UTILIZATION OF INTERNET SERVICES BY LIBRARIANS IN FEDERAL UNIVERSITY LIBRARIES IN NORTH WESTERN STATES OF NIGERIA

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MAY, 2015

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MSC/EDUC/5062/2010-2011

A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A MASTER OF SCIENCE DEGREE (MSC) IN INFORMATION SCIENCE
DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE,
FACULTY OF EDUCATION, AHMADU BELLO UNIVERSITY,
ZARIA, NIGERIA

MAY, 2015

DECLARATION

I declare that the work "Utilization of Internet Services by Librarians in Federal University Libraries in North Western States of Nigeria" was carried out by me in the Department of Library and Information Science, Ahmadu Bello University, Zaria under the supervision of Professor Innocent Isa Ekoja and Dr. Abu Yusuf. The literature used in the work have been duly acknowledged in the text and a list of references provided at the end. No part of this thesis was previously presented for the award of any degree or diploma either in this institution or any other.

…….. …….

Yakubu Emmanuel John Date

CERTIFICATION

This thesis titled "Utilization of Internet Services by Librarians in Federal University Libraries in North Western States of Nigeria" by Yakubu Emmanuel John meets the regulations governing the award of the degree of Master of Science (Msc) in Information Science of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This work is dedicated to my children, Hope, Becky, Mike, Kate and Debbie.

ACKNOWLEDGEMENTS

First of all, I want to thank God Almighty for making it possible for me to come this far in my academic pursuit.

My special thanks go to my first and second supervisors, Prof. Innocent Isa Ekoja and Dr. Abu Yusufu, who took their time to guide me and also go through this work making all necessary corrections to ensure the work was properly written.

I am equally grateful to the Postgraduate Coordinator of the Department, Dr. Ezra Shiloba Gbaje, Dr. Baba Adukwu, Dr. Babangida Umar Dangani and other lecturers in the Department whose names are not mentioned here, for their advice and encouragement. Thank you all. I appreciate.

I also want to acknowledge my family, my late father, Zakari Yakubu my mother, Ladi Yakubu, my wife, Kehinde Yakubu and our children and siblings for always allowing me to be me!

Finally, my appreciation goes to Habeeb Omeiza of Habib Computers for typing this work. Thank you all and God bless.

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ABSTRACT

The study was conducted to investigate the utilization of Internet services by librarians in federal university libraries in north western states of Nigeria. In the study, six research questions and six hypotheses were formulated and tested. One hundred and seventy-seven (177) respondents were issued copies of the questionnaires out of which, one hundred and fifty-five (155) completed copies were retrieved and used for the study. The data collected for the study were analysed using frequency tables and percentages while the hypotheses were tested using one way ANOVA to compare the mean scores of the respondents from the three university libraries studied. The findings of the study showed that the federal university libraries in the Northwest states provided basically the same Internet services to their users. The Internet is used for searching information for research and other purposes. Utilization of Internet services in the libraries was constrained by factors such as poor funding, high cost of connectivity, lack of adequate power supply, etc. The study recommended among other things, that there is the need for owners/stakeholders of the universities for the provision of Internet services, that to maximize the benefits of Internet use in the libraries, steps should be taken to ensure training and re-training of academic librarians to enable them stay abreast of developments in information work in this Internet era. Also, alternative sources of power supply should be explored to address the current problem of poor power supply from the national electricity grid.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Internet, which is a major tool of the Information and Communication Technology (ICT) innovation, is a global system that interconnects governments, academic institutions, corporations, the public and private computer networks. It is a global electronic network connecting millions of computers (Srivasta & Singh, 2007). The Internet is not only a 'network of networks', but it also serves as a storehouse of information on virtually all fields and topics in the world of knowledge. It is a repository or trough of large amounts of online information resources. As Usman (2007) posited, the Internet is an interconnection of computer networks to one another in order to access and share information that are stored online. The online network provides access to a great wealth of information resources that are stored on the millions of networks that are linked together around the world.

The provision of information and the access to services in modern academic libraries have been greatly influenced by the invention of the Internet and this has in turn also affected the modern academic librarian, the resources of his library, the services he provides and the users of his library's services.

The introduction of the Internet into library operations has helped to improve education delivery in our educational institutions, and as Ekoko & Ekoko (2004) explained, the Internet represents a medium for locating and retrieving data and reference materials, researching information, displaying projects, delivering in-service

programmes, posting news, participating in continuing education and talking with colleagues.

Some of the uses of the Internet in libraries according to Tiamiyu (1999), include its use for inter library information requests (e-mails), document delivery (by file attachment facility), current awareness services (through bulletin boards and lists) and database searching (of online or remote databases).

There were several unsuccessful efforts made in the past to connect Nigerian university libraries to the Internet. Nok (2006) for example, reported that the World Bank in 1989 provided funds to thirty (30) of Nigeria's federal universities for the acquisition of books, journals and equipment (including computers) in order to encourage them (the universities) to introduce information and communication technologies (internet connection included) in their institutions, but no significance progress was made.

Agbonlahor, Bamitale and Okike (2002) also reported that in 1995, the Nigerian National Universities Commission (NUC) had embarked on a project aimed at linking all federal universities through an electronic network named NuNet (Nigerian Universities Network) with the goal of establishing interconnectivity among the universities; this according to them had to be halted due to logistic problems.

Another attempt at Internet connection for Nigeria's university libraries was directly related to the Virtual Library Project introduced in the country's higher educational institutions. The idea for setting up the National Virtual Library Project was initiated in the year 2002 by the Federal Ministry of Education. The project was conceived in three phases; Phase One was to set up virtual libraries for universities, Phase

Two was for polytechnics and Colleges of Education and Phase Three is for primary and secondary schools through the Universal Basic Education Commission (UBEC). Phase One commenced with eleven universities and their activities were coordinated by the National Universities Commission (Lawal and Ani, 2007; in Ashiru, 2008).

This study examined the utilization of Internet services for information services by three Federal University libraries in North western, Nigeria. These universities are namely: The Ahmadu Bello University, Zaria, Bayero University, Kano and Usmanu Danfodiyo University, Sokoto.

1.2 Statement of the Problem

The acquisition and utilization of Internet facilities for information services provision has become widespread in libraries and information centres all over the world. In Nigeria, the deployment of Internet for the provision of information services became more prominent in the 1990s (Chiware, 2007). Studies however show that not many researches have been carried out to address specifically the issue of Internet use by librarians for information service delivery in Nigeria's university libraries (Oloruntoba and Bolarinwa, 2007). A study conducted by Gbaje (2007) found out that even though many academic libraries in Nigeria provide Internet access, and some have even uploaded their websites on the Internet, they are yet to move their services online and provide remote access to digital resources. Jagboro (2003) in a previous study at Obafemi Awolowo University found that the level of utilization of the Internet by post graduate students was low, this low utilization of the Internet was found to be due to two factors; the low level of connectivity and the high cost of cyber café facilities. Okon (2010) in a more recent study on 'Internet access and use' discovered that there exist a poor level of

use of electronic journals and online data bases which are essential for learning and research.

The problems associated with the effective utilization of the Internet in university libraries in Nigeria include but not limited to the following: low level of connectivity (Jagboro, 2003), inability to move services online to provide remote access to digital resources (Gbaje, 2007), poor level of use of electronic journals and online data bases (Okon, 2010), low bandwidth and limited computer terminals (Jagboro, 2003), low level of Internet search skills by academic librarians.

It is with this backdrop that the present study was conducted to find out the extent of utilization of the Internet by academic librarians in federal university libraries in Northwest states of Nigeria and the impact that its (Internet's) use is having on information services provision in these libraries.

1.3 Research Questions

The study attempted to provide answers to the following research questions:

1. Which are the most often used Internet services in the university libraries in Northwest States of Nigeria?
2. For what specific purposes are librarians in the universities using Internet services?
3. What is the extent of utilization of Internet services for information services delivery by the university libraries?
4. What Internet services are more preferred and used by users in the university libraries?

5. To what extent have the university libraries under study been able to satisfy their users with the information services they provide using the Internet?
6. What factors (if any) militate against effective use of Internet for information services delivery or provision by the university libraries in northwest states of Nigeria?

1.4 Research Hypotheses

Ho1: There is no significant difference in the type of Internet information services provided to users in the three university libraries.

Ho2: There is no significant difference in the purposes that Internet services are used in the three university libraries.

Ho3: There is no significant difference as to the extent of the utilization of Internet services to satisfy users' information needs by the three university libraries studied.

Ho4: There is no significant difference in the preference of Internet services provided to users in the three university libraries.

Ho5: There is no significant difference in the level of satisfaction with Internet services provided in the three university libraries.

Ho6: There is no significant difference in the factors militating against the effective use of the Internet for information service provision in the three university libraries.

1.5 Objectives of the Study

The study has the following objectives:

1) To find out the most often used Internet services available in the university libraries in the northwest states of Nigeria.
2) To determine the purposes for using Internet services in the university libraries under study.
3) To ascertain the extent to which the university libraries under study are succeeding in the use of Internet for the delivery of information services to their clients.
4) To identify which Internet services are more preferred and used by the users of the libraries under study.
5) To find out the extent to which users of the academic libraries under study are satisfied with information services provided by the university libraries using the Internet.
6) To identify the factors, if any, that militate against the use of the Internet to provide information services to users.

1.6 Significance of the Study

However, the result of this study contributes to knowledge in the area of library and information science as it reveals the state and level of Internet access and utilization by academic librarians in universities in Nigeria for information service delivery.

The study brings to light the problems faced by university libraries in the area of Internet access and utilization in the North-West states of Nigeria.

Also, the study's result would provide information that will be useful for planning information services provision through increased Internet access, training for staff and library users on the use of Internet services.

Finally, the study will provide reference material for other researchers who will be conducting research on Internet use both in libraries and in other disciplines.

1.7 Scope of the Study

The scope of this study is the first and second generation conventional federal university libraries in the North-Western states of Nigeria. This is so because these university libraries not only serve a large and varied client base, but also have Internet connections now for more than five years which, they have been using to provide information services to their users. The study tried to find out how effective and efficient they (the libraries) have been in their information service delivery using the Internet and how satisfied their libraries' users are with the services.

1.8 Limitations of the Study

The study is limited to studying three (3) federal university libraries in the North-West states of Nigeria. These universities include; Ahmadu Bello University, Zaria, Bayero University, Kano and Usmanu Danfodiyo University, Sokoto.

Another limitation for this researcher is paucity of funds and time for a more elaborate study to cover more universities across the entire Nigerian nation.

1.9 Operational Definitions of Terms

The terms below are operationally defined in the context of their use in this work;

Academic library: This is a library in an educational institution such as a university, college of education, polytechnic, research institution, etc.

Academic Librarian: This is a person who is a professional with bachelor level degree in library and information science who works in a university library, etc.

Information: This is data that is collected, processed and made meaningful and useful to a user who can use it to solve a particular need.

Information Service: For this study, it is the part of an information system that provides information. It is an activity that is aimed at making information available to users.

Internet: This is an interconnection of several computer networks around the world which allows the connected computers to exchange information with each other.

Internet Service: These are what you can use the Internet to do e.g. e-mail, remote computer access (Telnet), file transfer (FTP), World Wide Web (HTTP), chat (IRC), Internet telephony, mobile access, etc.

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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter, the literatures relevant to the study are reviewed. The review is based on literature sources such as journals, textbooks, magazines, online sources, etc. The literature review showed the level of access and the utilization of Internet facilities in the libraries of universities

To make the review more effective, it is organized as follows:

2.2 Conceptual definition of information, communication and Internet.

2.3 Academic Libraries: Objectives and Roles.

2.4 Historical Evolution of the Internet in University Libraries in Nigeria

2.5 Relevance and Purpose of the Internet in Academic Libraries.

2.6 Utilization of Internet for Information Services Provision by Academic Libraries

2.7 Internet Services and Resources.

2.8 Users' Satisfaction with Internet Services in Academic Libraries.

2.9 Factors militating against Internet use in Nigeria's university libraries.

2.10 Summary of the Literature Review

2.2 Conceptual Definitions: Information, Communication and Internet

2.2.1 Information

There are various definitions of information in the literature; this is so because information as a concept is closely related to other concepts such as data, knowledge and communication. The Institute of Chartered Accountants of Nigeria (ICAN, 2005), in its

professional examination study pack for management information system, defined information as "data that has been processed in such a way as to be meaningful to the person who receives it…". While to Akinde (2000), information is an entity that arises from a set of data which has been structured and tailored towards a particular audience, with which vital decisions may be made. Information is data that is accurate and timely, specific and organized for a purpose, presented within a context that gives it meaning and relevance, and can lead to an increase in understanding and decrease in uncertainty (www.businessdictionary.com). To Lucey (2005) "information is data that has been processed and communicated in such a way as to be useful to the recipient." The United States Information Industry Association in Galhotra (2008) defined information as "the resulting intellectual work produced when data elements are organized and communicated in a usual form to reduce uncertainty, for example, to help answer a question, to solve a problem, or to form a basis for action". Iloeje (2001) on his part see information as an important resource in human development, and access to it would improve knowledge.

In a simple hierarchy, symbols constitute data, data are the raw materials of information, information in context is knowledge, and knowledge is the basis of wisdom (Srivastav and Singh, 2007).

From the foregoing definitions, information can in summary be said to be processed data which is communicated to a recipient to increase their knowledge, reduce uncertainty and be useful for decision making.

2.2.2 Communication as a Concept

Communication is a very important tool for social interactions. It does not only help us keep in touch with other people around us, but also helps us to understand them. Communication is universal in nature and application. There are several definitions of communication but only a few are presented below.

For instance, Hornby (2005), in the Oxford Advanced Learner's Dictionary defined communication as "the activity or process of expressing ideas and feelings, or of giving people information.' To Eldridge in Galhotra, (2008), "when social interaction involves the transmission of meanings through the use of symbols, it is known as communication." The Microsoft Encarta Premium (2009) described communication as "the process of sharing ideas, information, and messages with others in a particular time and place."

Douglas (2013) in the online Etymology dictionary provided a more apt description of communication when he stated that it is the activity of conveying information through the exchange of thoughts, messages, or information, as by speech, visuals, signals, writing, or behaviour. It is the meaningful exchange of information between two or more living creatures.

Since communication is a process which involves the transmission or transfer of information, sharing of ideas and imparting of thoughts and messages, it involves a sender, a message, a channel and a receiver. But for communication to be complete there is the need for a fifth element which is the "feedback" or response to the transmitted message.

When we communicate, we are sharing information. This sharing of information can be done locally or remotely. Between individuals, local communication usually takes the form of a face-to-face encounter, while remote communication takes place over a distance (Forouzan, 2001). Face-to-face communication does not involve a complicated system unlike when we are communicating or transferring information over a long distance (remote communication). Long distance or remote communication requires a communication system. For a communication system to be useful, it requires three main parts, without which we cannot communicate effectively, and these parts are: the sending end, the transmission channel and the receiving end (Benzal, 2007).

As Benzal (2007) pointed out, it is the urgent need to send information quickly over long distances that led to what is referred to as telecommunications. As a result of the communication technology and systems that are in place today, communication over long distances is no longer a problem. People can communicate instantly in time using modern telephone networks. As Benzal (2007) further noted, 'these telecommunication networks have made it possible for people to communicate among themselves and when appropriately modified, they can facilitate communication between people and electronic machines (e.g. computers)".

When computers are connected for the purpose of facilitating communication, we call that 'computer network'. The networking of computers allow them to share and exchange various kinds of information; for while a single computer may serve its owner well, several computers networked together will be much more useful to their owners as they will serve them much better.

Computer networks provide a good example of information and communication systems. When computers are networked globally, that becomes an internet, that is, a computer-based global information system. The internet is composed of many interconnected computer networks. Each network may link tens, hundreds, or even thousands of computers, enabling them to share information and processing power (Microsoft Encarta Premium, 2009).

2.2.3 The Internet Technology

In 1967, Marshall McLuhan, a Professor of Mass Communication said "The new electronic interdependence recreates the world in the image of a global village." This insightful declaration has today become a fact (Long and Long, 2001). Today, we live in a global village created by global computer networks just as McLuhan predicted back in the 1960s. The Internet now links people within countries and between countries. The Internet, also known as the Net, is a world wide network of computers that have emerged as the enabling technology in our migration to a global village. It connects hundreds of thousands of networks, millions of computers, and almost a billion users in every country (Long and Long, 2001).

The Internet is a global network connecting millions of computers, allowing them to communicate with each other via a series of software protocols or rules. 'Inter' refers to the international nature of the connection between computers and 'net' refers to network – hence the name inter (national) net (work). The worldwide connection of computers allows Internet users to exchange data with other internet users (Gorard and Selwyn, 2001).

Srivastav and Singh (2007) refer to the internet as an amalgamation of inter-related computer networks permitting electronic communication on a global scale. While to Lucey (2005), it is "a global network connecting millions of computers and databases. It is a network of many computer networks." Not only is the Internet an international network, it is a vast superhighway of information which allows all kinds of networked computers to communicate with each other directly from all parts of the world. It allows information to be passed from one network and communication media to another in digital packets. The physical layer of the Internet connects users on telephone, satellite and cable TV networks, local area networks (LANs) and wide area networks (WANs) (Adesina, 2006).

