved by the research assistants in each University and submitted to the researcher.

The researcher personally visited the three university libraries to observe and record the availability, the utilization problem and strategies for use of ICT-based library resources. The observation checklist used was developed according to the specific purposes of the study (see appendix).

Method of Data Analysis

The research questions were analyzed using mean and standard deviation. The hypotheses were tested using analysis of variance (ANOVA) statistics. The mean score of each item was compared with the real limit of numbers in answering the research question as follows: 0.50 ï 1.49 (Not Available/Utilized); 1.50 ï 2.49 (Moderately Available/Utilized); 2.50 ï 3.49 (Highly Available/Utilized) and 3.50 ï 4.00 (Very highly Available/Utilized)

CHAPTER FOUR

RESULTS

This chapter presents the findings of the study. The findings are presented based on the research questions. Starting from research question 1, the findings are presented sequentially up to research question 6.

Table 1: Distribution and Return by Universities and Faculties

	Number of Questionnaire Administered	Number of Questionnaire Returned	Number of Questionnaire not Returned
University			
Federal	115	113	2
State	225	128	97
Private	170	125	45
Total	510	366	144
Faculty			
Education	140	96	44
Social sciences	200	155	45
Arts	170	115	55
Total	510	366	144

Table 1 shows that out of the total of 510 questionnaires administered, only 366 (72%) were successfully returned. Of this number, according to category of respondents, 140 questionnaires were administered to faculty of Education but only 96 were returned, 200 to faculty of Social Sciences but only 155 were returned, while faculty of Arts received 170 but only 115 were returned. In real numbers, faculty of Social Sciences returned the highest number, followed by the faculty of Arts with 155 and 115, respectively.

Distribution and return by institutions shows that 115 went to federal university but only 113 were returned while state university received 225 but only 128 were returned. Similarly private university got 170 with 125 returned. The details by category of respondent by institution are shown in table 1 and the percentage of return and not returned is shown in figure 1.

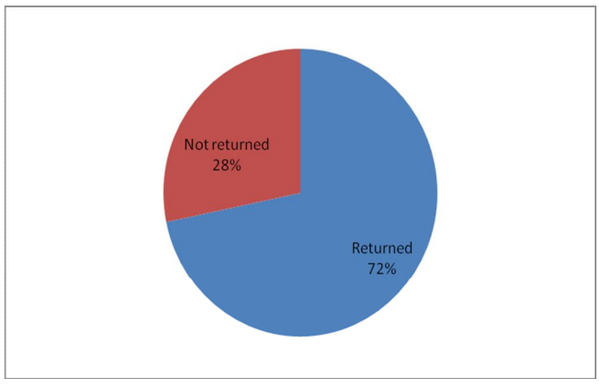

Fig. 1: Percentage of return and not returned of questionnaires.

Table 2: Availability of ICT-based Library Resources

S/N	ICT-based library resources	Availability			
		UNN	**Madonna**	**Ebonyi**	**Remark**
	Computer facilities				
1	Computer	Yes	Yes	Yes	3/3
2	Laptops	Yes	Yes	Yes	3/3
	Telecommunication Technology				
3	Online catalogue	Yes	Yes	Yes	3/3
4	Library website	Yes	Yes	Yes	3/3
5	E-learning/Discussion group	Yes	No	No	1/3
6	Web-documents	Yes	No	No	1/3
7	E-library and e-book	Yes	Yes	No	2/3
8	Internet	Yes	Yes	Yes	3/3
9	Usenet news group	No	No	No	0/3
10	Tele-communication facilities	No	Yes	No	1/3
11	Network	Yes	Yes	Yes	3/3
12	Resources sharing and collaboration on project	Yes	Yes	No	2/3
	Other Electronic Devices				
13	Telephone	No	Yes	No	1/3
14	Television	No	No	No	0/3
15	Radio	No	No	No	0/3
16	Slides	Yes	Yes	No	2/3
17	Projector	Yes	Yes	No	2/3
18	Facsime (online printing)	No	No	No	0/3
19	Machine readable resources e.g CD-ROM	Yes	Yes	Yes	3/3
20	Reprographic resources (e.g photocopying Machine	Yes	Yes	No	2/3
21	Bar-code reader	No	No	No	0/3
22	Close Circuit T.V (Network)	No	No	No	0/3
	Total	**14/22**	**13/22**	**5/22**	

Research Question One

What are the ICT-based library resources available for postgraduate research in Nigerian Universities?

Table 3: Level of Availability of ICT-Based Library Resources for Research Purposes

S/N	Item	UNN				Ebonyi				Madonna			
		VHA	HA	MA	NA	VHA	HA	MA	NA	VHA	HA	MA	NA
1.	Computer	23	37	40	13	43	25	38	22	45	31	29	20
2.	Laptops	24	42	31	16	31	42	45	10	36	47	37	5
3	Online catalogue	22	26	36	29	34	29	31	34	33	34	40	18
4.	Library Website	23	35	30	25	38	22	38	30	29	34	36	28
5.	E-Learning /Discussion group	20	25	44	24	28	29	35	36	25	22	36	42
6.	Web document	11	19	46	37	25	25	28	40	21	31	32	41
7.	E-Library and e-Book book	15	30	38	30	22	34	31	41	22	30	36	37
8.	Internet	15	28	35	35	24	25	40	39	22	24	35	44
9.	Usenet news group	12	22	33	46	22	21	47	38	21	19	36	49
10.	Tele-communication facilities resources	16	38	40	18	22	42	45	19	29	39	34	23
11.	Networks	21	30	40	22	26	38	45	19	24	43	41	17
12.	Resources sharing and collaboration on project	21	33	30	29	29	47	33	19	37	43	32	13
13.	Telephone	34	37	29	13	47	38	31	12	32	52	29	12
14.	Television	19	20	31	43	29	30	36	33	32	30	27	36
15.	Radio	68	27	12	6	64	33	20	11	79	31	9	6
16.	slides	36	30	28	19	35	30	40	23	48	32	27	18
17.	projector	25	40	20	28	40	29	32	27	40	40	29	16
18.	Fascine (online printing)	33	33	30	17	59	29	29	11	51	34	28	12
19.	Machine readable resources e.g. CD-Rom	54	27	20	12	72	23	24	9	76	27	12	10
20.	Reprographic resources (e.g photocopying machine)	66	24	17	6	85	24	15	4	81	28	11	5
21.	Bar Code Reader	69	28	11	5	87	26	14	1	92	24	5	4
22	Close circuit T.V (Network)	65	24	19	5	72	35	16	5	83	23	11	8
Total		**692**	**655**	**660**	**478**	**934**	**676**	**713**	**483**	**958**	**718**	**612**	**464**
Percentage (%)		**27.9**	**26.4**	**26.6**	**19.2**	**33.3**	**24.1**	**25.4**	**17.2**	**34.8**	**26.1**	**22.2**	**16.9**

The table 3 shows the availability of ICT-based library resources at the three university status by the researchers. The result indicates that the resources were more very highly available in private university (34.8%), followed by state university (33.3%) and least very highly available is federal (27.9%). In the case of highly available, the resources were found to be most highly available in federal university (26.4%), followed by private university (26.1%) and least state university (24.1%). The resources was more moderately available in federal university (26.6%), followed by state university (25.4%) and least private university (22.2%).

Research Question Two

To what extent do postgraduate students utilize the available ICT-based library resources in research?

Table 4: Extent of Utilization of ICT-based Library Resources in Postgraduate Research

S/N	ITEM	UNN				Ebonyi				Madonna			
		VHU	HU	MU	NU	VHU	HU	MU	NU	VHU	HU	MU	NU
1.	Computer	18	47	30	18	39	33	29	27	40	28	31	26
2.	Laptops	23	35	35	20	40	35	42	11	37	39	39	10
3	Online catalogue	14	24	40	35	29	32	41	19	30	35	40	20
4.	Library Website	20	27	34	32	28	41	41	18	29	30	41	25
5.	E-Learning /Discussion group	16	33	29	35	34	23	32	39	27	24	40	34
6.	Web document	12	25	34	42	20	30	29	49	13	33	44	35
7.	E-Library and e-Book book	17	27	29	40	19	22	42	45	21	28	33	43
8.	Internet	14	22	34	43	20	22	40	46	23	25	27	50
9.	Usenet news group	15	18	34	46	22	26	38	42	23	24	31	47
10.	Tele-communication facilities resources	19	30	38	26	30	41	33	24	18	50	34	23
11.	Networks	14	29	39	30	28	30	41	29	31	38	34	22
12.	Resources sharing and collaboration on project	19	30	39	35	30	43	31	24	29	47	38	11
13.	Telephone	33	37	29	14	39	41	36	12	42	48	21	14
14.	Television	12	26	23	52	30	26	32	40	33	21	36	35
15.	Radio	63	28	13	9	80	8	13	7	83	24	10	8
16.	slides	31	27	33	22	45	25	33	25	44	35	33	13
17.	projector	29	31	24	29	40	33	32	29	39	41	31	14
18.	Fascine (online printing)	32	36	24	21	47	38	30	13	54	33	28	10
19.	Machine readable resources e.g. CD-Rom	45	30	23	15	68	30	18	12	74	25	17	9
20.	Reprographic resources (e.g photocopying machine)	60	23	19	11	79	23	14	10	88	29	6	2
21.	Bar Code Reader	71	23	10	9	85	22	13	8	88	24	12	1
22	Close circuit T.V (Network)	64	24	14	11	68	33	14	13	78	27	13	7
Total		**641**	**632**	**627**	**595**	**920**	**677**	**674**	**542**	**944**	**708**	**639**	**459**
Percentage (%)		**25.7**	**25.3**	**25.1**	**23.9**	**32.7**	**24.1**	**24.0**	**19.3**	**34.3**	**25.8**	**23.2**	**16.7**

The table 4 shows the utilization of ICT-based library resources at the three university status by the researchers. The result indicates that the resources were more very highly utilized in private university (34.3%), followed by state university (32.7%) and least very highly available is federal (25.7%). In the case of highly utilized, the resources were found to be most highly utilized in private university (25.8%), followed by federal university (25.3%)

and least state university (24.1%). The resources were more moderately utilized in federal university (25.1%), followed by state university (24.0%) and least private university (23.2%).

Research Question Three

How does the University ownership Status (Federal, State and Private) influence the extent of utilization of ICT-based library resources for postgraduate research?

Table 5: Mean and Standard Deviation of the Respondents' Rating on the Influences of University (Federal, State, and Private) Status on Utilization of ICT-Based Library Resources for Postgraduate Research

S/N	Items	Federal		State		Private		Total	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	Computer	2.58	0.943	2.66	1.125	2.66	1.137	2.63	1.074
2	Laptops	2.54	1.009	2.81	0.978	2.82	0.951	2.73	0.984
3	Online catalogue	2.15	1.002	2.60	0.999	2.60	1.024	2.46	1.027
4	Library Website	2.31	1.070	2.62	0.981	2.50	1.060	2.48	1.041
5	E-Learning /Discussion group	2.27	1.052	2.41	1.180	2.35	1.102	2.34	1.114
6	Web document	2.06	1.011	2.16	1.107	2.19	0.965	2.14	1.029
7	E-Library and e-Book book	2.19	1.082	2.12	1.055	2.22	1.097	2.17	1.075
8	Internet	2.06	1.038	2.12	1.072	2.17	1.148	2.12	1.086
9	Usenet news group	2.02	1.052	2.22	1.086	2.18	1.132	2.14	1.092
10	Tele-communication facilities resources	2.37	1.019	2.60	1.045	2.50	0.956	2.50	1.009
11	Networks	2.23	0.991	2.45	1.071	2.62	1.045	2.44	1.047
12	Resources sharing and collaboration on project	2.29	1.083	2.62	1.043	2.75	0.913	2.56	1.028
13	Telephone	2.79	1.004	2.84	0.970	2.94	0.978	2.86	0.983
14	Television	1.98	1.061	2.36	1.155	2.42	1.158	2.26	1.141
15	Radio	3.28	0.959	3.41	0.883	3.46	0.894	3.39	0.911
16	slides	2.59	1.091	2.70	1.146	2.88	1.013	2.73	1.088
17	projector	2.53	1.134	2.70	1.097	2.84	0.995	2.70	1.079
18	Fascine (online printing)	2.70	1.076	2.93	1.005	3.05	0.991	2.90	1.030
19	Machine readable resources e.g. CD-Rom	2.93	1.067	3.20	1.007	3.31	0.962	3.16	1.021
20	Reprographic resources (e.g photocopying machine)	3.17	1.034	3.35	0.961	3.62	0.656	3.39	0.911
21	Bar Code Reader	3.38	0.948	3.44	0.911	3.59	0.697	3.47	0.849
22	Close circuit T.V (Network)	3.25	1.014	3.22	1.003	3.41	0.890	3.29	0.970

The data on this sub-section were used to answer question 5: how does the university status (federal, state, and private) influence the extent of utilization of ICT-based library resources for postgraduate research? The results on Table 5 show the extent to which researchers utilize ICT-based library resources by the three categories of Universities by the mean and standard deviation on each of twenty-two items. For the computer, federal

university mean score was ($\bar{x}$ = 2.58; SD = 0.943); state university ($\bar{x}$ = 2.66; SD = 1.125); while Private university scored ($\bar{x}$ = 2.66; SD = 1.137), giving the total mean score of ($\bar{x}$ = 2.63; SD = 1.074).

For the Laptops, federal university mean and standard deviation was ($\bar{x}$ = 2.54; SD = 1.009); state university ($\bar{x}$ = 2.81; SD = 0.978); and private university was ($\bar{x}$ = 2.82; SD = 0.951); while the total mean score and standard deviation was ($\bar{x}$ = 2.73; SD = 0.984).

For the online catalogue, federal university mean score was (X=2.15; SD=1.002); state university ($\bar{x}$ = 2.60; SD = 0.999); while Private university scored ($\bar{x}$ = 2.60; SD = 0.024), giving the total mean score of ($\bar{x}$ = 2.46; SD = 1.027).

For the Library website, federal university mean score was ($\bar{x}$ = 2.31; SD = 1.070); state university ($\bar{x}$ = 2.62; SD = 0.981); while Private university scored ($\bar{x}$ = 2.50; SD = 1.061), giving the total mean score of ($\bar{x}$ = 2.48; SD = 1.041).

For the E-learning/Discussion group, federal university mean score was (X=2.27; SD=1.052); state university ($\bar{x}$ = 2.41; SD = 1.180); while Private university scored ($\bar{x}$ = 2.35; SD = 1.102), giving the total mean score of ($\bar{x}$ = 2.34; SD = 1.114).