A key feature of the Internet as Gorard and Selwyn (2001) indicated is that, unlike centrally controlled computer networks, it is decentralized by design. Each computer connected to the Internet is independent from all the others. Thus, operators of interconnected computers can choose which Internet services they use, as well as which services local to them, they wish to make available to the wider Internet community. As Gorard and Selwyn (2001) further noted, 'every Internet connected computer has the potential to be both a recipient and provider of information and it is this decentralized nature that gives the Internet its defining feature and make people see it as a promoter of individual freedom, hence its importance as a powerful tool for information dissemination by libraries and information providers.

2.3 Academic Libraries: Objectives and Roles

Academic libraries are often described as the "heart" of the academic community; this is usually because they provide the environment necessary for both faculty and

students to carry out their research to advance knowledge in all fields. Academic libraries enable and facilitate the exchange and growth of information, knowledge and culture among faculty, staff, students and the general public (Tripathi and Kumar, 2010).

An academic library by definition is a library that is attached to an academic institution above secondary level, serving the teaching and research needs of students and staff. These libraries serve two complementary purposes; they support the institution's curriculum and the research of the faculty and students (Hoare, 1997). In yet another definition by Prytherch (2000), academic libraries are seen as libraries in an educational establishment at any level, i.e. universities, colleges, research associations, etc. The term is associated less with school libraries. Academic libraries provide all kinds of services to their users, services that meet the users' diverse needs, based on their characteristics and interests.

The objectives of academic libraries are determined by the community they serve, that is, the academic community. The academic community served by academic libraries includes faculty and students. They provide a study environment for users, provide lending services appropriate to the different types of users they serve, and provide an active information service which may go beyond the education institution within which they are located to other organizations in the local community.

Peter (1999) sees academic libraries as documenting and catering for the growth of education and research disciplines that are of great interest to an institution by providing a freely available and readily accessible service. Academic libraries are also repositories of ideas that provide a durable true base upon which subsequent generation of scholars can build upon and by so doing create knowledge or technology that opens

new possibilities of discovery. They guarantee the survival of knowledge beyond one generation by providing a shared collection that is difficult to destroy. It is this survival of knowledge that helps to ensure that a culture becomes grounded and spares a society the cost of efforts of recreating techniques and reinventing technology. As Peter concludes, academic libraries contribute towards a culture by providing it focus for research, new ideas, lecture series, and a host of exhibits and exhibition.

Regarding the role of academic librarians, Peter (1999) identifies these roles as:

i. Responsible for managing and leveraging the institutional resources that are devoted to educational and research support.
ii. Ensuring that information will be available to students and faculty on an equal basis, regardless of an individual's or departments' wealth by reducing unnecessary duplication and by facilitating inter-library loans to enable access to other libraries on a no – or – low cost basis.
iii. Contributing to the timeliness and quality of scholarship by making it possible to locate and use information wherever it may be.

Veaner (1990) also discussing the contribution of academic librarians to higher education, identified the following unique roles:

i. Bearing responsibility for developing college and university library collections and for instructing students (both formally in the classroom and informally in the library).
ii. Advising faculties and scholars on the use of library collections.

iii. Providing a variety of information services to the college or university communities, ranging from answers to specific questions to the compilation of extensive bibliographies.

iv. Providing library and information services to the community at large.

v. Through research into the information process and through bibliographies and other studies they add to the sum total of knowledge in the field of library practice and information science. Through membership and participation in library and scholarly organizations, they work to improve the practice of academic librarianship, bibliography and information work.

vi. Performing a teaching and research role by advising and assisting faculties in their scholarly pursuits.

2.4 Historical Evolution of the Internet in University Libraries in Nigeria

What is referred to today as the Internet began as an experiment by the United States of America's (USA), Department of Defence in the 1960s. This research (carried out during the cold war era) was initiated because of the United States' Defence department's fear that its communication system could be wiped out by a nuclear attack (Adesina, 2006). This fear led the research arm of the United States' Department of Defence, known as the Advanced Research Projects Agency (ARPA) to commission the research aimed at developing a computer network using peer-to-peer networking to create a computer system that would make it possible for addressing and checking communications, rather than the network itself (Adesina, 2006). By 1969, four computers on the network were able to exchange data and the network created by these computers was named ARPANET (ARPA NETWORK). With time, more computers were added to

the network to increase the size of the ARPANET. An early development that proved to be significant to the success of ARPANET (which became Internet later) were “packet switching” and ‘Transmission Control Protocol/Internet Protocol (“TCP/IP”). Packet switching involves digital systems that transmit data in small packets that use the best current path to their destination. TCP/IP on the other hand is the core Internet protocol that allows computers to communicate with each other. In time, the academic community came to realize the value of networked computers and started its own research network which was named NSFNet after the National Science Foundation of the United States. NSFNet linked academic networks that connected universities and research organizations around North America. Later, other networks from Europe and other countries were connected to NSFNet. In the process of time, the management of the Internet was passed on to the NSFNet and the restriction hitherto placed in the commercial use of the Internet was removed making it available to all and sundry (Rajasherkar, 2004).

The removal of restriction on the use of the Internet made it possible for various governments, scientific and academic groups to create their own networks, for instance, academics in Britain developed JANET (Joint Academic Network) to link all the universities and research institutions resident in the United Kingdom and at the same time extended access to other academic institutions outside the UK. Other countries, commercial groups and organizations also soon developed their own networks. Examples of organizations that developed their own networks include: the Department of Energy (DOE) of the United States, Magnetic Fusion Energy (MPE), the High Energy Physics Network (HEPNET) and the National Science Foundation Network (NSFNET) (Rutkowski, 1996).

Nigeria established a node on the internet in 1997 but full access to the internet was not available in the country until 1998 (eShekels, 2001). Widespread availability of internet services in the country was made possible only by the year 2001 when the Nigerian telecommunication sector was deregulated allowing private telecommunication companies such as Econet (now Airtel), MTN, Globacom, etc to begin operation in the country. These private telecommunication companies started rolling out internet facilities to the Nigerian public in 2003 (Adesina, 2006).

Several efforts were made toward ICT/internet development and connection in Nigeria's universities prior to the 1990s but without much success. Agbonlahor, Bamitale and Okike (2002) reported that in 1995, the Nigerian National Universities Commission (NUC) embarked on a project to link all federal universities through an electronic network named NuNet (Nigerian Universities Network) with the ultimate goal of establishing interconnectivity (including internet connection) among the universities, but this project according to them was halted due to certain logistic problems that were encountered.

It was, however, the introduction of the virtual library project in the year 2002 by the Federal Ministry of Education that has helped greatly in speeding up internet connection in Nigeria's universities' libraries. The project was conceived in three stages. The first stage was to set up virtual libraries for universities. This first stage took off with eleven universities as pilots and this project coordinated directly by the National Universities Commission (Lawal and Ani, 2007, in Ashiru, 2008).

Apart from the McAthur Foundation that has been helping to provide internet facilities and connections to several universities in Nigeria, there are also organizations like the MTN providing e-libraries in the universities.

Today, Nigeria's university libraries that want to connect to the internet have the option of getting either full connection or terminal connection. Full connection gives them direct connection where the library's computers or network of computers are permanently linked by a dedicated line permanently to the internet making it possible for the library to remain connected twenty four hours, seven days a week (24/7). Full connection to the internet is recommended for university libraries over terminal connection because of the nature of services the libraries provide and the type of patrons they serve (university community requires internet services 24/7).

2.5 Relevance and Purpose of the Internet in Academic Libraries

The invention of the Internet has made it possible for libraries to gain access to programs, retrieve documents of all kinds of information, books and other printed materials, exchange data and send e-mails. Users of academic libraries can now get answers to their queries within the shortest time possible. Also, books and journals that have been previously impossible to obtain and keep current copies of in the academic libraries of developing countries are now made available electronically and instantaneously as they are being published. The advantage this has on the development of a library is that it makes the maintenance of large collections of printed materials and subscription to wide range of journals unnecessary (Oyinloye, 1998). Academic libraries in the Internet era provide a variety of information resources that make it possible for them to satisfy the information needs of their users. The Internet as Nair (1999) observed,

has become another alternative source of information for libraries. With the electronic information storage mechanisms and the new access and dissemination methods that are made possible by the Internet, the old traditional library techniques of information provision are fast losing their relevance. Problems such as the non-availability of materials, mutilation of books, journals etc, that are associated with traditional libraries are no more an issue in the era of virtual libraries.

The advantages of using the Internet by academic libraries and information centres are listed by Daraman (1997) and Tiamiyu (1999) in Adebisi (2004) as follows:

i. The Internet as expert system gives personal access to specialists and experts in hundreds of disciplines.

ii. As a communication mechanism, the Internet provides opportunity for librarians and libraries to reach other libraries with messages, documents and information independent of the problems of mails, telegraphs or even fax.

iii. As reference resources, the Internet provides a wealth of up-to-date information unavailable in bound volumes.

iv. With the Internet, one can collect news and facts, which can be stored on one's computer for later use in reference sources.

v. The Internet allows one to communicate with any professional colleague around the world for the progress and development of professionalism.

vi. With abundant information resources in the Internet, librarians can provide better services to their patrons by giving them access to information that will be difficult to locate in any other way.

vii. The Internet online library catalogue makes available many catalogue entries to librarians who are very close or far away in another continent.

viii. The Internet permits accessibility to bibliographic records of millions of books as well as the details of the collection of academic and research libraries around the world.

ix. The availability of resources on the Internet oblige librarians to verify and validate bibliographic information, locate an obscure title or paper for library clients, compile bibliographies and compare subject specialties in our libraries located locally and internationally.

x. Librarians can check for new titles, order for them from publishing houses or even make payment through the Internet.

xi. On the Internet, valuable information in electronic libraries, books, journals, magazines and newsletters are made available. These journals are like their printed counterparts, which appear on regular schedules, having a team of editors and reviewers that focus on specific fields and disciplines. Many electronic journals publish original researches like their paper alternatives and reference questions can only be answered through this medium

Problems that are generally associated with conventional libraries such as unavailability of materials, mutilation and theft of library books and other information resource materials, absence of up-to-date materials, etc are not a problem with the Internet database in the modern academic library. The Internet has today become a very powerful tool in libraries and no academic library in the near future will be relevant without Internet connection and this is the reason why it is imperative that the library

schools of Nigeria's universities need to update their syllabi to accommodate these new developments (Daniel, 2000). Internet and by extension ICT skills are better acquired along with professional training in librarianship (Omekwu, 2001).

A lot of information are available on the internet, however, certain skills are required in order to access them. As Dutton (1990) in Brophy (2005) suggested, the skills that are required to maximize the potentials of electronic resources are much greater than those required for searching printed sources. These skills include knowledge of the structure of the database and the instructions which must be input into the computer by the researcher, as well as an understanding of the ways in which the instructions are linked with one another. Academic librarians must reach a position where the acquisition of information skills is acknowledged as one of the key learning objectives for every student entering a university, so that no student leaves without being fully equipped to cope with the information intensive world – the information society – as an end user' Brophy, (1993) in Achona (2008).

2.6 Utilization of Internet for Information Services Provision by Academic Libraries

Internet utilization here refers to a situation in which the Internet is used by librarians to provide information services and resources to faculty members and students for solving their academic and personal problems. Utilization of Internet services in university libraries has greatly revolutionalized the art of information provision. The Internet (because of the vast information resources it contains) has become an indispensable tool in all modern academic libraries. Academic libraries now use the Internet to provide current and factual information resources on different areas of

knowledge to their users. There are now thousands of Internet 'home pages' which serve as information sources for institutions and organizations. To be able to use the Internet to meet users' information needs successfully; academic libraries need to have a good understanding of the users, their characteristics and their information needs. As Ksauri (2006) pointed out, a prime concern of every library is its users and to ensure that the information resources provided are relevant to them. The amount of information available on the Internet is quite large and now changing the world of information work. The Internet has made it easier for academic librarians to order and process information materials before making them available to users. In a study by Majid (2000) on the use of Internet by library professionals in Malaysian academic libraries, Majid (2000) found out that the use of Internet contributed positively to reference work and enhanced their effectiveness and efficiency.

Internet is used in academic libraries for library management, to provide access to online library and information services using library websites, the library's website can be used also to provide information about the library's collections, staff, rules and regulations (Rejashekar, 2004). The Internet is also used to provide online reference services such as, online indexes, online library catalogues and online searches. Internet is also used to provide are online newsgroups, inter library loans, selective dissemination of information (SDI), etc.

2.7 Internet Services and Resources

The Internet offers a number of services and resources to users that help them to either retrieve or disseminate information using the network. Resources of the Internet are not only the e-mail or newsgroup, but include various types of information resources

stored on numerous network servers. Resources on the Internet include but not limited to the following:

- ✓ Databases (factographic, bibliographic, etc)
- ✓ Electronic vocabularies
- ✓ Electronic online editions (of newspapers, magazines).
- ✓ File archives
- ✓ Various web pages

Access to these information resources is provided by special network protocols and client server softwares. The most popular Internet applications that are used to gain access to network information resources are services such as Telnet, FTP, Gopher and www (UNESCO, 2003).

Internet information resources access services or facilities can be grouped into four (4), namely;

- Information retrieval services
- Information search services
- Information communication services
- Information multimedia services.

2.7.1 Information Retrieval Services

a. File Transfer Protocol (FTP): This is an Internet information retrieval service that makes it possible for an Internet user to log onto a remote computer host and download files from the remote computer to a local computer (Srivastav and Singh, 2007). This service enables users of the Internet to move files from one

computer system to another on the Internet, no matter the location on earth, all the user needs to do is to log on to the remote computer and browse through the files in it to select and retrieve the file or files he needs.

b. **Gopher:** This is an information retrieval service that is similar to FTP, except that it is more enhanced and is easy to use. It is a software that searches and retrieves documents on remote computers which are then displayed on your computer in the form of menus. It is a menu-driven client/server programme for providing access to information through the Internet. The user of a Gopher must have a 'Gopher client programme' (Srivastav and Singh, 2007).

With Gopher, users of the internet can create and use computer file directories. It is not only easy to use, but it also has the ability to put descriptive titles on the items on the menu, which makes it much easier to use for browsing files than using file transfer protocol (FTP).

2.7.2 Information Search Services

a. **Wide Area Information Service (WAIS):** This is an Internet information search service that involves the use of a complex search programme to help us locate information resources on the Internet. This information search or retrieval service has databases of information where users can search and retrieve full text or multi-media documents. The WAIS searches databases that have been indexed with key words and returns addresses of where users can find documents that may be of interest to them. The database typically is that of bibliographies, textbooks, abstracts, indexes, library catalogues and so on. The following are the two main features of a WAIS system:

i. It has the ability to have indexes that help to point to other servers.

ii. It also allows for the use of client software running on a local computer that allows a user to ask for information in simple English language.

The most popular search engines of WAIS are 'Archie' and 'Veronica'

b. **Mosaic:** (With Internet access software) is a graphical browser that responds to hypermedia links, etc (Galhotra, 2008). Mosaic is a window based program which allows you access information on the World Wide Web. Microsoft's version called 'the Internet' is the most popular version of Mosaic.

2.7.3 Information Communication Services

a. Electronic mail (E-mail): This service is the most widely used on the Internet. It is a world wide system used for both sending and receiving messages through electronic system by individuals or groups that are often separated by great distances. E-mail messages can take the form of letters, memos, graphics, pictures, whole books, etc.

The e-mail message when sent is received by **Mail Servers** (these are computers dedicated to receiving, processing and directing e-mails to recipient computers) from where the mail is directed to the computer that the mail is specifically addressed to (examples of e-mail addresses are ejyakubu@yahoo.com, hope99@hotmail.com, psankey@abu.edu.au, nansy2008@gmail.com etc.

E-mails have the advantage of being faster, cheaper and more reliable and convenient to use for communication than the conventional media of postal and courier services. This is because messages are delivered within seconds and multiple copies of the same message can be sent to multiple recipients at the same time using a mailing list.

Unlike is the case with telephone communication, e-mails do not depend on both the receiver and sender of the message being simultaneously available before communication can take place, the message sent via e-mail can be stored and forwarded to the recipient so that they can retrieve it from any location provided they have access to the Internet.

Tiamiyu (1999) in Adebisi (2004) identified the following important applications of the e-mail:

i. Fast and cheap information service
ii. Document delivery and data exchange – this important facility of the e-mail makes it possible for computer created documents or files to be sent as attachments to an e-mail much more faster than by a courier and much cheaper than fax.
iii. Bulletin boards – these are computers on which electronic notices may be posted by other computers through e-mails.
iv. Computer conferencing – is an application of e-mail for the purpose of sending and receiving contributions to a topic. The contributions are sent to a designated 'moderator' computer, which collates and summarizes all contributions, and distributes them to all computers participating in the conference.
v. Distance education – where the teacher and the students have access to computers, e-mail may be used to communicate instructions, messages, study materials, completed assignments, questions and answers, etc.

b. Usenet: This is 'a world-wide system of electronic discussion groups with over 10,000 discussion areas, referred to as Newsgroups' (Strivastav and Singh, 2007). Usenet is an

Internet news system which helps to carry news and current affairs across the globe. This news group on the Internet is like an organization's notice board on which different types of information are posted. Journals, magazines, newsletters, research publications, etc are distributed electronically among institutions that are collaborating with each other using Usenet service. With Usenet service, Internet users can distribute and share news automatically with thousands of structured news groups.

c. Terminal Emulation Link Network (Telnet): This service allows one computer to access another computer. It enables a user to exchange data and issue commands on the other computer (the Telnet host). Telnet services are mainly used by libraries to allow access to information stored in their computers (Rajashekar, 2004). "If one has an access to the Telnet functions of Internet, one can search and view 'displayed' versions of records from LC's MARC files as well as from a number of other files, through the LOCIS (Library of Congress Information System). LOCIS is available over the Internet at no charge" (Oketunji, 1997). Using a Telnet service, one can log onto and search the catalogue of a university's library in any part of the world and query its database to retrieve information about grants, admission requirements and so on.

d. Internet Relay Chat (IRC): It is real-time communication using the Internet. IRC is a client/server application that makes it possible for several people to simultaneously communicate by text messages. People who want to communicate with one another must have an IRC client and must have also an IRC server connection. The moment you are on the server, you can select the channel on which you want to communicate. IRC allows real-time text based communication through the internet. It is organized by topics of

interest into “channels”, and the discussion occurs in “chatrooms” e.g. irc< nickname ><irc server > (Rajashekar, 2004).

2.7.4 Multimedia Information Services

Multimedia ‘refers to the integrated presentation of data, text, graphics, video and sound on a computer or other digital environment. Most common forms of multimedia are the World Wide Web, digital television and computer based CD-ROMS all offering a blend of sound, images and text (Gorard and Selwyn, 2007). The Internet information services classified under multimedia are: The World Wide Web (www), video conferencing and teleconferencing.

a) World Wide Web (www or w3):

This service allows all kinds of documents containing dynamic graphics, texts, videos, and sounds to be hyperlinked together making it easy for users of the Internet to access them.

The World Wide Web (www) was developed by Tim Berners-Lee and his team of physicists in 1990. It provides ‘hypertext’s links between different documents on the internet. These links allow users to follow pathways of interest to them by clicking on words or links within documents that would then jump to another part of the document or even a related document on another server system (Gorard and Selwyn, 2007).

The World Wide Web is the fastest growing Internet service and it is based on HTML (Hyper Text Markup Language) which allows users to access data in multimedia format. The webpage is the simplest unit of the www which is primarily a document encoded in HTML format that can be accessed by using a browser. HTML links contents

of a webpage to each other as well as to other web pages through a hyperlink. Each page has an address, a uniform resource locator (URL) (Rajashekar, 2004).

The resources on the World Wide Web are organized in such a way as to make it easy for users of the web to move from one resource to another. The connection between the different resource containing computers on the web are made through the use of 'hypertext' (a web concept that makes it easy for a user to navigate through various pieces of linked information on the web) and 'hypermedia', that links web resources.

The importance of the www can be seen in its use as a tool for instruction in classrooms, where it makes it possible for information to be accessed via the Internet protocol hypertext transfer protocol (http) and its associated language, called 'hypertext markup language' (html) that enables links to other related documents on the www. This also facilitates research on any topic of interest as all one needs to do is to identify a keyword or keywords relating to the topic one wants to carry out the research on, then by a simple click on the mouse, you will be linked to all information related to the topic. All the information on the World Wide Web are organized into 'home pages' that are generated by organizations or individuals sponsoring the information. These homepages contain combinations of texts, photos, illustrations, headlines, maps and graphics to a layout designed similar to a newsletter or magazine format (Philips and Horton, 1998). 'The web opened the Internet up to a general audience because it overcame the need for technical knowledge. Its subsequent popularity is testament to the web's ease of use and networked architecture that allows users to browse (or 'surf') many different sources of information' (Gorard and Selwyn, 2007).

b) Video Conferencing:

Video conferencing is an innovation that is made possible by information technology. Through this service, remote collaboration is made possible for individuals who would not otherwise meet with each other physically to interact and discuss issues of common interests to them. Regarding its application in libraries, Littman (1995) saw it "…as a communication facilitator in an academic library that can enable librarians to hold interactive sessions, regardless of location on such topic as Internet access and use, computer security, personal, information and privacy, intellectual freedom and copyright".

c) Teleconferencing:

A group of people who wish to meet and discuss on an issue that they all have a common interest in without having to come together physically at a particular location, can conveniently do so by means of teleconferencing. Teleconferencing, according to Hornby (2005) is a conference or discussion at which members (of the conference discussion group) are in different places and speak to each other using telephone and video connections. Teleconferencing is relatively cheap to use as it does not involve travel cost, and saves your time, since you do not need to travel far away from your office to attend the conference meeting.

2.8 Users' Satisfaction with Internet Services in Academic Libraries

The resources a library possesses are critical to users' satisfaction. In order to provide services and satisfaction to their users, academic librarians have to be friendly, helpful and provide knowledgeable advice, and the best technological resources available, this is because academic libraries' users have different needs and expectations

and they (academic librarians) are responsible for identifying these needs and expectations and meeting them. As Millson–Martula and Menon (1995) opined, one of the elements of quality service is when users' personal needs and expectations are incorporated into the development of programs and services of libraries. For this to be possible, there is the need to understand users, this is so as to provide them with the appropriate resources that would give them the level of satisfaction they need. There is also a direct link between users' satisfaction and the level of usage of and the quality of a library's facilities.

Several studies now focus on users' satisfaction with library services and resources and factors that influence users' satisfaction. A study by Andaleeb and Simmonds' (1998) for example, identified several factors that influence users' satisfaction, and these factors include, responsiveness, competence and assurance (translated to demeanor) tangibles and resources. The only thing deficient with Andaleeb and Simmonds' (1998) investigation, however, is that they did not concern themselves with investigating whether quality of services provided leads to increase usage of a library. Hermon and Altman (1996) in a monograph titled 'service quality in academic libraries' used the SERVQUAL (service quality) model to develop an instrument for measuring service quality and satisfaction in academic libraries (they claimed they found no library and information science research on service quality to use). The SERVQUAL model used by Hermon and Altman and other library and information science researchers for examining service quality was derived from the work of Parasuraman, Zeithaml and Berry (1988). The SERVQUAL model defines quality as "perceived quality" instead of as "objective quality". This means that quality is dependent on the perception that the

customer has on what he or she expects from a service rather than on any "objective" standard that is determined by a professional group or conventional performance measurement. There is, however, a division among researchers on the use of SERVQUAL and models similar to it in library and information science researches, these researchers are divided on whether the SERVQUAL instrument should be used as a diagnostic tool or as a tool for ranking libraries' performance (Cook and Heath, 1999).

In a research carried out at the Western Kentucky University (WKU) libraries, which was a library satisfaction survey reported by Perkins and Yuan (2000), in which a survey placed on the WKU library's homepage gathered usable responses from 247 participants. The participants were asked about their use and satisfaction with the libraries' electronic resources, library centre, use of library resources off-site, books and serial collections, and internet databases. The findings of the study found that the respondents were satisfied with access to databases both within and from outside the library and with the book and serial collections but were less satisfied with the libraries' homepage, with phone and e-mail assistance, and with access to CD-ROM products. In yet another study carried out by Edwards and Browne (1995) aimed at addressing the problem of the gap between users' expectations and library management's (or the professional librarian's) views of those expectations, Edwards and Browne (1995) developed a ninety-three item service quality questionnaire with which they canvassed the views of professional librarians and academics. The questionnaire were sent to a group that was randomly selected from four widely different Australian universities and a smaller group of senior librarians who were asked to respond to the questionnaire as they thought their users would. After the results had been analyzed, the researchers concluded

that the academics and librarians were agreed on the significance of the five broad dimensions of service quality (tangibles, responsiveness, reliability, assurance and empathy) although the academics appeared to place greater emphasis on reliability and the librarians, on assurance, the dimension which measures the extent to which service providers are knowledgeable, courteous and engender trust and confidence. These findings are in some way related to Hernon and Altman's (1998) observation that non-profit organizations see their services as desirable and do not focus on service quality and certainty not in terms of "perceived quality'. Edward and Browne's (1995) findings highlight the similarities between the perceptions of academics and librarians:

> The findings also show that the librarians in the sample had an accurate perception of their users' expectations across the broad dimensions that research has found to be important in determining service quality. In addition, librarians were able to identify many of the attributes of service which the academics most strongly agreed are expected of a quality information service (p.178).

While on his part, Blackman (2003) in a study which compared age and satisfaction with distant library resources found out no significant difference for age groups when investigating satisfaction with online library resources. Porter and Donthu (2006) also in a similar study found out that younger ages correlated positively with perceived ease of use and usefulness. Blackman (2003) also found out that there was no significant difference between gender and satisfaction with online library resources.

Under the technology acceptance model (TAM), acceptance is linked to satisfaction. Acceptance of an information system results when a user finds a system useful and easy to use to the extent it offers significant performance gains (Davis et al., 1989). The TAM provides a framework for determining users' satisfaction with resources

and services of a virtual library. In this write up, satisfaction or acceptance is equated to meeting the needs of virtual library users accessing the online library's resources and services. When we apply the TAM, it is predicted that the users that are more satisfied with the resources and services of the online library have achieved acceptance (satisfaction) with the information system.

Information derived using a TAM study may help academic librarians to take corrective steps necessary for improving ease of use and usefulness of resources within the academic libraries' virtual environment and meet students and faculty's demand for 24/7 access to information (Gardner and Eng, 2005). As a result of competitive pressures, information explosion, rising costs, and an increasingly aware and selective student and faculty population, this have made it necessary for Nigeria's academic libraries to become more user focused. There is the need for academic librarians to have a better understanding of the specific needs of their libraries' users in order for them to satisfy such needs adequately. To perform their roles effectively and creditably, the academic librarian must possess adequate and appropriate information resources and services, provide user-oriented services such as selective dissemination of information (SDI), current awareness services, indexing and abstracting services, inter-library loan and so on.

2.9 Factors Militating against Internet Access and Use in Nigeria's University Libraries

Despite the immense benefits associated with the application of the Internet in university libraries in Nigeria, there are a lot of problems militating against the deployment of the technology. Alasa and Kelechukwu (1998) in Adebisi (2004)

identified and enumerated the following as some of the problems militating against the use of Internet in Nigerian universities (most are still relevant today):

- Poor and inadequate telecommunication facilities
- Poor level of computer literacy even within the academic community
- Poor computer facilities.
- Poor level of awareness of Internet facilities in the academic community.
- Minimum involvement of academic institutions in network building and diffusion in Africa.
- Ignorance of decision or policy makers on the power of information on the economic and industrial development of a nation.

In addition to the above impediments, Aduwa-Ogiegbaen and Iyamu (2005) identified cost, weak infrastructures, lack of skill, lack of relevant softwares and limited access to the Internet as reasons affecting the deployment of information and communication technologies and by extension, the Internet in Nigeria's tertiary institutions.

Ashcroft and Watts (2005) reiterated the above views when they noted that the problems of Internet access and use in universities in Nigeria are made worse by "shortage of technology literate staff in the libraries, lack of skilled human resources to install and manage technology networks and poor funding to attract such staff or develop such skills in existing staff." The application of the Internet technology in library and information science practice in Nigeria is relatively low and rudimentary when compared with global trends and developments. Libraries are today shifting from their role of

custodians of traditional information to that of provider of service-oriented digital information resources (Williams and Channaveerariah, 2008).

As far back as 1998, Oconor (1998) noted the poor attitude of the Nigerian government toward the Internet and pointed out that the risk inherent in developing countries like Nigeria is that of being marginalized by the accelerating global revolution in creating, accessing and using information.'

2.10 Summary of Literature Review

Various works that are related to Internet access and utilization were reviewed in this chapter. The review was carried out to give a proper perspective to the study. The result of the review shows that not only does the use of Internet promote effective communication; it also fosters greater access to information and collaboration between individuals, groups and organizations.

The works reviewed showed the various ways that the Internet can be applied in libraries, the skills required by academic librarians for using the Internet, and factors militating against Internet access and use in Nigerian universities libraries.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the research methodology employed for this study is described. This chapter is presented under the following: Research method, population of the study, sample and sampling technique, instrument for data collection, procedure for validation of the instrument, administration of the instrument and procedure for data analysis.

3.2 Research Method

The survey research method was employed for this study. This method was chosen because of the nature of the study and the fact that the survey method would enable the researcher to reach the study's population where they are. Also, the survey method was used because the study is more interested in describing specific variables that relate to the population (Aina and Ajiferuke, 2002; Uhegbu, 2009; Anikweze, 2009). The researcher's concern in the study was to get people's views or opinions on Internet access and utilization by libraries in Nigerian universities. The survey research method is regarded as most appropriate for this research because it is best for descriptive research studies of this nature.

3.3 Population of the Study

The population of this study constituted the entire academic librarians in all the federal university libraries in the North-Western states of Nigeria. This population group was chosen based on the premise that they are supposed to be more qualified by their training and qualifications to provide information services that will help to support teaching and research activities in the universities. Also, they are the study's focus

because they are in the best position to provide relevant information that are required for the study.

Table 3.1: List of Federal University Libraries in the North-West States of Nigeria

University	Year of Establishment	State of Location	Classification
Ahmadu Bello University (ABU), Zaria	1962	Kaduna	Conventional
Bayero University (BUK), Kano	1975	Kano	Conventional
Federal University, Dutse	2011	Jigawa	Conventional
Federal University, Dutsin-ma	2011	Katsina	Conventional
Federal University, Birnin-Kebbi	2013	Kebbi	Conventional
Federal University, Gusau	2013	Zamfara	Conventional
Police Academy, Wudil	2012	Kano	Non-Conventional
Nigeria Defence Academy (NDA), Kaduna	1985	Kaduna	Non-Conventional
Usmanu DanFodiyo University (UDUS), Sokoto	1975	Sokoto	Conventional

Source: National Universities Commission (NUC) website.

3.4 Sample and Sampling Technique

The three (3) first and second generation conventional university libraries in the North western states of Nigeria were used for the study because of reasons stated earlier in the scope of the study. The researcher selected the three (3) university libraries using purposive or judgmental sampling which is based on the researcher's knowledge of the population, its elements, nature of his research objectives and scope (Akanbi, 2002 and Ngu, 2005). Also, these university libraries were selected because they are most suitable for supplying the required information (Olajide, 2007).

Copies of questionnaire were administered to the academic librarians in the three university libraries with a total population of one hundred and seventy-seven (177) and these were all used. This population breakdown is presented in table 3.2.

Table 3.2: Showing Number of Librarians in the Three (3) University Libraries

University	No. of Academic Librarians
Ahmadu Bello University (ABU), Zaria	113
Bayero University (BUK), Kano	35
Usmanu DanFodiyo University (UDUS), Sokoto	29
Total	177

Source: Personnel Records of the individual Universities

3.5 Instrument for Data Collection

The instrument used for the collection of data for this study was a questionnaire titled, Questionnaire on Utilization of Internet Services (QUIS). This questionnaire which was designed by the researcher for this study is divided into – sections numbered A – G. Section A requested for the respondents' personal data or information, and this is used for identification purposes. The other sections namely B – G contain items which the researcher used to seek information that enabled him answer the research questions stated in chapter one and test the stated hypotheses also in chapter one which were all used to guide the course of the research study. About 63 items are on the questionnaire.

This method of data collection was decided upon for the following reasons: first of all, because all those used as respondents are capable of completing the questionnaire since they are very literate and hence cannot require any form of assistance to do so. Secondly, they (respondents) are not in the same state, hence the need to collect data

using the questionnaire instrument. The third reason as Uhegbu (2009) pointed out is that questionnaire is by far the most popular instrument used in social science and education researches. Its popularity is demonstrated by the number of published studies and students' projects in education and the social sciences that employ this instrument for data collection. Accompanying the questionnaire was a brief letter of introduction to the respondents, informing them of the reason for the study and requesting their cooperation in completing the questionnaire for the study.

Apart from the questionnaire that was used to collect primary data, secondary sources such as documentary evidence were used in the review of literature related to the study which helped to put the study in a proper perspective.

3.6 Validation of the Research Instrument

To ensure the instrument (QUIS) elicited the data required from the respondents, it was subjected to face validation. This is a type of validation that involves the draft instrument being presented to experts to read through and make necessary corrections and amendments where necessary in order to make the instrument more reliable (Uhegbu, 2009). For this purpose, a team of experienced researchers which included the two supervisors of the researcher and three others from Ahmadu Bello University, Zaria and Bayero University, Kano were given copies of the instrument for face validation. Face validation is adopted because as Kerlinger (1973) in Anikweze (2009) noted, validation by others is an effective method of content validation of research instruments.

3.7 Reliability of the Instrument

To determine the consistency of the instrument for data collection, a pilot study was carried out. For the sake of convenience, the researcher carried out the pilot study

using librarians in Kano University of Science and Technology Wudil's library as this group did not form part of the respondents for the actual study. Seventeen (17) librarians were used. The split-half reliability test was carried out using Pearson's Product Moment Correlation Coefficient (PPMC) and a reliability coefficient of 0.821 was arrived at and this guaranteed the instrument's reliability.