For the Wed documents, federal university mean score was ($\bar{x}$ = 2.06; SD = 1.011); state university ($\bar{x}$ = 2.16; S D= 1.104); while Private university scored ($\bar{x}$ = 2.19; SD = 0.965), giving the total mean score of ($\bar{x}$ = 2.14; SD = 1.029).

For E-library and e-book, federal university mean score was ($\bar{x}$ = 2.19; SD = 1.082); state university ($\bar{x}$ = 2.12; SD = 1.055); while Private university scored ($\bar{x}$ = 2.22; SD = 1.097), yielding the total mean score of ($\bar{x}$ = 2.17; SD = 1.075).

For the internet, federal university mean score was ($\bar{x}$=2.06; SD = 1.038); state university ($\bar{x}$ = 2.12; SD = 1.072); while Private university scored ($\bar{x}$ = 2.17; SD = 1.147), yielding the total mean score of ($\bar{x}$ = 2.12; SD = 1.086).

For the UseNet New group, federal university mean score was ($\bar{x}$ = 2.02; SD = 1.052); state university ($\bar{x}$ = 2.22; SD = 1.086); while Private university scored ($\bar{x}$ = 2.18; SD = 1.132), resulting in the total mean score of ($\bar{x}$ = 2.14; S = 1.092).

For the Tele-communication facilities, federal university mean score was ($\bar{x}$ = 2.37; SD = 1.019); state university ($\bar{x}$ = 2.60; SD = 1.045); while Private university scored ($\bar{x}$ = 2.50; SD = 0.956), giving the total mean score of ($\bar{x}$ = 2.50; SD = 1.009).

For the Networks, federal university mean score was (X=2.23; SD=0.991); state university ($\bar{x}$ = 2.45; SD = 1.071); while Private university scored ($\bar{x}$ = 2.62; SD = 1.045), yielding the total mean score of ($\bar{x}$ = 2.44; SD = 1.047).

For the Resources sharing and collaboration on project assisted project based learning (PBL), federal university mean score was ($\bar{x}$ = 2.29; SD = 1.083); state university ($\bar{x}$ = 2.62; SD = 1.043); while Private university scored ($\bar{x}$ = 2.75; SD = 0.913), resulting in the total mean score of ($\bar{x}$ = 2.56; SD = 1.028).

For the telephone, federal university mean score was ($\bar{x}$ = 2.79; SD = 1.004); state university ($\bar{x}$ = 2.84; SD = 0.970); while Private university scored ($\bar{x}$ = 2.94; SD = 0.978), giving the total mean score of ($\bar{x}$ = 2.86; SD = 0.983).

For the Television, federal university mean score was ($\bar{x}$ = 1.98; SD = 1.061); state university ($\bar{x}$ = 2.36; SD = 1.155); while Private university scored ($\bar{x}$ = 2.42; SD = 1.158), yielding the total mean score of ($\bar{x}$ = 2.26; SD = 1.141).

For the Radio, federal university mean score was ($\bar{x}$ = 3.28; SD = 0.959); state university ($\bar{x}$ = 3.41; SD = 0.883); while Private university scored ($\bar{x}$ = 3.46; SD = 0.894), resulting in the total mean score of ($\bar{x}$ = 3.39; SD = 0.911).

For the slides, federal university mean score was (X=2.59; SD=1.091); state university ($\bar{x}$ = 2.70; SD = 1.146); while Private university scored ($\bar{x}$ = 2.88; SD = 1.013), amounting to the total mean score of ($\bar{x}$ = 2.73; SD = 1.088).

For the projector, federal university mean score was ($\bar{x}$ = 2.53; SD = 1.134); state university ($\bar{x}$ = 2.70; SD = 1.097); while Private university scored ($\bar{x}$ = 2.84; SD = 0.995), resulting in the total mean score of ($\bar{x}$ = 2.70; SD = 1.079).

For the facsime (online printing), federal university mean score was ($\bar{x}$ = 2.70; SD = 1.076); state university ($\bar{x}$ = 2.93; SD = 1.005); while Private university scored ($\bar{x}$ = 3.05; SD = 0.991), giving the total mean score of ($\bar{x}$ = 2.90; SD = 1.030).

For the Machine Readable resources e.g. CD-Rom, federal university mean score was ($\bar{x}$ = 2.93; SD = 1.067); state university ($\bar{x}$ = 3.20; SD = 1.007); while Private university scored ($\bar{x}$ = 3.31; SD = 0.962), yielding the total mean score of ($\bar{x}$ = 3.16; SD = 1.021).

For the Reprographic resources (e.g. photocopying Machine), federal university mean score was ($\bar{x}$ = 3.17; SD = 1.034); state university ($\bar{x}$ = 3.35; SD = 0.961); while Private university scored ($\bar{x}$ = 3.62; SD = 0.656), amounting to the total mean score of ($\bar{x}$ = 3.39; SD = 0.911).

For the Bar-code reader, federal university mean score was ($\bar{x}$ = 3.38; SD = 0.948); state university ($\bar{x}$ = 3.44; SD = 0.911); while Private university scored ($\bar{x}$ = 3.59; SD = 0.697), resulting in the total mean score of ($\bar{x}$ = 3.47; SD = 0.849).

For the Close circuit TV (Network), federal university mean score was ($\bar{x}$ = 3.25; SD = 1.014); state university ($\bar{x}$ = 3.22; SD = 1.003); while Private university scored ($\bar{x}$ = 3.41; SD = 0.890), giving the total mean score of ($\bar{x}$ = 3.29; SD = 0.970).

Comparing strictly among the three universities, the result shows that the private university has the highest number of items utilized followed by state university and finally federal. The private university scored highest on sixteen items utilized. They are library

website, Usenet news group, tele-access, tele-presence, auditing web document, information technology assisted project based learning (PBL), Computer, Laptops, online catalogue, Library website, E-learning/Discussion, Web document E-library and e-book, internet, Usenet News group; while state scored highest on the remaining six items utilized (Telecommunication resource, Fascine (online printing, Machine readable resources e.g CD-rom. Bar-Code Reader, Close circuit TV (network) Usenet net group,, whereas federal scored all low.

Research Question Four

What is the influence of area of study represented by faculties (Faculty of Education, Social Science and Arts) on the extent of utilization of ICT-based resources in postgraduate research?

Table 6: Means and Standard Deviation of Respondents Rating According to Area of Study (Faculties of Education, Social Sciences, and Arts) on Extent of Utilization Of ICT-Based Library Resources in Postgraduate Research