3.8 Administration of the Instrument

The questionnaire was administered to the 177 respondents using two research assistants (for ABU and UDU), while the researcher administered those for Bayero University, Kano (BUK), personally. The respondents were allowed a time period of at least two weeks to complete and return the completed questionnaire.

3.9 Method of Data Analysis

In analyzing data that relate to the research questions, frequency distribution tables and percentages were used, while ANOVA was used to test Ho1 – 6 because there is the need to compare the mean scores of the respondents from the three university libraries studied.

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CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1. Introduction

This chapter presents the statistical analysis of the data collected with the questionnaire for assessing the utilization of Internet services by academic librarians in Federal University Libraries in North Western states of Nigeria. The chapter, begins with the response rate of the questionnaire and an analysis of the respondents' socio-demographic characteristics. The chapter is structured along the research questions and objectives of the study. The responses to each of the variables of investigation was presented in tables of frequencies and percentages and where feasible a graphical illustration was used as appendage for a comprehensive assessment. The hypotheses of the study are tested with a discussion of the findings at the end of the chapter.

4.2. Questionnaire Response Rate

Table 4.1 shows the copies of questionnaire administered in each of the libraries and the number returned and used for the study.

Table 4.1: Response of Rate to Questionnaire Used for the Study

The	Total Administered	Total Returned	Percentage (%)
ABU	113	98	86.7
UDUS	29	25	86.2
BUK	35	32	91.4
Total	177	155	87.6

Source: Survey, 2014

One hundred and seventy seven (177) copies of the questionnaire were administered to the respective cadres of librarians in the three University Libraries. The

breakdown of the number shows that 113 were distributed in Ahmadu Bello University (ABU) library while 98 (86.7%) were found to be completely filled and returned. In Usmanu Dan Fodio University library, 29 were distributed and 25 (86.2%) were filled and returned. In Bayero University Kano (BUK), a total of 35 questionnaires were distributed and 32 (91.4%) were returned. A total of 155 (87.6%) copies of the total number of questionnaire retrieved were therefore used for the study.

4.3 Descriptive Analysis of Socio-demographic Characteristics of Respondents

The working experience and highest professional educational qualifications of the librarians were considered to be of meaningful association with the expressed opinion of the respondents and with the objective of the study. The two demographic characteristics of the librarians are presented in frequencies and percentages below and also graphically illustrated in Fig.1.

Table 4.2: Classification of the Respondents by their Highest Educational Qualifications

Libraries	BA/BLIS	MLS/MIS/MSC	PhD	Total
ABU	56(57.1)	38(38.8)	4(4.1)	98
UDUS	17(68.0)	8(32.0)	0(0.0)	25
BUK	13(40.6)	19(59.4)	0(0.0)	32
Total	86(55.5)	65(41.9)	4(2.6)	155

Source: Survey, 2014

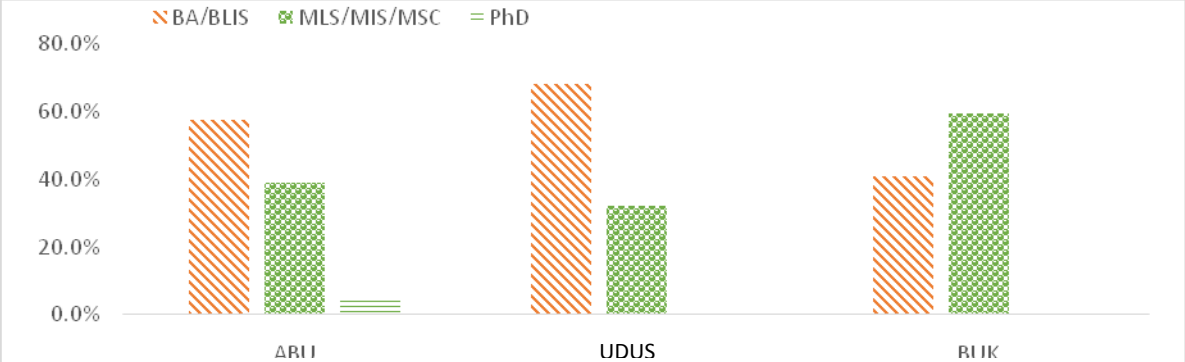


Fig. 1: Percentage Distribution of the Respondents by their Highest Professional Qualifications in the Libraries

The percentage representations are enclosed in brackets for each of the observed frequency count. The percentages are based on the number from each of the libraries and graphically illustrated in Fig. 1. Among the respondents in ABU, 56 (57.1%) were with BA or BLIS as their highest professional qualification while 38 (38.8%) had MLS, MIS or MSC. Only 4 (4.1%) had doctorate degrees. For respondents from UDUS, 17 (68.0%) had BA or BLIS as their highest professional qualification while 8 (32.0%) had MLS, MIS or MSC. From BUK, 13 (40.6%) were with BA or BLIS as their highest professional qualification and 19 (59.4%) had MLS, MIS or MSC. No respondent with doctorate was obtained among the respondents from UDUS and BUK. However, the obtained professional qualification could be considered to be adequate for information on the effective utilization of the Internet services in the libraries.

Table 4.3 shows the librarians by their years of working experience in the respective libraries. The percentage representations are graphically illustrated in figure 2.

Table 4.3: Classification of the Respondents by their Years of Working Experiences in the Libraries

Libraries	1-5 years	6-10 years	11-15 years	16-20 years	21-25 years	Above 25years	Total
ABU	65(66.3)	5(5.1)	4(4.1)	8(8.2)	4(4.1)	12(12.2)	98
UDUS	6(24.0)	6(24.0)	4(16.0)	4(16.0)	3(12.0)	2(8.0)	25
BUK	10(31.3)	8(25.0)	2(6.3)	4(12.5)	5(15.6)	3(9.4)	32
Total	81(52.3)	19(12.3)	10(6.5)	16(10.3)	12(7.7)	17(11.0)	155

Source: Survey, 2014

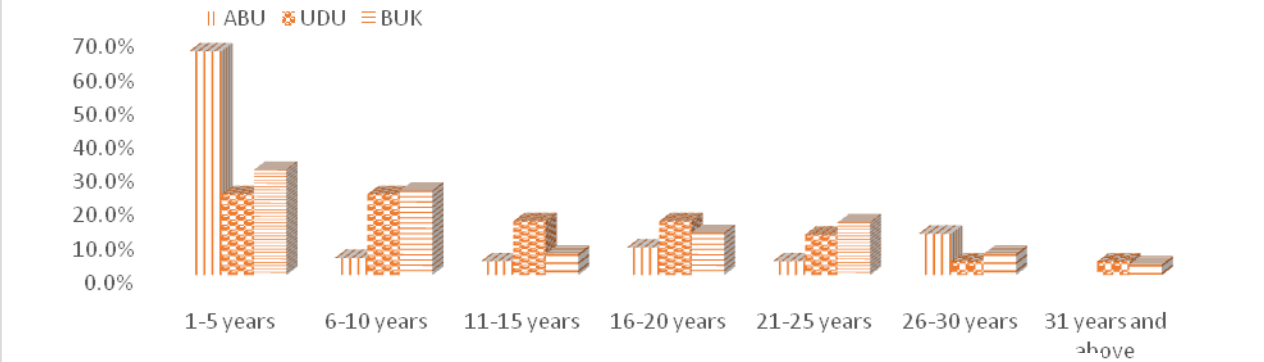


Fig. 2: Percentage Distribution of the Respondents by their Years of Working Experiences in the Libraries

Table 4.3 and figure 2 shows that 65 (66.3%) respondents from ABU have between 1 and 5 years of working experience while 5 (5.1%) have between 6-10 years with 8 (8.2%) of them having between 11-15 years. For 11-15 years the number of librarians were 4 (4.1%), 16-20 years were 8 (8.0%) and 21-25 years were 4 (4.1%) with 12 (12.2%) having above 25 years of working experience. For Librarians from UDUS, the number was 6 (24.0%) for 1-5 years, 6 (24.0%) for 6-10 years, 4 (16.0%) for 16-20 years. Those with experiences of between 21 and 25 years were 3 (12.0%) while 2 (8.0%) have above 25 years of working experience. For BUK, the number 1 – 5 years was 10 (31.3%), for 6-10 years was 8 (25.0%) and 2 (6.3%) have between 11 and 15 years of

working experience. Those with 16 and 20 years of working experience were 4 (12.5%) and 5 (15.6%) have between 21 and 25 years with 3 (9.4%) having more than 25 years of working experience in the library. The years of working experience was considered an important factor in the knowledge and use of Internet services by the librarians. By their years of working experience, the respondents could be expected to give adequate and valid information regarding the objective of the study.

4.4 Analysis and Discussion

The research questions used in addressing the objectives of assessing the utilization of Internet services by academic librarians in the selected University Libraries in the North West states of Nigeria were analyzed as follows:

4.4.1 Internet Services most often Used in the University libraries in North West states of Nigeria

Table 4.4 shows a list of Internet services used in University Libraries which the librarians were asked to indicate their usage or otherwise in their libraries. The responses presented in frequencies and percentages are graphically illustrated in Figure 3. The figure used only the percentages for the respective items.

Table 4.4: Respondents' Opinions on the Internet Services Used in the Libraries

Internet services used in the libraries	Libraries	Used		Not Used		Total
		Freq.	%	Freq.	%	
Electronic mail (e-mail)	ABU	74	75.5	24	24.5	98
	UDUS	18	72.0	7	28.0	25
	BUK	28	87.5	4	12.5	32
Internet chat facilities	ABU	66	67.3	32	32.7	98
	UDUS	15	60.0	10	40.0	25
	BUK	23	71.9	9	28.1	32
Internet newsgroup	ABU	70	71.4	28	28.6	98
	UDUS	17	68.0	8	32.0	25
	BUK	25	78.1	7	21.9	32
Internet discussion group	ABU	67	68.4	31	31.6	98
	UDUS	10	40.0	15	60.0	25
	BUK	17	53.1	15	46.9	32
Telnet service	ABU	34	34.7	64	65.3	98
	UDUS	10	40.0	15	60.0	25
	BUK	12	37.5	20	62.5	32
Internet phone	ABU	37	37.8	61	62.2	98
	UDUS	9	36.0	16	64.0	25
	BUK	10	31.3	22	68.8	32
FTP (for downloading)	ABU	98	100.0	0	0.0	98
	UDUS	16	64.0	9	36.0	25
	BUK	23	71.9	9	28.1	32
Video conferencing facilities	ABU	40	40.8	58	59.2	98
	UDUS	11	44.0	14	56.0	25
	BUK	15	46.9	17	53.1	32
Internet fax	ABU	9	9.2	89	90.8	98
	UDUS	10	40.0	15	60.0	25
	BUK	9	28.1	23	71.9	32
Teleconferencing facilities	ABU	40	40.8	58	59.2	98
	UDUS	12	48.0	13	52.0	25
	BUK	13	40.6	19	59.4	32

Source: Survey, 2014

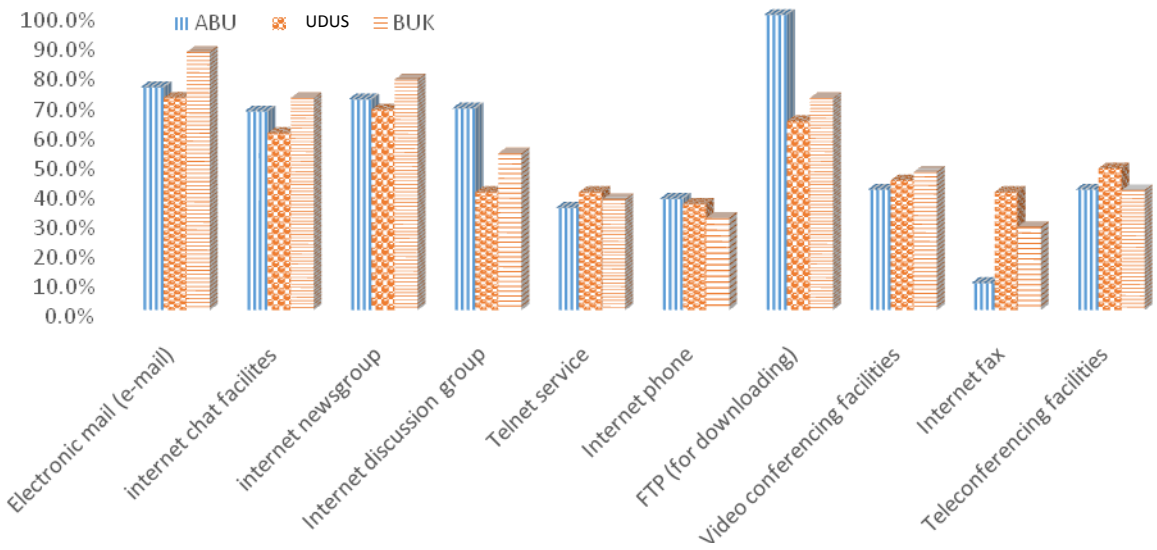


Fig. 3: Percentage Distribution of the Respondents by Internet Services Used in their Respective Libraries

Going by percentage representation of the usage of the services, noticeable variability could be observed from the three university libraries. In some services, librarians from ABU have higher ratings while in others BUK tended to have higher ratings. Among such services where BUK has higher ratings were Electronic mail (e-mail) with (87.5%) compared to the 74 (75.5%) for ABU and 18 (72.0%) for UDUS respectively. This was also the case with the adequacy of Internet chat facilities where respondents from BUK rated theirs 23 (71.9%), ABU 66 (67.3%) and UDUS 15 (60.0%). For Internet newsgroup BUK had a higher rating with 25 (78.1%) while ABU librarians' rating was 70 (71.4%) and UDUS 17 (68.0%). However, ABU's respondents rated their usage of Internet discussion groups at 67 (68.4%), while BUK's rating was 17 (53.1%) and UDUS 10(40.0%) respectively.

There were certain services that were not used in the libraries, going by their rating in the table and the figure. Such services included Telnet services, Internet phone, Video conferencing facilities, Internet fax and Teleconferencing facilities. The low rating

of these services cut across all the three university libraries. But in FTP (for downloading), all respondents (98 or 100.0%) from ABU library were of the opinion it was available compared to 23 (71.9%) for BUK and 16 (64.0%) for UDUS.

4.4.2 Purposes for which Internet Services are Used in University Libraries

To identify the purposes for using Internet services in the university libraries under study, a number of items were suggested on which the respondents expressed their opinions. The expressed opinions were measured on a five point scale and presented in frequencies and percentages in Table 4.5. The analysis or interpretations of the scores were however based on a dichotomous categorization of agreement and disagreement. In Figure 4, the percentages of agreement for the respective university are graphically illustrated for each of the items.

Table 4.5 and figure 4 showed that usage for the respective purposes was more in ABU than in any of the other two universities involved in the study. For example, while 94 (95.9%) staff in ABU were in agreement with the use of the internet to access electronic journals, for UDUS and BUK, the percentages were 14 (56.0%) and 22(68.8%) respectively. In the case of using the internet for receiving professional news, information and news updates, the percentages for agreement among the respondents were 98(100.0%) for ABU, 12(48.0%) for UDUS and 19(59.4%) for BUK respectively. For downloading of information materials, the percentages were 98(100.0%) for ABU, 11(44.0%) for UDUS and 21(65.6%) for BUK. The respondents from ABU that is, (98 or 100.0%) agreed that the purpose of usage of their Internet service is for accessing libraries' websites. But the corresponding level of agreement with the item was 10(40.0%) for UDUS and 19(59.4%) for BUK. For web browsing, the staff from ABU

98(100.0%) agreed. 15(60.0%) of staff from UDUS and 23(71.9%) from BUK agreed that the Internet Services were used for Web browsing in their libraries. In the same vein, all respondents (98 or 100%) from ABU agreed that the Internet services were used for searching for information for research and publication purposes but in UDUS and BUK the percentages of agreement with the purpose were 15(60.0%) and 22(68.8%) respectively.