S/N	Items	Education		Social Sciences		Arts		Total	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	Computer	2.81	0.998	2.60	1.079	2.52	1.119	2.63	1.074
2	Laptops	2.84	0.977	2.72	1.016	2.65	0.946	2.73	0.984
3	Online catalogue	2.56	1.054	2.39	0.977	2.47	1.071	2.46	1.027
4	Library Website	2.56	1.044	2.50	0.976	2.40	1.122	2.48	1.041
5	E-Learning /Discussion group	2.58	1.185	2.26	1.099	2.25	1.050	2.34	1.114
6	Web document	2.23	1.119	2.15	0.959	2.06	1.045	2.14	1.029
7	E-Library and e-Book book	2.24	1.064	2.15	1.094	2.14	1.067	2.17	1.075
8	Internet	2.15	1.105	2.08	1.066	2.16	1.105	2.12	1.086
9	Usenet news group	2.22	1.135	2.09	1.071	2.16	1.089	2.14	1.092
10	Tele-communication facilities resources	2.60	1.041	2.48	0.956	2.43	1.052	2.50	1.009
11	Networks	2.45	1.085	2.39	0.984	2.50	1.103	2.44	1.047
12	Resources sharing and collaboration on project	2.58	1.111	2.48	1.015	2.65	0.974	2.56	1.028
13	Telephone	2.96	1.025	2.72	0.979	2.93	0.943	2.86	0.983
14	Television	2.41	1.236	2.04	1.056	2.44	1.125	2.26	1.141
15	Radio	3.50	0.808	3.34	0.950	3.36	0.938	3.39	0.911
16	slides	2.72	1.073	2.63	1.094	2.88	1.085	2.73	1.088
17	projector	2.70	1.144	2.57	1.044	2.86	1.059	2.70	1.079
18	Fascine (online printing)	2.98	1.086	2.85	0.966	2.90	1.071	2.90	1.030
19	Machine readable resources e.g. CD-Rom	3.28	0.948	3.06	1.027	3.18	1.064	3.16	1.021
20	Reprographic resources (e.g photocopying machine)	3.56	0.751	3.28	0.990	3.39	0.905	3.39	0.911
21	Bar Code Reader	3.52	0.781	3.48	0.906	3.47	0.862	3.47	0.859
22	Close circuit T.V (Network)	3.46	0.870	3.15	1.027	3.34	0.954	3.29	0.970

The data on this sub-section were used to answer question 6: what is the influence of area of study represented by faculties (Education, Social Sciences, and Arts) on the extent of utilization of ICT-based library resources in postgraduate research? The results on Table 4 show the extent to which researchers utilize ICT-based library resources by the three faculties by the mean and standard deviation on each of twenty-two items. For the Catalogue searchable online, Faculty of Education mean score was ($\bar{x}$ = 2.81; SD = 0.998); Faculty of Social Sciences ($\bar{x}$ = 2.60; SD = 1.079); while Faculty of Arts scored ($\bar{x}$ = 2.52; SD = 1.119), giving the total mean score of ($\bar{x}$ = 2.63; SD = 1.074).

For the Library website, Faculty of Education mean score was ($\bar{x}$ = 2.84; SD = 0.977); Faculty of Social Sciences ($\bar{x}$ = 2.72; SD = 1.016); while Faculty of Arts scored ($\bar{x}$ = 2.65; SD = 0.946), yielding the total mean score of ($\bar{x}$ = 2.73; SD = 0.984).

For the Amazon website, Faculty of Education mean score was ($\bar{x}$ = 2.56; SD = 1.054); Faculty of Social Sciences ($\bar{x}$ = 2.39; SD = 0.977); while Faculty of Arts scored ($\bar{x}$ = 2.47; SD = 1.071), resulting in the total mean score of ($\bar{x}$ = 2.46; SD = 1.027).

For the digitization of books, Faculty of Education mean score was ($\bar{x}$ = 2.56; SD = 1.044); Faculty of Social Sciences ($\bar{x}$ = 2.50; SD = 0.976); while Faculty of Arts scored ($\bar{x}$ = 2.40; SD = 1.122), amounting to the total mean score of ($\bar{x}$ = 2.48; SD = 1.041).

For the E-learning/discussion group, Faculty of Education mean score was ($\bar{x}$ = 2.58; SD =1.185); Faculty of Social Sciences ($\bar{x}$ = 2.26; SD = 1.099); while Faculty of Arts scored ($\bar{x}$ = 2.25; SD = 1.050), giving the total mean score of ($\bar{x}$ = 2.34; SD=1.114).

For the Usenet news group, Faculty of Education mean score was ($\bar{x}$ = 2.23; SD =1.119); Faculty of Social Sciences ($\bar{x}$ = 2.15; SD=0.959); while Faculty of Arts scored ($\bar{x}$ = 2.06; SD = 1.045), giving the total mean score of ($\bar{x}$ = 2.14; SD = 1.029).

For the Web document, Faculty of Education mean score was ($\bar{x}$ = 2.24; SD = 1.064); Faculty of Social Sciences ($\bar{x}$ = 2.15; SD = 1.094); while Faculty of Arts scored ($\bar{x}$ = 2.14; SD = 1.067), yielding the total mean score of ($\bar{x}$ = 2.17; SD = 1.075).

For the E-learning/Discussion group, Faculty of Education mean score was ($\bar{x}$ = 2.15; SD = 1.105); Faculty of Social Sciences ($\bar{x}$ = 2.08; SD=1.066); while Faculty of Arts scored ($\bar{x}$ = 2.16; SD = 1.105), yielding the total mean score of ($\bar{x}$ = 2.12; SD = 1.086).

For the Internet, Faculty of Education mean score was ($\bar{x}$ = 2.22; SD = 1.135); Faculty of Social Sciences ($\bar{x}$ = 2.09; SD = 1.071); while Faculty of Arts scored ($\bar{x}$ = 2.16; SD = 1.089), giving the total mean score of ($\bar{x}$ = 2.14; SD = 1.092).

For the Usenet news group, Faculty of Education mean score was ($\bar{x}$ = 2.60; SD = 1.041); Faculty of Social Sciences ($\bar{x}$ = 2.48; SD = 0.956); while Faculty of Arts scored ($\bar{x}$ = 2.43; SD = 1.052), giving the total mean score of ($\bar{x}$ = 2.50; SD = 1.009).

For the Tele-communication facilities, Faculty of Education mean score was ($\bar{x}$ = 2.45; SD = 1.085); Faculty of Social Sciences ($\bar{x}$ = 2.39; SD = 0.984); while Faculty of Arts scored ($\bar{x}$ = 2.50; SD = 1.103), amounting to the total mean score of ($\bar{x}$ = 2.44; SD = 1.047).

For the Network assisted project based learning (PBL), Faculty of Education mean score was ($\bar{x}$ = 2.58; SD = 1.111); Faculty of Social Sciences ($\bar{x}$ = 2.48; SD = 1.015); while Faculty of Arts scored ($\bar{x}$ = 2.65; SD = 0.974), resulting in the total mean score of ($\bar{x}$ = 2.56; SD = 1.028).

For the E-library and E-book, Faculty of Education mean score was ($\bar{x}$ = 2.96; SD = 1.025); Faculty of Social Sciences ($\bar{x}$ = 2.72; SD = 0.979); while Faculty of Arts scored ($\bar{x}$ = 2.93; SD = 0.943), yielding the total mean score of ($\bar{x}$ = 2.86; SD = 0.983).

For the Resource sharing and collaboration on project, Faculty of Education mean score was ($\bar{x}$ = 2.41; SD = 1.236); Faculty of Social Sciences ($\bar{x}$ = 2.04; SD = 1.056); while

Faculty of Arts scored ($\bar{x}$ = 2.44; SD = 1.125), yielding the total mean score of ($\bar{x}$ = 2.26; SD = 1.141).

For the Telephone, Faculty of Education mean score was ($\bar{x}$ = 3.50; SD = 0.808); Faculty of Social Sciences ($\bar{x}$ = 3.34; SD = 0.950); while Faculty of Arts scored ($\bar{x}$ = 3.36; SD = 0.938), resulting in the total mean score of ($\bar{x}$ = 3.39; SD = 0.911).

For the Television, Faculty of Education mean score was ($\bar{x}$ = 2.72; SD = 1.073); Faculty of Social Sciences ($\bar{x}$ = 2.63; SD = 1.094); while Faculty of Arts scored ($\bar{x}$ = 2.88; SD = 1.085), resulting in the total mean score of ($\bar{x}$ = 2.73; SD = 1.088).

For the Radio, Faculty of Education mean score was ($\bar{x}$ = 2.70; SD = 1.144); Faculty of Social Sciences ($\bar{x}$ = 2.57; SD = 1.044); while Faculty of Arts scored ($\bar{x}$ = 2.86; SD = 1.059), yielding the total mean score of ($\bar{x}$ = 2.70; SD = 1.079).

For the Slides resources, Faculty of Education mean score was ($\bar{x}$ = 2.98; SD = 1.086); Faculty of Social Sciences ($\bar{x}$ = 2.85; SD = 0.966); while Faculty of Arts scored ($\bar{x}$ = 2.90; SD = 1.071), yielding the total mean score of ($\bar{x}$ = 2.90; SD = 1.030).

For the Projector, Faculty of Education mean score was ($\bar{x}$ = 3.28; SD = 0.948); Faculty of Social Sciences ($\bar{x}$ = 3.06; SD = 1.027); while Faculty of Arts scored ($\bar{x}$ = 3.18; SD = 1.064), resulting in the total mean score of ($\bar{x}$ = 3.16; SD = 1.021).

For the Fascine (online printing), Faculty of Education mean score was ($\bar{x}$ = 3.56; SD = 0.751); Faculty of Social Sciences ($\bar{x}$ = 3.28; SD = 0.990); while Faculty of Arts scored ($\bar{x}$ =3 .39; SD = 0.905), giving the total mean score of ($\bar{x}$ = 3.39; SD = 0.911).

For Reprographic resources (e.g. photocopying machine), Faculty of Education mean score was ($\bar{x}$ = 3.52; SD = 0.781); Faculty of Social Sciences ($\bar{x}$ = 3.48; SD = 0.906); while Faculty of Arts scored ($\bar{x}$ = 3.47; SD = 0.862), amounting to the total mean score of ($\bar{x}$ = 3.47; SD = 0.859).

For the Bar-code reading, Faculty of Education mean score was ($\bar{x}$ = 3.46; SD = 0.870); Faculty of Social Sciences ($\bar{x}$ = 3.15; SD = 1.027); while Faculty of Arts scored ($\bar{x}$ = 3.34; SD = 0.954), yielding the total mean score of ($\bar{x}$ = 3.29; SD = 0.970).

Comparing strictly between the three faculties, the result shows that Faculty of Education has the highest number of ICT-based library resources utilized followed by Arts and finally Social Sciences. The Faculty of Education scored highest on fifteen items utilized. These are computer, laptop, online catalogue, library website, E-learning/discussion group, Usenet news group, web document, E-library and e-Book, Internet, world wide web, CD-ROM resources, Reprographic resources, Tele-communication, Fascine (online printing machine), and E-mail; while Arts had the highest utilization on six items (E-learning/discussion group, collaboration on project, slides, projector, assisted project based learning. (PBL), Bar-code reader, close circuit T.V (Network), and Machine readable resources); whereas Social Sciences scored highest only on (E-library and E-book).

Research Question Five

What problems are encountered in the utilization of ICT-based library resources for postgraduate research?

Table 7: Mean and Standard Deviation of Respondents ratings on The Problems Encountered in Utilization of ICT-Based Resources in Postgraduate Research

S/N	ITEM	Frequency				Mean	SD	Remark
		SA	A	D	SD			
1.	Postgraduate students lack of fund to use ICT-based information services.	118	132	78	38	2.90	0.971	Agreed
2.	The cost of internet search for research is very high for Postgraduate students.	109	108	72	77	2.68	1.112	Agreed
3.	The university library staff do not possess the competency for guiding students on ICT-based resources	99	112	88	67	2.66	1.065	Agreed
4.	The students lack access to ICT-based resources in university library.	75	130	95	66	2.58	1.008	Agreed
5.	Postgraduate research students lack knowledge of websites for locating appropriate person or group or materials in the net	78	99	123	66	2.52	1.020	Agreed
6.	Postgraduate students lack competence in ICT-based resources usage.	58	134	96	78	2.47	0.997	Agreed
7.	Postgraduate students lack awareness of ICT-based library resources	79	102	92	93	2.46	1.091	Agreed
8.	Postgraduate students do not posses computer for use.	68	94	105	99	2.36	1.070	Not agreed
9.	Information got from ICT-based research is not reliable	56	52	127	131	2.09	1.052	Not agreed
10.	ICT-based library search is time wasting	50	59	102	155	2.01	1.065	Not agreed

Table 7 shows the result of problems associated with the utilization of ICT-based resources in postgraduate research in Universities by researchers. In order of magnitude in descending order, respondents reported that Postgraduate studentsô lack of fund as the biggest problem ($\bar{\times}$ = 2.90; SD = 0.971), followed in by high cost of internet use ($\bar{\times}$ = 2.68; SD = 1.112), and non competent library staff ($\bar{\times}$ = 2.66; SD = 1.065). The fourth major

problem was lack of access to ICT-based resources in the university library ($\bar{x}$ = 2.58; SD = 1.008). The fifth problem is respondents perception that they lack knowledge of websites for locating exactly what they want ($\bar{x}$ = 2.52; SD = 1.020). Other problems of significant magnitude reported by respondents include, lack of competence in ICT usage ($\bar{x}$ = 2.47; SD = 0.997) and lack of awareness of ICT-based library resources ($\bar{x}$ = 2.46; SD = 1.091).

Research Question Six

What are the possible ways to enhance utilization of ICT-based library resources for postgraduate research?

Table 8: Mean and Standard deviation of Respondents Rating on Ways to Enhance Utilization of ICT-Based Resources

S/N	ITEM	Frequency						
		SA	A	D	SD	Mean	SD	Remark
1	Training of university librarians on ICT facility utilization.	223	105	15	23	3.44	0.841	Agreed
2	Library staff should be skilled in ICT-based library resources.	216	103	19	28	3.39	0.895	Agreed
3	A course on ICT utilization for research studies be mounted for postgraduate degree programme	201	122	20	23	3.37	0.849	Agreed
4	The cost of utilizing ICT facilities for postgraduate research in university libraries be made free.	202	108	30	26	3.33	0.902	Agreed
5	The cost of using internet for postgraduate research should be subsidized by the institution concerned.	173	125	41	27	3.21	0.915	Agreed
6	Postgraduate students should be linked directly to the internet by university administration.	164	135	38	29	3.18	0.915	Agreed
7	Laptops and palmtop computers should be provided to postgraduate students at subsidized rate	176	112	42	36	3.17	0.981	Agreed

The data presented on Table 8 was used to answer research question six, ñWhat are the ways of enhancing the utilization of ICT-based library resources for postgraduate research in Nigeria Universities?ò Respondents mean score on each of the seven (7) items in this subsection were calculated and limit of real numbers were used to test significance. The

overall result indicates that there is significant agreement by respondents on these strategies/ways enumerated for the utilization of ICT-based library resources for postgraduate research by researchers. Furthermore, the results for each of the items were significant using the limit of real numbers. Arranged in order of importance, respondents ranked the strategies as follows: Training of university librarians on ICT facility utilization ($\bar{x}$ = 3.44; SD = 0.841), Library staff should be skilled in ICT-based library resources ($\bar{x}$ = 3.39; SD = 0.895), and a course on ICT utilization for research studies be mounted for postgraduate degree programme ($\bar{x}$ = 3.37; SD = 0.849) as the top three strategies.

Hypothesis One

There is no significant relationship between the postgraduate researchersô university status (Federal, State and Private) and their utilization of Information and Communication Technology based library resources for postgraduate research in the universities located in South-East Nigeria.