Table 4.5: Respondents' Opinion on Purposes of Internet Usage in the Libraries

Purposes for Internet use	Libraries	SA	A	U	D	SD	Total
To access electronic journals	ABU	94(95.9)	0(0.0)	0(0.0)	4(4.1)	0(0.0)	98
	UDUS	11(44.0)	3(12.0)	4(16.0)	4(16.0)	3(12.0)	25
	BUK	20(62.5)	2(6.3)	3(9.4)	3(9.4)	4(12.5)	32
To receive professional news/information/ news updates	ABU	62(63.3)	36(36.7)	0(0.0)	0(0.0)	0(0.0)	98
	UDUS	8(32.0)	4(16.0)	3(12.0)	5(20.0)	5(20.0)	25
	BUK	14(43.8)	5(15.6)	5(15.6)	5(15.6)	3(9.4)	32
To download e.g. software etc	ABU	72(73.5)	26(26.5)	0(0.0)	0(0.0)	0(0.0)	98
	UDUS	9(36.0)	2(8.0)	4(16.0)	7(28.0)	3(12.0)	25
	BUK	20(62.5)	1(3.1)	5(15.6)	5(15.6)	1(3.1)	32
To access libraries, websites	ABU	12(12.2)	86(87.8)	0(0.0)	0(0.0)	0(0.0)	98
	UDUS	8(32.0)	2(8.0)	3(12.0)	7(28.0)	5(20.0)	25
	BUK	16(50.0)	3(9.4)	3(9.4)	5(15.6)	5(15.6)	32
For web browsing	ABU	85(86.7)	13(13.3)	0(0.0)	0(0.0)	0(0.0)	98
	UDUS	11(44.0)	4(16.0)	3(12.0)	4(16.0)	3(12.0)	25
	BUK	22(68.8)	1(3.1)	4(12.5)	2(6.3)	3(9.4)	32
To search for and get information for research/publication	ABU	37(37.8)	61(62.2)	0(0.0)	0(0.0)	0(0.0)	98
	UDUS	12(48.0)	3(12.0)	2(8.0)	3(12.0)	5(20.0)	25
	BUK	21(65.6)	1(3.1)	4(12.5)	3(9.4)	3(9.4)	32
To participate in discussion groups	ABU	0(0.0)	4(4.1)	78(79.6)	16(16.3)	0(0.0)	98
	UDUS	5(20.0)	5(20.0)	3(12.0)	8(32.0)	4(16.0)	25
	BUK	10(31.3)	3(9.4)	8(25.0)	8(25.0)	3(9.4)	32
For sending and receiving or checking e-mails	ABU	90(91.8)	4(4.1)	0(0.0)	4(4.1)	0(0.0)	98
	UDUS	9(36.0)	3(12.0)	4(16.0)	6(24.0)	3(12.0)	25
	BUK	19(59.4)	1(3.1)	3(9.4)	4(12.5)	5(15.6)	32
For internet phone calls	ABU	4(4.1)	0(0.0)	26(26.5)	47(48.0)	21(21.4)	98
	UDUS	3(12.0)	2(8.0)	7(28.0)	8(32.0)	5(20.0)	25
	BUK	3(9.4)	3(9.4)	8(25.0)	9(28.1)	9(28.1)	32
To obtain information on conference announcements, vacancies etc	ABU	9(9.2)	85(86.7)	0(0.0)	4(4.1)	0(0.0)	98
	UDUS	6(24.0)	3(12.0)	6(24.0)	5(20.0)	5(20.0)	25
	BUK	10(31.3)	5(15.6)	10(31.3)	2(6.3)	5(15.6)	32
For internet fax	ABU	0(0.0)	4(4.1)	41(41.8)	18(18.4)	35(35.7)	98
	UDUS	3(12.0)	4(16.0)	4(16.0)	8(32.0)	6(24.0)	25
	BUK	2(6.3)	3(9.4)	9(28.1)	8(25.0)	10(31.3)	32
For inter library exchange and resource sharing	ABU	9(9.2)	81(82.7)	4(4.1)	0(0.0)	4(4.1)	98
	UDUS	4(16.0)	4(16.0)	5(20.0)	6(24.0)	6(24.0)	25
	BUK	10(31.3)	3(9.4)	7(21.9)	8(25.0)	4(12.5)	32
For Telnet connections	ABU	9(9.2)	9(9.2)	21(21.4)	46(46.9)	13(13.3)	98
	UDUS	3(12.0)	3(12.0)	6(24.0)	6(24.0)	7(28.0)	25
	BUK	10(31.3)	2(6.3)	8(25.0)	3(9.4)	9(28.1)	32
For reference purposes	ABU	9(9.2)	85(86.7)	0(0.0)	4(4.1)	0(0.0)	98
	UDUS	7(28.0)	2(8.0)	3(12.0)	8(32.0)	5(20.0)	25
	BUK	15(46.9)	5(15.6)	5(15.6)	3(9.4)	4(12.5)	32
To discuss or contact experts in a field	ABU	8(8.2)	81(82.7)	9(9.2)	0(0.0)	0(0.0)	98
	UDUS	6(24.0)	4(16.0)	3(12.0)	5(20.0)	7(28.0)	25
	BUK	10(31.3)	2(6.3)	5(15.6)	5(15.6)	10(31.3)	32

Source: Survey, 2014

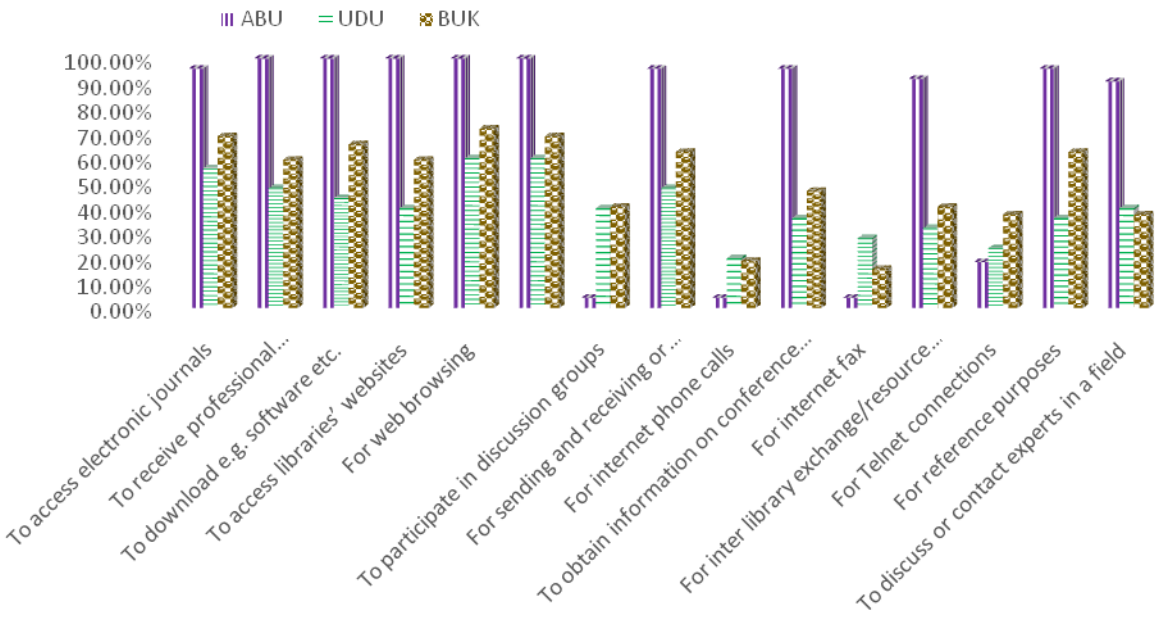


Fig. 4: Purposes for which Internet Services are Used in the Libraries

However, staff from ABU indicated that their Internet services were not used for participating in discussion groups. The respondents from UDUS and BUK indicated that they also do not use the Internet for such purpose, but their percentages for agreement were relatively higher than that of ABU. Respondents from UDUS for example had a percentage of 10(40.0%) while BUK had 13(40.6%). Most (94 or 95.9%) of the respondents from ABU were of the opinion that their Internet services were used for sending and receiving or checking e-mails. The corresponding percentages for BUK and UDUS were 20(62.5%) and 12(48.0%) respectively. The respondents from the three University libraries did not agree that their Internet services use included for Internet phone calls. This is clearly shown in table 4.5 and fig. 4. It was only librarians of ABU (94 or 95.9%) that agreed that their Internet services were used for obtaining information on conferences' announcements, job vacancies and such other information. The

percentage of agreement obtained among respondents from UDUS 9(36.0%) and BUK 15(46.9%) were relatively low.

As shown in table 4.5 and fig. 4, there were certain information services which were not used using the Internet in the libraries. These included Internet fax and Telnet connections. These items were rated very low by all the respondents from the three libraries. Other purposes for which the Internet was not used among the respondents were for inter library exchange of information and resource sharing, references and for discussing or contact with experts and other professionals in various field. In all these purposes, the respondents from ABU have the highest rating among the three university libraries.

4.4.3 Extent of Utilization of Internet Services for Information Services Delivery by the University Libraries

To ascertain the extent to which the university libraries under study are succeeding in the use of Internet for the delivery of information services to their clients, the respondents' answers to the items used for the assessment are tabulated in frequencies and percentages in Table 4.6. The responses are re-categorized into agreement and disagreement in the analysis of the items; this is to make the analysis more comprehensive. The percentages for agreement by the groups of librarians from the three university libraries are then graphically illustrated in Figure 5.

A look at table 4.6 and the graph following it, will reveal the predominance of the respondents from ABU rating across the selected items. This is the case for items such as, for helping the librarians to use the web to enhance their job performance and using the Internet to help librarians to answer specific questions that enable them to increase their capability for solving patrons' information need problems. Respondents from UDU were

particularly low in their rating for the two items as indicated by their percentages for agreement and as illustrated in the chart. However, respondents from BUK have a relatively higher rating next to those of ABU on the two items, which clearly shows the importance attached by the respective university libraries to the provision of Internet services to their clients. The librarians were particularly agreed that the Internet to them has become a major source of research information in libraries. Though ABU had the highest rating of 98(100%) but UDUS and BUK had 13(52.0%) and 19(59.4%) respectively (see Table 4.6 and figure 5).

Table 4.6: Respondents' Opinion on the Utilization of Internet Services in the Libraries

Usefulness of Internet in Library		**SA**	**A**	**U**	**D**	**SD**	**Total**
They help librarians to use the web to enhance their job performance	ABU UDUS BUK	67(68.4) 8(32.0) 13(40.6)	22(22.4) 4(16.0) 7(21.9)	9(9.2) 4(16.0) 7(21.9)	0(0.0) 4(16.0) 3(9.4)	0(0.0) 5(20.0) 2(6.3)	98 25 32
The internet helps librarians to answer specific questions that enable them to increase their capability for solving patrons information need problems	ABU UDUS BUK	65(66.3) 9(36.0) 15(46.9)	33(33.7) 5(20.0) 2(6.3)	0(0.0) 6(24.0) 3(9.4)	0(0.0) 3(12.0) 5(15.6)	0(0.0) 2(8.0) 7(21.9)	98 25 32
The internet has become an important and useful source for research information in libraries	ABU UDUS BUK	67(68.4) 9(36.0) 17(53.1)	31(31.6) 4(16.0) 2(6.3)	0(0.0) 5(20.0) 6(18.8)	0(0.0) 2(8.0) 5(15.6)	0(0.0) 5(20.0) 2(6.3)	98 25 32
Internet use has helped to reduce the time spent on the use of information resources in printed form	ABU UDUS BUK	66(67.3) 4(16.0) 15(46.9)	28(28.6) 2(8.0) 2(6.3)	4(4.1) 7(28.0) 5(15.6)	0(0.0) 8(32.0) 6(18.8)	0(0.0) 4(16.0) 4(12.5)	98 25 32
Increased productivity and time saving are some of the benefits of using the internet	ABU UDUS BUK	55(56.1) 8(32.0) 16(50.0)	43(43.9) 5(20.0) 3(9.4)	0(0.0) 6(24.0) 3(9.4)	0(0.0) 3(12.0) 5(15.6)	0(0.0) 3(12.0) 5(15.6)	98 25 32
There is an increase in the quantity and quality of publication as a result of internet use	ABU UDUS BUK	77(78.6) 8(32.0) 15(46.9)	21(21.4) 4(16.0) 6(18.8)	0(0.0) 7(28.0) 6(18.8)	0(0.0) 4(16.0) 3(9.4)	0(0.0) 2(8.0) 2(6.3)	98 25 32
There is an increase in the level of research output in virtually all fields of knowledge as a result of internet use	ABU UDUS BUK	61(62.2) 10(40.0) 16(50.0)	37(37.8) 5(20.0) 3(9.4)	0(0.0) 6(24.0) 3(9.4)	0(0.0) 2(8.0) 5(15.6)	0(0.0) 2(8.0) 5(15.6)	98 25 32

Source: Survey, 2014

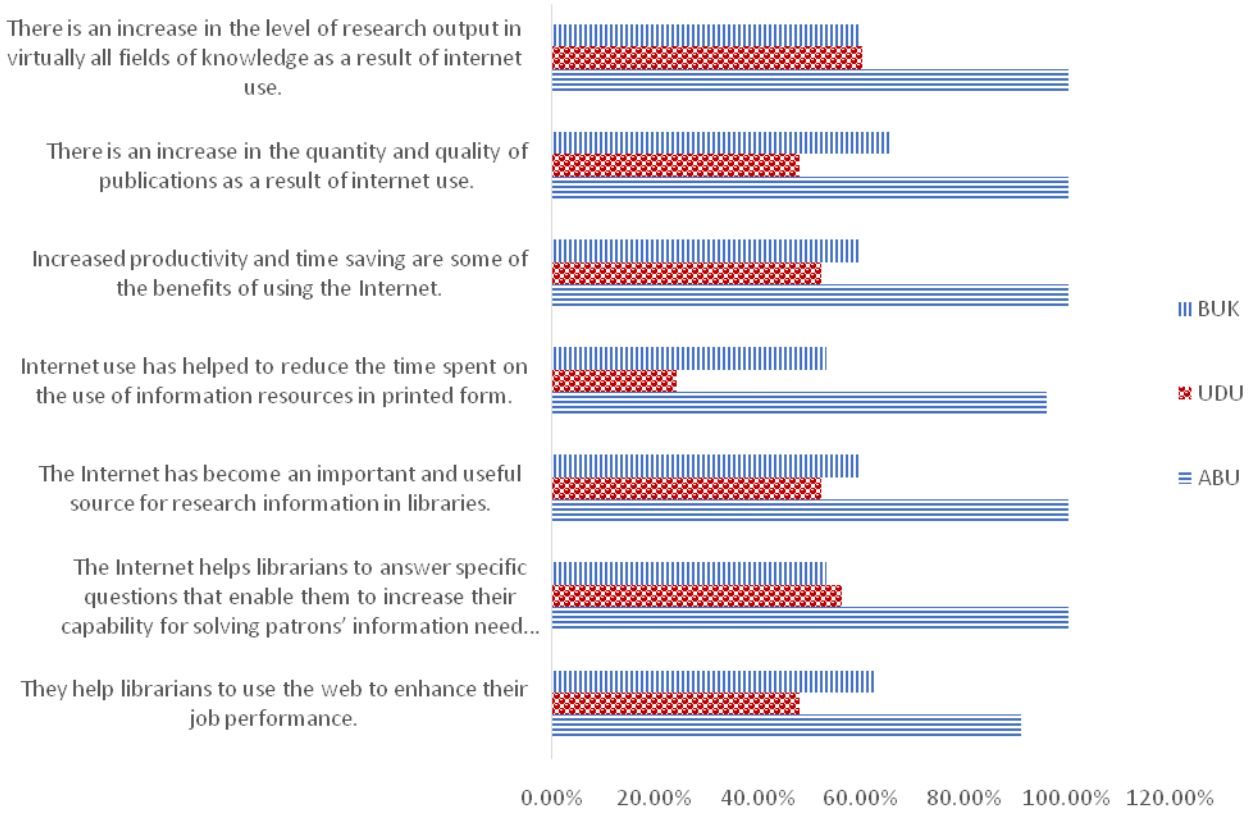


Fig. 5: Usefulness of the Internet Services in the Libraries

Apart from the low rating 6 (24.0%) among UDUS respondents, it could be said that the librarians agreed that Internet usage has helped to reduce the time spent on use of information resources in printed form. This is clearly shown by 94(95.9%) of ABU staff rating and 17(53.1%) by BUK staff as shown on the chart (fig.5). All 98(100%) respondents from ABU library, 13(52.0%) from UDUS, and 19 (59.4%) from BUK's library agreed that the Internet has increased productivity and time saving among staff, this they see as some of the benefits accruing from Internet usage in the libraries. Respondents from ABU (98 or 100%), UDUS (12 or 48%) and BUK (21 or 65.6%)

agreed that there is an increase in the quantity and quality of publications as a result of internet use and that there is an increase in the level of research output in virtually all fields of knowledge as a result of Internet use. Though librarians at UDUS agree that increase in the level of research output in virtually all fields of knowledge is as a result of internet use, but they did not agree that Internet has led to an increase in the quantity and quality of publications.

4.4.4 More preferred Internet Services by Users in the University Libraries of Northwest States of Nigeria

To identify the Internet services preferred and used mostly by the users of the libraries under study, a generalization was made with a number of items. The items used for the assessment which consisted of a number of Internet services are rated in a five point scale but in the discussions, two categorizations were used. These were preferred or not preferred. This was necessary for easy comprehension of the direction of the respondents. The percentages for preferred are graphically illustrated in Figure 6.