Table 9: Analysis of Variance (ANOVA) of the Mean Difference in Ratings of Postgraduate Students from Federal, State and Private Universities

	Sum of squares	df	Mean Square	F	P-value
Between Groups	1838.345	2	919.172		
Within Groups	69137.874	363	190.462	4.826	0.009
Total	70976.219	365			

Table 9 shows that the F calculated (4.826) was greater than P-value (0.009). The null hypothesis was therefore not accepted. In other words, there is significant difference in the mean ratings of postgraduate students in Federal, State and Private universities on the utilization of ICT-based library resources for postgraduate research.

Hypothesis Two

There is no significant relationship between the postgraduate researchersô areas of studies (Education, Social Sciences, and Arts) and their utilization of Information and communication Technology based library resources for research in the universities located in South-East Nigeria.

Table 10: Analysis of variance (ANOVA) of the Mean Difference in Rating of Postgraduate Students from Various Faculties (Education, Social Science, Arts) on the Extent of Utilization of ICT-Based Resources

	Sum of squares	D.F	Mean Square	F	P-value
Between Groups	739.537	2	369.769		
Within Groups	70236.681	363	193.489	1.911	0.149
Total	70976.219	365			

Table 10 result shows that the F-ratio calculated (1.911) was greater than the significant value (0.149). Thus, the null hypothesis is not accepted. In other words, there is no significant difference in the mean ratings of postgraduate researchers in Faculties of Education, Social Sciences and Arts on the extent of utilization of ICT-based library resources for postgraduate research.

Hypothesis Three

Postgraduate researchersô university status (Federal, State, and Private), and faculties (Education, Social Sciences, and Arts) have no significant joint influence on their utilization of Information and communication Technology based library resources for research in universities in South-East Nigeria.

Table 11: Analysis of variance (ANOVA) of the Mean Difference in Ratings of Postgraduate Researchers of Universities (Federal, State and Private) and Faculties (Education, Social Sciences, and Arts) on the Problems that Hinder ICT Utilization in Research

	Sum of squares	D.F	Mean Square	F	P-value
Between Groups	12.290	2	6.145		
Within Groups	16749.932	363	46.143	0.133	0.875

Total	16762.221	365

Result presented on Table 11 indicates that the F-ratio calculated (0.133) was less than the Table F (0.875). Hence the null hypothesis was accepted. In other words, there is no significant difference in the mean ratings of postgraduate researchers in Federal, State and Private universities on the problems that hinder utilization of ICT-based library resources for research.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter presents the discussion of the findings of the study as well as the implications of the study, recommendations and limitations of the study are also presented. The chapter also contains suggestions for further research and conclusion.

Discussion of Findings

Availability of ICT-based library resources for research purposes

The data presented showed that some ICT-based library resources were available in university libraries. Using the real limit of numbers, with twenty-two (22) ICT-based library resources studied for the federal, state, and private university, respectively shows that these ICT-based library resources for research purposes are highly available. The study found high level of availability of ICT-based library resources to researchers in the three universities investigated.

Institution-wise, the resources were reported to be more available in private university, followed by state university. By area of study, availability was reported mostly by Faculty of Education, followed by Faculty of Arts across the three universities under study. This study is not surprise because, the reason why researchers in Faculty of Education utilized ICT-based resources more than those in social science and Art could be that ICT provides more information to researchers in education discipline than those in social sciences

and Arts. Study conducted by Echezona (1978) revealed that researchers in Education of the University of Nigeria, Nsukka frequently use journals, conference papers and seminar papers while social science researchers consulted books, journals, and references books more than other information sources. These points to the fact that researchersô use library resources depend on the source from which they perceive will hold more information on their discipline.

This finding is in line with that of Croom (2002) that starting from the 1990s up to date, rapid advances in technology have provided postgraduate researchers with ICT resources as alternative to the traditional university library materials. It is also supported by Mostafa (2005) who observed that many academic libraries in Nigeria are becoming increasingly digitally oriented. Also, Bells (2005) noted that university libraries are sub sensing to electronic journals, data bases, providing research and scholarly writing software, and computer work stations or computer labs for students to access journals. According to Bell, university libraries provide areas to facilitate group study and collaboration they often provide facilitiesôfor access to electronic resources and the internet.

Further, Kenny (2007) reported that modern libraries are increasingly being redefined as places to set unrestricted access to information in many formats and from many sources. They are extending services beyond the physical walls of a building, by providing materials accessible by electronic means, and by providing the assistance of libraries in navigating analyzing very large amount of information with a variety of digital tools. The finding of the present study may be associated with the recent digitization of many federal university libraries by the Federal Government.

Extent of utilization of ICT-based library resources in postgraduate research

The discussion on the second research question, ñextent of utilization of ICT-based library resourcesò was undertaken. This research question presumes to find out whether

researchers in the three universities studied use ICT-based resources to a great extent or not. It seeks to investigate the level of use of such resources as this can have impact on the quality of their research work.

The result of data analysis showed that some ICT-based library resources are utilized in postgraduate research. Some of the resources included: Google, Computer, World wide web (www), E ï mailing, Reprographic resources, CD-ROM resources, E ï library and E ï book, Library website, internet banking, Machine readable resources, Catalogue searchable online, Information technology assisted project based learning (PBL), and Collaboration on projects.

The finding of the study which indicated that Google was highly utilized by the postgraduate research students seems to be in line with the observation of McLaughlin and Oberman (1996) which explained that the Google is the easiest and most popular way of accessing information and resources on the internet.

According to McLaughlin and Oberman, Google site assist students, teachers and researchers to find thousands of journals, projects, reading materials, programmes and curricular in the internet. This finding is in accordance with that of Ajayi and Adebayo (2005) who reported that there was increasing level of utilization of ICT-based resources for research purposes among the postgraduate students in Nigeria Universities. In a study conducted at Obafemi Awolowo University, Ajayi and Adebanyo found that ICT library resources are maximally utilized by the students. According to the authors, there was a progressive increase in the number of ICT library users.

Problems that hinder the utilization of ICT-based library resources for postgraduate research

With regards to the third question, ñwhat are the problems that hinder the utilization of ICT-based library resources?ò findings from the study revealed a number of significant

problems. It was found that overall; researchers reported significant problems () associated with the use of ICT-based library resources. For instance, out of a total number of 10 items that constitutes such problems to researchers, 7 of them were considered by the researchers as significant. Only 3 of such items were considered as not significant.

These findings mean that researchers are confronted with significantly numerous problems that are associated with the use of ICT-based library resources in postgraduate research in the universities located in south-east Nigeria. These problems range among others, from lack of fund, high cost of ICT services, lack of competency by university libraries, denial of free access to the use of university websites, as well as lack of knowledge of websites. What this means is that many researchers could be hindered from benefiting from the potentials that ICT-based library resources have to offer to researchers. This could lead to poor research outputs. These findings are supported by earlier report of Erens (1996) that lack of awareness, incompetence, as well as lack of adequate fund protracts the utilization of ICT-based resources in Nigerian libraries. Also, Agaba (2002) noted that most researchers had no access to the ICT library services. The author further reported that the researchers were not aware of the use of ICT-based library resources in research purpose. Further the finding is in agreement with the result of Marigold (2007) which stipulated that another problem facing the utilization of library resources is the issue of librarians not being well acquainted with the ICT resources. This problem among others poses serious hindrances to the use of ICT-based library resources by postgraduate research students in Nigeria universities.

Strategies for enhance the utilization of ICT-based library resources in postgraduate research

The final part of the discussion relates to the fourth research question ñwhat ways could be used to enhance the utilization of ICT-based library resources in postgraduate research in Nigerian universities?ò in all, seven ways for the enhancement of the use of ICT-based library resources by researchers were proffered. Researchers reported that each of the ways was significant. However, they ranked the ways in terms of perceived importance and relevance as suggested by the problems as follows: Training of university librarians on ICT facility utilization, training of librarians on ICT utilization, mounting of course on ICT utilization for postgraduate degree programme, free cost of ICT utilization by post graduate research students, linking of postgraduate students to internet by university administration; and provision of laptops at subsidized cost to the postgraduate research students.

This finding is in consonant with the suggestions of Echezona (2005) who opined that the level of utilization of ICT library resources can be greatly enhanced by the provision of need base education programme by the university library to users; updating the skill of library staff to enable them help users; improving the funding of libraries and reducing the cost of using the library services by users. Similarly, Ikegbune (1994) outlined some strategies for enhancing the utilization of ICT-based library resources to include creation of awareness on the use of ICT-based library resources, provision of better trained staff with computerize in ICT utilization, and training staff in information and communication among others.

These suggestions are indications that researchers are aware of the problems of ICT-based library resources relating to their work and they need improvement in their services. These findings are in agreement with the positions of many other researchers and scholars of library and information science (see, e.g. Alabi, 2003; Etim, 2006; Gbaje, 2007; Anioke, 2009). These strategies as identified solely to proffer solutions to the fourth research question posed in this study.

Implication of Findings

The findings of this study have a number of implications for the ICT-based library resources in Nigerian universities. University libraries should create awareness of and train users so as to enhance the quality of learning and research. Researchers who fail to make use of ICT facilities may be losing valuable information available to them. This supports the work of scoyoc & cason, (2006) which says that the vast majority of research students turn to ICT first for academic research.

Researchers utilization of ICT-based library resources significantly for research and academic work implies that university library that provide such resources effectively will help to promote academic scholarship and research, thereby helping such institutions to fulfill their status as centres of learning and research. On the contrary, universities which fail to support their libraries with ICT facilities risk standards in general academic work and research of her students/researchers. It was found that researchers visit Google; that have easy access, reliable and specific and direct to certain areas of information.

The findings that researchers utilize ICT-based library resources to a limited extent implies that unless universities include ICT training in their curricula, at least for research students/staff, under utilization of ICT-based library resources will lead to a downward slide in quality of academic and research work. Limited utilization of ICT-based library resources could also be due to lack of fund or high cost of access. This implies that utilization calls for a holistic approach from government support through policy implementation and provision of infrastructures that support the use of ICT-based library resources. Lack of government support will continue to hinder the use of ICT-based library resources by researchers.

Recommendations

From the discussion and implication of the findings, the following recommendations were made:

a) University budgetary allocation to libraries should improve so that university libraries can make the cost of ICT-based library resources more affordable to users by way of subsidy.

b) The problem of inadequate awareness can be addressed by the library management in Nigerian Universities. Libraries should give more education to users on the use of ICT resources. Current awareness services, selection dissemination of information on ICT resources should be intensified by university library staff to users of the libraries.

c) The skills of librarians on ICT-based resources should be updated to enable them direct the users on the use of ICT resources for research purposes. The skill can be connected through seminars, workshops, conferences and short course training of the staff.

d) There should be education of postgraduate research students on the use of ICT-based library resources. This will help to sensitize the postgraduate researchers on importance of ICT resources available in libraries.

e) University management should make university websites freely available to the postgraduate research students and as well connect them to research sites where they could collaborate with other researchers.

Limitations of the Study

Based on the findings of the study, the following limitations were noted, that could limit the generalization of the findings:

1. The study utilized questionnaire in data collection. This may have some limitations on the validity of the findings of the study as faking is always associated with questionnaire.
2. The use of only postgraduateôs respondents may also limit the finding of the study because other groups such as librarians and university management cadre could have provided more valid information on the extent of utilization of ICT-based library resources.
3. The use of only three universities and three faculties for the study may have limited the generalization of the findings. This is because a larger population may have generated more responses from larger respondents.

Conclusion

Many ICT-based library resources are available to postgraduate researchers in Universities (federal, state, and private) located in south-east Nigeria, to which they can tap into to carry out their research endeavours. The study also found that majority of the researchers use ICT-based library resources for purpose of research.

Furthermore, Faculty of Education postgraduate researchers were predominant users of ICT-based library resources, followed by Faculty of Arts postgraduate researchers and least so by Faculty of Social Sciences. Institution wise, private university reported the highest level of availability and use.

In this study, the major challenges reported as facing ICT-based library resources were postgraduate studentôs lack of fund, high cost of internet use, non competent of library staff, lack of access to ICT resources, lack of ICT skills by users and lack of awareness of ICT-based library resources.

The study suggested the following in order to make use of ICT-based library resources effective in universities located in south-east Nigeria - university libraries should make the cost of ICT-based library resources affordable, update the skills of librarians on ICT-based resources, educate the postgraduate research students on the use of ICT-based library resources and make university websites freely available to the postgraduate research students.

Suggestions for Further Research

Based on the limitations of the present study, the following suggestions were made for further studies.

1. Further research in this area should be undertaken with more universities included in the study and hence, a larger sample size to enable greater confidence in generalization of results.
2. A longitudinal study can be undertaken extending on this same topic to observe changes in availability and utilization over time given that, universities and the world at large has tilted more of ICT resources for information storage and retrieval, it is good to be kept on check so that you donâ t lag behind in the process of information acquisition and dissemination.
3. An experimental study can be undertaken comparing those who use and those who do not use ICT-based library resources on number of researches completed within a specified time-frame.