Table 4.7: Respondents' Opinion on the Preference of Internet Services in the Libraries

Internet services preferred	Libraries	MP	P	U	LP	NP	Total
Information retrieval services (i.e. for receiving professional information/news, for accessing e-journal, downloading, etc)	ABU UDUS BUK	98(100.0) 9(36.0) 15(46.9)	0(0.0) 4(16.0) 5(15.6)	0(0.0) 6(24.0) 6(18.8)	0(0.0) 4(16.0) 3(9.4)	0(0.0) 2(8.0) 3(9.4)	98 25 32
Information search services (i.e. for browsing the web, accessing other libraries' data bases, general search etc)	ABU UDUS BUK	90(91.8) 8(32.0) 14(43.8)	8(8.2) 3(12.0) 3(9.4)	0(0.0) 5(20.0) 7(21.9)	0(0.0) 6(24.0) 6(18.8)	0(0.0) 3(12.0) 2(6.3)	98 25 32
Information communication services (i.e. for taking part in discussion groups, sending and receiving e-mails, Internet fax, Internet phone)	ABU UDUS BUK	48(49.0) 3(12.0) 12(37.5)	42(42.9) 4(16.0) 3(9.4)	8(8.2) 8(32.0) 6(18.8)	0(0.0) 5(20.0) 8(25.0)	0(0.0) 5(20.0) 3(9.4)	98 25 32
Multimedia information services (i.e. for Telnet connections, video conferencing, www, etc)	ABU UDUS BUK	0(0.0) 4(16.0) 7(21.9)	27(27.6) 3(12.0) 4(12.5)	37(37.8) 8(32.0) 7(21.9)	34(34.7) 6(24.0) 8(25.0)	0(0.0) 4(16.0) 6(18.8)	98 25 32

Source: Survey, 2014

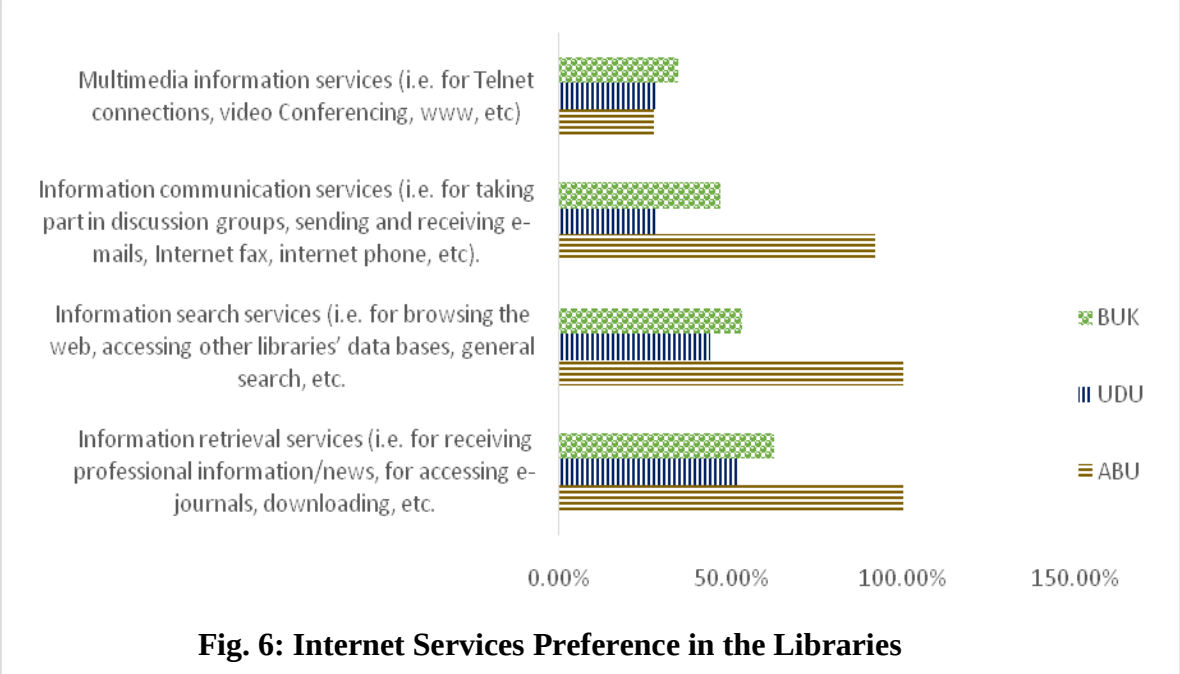


Fig. 6: Internet Services Preference in the Libraries

Table 4.7 and the graph (fig. 6) revealed that preference for the different Internet services could be said to vary in the three University libraries. Though preference of the services was generally high among respondents from ABU, but among BUK respondents, preference for Information retrieval services (i.e. for receiving professional information/news, for accessing e-journal, downloading, etc) was higher with 62.5% and was followed by preference for Information communication services (i.e. for taking part in discussion groups, sending and receiving e-mails, Internet fax, internet phone, etc) with 53.1%. Among respondents from UDUS, preference was only for Information retrieval services (i.e. for receiving professional information/news, for accessing e-journals, downloading, etc with 52.0% rating. Other items were rated below 50%. Which clearly mean that the respondents have no preference for the services.

4.4.5 Extent to which University Libraries under Study have been able to Satisfy their Users with the Information Services they Provide using the Internet

To find out the extent to which users of the academic libraries under study are satisfied with information services provided by the university libraries using the Internet, a number of items used for the assessment were rated by the librarians from the respective libraries. The discussions of the items were based on two categories of satisfied or not satisfied and the percentages for satisfaction are graphically presented in Table 4.8 and in Figure 7.

Table 4.8: Respondents' Opinions on the Levels of Satisfaction with Internet Services provided in the Libraries

Level of satisfaction with Internet services	Libraries	VH	H	U	L	VL	Total
Level of satisfaction with the Internet facilities/services provided in the library for research and other academic purposes	ABU	24(24.5)	37(37.8)	9(9.2)	19(19.4)	9(9.2)	98
	UDUS	8(32.0)	6(24.0)	5(20.0)	4(16.0)	2(8.0)	25
	BUK	9(28.1)	1(3.1)	9(28.1)	8(25.0)	5(15.6)	32
Level of satisfaction with the use of Internet facilities/services in the library by the library's patrons	ABU	0(0.0)	56(57.1)	21(21.4)	21(21.4)	0(0.0)	98
	UDUS	4(16.0)	2(8.0)	7(28.0)	6(24.0)	6(24.0)	25
	BUK	6(18.8)	1(3.1)	9(28.1)	7(21.9)	9(28.1)	32
Level of satisfaction derived from Internet use by librarians in the library to meet users information needs	ABU	23(23.5)	40(40.8)	8(8.2)	18(18.4)	9(9.2)	98
	UDUS	8(32.0)	1(4.0)	8(32.0)	3(12.0)	5(20.0)	25
	BUK	8(25.0)	1(3.1)	8(25.0)	7(21.9)	8(25.0)	32
Extent of users use of the internet to solve both personal and academic problems	ABU	26(26.5)	37(37.8)	8(8.2)	13(13.3)	14(14.3)	98
	UDUS	8(32.0)	5(20.0)	2(8.0)	4(16.0)	6(24.0)	25
	BUK	8(25.0)	3(9.4)	8(25.0)	7(21.9)	6(18.8)	32
Use of Internet for inter library exchanges/resources sharing etc by the library staff	ABU	0(0.0)	46(46.9)	30(30.6)	18(18.4)	4(4.1)	98
	UDUS	4(16.0)	2(8.0)	4(16.0)	8(32.0)	7(28.0)	25
	BUK	5(15.6)	3(9.4)	7(21.9)	8(25.0)	9(28.1)	32

Source: Survey, 2014

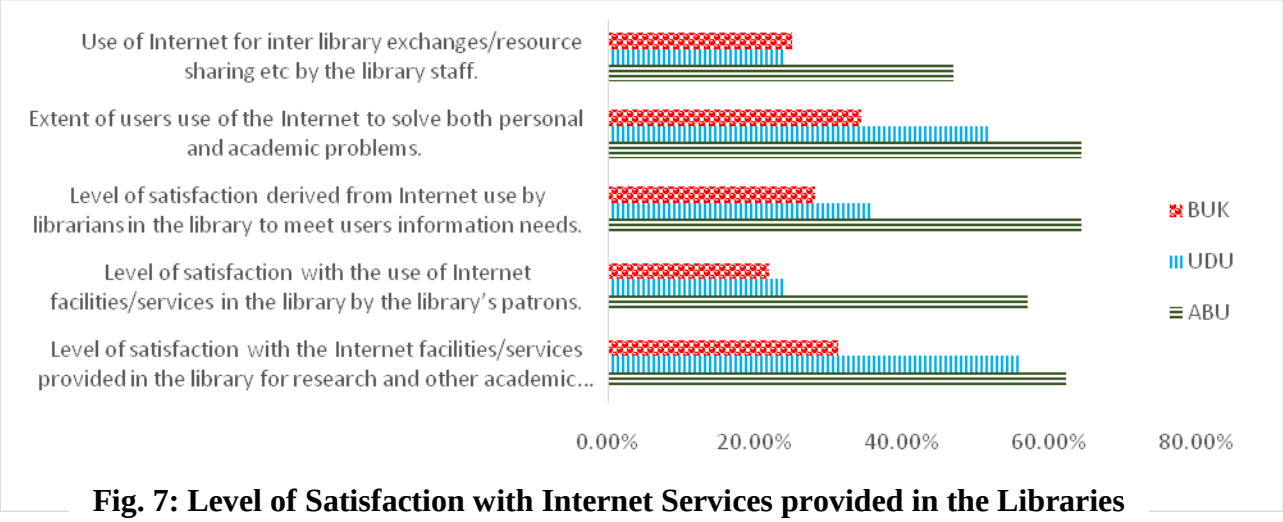


Fig. 7: Level of Satisfaction with Internet Services provided in the Libraries

From table 4.8 and fig.7, it shows that respondents from BUK library were satisfied with the Internet facilities and services provided in their library for research and other academic purposes, this was indicated by 22 (68%) of the respondents and this was followed closely by respondents from ABU and UDUS with 61 (62.2%) and 14 (56.0%) respectively.

In terms of level of satisfaction with Internet services provided to meet users' information needs the analysis showed that in ABU, 63 (64.3%) indicated they were satisfied, in UDUS and BUK, the corresponding percentages for satisfaction were 9 (36.0%) and 9 (28.1%) respectively. On extent of Internet usage to solve both personal and academic problems of users, the analysis show that 63 (64.3%) and 13 (52.0%) respondents in Abu and UDUS respectively indicated they were satisfied. It was only in BUK library that the level of satisfaction (11 or 34.4%) was found to be extremely low. The respondents from the three university libraries were, however, found not to be satisfied with the use of Internet for inter-library exchanges of information and resource sharing. This is clearly shown by the low percentages for the three groups in table 4.8 and fig. 7.

On a whole, in terms of level of satisfaction with the use of the Internet facilities/ services in the three libraries, ABU library recorded the highest level of satisfaction with 56 (57.1%), while UDUS and BUK had the least level of satisfaction as can be seen in their respective percentages of 6 (24.0%) and 7 (21.9%).

4.4.6 Factors Militating against Effective use of Internet for Information Services Delivery by the University Libraries in Northwest States of Nigeria

To identify the factors that militate against the use of the Internet to provide information services to users, the items selected for which the librarians' opinions were

solicited are listed in Table 4.9 with the rated frequencies and percentages on a five point scale. The interpretations were however based on a dichotomous perception in terms of agreement and disagreement. The percentages for agreement are graphically illustrated in Figure 8.

Table 4.9: Opinions of the Respondents on Factors Militating against Effective Use of Internet in the Libraries

Factors militating against Internet usage	Libraries	SA	A	U	D	SD	Total
Obsolete and unreliable computer hardware	ABU	38(38.8)	56(57.1)	0(0.0)	4(4.1)	0(0.0)	98
	UDUS	6(24.0)	3(12.0)	3(12.0)	6(24.0)	7(28.0)	25
	BUK	12(37.5)	3(9.4)	6(18.8)	5(15.6)	6(18.8)	32
Low bandwidth	ABU	60(61.2)	34(34.7)	0(0.0)	4(4.1)	0(0.0)	98
	UDUS	10(40.0)	5(20.0)	2(8.0)	3(12.0)	5(20.0)	25
	BUK	18(56.3)	4(12.5)	5(15.6)	3(9.4)	2(6.3)	32
Lack of funds for purchasing required ICTs because of low budget	ABU	41(41.8)	49(50.0)	8(8.2)	0(0.0)	0(0.0)	98
	UDUS	10(40.0)	4(16.0)	3(12.0)	6(24.0)	2(8.0)	25
	BUK	17(53.1)	5(15.6)	3(9.4)	3(9.4)	4(12.5)	32
Technophobia on the part of management and staff	ABU	8(8.2)	86(87.8)	4(4.1)	0(0.0)	0(0.0)	98
	UDUS	5(20.0)	3(12.0)	4(16.0)	8(32.0)	5(20.0)	25
	BUK	14(43.8)	1(3.1)	5(15.6)	6(18.8)	6(18.8)	32
High cost of connectivity and maintenance	ABU	48(49.0)	50(51.0)	0(0.0)	0(0.0)	0(0.0)	98
	UDUS	8(32.0)	5(20.0)	2(8.0)	3(12.0)	7(28.0)	25
	BUK	15(46.9)	3(9.4)	3(9.4)	6(18.8)	5(15.6)	32
Level of computer literacy and skills for the effective use of the Internet by staff	ABU	0(0.0)	57(58.2)	41(41.8)	0(0.0)	0(0.0)	98
	UDUS	6(24.0)	5(20.0)	2(8.0)	5(20.0)	7(28.0)	25
	BUK	13(40.6)	2(6.3)	3(9.4)	7(21.9)	7(21.9)	32
Lack of enough time to spend on browsing the net	ABU	0(0.0)	8(8.2)	51(52.0)	30(30.6)	9(9.2)	98
	UDUS	5(20.0)	3(12.0)	4(16.0)	7(28.0)	6(24.0)	25
	BUK	11(34.4)	1(3.1)	5(15.6)	8(25.0)	7(21.9)	32
Problem of locating and retrieving information resources from the Internet	ABU	0(0.0)	8(8.2)	35(35.7)	38(38.8)	17(17.3)	98
	UDUS	5(20.0)	3(12.0)	3(12.0)	9(36.0)	5(20.0)	25
	BUK	10(31.3)	1(3.1)	6(18.8)	9(28.1)	6(18.8)	32
Poor and unstable power supply hinders effective use of the Internet	ABU	94(95.9)	0(0.0)	4(4.1)	0(0.0)	0(0.0)	98
	UDUS	12(48.0)	5(20.0)	3(12.0)	2(8.0)	3(12.0)	25
	BUK	17(53.1)	6(18.8)	3(9.4)	3(9.4)	3(9.4)	32
Encouraging pages with bad HTML when browsing	ABU	4(4.1)	37(37.8)	31(31.6)	5(5.1)	21(21.4)	98
	UDUS	5(20.0)	1(4.0)	3(12.0)	8(32.0)	8(32.0)	25
	BUK	12(37.5)	1(3.1)	5(15.6)	5(15.6)	9(28.1)	32
Lack of proper training on how to use the web	ABU	0(0.0)	35(35.7)	17(17.3)	29(29.6)	17(17.3)	98
	UDUS	4(16.0)	2(8.0)	3(12.0)	9(36.0)	7(28.0)	25
	BUK	12(37.5)	3(9.4)	4(12.5)	6(18.8)	7(21.9)	32
Problems associated with browsers e.g. breezing up, getting disconnected, poor interface, etc	ABU	4(4.1)	57(58.2)	17(17.3)	8(8.2)	12(12.2)	98
	UDUS	5(20.0)	2(8.0)	6(24.0)	6(24.0)	6(24.0)	25
	BUK	10(31.3)	3(9.4)	3(9.4)	8(25.0)	8(25.0)	32