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APPENDIX A

SCHEMATIC DIAGRAM OF THE RELATIONSHIP BETWEEN VARIABLES OF THE STUDY

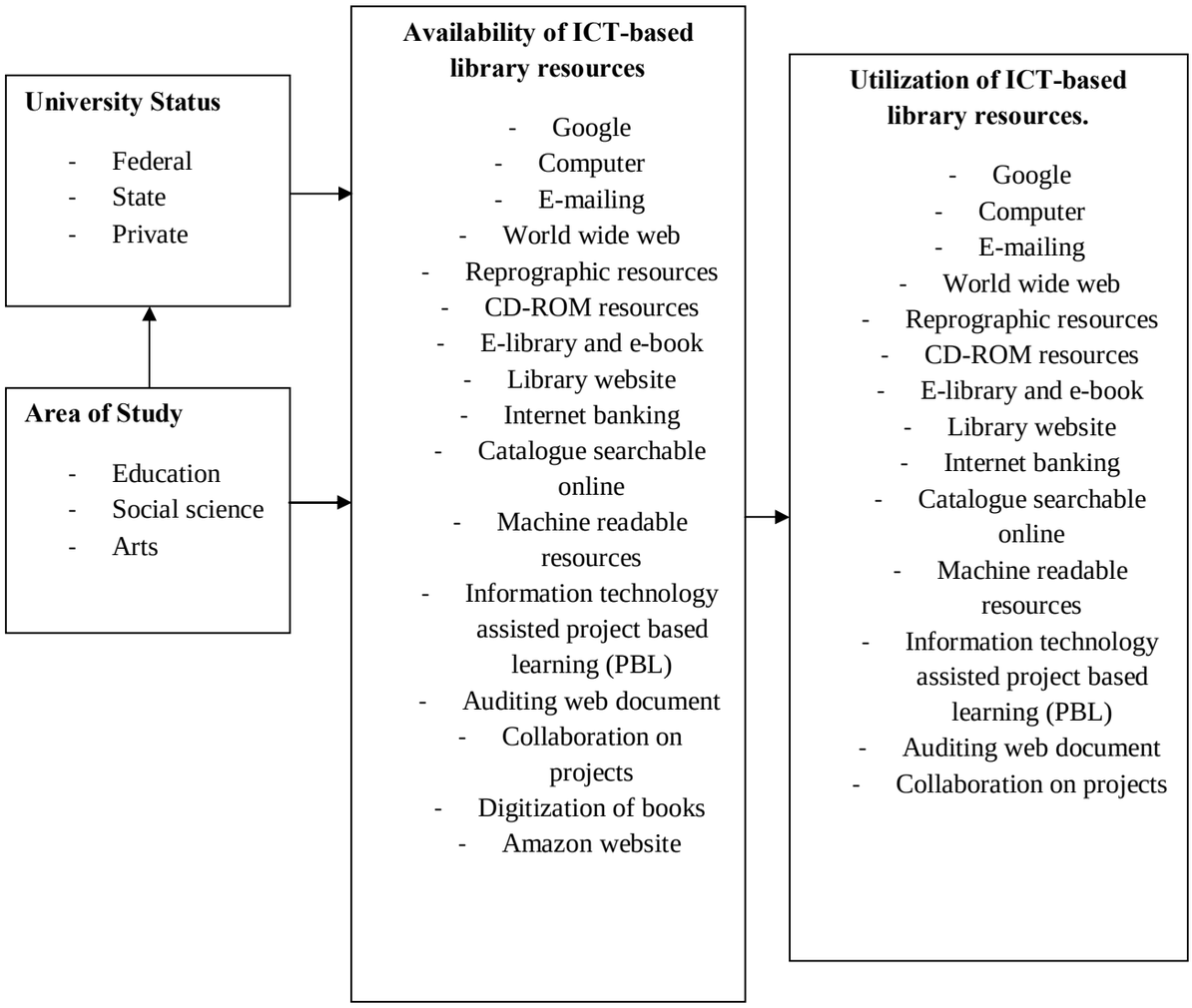

Table 3.1 Federal, state, and private universities in the south-east zone of Nigeria

S/N	Name of Universities	Status	State Located
1	University of Nigeria, Nsukka	Federal	Enugu
2	Federal University of Technology, Owerri	Federal	Imo
3	Micheal Okpara University of Agriculture, Umudike	Federal	Abia
4	Nnamdi Azikiwe University, Awka	Federal	Anambra
5	Federal University, Ndufu-Alike	Federal	Ebonyi
6	Ebonyi State University, Abakiliki	State	Ebonyi
7	Anambra State University of Science and Technology, Uli	State	Anambra
8	Abia State University, Uturu	State	Abia
9	Imo State University, Owerri	State	Imo
10	Enugu State University of Science and Technology, Agbani	State	Enugu
11	Madonna University, Okija	Private	Anambra
12	Renaissance University, Ugbawka-Agbani	Private	Enugu
13	Godfrey Okoye University, Ugwuomu-Nike	Private	Enugu
14	Caritas University, Amorji-Nike	Private	Enugu
15	Paul University, Awka	Private	Anambra
16	Gregory University, Uturu	Private	Abia
17	Evangel University, Akaeze	Private	Ebonyi

Table 3.2: Selected universities, their status and location in the south-east zone of Nigeria

S/N	Name of Universities	Status	State Located
1	University of Nigeria, Nsukka	Federal	Enugu
2	Ebonyi State University, Abakiliki	State	Ebonyi
3	Madonna University, Okija	Private	Anambra

APPENDIX B

EXTENT OF UTILIZATION OF ICT-BASED QUESTIONNAIRE QUESTIONNAIRE FOR POSTGRADUATE RESEARCH STUDENTS

Section A:

Please tick (ã) as appropriate to you.

University Status: Federal ☐ State ☐ Private ☐

Faculty base of students: Education ☐ Social Science ☐ Arts ☐

Section B:

Please tick (ã) where appropriate in the column provided on the

Part 1: level of availability of ICT based library resources for research purposes. (VHA = Very Highly Available; HA = Highly Available, MA = Moderately Available, NA = Not Available)

S/N	ICT Base Library Resources Facilities	Level of Availability			
		VHA	HA	MA	NA
1.	Computer				
2.	Laptops				
3.	Online catalogue				
4.	Library Website				
5.	E-Learning /Discussion group				
6.	Web document				
7.	E-Library and e-Book book				
8.	Internet				
9.	Usenet news group				
10.	Tele-communication facilities resources				
11.	Networks				
12.	Resources sharing and collaboration on project				
13.	Telephone				
14.	Television				
15.	Radio				
16.	slides				
17.	projector				
18.	Fascine (online printing)				
19.	Machine readable resources e.g. CD-Rom				
20.	Reprographic resources (e.g photocopying machine)				
21.	Bar Code Reader				
22.	Close circuit T.V (Network)				

Part 2: Extent of utilization of the ICT library resources in postgraduate research. (VHU = Very Highly Utilized, HU = Highly Utilized, MU = Moderately Utilized, NU = Not Utilized)

S/N	ICT Base Library Resources Facilities	Level of Availability			
		VHA	HA	MA	NA
1.	Computer				
2.	Laptops				
3.	Online catalogue				
4.	Library Website				
5.	E-Learning /Discussion group				
6.	Web document				
7.	E-Library and e-Book book				
8.	Internet				
9.	Usenet news group				
10.	Tele-communication facilities resources				
11.	Networks				
12.	Resources sharing and collaboration on project				
13.	Telephone				
14.	Television				
15.	Radio				
16.	slides				
17.	projector				
18.	Fascine (online printing)				
19.	Machine readable resources e.g. CD-Rom				
20.	Reprographic resources (e.g photocopying machine)				
21.	Bar Code Reader				
22.	Close circuit T.V (Network)				

Part 3: Problems that hinder utilization of ICT base library resources facilities. (SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree).

S/N	Problem item	Response			
		SA	A	D	SD
1.	postgraduate researchers lack awareness of ICT based library resources facilities				
2	Postgraduate researchers does not possess computer for use				
3.	They lack competence in ICT based resources usage				
4.	The students lack adequate fund to use in ICT based information retrieval				
5.	the students lack access to ICT- based resources in University libraries				
6.	The cost of internet search for research is high				
7.	The University Library Staff Do Not Possess The ICT competency to guide the students				
8.	ICT based library search is time wasting				
9.	Information from ICT based resources is not reliable				
10.	Postgraduate research students lack knowledge or website for locating appropriate group of persons materials in the net				

Part 4: Strategies for enhancing utilization of ICT based library resources in postgraduate research. (SA = strongly agree, A = Agree, D = Disagree SD = strongly disagree)

S/N	Problem item	Response			
		SA	A	D	SD
1.	A course on ICT utilization for research studies be mounted for postgraduates degree programme				
2.	The cost of using ICT facilities for postgraduate research in University libraries be made free				
3.	Training of University libraries on ICT facility utilization should be embarked on				
4.	Postgraduate students should be linked directly to the internet by the University administration.				
5.	The cost of using internet for PG research should be subsidized by the institutions concerned				
6.	library staff should be skilled in ICT based facilities				
7.	Laptop computers should be provided to postgraduates students				