Source: Survey, 2014

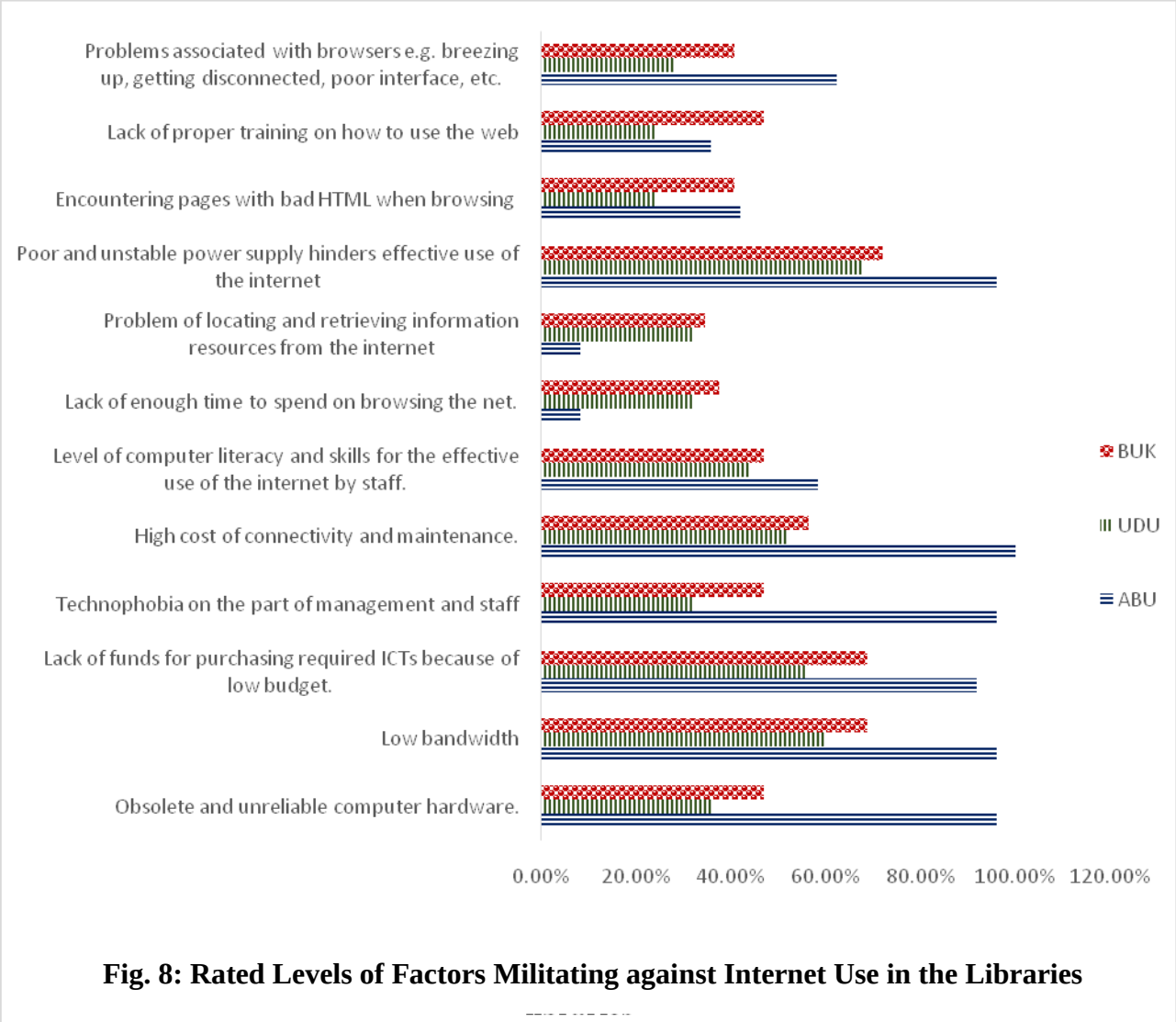


Fig. 8: Rated Levels of Factors Militating against Internet Use in the Libraries

Table 4.9 and Fig. 8 show that the challenges were more prevalent with ABU Internet provision to users. In the table, 94 (95.9%) respondents from ABU were of the view that part of the factors militating against effective Internet provision for users in the library was obsolete and unreliable computer hardware. This was not however, really a problem in UDUS and BUK where only 9 (36.0%) and 15 (46.9%) respondents respectively agreed with such problem in their libraries. However, all groups (94 or 95.9%) for ABU, 15 (60.0%) for UDUS and 22 (68.8%) for BUK agreed that low

bandwidth was a major factor militating against effective provision of Internet services in the libraries.

Another factor is the lack of funds for purchasing required ICTs hardware and software because of low budget for the libraries by their respective managements. This factor cut across all the three university libraries as 90 (91.8%) among ABU respondents and 14 (56.0%) among UDUS respondents along with 22 (68.8%) among BUK respondents agreed that they experienced the problem (lack of funds) in their Internet services provision to users. It was only in ABU that 94 (95.9%) respondents agreed they have the challenge of technophobia on the part of management and staff of the library. In BUK and UDUS, this was not a major limitation to the provision of Internet services by their libraries to users. This is clearly demonstrated in the Table 4.9 and Figure 8.

All the Librarians agreed that there is a problem of high cost of connectivity and maintenance of the Internet facilities and equipment which pose another major factor militating against effective provision of the services to users in the libraries. In Table 4.9 and figure 8, 48 (49.0%) respondents from ABU, 8 (32.0%) from UDUS and 15 (46.9%) from BUK all agreed that high cost of connectivity and maintenance is a constraint. Only respondents from ABU numbering 57 (58.2%) were of the opinion that level of computer literacy and skills for the effective use of the Internet by staff was militating against the effective provision of Internet services to their users. Among UDUS and BUK respondents, this factor was not seen as a major constraint to the provision of Internet services in the libraries. The amount of time spent on browsing the net was not a major constraint to the effective provision of the services to users in the libraries. This is clearly demonstrated in Table 4.9 with low percentages of agreement by the staff and graphically

illustrated in figure 8. This was also the case with the problem of locating and retrieving information resources from the Internet which the respondents did not agree could constitute a constraint to the effective provision of the services to users.

Poor and unstable power supply was a major factor that hindered effective use of the Internet services which all the respondents across the three libraries agreed on. In ABU, 94 (95.9%) respondents agreed with this challenge facing provision of Internet services in the library. In UDUS and BUK the percentages for agreement were 17(68.0%) and 23(71.9%) respectively. However, most librarians across the three universities did not see the problems of bad HTML when browsing as a major limitation in the provision of the services. This can be seen in the low percentages for agreement and as shown in fig. 8. In the same vein, lack of proper training on how to use the web was not found to be a major challenge across the three libraries. But in ABU 61(62.2%) agreed that the problems associated with browsers e.g. breezing up, getting disconnected, poor interface and others was a major challenge to the provision of Internet services to the users. This factor was not however seen as a major constraint by librarians from UDUS and BUK. From the assessment of these opinions, the major challenges which are faced by the libraries revolved around poor funding, coupled with poor power supply.

4.5 Test of Hypotheses

Six null hypotheses were formulated to test for possible differences in the opinions of the three groups of respondents involved in the utilization of Internet services by academic librarians for information service delivery in federal university libraries in the northwest states of Nigeria.

Hypothesis I: There is no significant difference in the type of Internet information services provided to users in the three university libraries.

The opinions of the respondents on the type of Internet information services they provide to their users in the university libraries were examined in Table 4.4. In the test of this hypothesis, the opinion of respondents from ABU, BUK and UDUS were tested for possible significant differences using the one way analysis of variance (ANOVA). The use of the ANOVA was informed by the more than two groups of the independent variable (University libraries) involved in the test. In Table 4.10, a summary of the ANOVA model is presented.

Table 4.10: ANOVA summary for the types of Internet Information Services provided to Users in the University Libraries

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	2.448	2	1.224	1.063	.348
Within Groups	174.945	152	1.151		
Total	177.394	154			

(F-critical=3.00, P>0.05)

The observed F-values (1.063) for the test is lower than the critical value of 3.00 at the same degree of freedom (2, 152). The observed levels of significance (0.348) for the test is higher than 0.05 (P > 0.05). This means that the respondents did not differ significantly in their opinions on the type of Internet information services they provide to their users in the respective universities. With these observations, there is no sufficient evidence to reject the null hypothesis that there is no significant difference among the university libraries under study in the type of Internet information services they provide

to their users. Table 4.11 presents the mean scores of the respondents by their respective universities.

Table 4.11: Mean scores of the Respondents on the Type of Internet Information Services they provide to their Users

University	N	Mean	Std. Deviation	Std. Error
ABU	98	5.4592	1.25319	.12659
UDUS	25	5.1200	.60000	.12000
BUK	32	5.4688	.67127	.11867
Total	155	5.4065	1.07327	.08621

The variability between the mean scores in the table is not large enough to denote statistical significance between the groups in their opinion on the type of Internet information services they provide to their users. This means that the libraries practically provide the same Internet services for their users in the libraries.

Hypothesis II: There is no significant difference in the purposes that Internet services are used in three university libraries.

The opinions of the respondents on the purposes Internet services were used in the libraries examined in Table 4.5 was used for this test as the dependent variable. In the test the one way analysis of variance procedure was used to compare the opinions of the three groups on the purposes of Internet usage in the libraries. The analysis of variance model is summarized in Table 4.12.

Table 4.12: Analysis of variance on purpose of Internet usage in the university libraries

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	15.848	2	7.924	261.342	.000
Within Groups	4.609	152	.030		
Total	20.456	154			

(F-critical=3.00, P<0.05)

The test revealed a significant variability in the mean scores of the groups in their opinions on the purposes for Internet services use in the different libraries. This is deduced from the observed F-values (261.342) and the observed levels of significance (0.000) which is lower than 0.05 (P < 0.05). These observations, provides enough evidence to reject the null hypothesis. Therefore the null hypothesis is rejected. Table 4.13 presents the mean scores of the respondents by their universities.

Table 4.13: Mean Scores of the Respondents on the Purposes for Internet Usage in the Libraries

University	N	Mean	Std. Deviation	Std. Error
ABU	98	3.9136	.15852	.01601
UDUS	25	3.0853	.17797	.03559
BUK	32	3.4521	.21334	.03771
Total	155	3.6847	.36446	.02927

Table 4.13 revealed that respondents from UDUS had the least mean score on the purposes for which internet services were used, with ABU having the highest mean score. However, the mean scores were subjected to a mean separation test to determine the University library that was significantly different from the others in their opinion on the

purpose for Internet services' usage in the libraries. The Scheffe procedure was used for the post hoc test and the result is summarized in Table 4.14.

Table 4.14: Summary of Scheffe's Post Hoc Analysis of Sources of Difference in the Purposes for which Internet was used in the Libraries

(I) Libraries	(J) Libraries	Mean Difference (I-J)	Std. Error	Sig.
ABU	UDUS	.82827(*)	.03901	.000
	BUK	.46152(*)	.03545	.000
UDUS	ABU	-.82827(*)	.03901	.000
	BUK	-.36675(*)	.04648	.000
BUK	ABU	-.46152(*)	.03545	.000
	UDUS	.36675(*)	.04648	.000

* The mean difference is significant at the .05 level.

The result revealed that each of the university librarians were significantly different from the other in the purposes for which the Internet services were majorly used in the University libraries. ABU respondents had the highest score with BUK and UDUS following respectively.

Hypothesis III: There is no significant difference as to the extent of the utilization of Internet services to satisfy users' information needs by the three university libraries studied.

This hypothesis was tested with the one way analysis of variance because of the multiple levels of the independent variable (University libraries) involved in the test. The rating of the respondents on the extent for which the Internet services were utilized in the libraries as examined in Table 4.14 was used as the dependent variable for the test. The

result of the analysis of variance procedure used for the hypothesis is summarized in Table 4.15.

Table 4.15: One Way Analysis on Extent of Internet Services Utilization by the Libraries

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	46.892	2	23.446	311.803	.000
Within Groups	11.430	152	.075		
Total	58.322	154			

(F-critical=3.00, P<0.05)

The result of the test as indicated in the table revealed that the groups differed significantly in their opinion on the extent to which the Internet services were utilized in the libraries. This is deduced from the observed F-values of 311.803 and an observed level of significance (P) of 0.000 (P < 0.05). By these observations, the null hypothesis that there is no significant difference among the university libraries under study as to the extent of their utilization of Internet services to satisfy their users' information needs is therefore rejected. Table 4.16 presents the mean scores of the respondents by their respective university on the variable.

Table 4.16: Mean Scores of the Respondents by University on the Extent of Utilization of the Internet Services in the Libraries

University	N	Mean	Std. Deviation	Std. Error
ABU	98	4.7070	.14414	.01456
UDUS	25	3.4400	.25728	.05146
BUK	32	3.6830	.50244	.08882
Total	155	4.2912	.61540	.04943

Table 4.16 showed that ABU respondents had the highest rating of the internet utilization with BUK coming second. UDUS respondents recorded the least mean score obtained in the test. The test for significant difference was conducted on the mean scores using the Scheffe procedure to determine the group(s), that were significantly different from the others as summarized in Table 4.17.

Table 4.17: Summary of Scheffe's Post Hoc Analysis of Sources of Difference in the Extent of Utilization of Internet Services in the Different Libraries

(I) Libraries	(J) Libraries	Mean Difference (I-J)	Std. Error	Sig.
ABU	UDUS	1.26700(*)	.06144	.000
	BUK	1.02396(*)	.05583	.000
UDUS	ABU	-1.26700(*)	.06144	.000
	BUK	-.24304(*)	.07320	.005
BUK	ABU	-1.02396(*)	.05583	.000
	UDUS	.24304(*)	.07320	.005

* The mean difference is significant at the .05 level.

The result of the post hoc test revealed that the observed variability between the mean scores was across the three groups. In essence, ABU respondents were significantly different in their opinions from those ofUDUS and BUK. Respondents from BUK were significantly different from those of UDUS. Respondents from UDUS had the least mean score on the utilization of the Internet services among the three university libraries.

Hypothesis IV: There is no significant difference in the preference of Internet services provided to users in the three university libraries.

The expressed preference for the Internet services as examined in Table 4.7 was used for this hypothesis as the dependent variable. The statistical procedure used was the One way analysis of variance. The result of the test is summarized in Table 4.18.

Table 4.18: One Way Analysis on Internet Services Preference by the University Libraries

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	19.670	2	9.835	102.292	.000
Within Groups	14.614	152	.096		
Total	34.285	154			

(F-critical=3.000, P<0.05)

The result in table 4.18 revealed that the groups differ significantly on the expressed preferences for the internet services. The observed F-values (9.835) is higher than the critical value of 3.00 at the same degree of freedom. The observed levels of significance (0.000) for the test is lower than 0.05 ($P < 0.05$). This means, the null hypothesis which states that there is no significant difference among the university libraries under study in the preferences of Internet services provided by the libraries

could thus be rejected. The mean scores of the individual groups on the expressed preferences for the Internet services are presented in Table 4.19.

Table 4.19: Mean Scores of the Respondents on Preferences for Internet Services by the Libraries

University	N	Mean	Std. Deviation	Std. Error
ABU	98	3.9362	.36132	.03650
UDUS	25	3.1300	.19257	.03851
BUK	32	3.2578	.18496	.03270
Total	155	3.6661	.47183	.03790

The scores of respondents from ABU was higher than that of any of the other two universities involved in the study as revealed in table 4.19. UDUS respondents had the least score of 3.13 ± 19257 standard deviation. The Scheffe post hoc test procedure was used to determine the group's mean score that was significantly different from the other in their rating of the preferences of the Internet services in the libraries. The test result is summarized in Table 4.20.

Table 4.20: Summary of Scheffe's Post Hoc Analysis of Sources of Difference in the Preference for Internet Services by the Different Libraries

(I) Libraries	(J) Libraries	Mean Difference (I-J)	Std. Error	Sig.
ABU	UDUS	.80622(*)	.06948	.000
	BUK	.67841(*)	.06313	.000
UDUS	ABU	-.80622(*)	.06948	.000
	BUK	-.12781	.08277	.306
BUK	ABU	-.67841(*)	.06313	.000
	UDUS	.12781	.08277	.306

* The mean difference is significant at the .05 level.

The result revealed that the observed significant variability between the means cut across the three groups. ABU had the highest rating and were significantly different from BUK and UDUS. BUK was significantly different from UDUS in their rating of the preferences.

Hypothesis V: There is no significant difference in the level of satisfaction with Internet services provided in the three university libraries.

The opinions of the respondents on the level of satisfaction with the Internet services provided in the libraries examined in Table 4.8 was the dependent variables used in this test. The result of the one way analysis of variance used for the test is summarized in Table 4.21.

Table 4.21 Analysis of Variance on Satisfaction with Internet Services provided for Users by the Libraries

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	17.826	2	8.913	31.008	.000
Within Groups	43.690	152	.287		
Total	61.516	154			

(F-critical=3.00, P<0.05)

The observed F-values (31.008) for the test is higher than the critical value of 3.00 at the same degree of freedom (2,152). The observed levels of significance (0.000) for the test is lower than the fixed value of 0.05 ($P < 0.05$). This means that the respondents differed significantly in their opinions on the satisfaction with the Internet services provided by the libraries. By these observations the null hypothesis that there is no significant difference among the university libraries under study in the level of their

satisfaction with Internet services provision in the libraries is therefore rejected. The different mean scores by the librarians from the different universities are presented in Table 4.22.

Table 4.22: Mean Scores of the Respondents on the Level of Satisfaction with Internet Services by the Libraries

University	N	Mean	Std. Deviation	Std. Error
ABU	98	3.5735	.62960	.06360
UDUS	25	2.8720	.33106	.06621
BUK	32	2.8688	.29009	.05128
Total	155	3.3148	.63202	.05077

The mean scores in the table tended to differ by each of the groups. But by virtue of the magnitude of the means, only respondents from ABU could be said to be satisfied, going by the five point scale measurement used in the expressed opinions. This is because the mean score exceed the 3.5 which could be approximated to agreement on the five point scale. However a post hoc test was performed on the mean scores to determine the group(s), that were significantly different from the others in their opinion on the level of satisfaction with the Internet services in the university libraries. The Scheffe procedure was used for this purpose and the result is summarized in Table 4.23.

Table 4.23: Summary of Scheffe's Post Hoc Analysis of Sources of Difference in Level of Satisfaction with Internet Services in the Different Libraries

(I) Libraries	(J) Libraries	Mean Difference (I-J)	Std. Error	Sig.
ABU	UDUS	.70147(*)	.12013	.000
	BUK	.70472(*)	.10916	.000
UDUS	ABU	-.70147(*)	.12013	.000
	BUK	.00325	.14311	1.000
BUK	ABU	-.70472(*)	.10916	.000
	UDUS	-.00325	.14311	1.000

* The mean difference is significant at the .05 level.

The result revealed that only ABU was significantly different from BUK and UDUS. Between UDUS and BUK the variability was not found to be statistically significant.

Hypothesis VI: There is no significant difference in the factors militating against the effective use of the Internet for information service provision in the three university libraries.

This hypothesis was tested with the one way analysis of variance statistic because of the multiple levels of the independent variable (the university libraries) involved in the test. The rating of the respondents on the factors militating against the effective use of Internet services in the libraries was used as the dependent variable. A summary of the analysis of variance model on the variable is presented in Table 4.24.

Table 4.24: One Way Analysis on Factors Militating Against the Effective Use of Internet Services in the Libraries

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	6.787	2	3.393	62.662	.000
Within Groups	8.231	152	.054		
Total	15.018	154			

(F-critical=3.00, P<0.05)

The result of the test as indicated in the table revealed that the groups differed significantly in their opinion on the factors militating against the effective use of Internet services in the libraries. The observed F-values of 62.662 and an observed level of significance of 0.000 (P < 0.05) are all clear indications of this observed significant difference. By these observations, the null hypothesis that there is no significant difference among the university libraries under study on the factors militating against the effective use of the Internet for information service provision is therefore rejected. Table 4.25 presents the mean scores of the respondents by their respective universities on the variable.

Table 4.25: Mean Scores of the Respondents on the Factors Militating Against the Use of Internet Services by the Libraries

University	N	Mean	Std. Deviation	Std. Error
ABU	98	3.3223	.22085	.02231
UDUS	25	2.7500	.16667	.03333
BUK	32	3.1042	.30232	.05344
Total	155	3.1849	.31228	.02508

Table 4.25 showed that ABU had the highest rating on the militating factors, followed by BUK with UDUS having the least rating on the constraints. A test for significant difference was conducted on the mean scores using the Scheffe procedure to determine the group(s), that were significantly different from the others. The result of the test is summarized in Table 4.26.

Table 4.26: Summary of Scheffe's Post Hoc Analysis of Sources of Difference in Factors Militating against the use of Internet Services by the Different Libraries

(I) Libraries	(J) Libraries	Mean Difference (I-J)	Std. Error	Sig.
ABU	UDUS	.57228(*)	.05214	.000
	BUK	.21811(*)	.04738	.000
UDUS	ABU	-.57228(*)	.05214	.000
	BUK	-.35417(*)	.06212	.000
BUK	ABU	-.21811(*)	.04738	.000
	UDUS	.35417(*)	.06212	.000

* The mean difference is significant at the .05 level.

The result revealed that the observed significant difference in the rating of the militating factors differed from one university library to the other. In other words, the university libraries differed significantly in the factors militating against the effective provision of internet services to their users in the respective universities.

4.6 Discussion of Findings

In the course of the analysis of data collected for this study, it has been established that the libraries provide Internet services for the utilization of their users. A total of six null hypotheses were tested in the study to establish possible significant

difference between the three libraries on the investigated variables. In the test of Hypothesis one, no significant difference was observed between the three libraries on the types of Internet services they provide for their users in the universities. The null hypothesis was therefore accepted.

In the test of hypothesis two, significant differences between the libraries on the purposes of the Internet services provided by the libraries was tested. The result revealed that the three libraries differed significantly from each other on the purposes for which the Internet services were used. The null hypothesis was therefore rejected. The finding here is in line with Nair (1999) who observed that the Internet has become another alternative source of information for libraries. In the report, it was pointed out that with the electronic information storage mechanisms and the new access and dissemination methods that are made possible by the Internet, the old traditional library techniques of information provision are fast changing and that problems such as, the non-availability of materials, mutilation of books, journals, among others that are associated with traditional libraries are no more an issue in the era of virtual libraries.

Hypothesis three tested for significant differences in the extent of utilization of the Internet services provided by the libraries to users. The result of the test revealed that the libraries differed significantly from each other in the level they utilize the provided Internet services for their users. The null hypothesis was therefore rejected. The finding here is in line with the views of Williams and Channaveerariah (2008), who reported that Libraries are today shifting from their role of custodians of traditional information to that of providers of service-oriented digital information resources

The differences between the three university libraries in the preferences of the Internet services was tested in Hypothesis four. The result of the one way analysis of variance (ANOVA) used in conducting the test revealed that the three libraries were significantly different from each other in terms of their users' preferences of the Internet services. The null hypothesis was therefore rejected. The finding here shows that users of libraries have personal preferences for the internet services because of their different information needs and the internet by its design is capable of meeting these different needs hence the expressed preferences in the study.

Hypothesis five tested for significant differences in the level of satisfaction with the Internet services provided by the different libraries of the Universities. The result showed that there was significant difference between the groups, with ABU being the main library whose Internet service provision was rated to the level of satisfaction. For BUK and UDUS, the level of satisfaction attained was not adequate. This finding may not be unconnected to Millson–Martula and Menon's (1995) opinion that one of the elements of quality service is when users' personal needs and expectations are incorporated into the development of programs and services of libraries. Andaleeb and Simmonds' (1998) listed several factors that influence users' satisfaction, and these include, responsiveness, competence and assurance (translated to demeanor) tangibles and resources.

Hypothesis six tested for significant differences in the factors militating against the use of Internet services in the libraries of the different universities. The result of the test revealed that the groups were significantly different in their expressed challenges or militating factors faced in their efforts at providing Internet services in the libraries. The

null hypothesis was therefore rejected. Adebisi (2004) in his work enumerated the problems militating against the use of Internet in Nigerian universities as: poor and inadequate telecommunication facilities, poor level of computer literacy even within the academic community and poor computer facilities among others. Aduwa-Ogiegbaen and Iyamu (2005) reported these factors but included cost, lack of relevant softwares and limited access to the Internet as reasons affecting the deployment of information and communication technologies and by extension, Internet services in Nigeria's tertiary institutions.

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CHAPTER FIVE

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

5.1 Introduction

This chapter provides the summary of the study, its major findings, conclusion, recommendations and suggestions for further research.

5.2 Summary of the Study

The study was on the utilization of Internet services by academic librarians in federal university libraries in the northwestern states of Nigeria. The general purpose or objective of the study was to find out the extent of access and utilization of Internet services by the first and second generation university libraries in northwest states of Nigeria for the delivery of information services to their users. The research methodology adopted for this was the survey method. The survey research method was adopted because it is regarded as the appropriate method for descriptive research studies. The population used for the study was all academic librarians in all the Federal Universities in the northwest states of Nigeria. The three first and second generation conventional university libraries in the North West states of Nigeria were used for the study and in all, one hundred and seventy seven (177) academic librarians from these university libraries were used as sample. The sampling technique used for deciding this sample for the study was the purposive or judgmental sampling technique. The major instrument used for data collection was the questionnaire. The questionnaire was designed by the researcher and contained about 63 items divided into sections numbered A – G and based on a five-point likert scale. The analysis of the questionnaire was carried out using frequency distribution

tables, while ANOVA was used to test Ho_1 – Ho_6, graphs and Scheffe's post Hoc analysis tests were also used. The study is divided into five chapters as follows:

Chapter one which is the introductory chapter presents the background of the study, statement of the problem, research questions, research hypotheses, objectives of the study, significance of the study, scope of the study, limitation of the study and the operational definition of terms. Chapter two contained the review of related literature. Here, literatures relevant to the study were systematically reviewed to give perspective to the entire work. Chapter three is where the research methodology employed for the study was described. Chapter four contained the data presentation and analysis. Here, the data collected for the study are presented, analysed and discussed. Chapter five, which was the culminating chapter, presents the summary (which include summary of major findings) of the study, conclusion, recommendations and suggestions for further research.

5.2.1. Summary of Major Findings

The findings of the study were that:

1. The most often used Internet services in the university libraries are FTP (for downloading), electronic mail (e-mail), Internet newsgroup.
2. The purpose for which Internet services are used in the university libraries studied are for web browsing, to search for and get information for research/publication, to access electronic journals, to download, to receive professional news/ information/news updates, to access libraries' websites, for sending and receiving or checking e-mails.
3. The level of utilization of Internet services in the three university libraries studied was very high.

4. Internet services prefered and used by users in the three libraries are: information retrieval services, followed by information search services then by information communication services. The least preferred are the multimedia information services (see Table 4.7 and fig.6)
5. The level of satisfaction of users with information services provided by the librarians in the three university libraries studied was very high.
6. The following factors were found to be militating against Internet use by librarians in the three university libraries studied; poor and unstable electricity power supply, high cost of connectivity and maintenance, lack of adequate funds or low budget, obsolete and unreliable computer hardware.

5.4. Conclusion

The findings of the study indicate that the importance of Internet services in academic libraries cannot be underestimated because of the benefits derivable from its use. The Internet provides current and up-to-date relevant information resources that students and faculty can use to solve their research/academic and other personal problems,

In spite of its many benefits, Internet connections and services in the various federal universities is still poor and inadequate. This is not unconnected with militating factors such as poor and unstable power supply, low bandwidth, high cost of connectivity and maintenance, low budgets of the university libraries, obsolete and unreliable computer hardware among others.

5.5. Recommendations

The following recommendations are made based on the findings and conclusion reached in the study:

1) University librarians in the three universities should increase their usage of other Internet services like video conferencing services, telnet services, etc which are currently less often used and also encourage their users to use them.
2) University librarians need to increase their use of the Internet for other purposes other than the ones they currently use them for. There is the need for the three university libraries to use the Internet for inter library loans, for managing their libraries' collections, etc.
3) Though the level of utilization of Internet services in the three university libraries is very high, the librarians in the university libraries should step up and increase the use of multimedia information services , etc in their libraries.
4) The university librarians need to step up effort to ensure that less preferred and used Internet services like multimedia information services, etc have their use increased in their libraries.
5) Though level of satisfaction of users with information services provided by the librarians in the three university libraries' was high, there is the need for the librarians to use the Internet for inter library exchange/resource sharing (which is presently not being carried out) as this is one of the ways they can enrich their libraries' collection and also meet their numerous clients' information needs.

6) The universities' and libraries' management should address the problem of power supply, find ways of increasing their libraries' funding, etc.

7) To maximize the benefits of Internet use in the university libraries, steps, should be taken by the various universities' management to ensure constant training and re-training of their librarians to keep them abreast of the new trends in information work in an Internet era, also Internet facilities in the university libraries should be regularly maintained and where funds are available, dedicated connections that will provide Internet access 24/7 should be provided in the libraries.

5.6. Suggestions for Further Research

In this study, the researcher discovered that one of the problems militating against the provision of Internet service was funding among others. It would be for academic advancement therefore to recommend that further studies be undertaken in the following areas:

1. Internet connectivity and its impact on the productivity of university libraries in Northwest states of Nigeria.
2. A study on Internet usage among library and information science undergraduates of Nigerian universities.
3. The present study can be replicated at some other time or place in the future.

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APPENDIX

RESEARCH QUESTIONNAIRE

Department of Library and Information Science,

Faculty of Education,

AhmaduBelloUniversity,

Zaria.

January 25, 2014.

Dear Respondents,

QUESTIONNAIRE ON UTILIZATION OF INTERNET SERVICES (Q.U.I.S.) BY FEDERAL UNIVERSITY LIBRARIES IN NORTHWEST NIGERIA

I am a post-graduate student in the above Department undertaking a research study on: **"Utilization of Internet Services by Academic Librarians for Information Service Delivery in Federal University Libraries in Northwest States of Nigeria"**. The study is in partial fulfillment of the requirement for the award of the Master of Science (MSc) degree in information science.

You are selected as one of the respondents for the study and requested to complete the attached questionnaire. Be are assured that any information you provide will be treated with utmost confidentiality and will be used only for the academic purpose for which it is supplied.

Thank you.

Yours faithfully,

Researcher

QUESTIONNAIRE

Section A: Personal Data of Respondents

1) Name of University …….

2) Name of Library ……

3) Academic Qualification: (please tick your highest qualification)

(i) BA/BLIS [ ]

(ii) MLS/MIS/MSc [ ]

(iii) PhD [ ]

(iv) Others (Specify) …….

4) Area of specialization (specify) ……..

5) Years of working experience (please tick as appropriate)

(i) 1 – 5 years [ ]

(ii) 6 – 10 years [ ]

(iii) 11 – 15 years [ ]

(iv) 16 – 20 years [ ]

(v) 21 – 25 years [ ]

(vi) 26 – 30 years [ ]

(vii) 31 years and above [ ]

6) **Section B: Internet Services Used in the University's Library**

Please tick (✓) to indicate the internet services that are available in your university's library.

	Services	**Used**	**Not Used**
i.	Electronic mail (e-mail)		
ii.	Internet chat facilities		

iii.	Internet newsgroup		
iv.	Internet discussion groups		
v.	Telnet services		
vi.	Internet phone		
vii.	FTP (for downloading)		
viii.	Video conferencing facilities		
ix.	Internet fax		
x.	Teleconferencing facilities		
xi.	Others (specify)		

7. Section C: Purposes for which Internet services are used in the Library

Indicate by ticking (✓) to show your level of agreement with the purposes for which Internet services are used in libraries.

	Purposes of Internet use	**SA**	**A**	**U**	**D**	**SD**
i.	To access electronic journals					
ii.	To receive professional news/information/ news updates					
iii.	To download e.g. software etc.					
iv.	To access libraries' websites					
v.	For web browsing					
vi.	To search for and get information for research/publications					
vii.	To participate in discussion groups					
viii.	For sending and receiving or checking e-mails.					
ix.	For internet phone calls					

x.	To obtain information on conference announcements, vacancies, etc.					
xi.	For internet fax					
xii.	For inter library exchange/resource sharing					
xiii.	For Telnet connections					
xiv.	For reference purposes					
xv.	To discuss or contact experts in a field					
xvi.	Others (specify here)					

Key:

SA = Strongly Agree

A = Agree

U = Undecided

D = Disagree

SD = Strongly Disagree

8. Section D: How Useful Internet Services are in Libraries

Indicate your extent of agreement with the statements below on how useful Internet services are to your university library in its provision of information services to meet the needs of users/clients.

	Usefulness of Internet in Libraries	**SA**	**A**	**U**	**D**	**SD**
i.	They help librarians to use the web to enhance their job performance.					
ii.	The Internet helps librarians to answer specific questions that enable them to increase their capability for solving patrons' information need problems.					
iii.	The Internet has become an important and useful source					

	for research information in libraries.					
iv.	Internet use has helped to reduce the time spent on the use of information resources in printed form.					
v.	Increased productivity and time saving are some of the benefits of using the Internet.					
vi.	There is an increase in the quantity and quality of publications as a result of internet use.					
vii.	There is an increase in the level of research output in virtually all fields of knowledge as a result of internet use.					
viii.	Others (specify here)					

9. Section E: Internet Service Preference

Indicate in the appropriate box which Internet service you prefer to use more for carrying out your functions.

	Internet services	**MP**	**P**	**U**	**LP**	**NP**
i.	Information retrieval services (i.e. for receiving professional information/news, for accessing e-journals, downloading, etc.					
ii.	Information search services (i.e. for browsing the web, accessing other libraries' data bases, general search, etc.					
iii.	Information communication services (i.e. for taking part in discussion groups, sending and receiving e-mails, Internet fax, internet phone, etc).					
iv.	Multimedia information services (i.e. for Telnet connections, video Conferencing, www, etc)					

Key:

MP = Most Preferred

P = Preferred

U = Undecided

LP = Least Preferred

NP = Not Preferred

10. Section F: Respondents' views on satisfaction with Internet services.

Indicate by ticking (✓) in the appropriate box to show your level of satisfaction with the Internet services that are provided in your university's library.

	Satisfaction with Internet use	**VH**	**H**	**U**	**L**	**VL**
i.	Level of satisfaction with the Internet facilities/services provided in the library for research and other academic purposes.					
ii.	Level of satisfaction with the use of Internet facilities/services in the library by the library's patrons.					
iii.	Level of satisfaction derived from Internet use by librarians in the library to meet users information needs.					
iv.	Extent of users use of the Internet to solve both personal and academic problems.					
v.	Use of Internet for inter-library exchanges/resource sharing etc by the library staff.					
vi.	Others (specify here)					

Key:

VH = Very High

H = High

U = Undecided

L = Low

VL = Very Low

11. Section G: Factors Militating against Internet Use by Libraries

Indicate by ticking (✓) the factors you accept or do not accept as affecting the effective use of the internet in your library from the list provided below.

	Factors	**SA**	**A**	**U**	**D**	**SD**
i.	Obsolete and unreliable computer hardware.					
ii.	Low bandwidth					
iii.	Lack of funds for purchasing required ICTs because of low budget.					
iv.	Technophobia on the part of management and staff					
v.	High cost of connectivity and maintenance.					
vi.	Level of computer literacy and skills for the effective use of the internet by staff.					
vii.	Lack of enough time to spend on browsing the net.					
viii.	Problem of locating and retrieving information resources from the internet					
ix.	Poor and unstable power supply hinders effective use of the internet					
x.	Encountering pages with bad HTML when browsing					
xi.	Lack of proper training on how to use the web					
xii.	Problems associated with browsers e.g. breezing up, getting disconnected, poor interface, etc.					
xiii.	Others (specify here)					

Key:

SA = Strongly Agree

A = Agree

U = Undecided

D = Disagree

SD = Strongly Disagree