UTILIZATION OF INTERNET FACILITIES AMONG LIBRARY AND INFORMATION SCIENCE ACADEMICS IN NIGERIAN UNIVERSITIES

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A thesis submitted to the Postgraduate School, Ahmadu Bello University, Zaria in partial fulfillment of the requirements for the award of the degree of Master in Library and Information Science (MLIS)

JUNE, 2005

DECLARATION

I hereby declare that this study entitled "UTILIZATION OF INTERNET FACILITIES AMONG LIBRARY AND INFORMATION SCIENCE ACADEMICS IN NIGERIAN UNIVERSITIES" has been written by me and it is a record of my research work. It has not been previously presented for any higher degree and is not being concurrently submitted for any other degree.

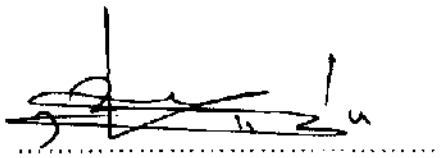
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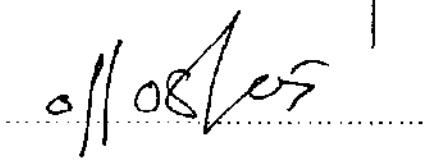
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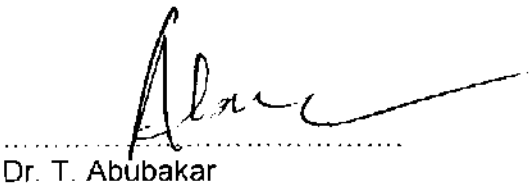
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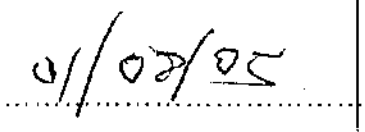
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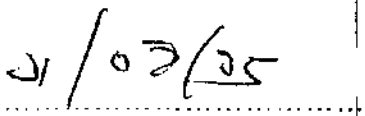
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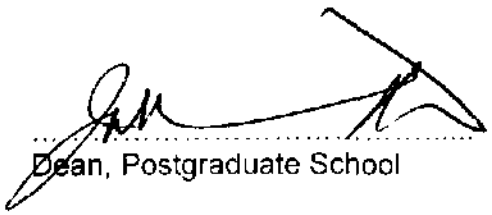
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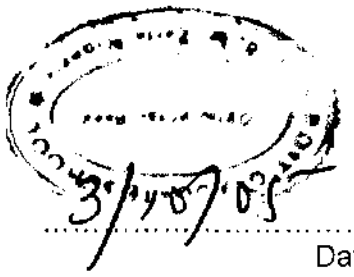
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DEDICATION

To

My Parents, Mr. and Mrs. D. A. Adebo

And To

All members of my family for their support.

ACKNOWLEDGMENT

I wish to express my profound gratitude and appreciation to the Almighty God who has helped me thus far.

I am particularly grateful to my supervisors, Prof. .Z. Mohammed and Dr. T. Abubakar whose relentless efforts, patience and assistance have given this thesis its present shape. I also express my gratitude to Mallam Abdullahi I. Musa and all the members of staff of the Department of Library and Information Science A.B.U Zaria for their invaluable contributions to the success of this work.

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ABSTRACT

The study was undertaken to explore the extent of Utilization of Internet among library and information science academics in the provision of library services and for educating prospective librarians in academic departments in Nigerian universities. Investigation was carried out in respect of the type of Internet services available, the various uses, preferences in the use of Internet, satisfaction with the use and provision of Internet facilities and the factors influencing use. The paucity of studies on Internet use in general necessitated this study.

Using six research questions and three research hypotheses, data was collected from 198 academic librarians and library and information science lecturers in 7 universities with Internet in their library science department and/or their libraries. The data was treated using frequency distribution tables, percentages and mean scores while the hypotheses were tested using t-test statistics.

The results show among others that Internet use by the studied academics is useful for their information needs and that Internet search services are preferred above Information retrieval services, communication services and multimedia services. It also shows that there are some barriers to adequate use of Internet resources. Suggestions are made for increased use of the Internet to benefit the nation as a whole.

TABLE OF CONTENT

Title page i
Declaration page ii
Certification page iii
Dedication iv
Acknowledgment v
Abstract vi
Table of contents vii
List of tables x

CHAPTER I

INTRODUCTION 1

1.1 Background to the study 1
1.2 Statement of the problem 5
1.3 Research Questions 8
1.4 Hypotheses 8
1.5 Objective of the study. 9
1.6 Scope of the study. 10
1.7 Significance of the study 10
1.8 Basic Assumptions 11
1.9 Definition of terms. 12
References. 15

CHAPTER II

REVIEW OF RELATED LITERATURE. 17
2.0 Introduction. 17
2.1 The concept of information and communication 17
2.2 Internet Definition, Concept and Essence 21
2.3 Brief history of the Internet 24
2.4 Services and resources of Internet. 27

2.5 Relevance of Internet to library and information sciences. 34
2.6 Internet access and use..... 36
2.7 Factors influencing use of Internet facilities and services. 42
2.8 Internet users: Characteristics and information seeking behavior 45
2.9 Potentials of Internet use by academicians 49
2.10 Summary of the review..... 52
References 53

CHAPTER III

RESEARCH METHODOLOGY..... 57

3.0 Introduction 57
3.1 Research method. 57
3.2 Population of the study 57
3.3 Sample and sampling procedure 59
3.4 Instrument for data collection. 59
3.5 Validation of the instrument..... 60
3.6 Reliability of the instrument..... 61
3.7 Administration of the instrument. 61
3.8 Procedure for data analysis 62
References 63

CHAPTER IV

4.0 DATA PRESENTATION AND ANALYSIS..... 64
4.0 Introduction. 64
4.1 Response rate of questionnaire administered. 64
4.2 Data analysis and discussion..... 65
4.2.1 Internet services in the universities. 65
4.2.2 Uses of Internet services/facilities by library and information science academics. 67
4.3.3 Benefits (usefulness) of the Internet services/facilities. 72
4.3.4 Preference for Internet use among library and Information science academics 76
4.3.5 Satisfaction with the provision and use of Internet

facilities/services 78
4.3.6 Factors affecting Internet use 81
4.4 Hypothesis testing 85
4.4.1 Hypothesis I 85
4.4.2 Hypothesis ii 89
4.4.3 Hypothesis iii 92

References 98

CHAPTER V

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS. 99
5.0 Introduction 99
5.1 Summary of study 99
5.2 Summary of findings 99
5.3 Conclusion 103
5.4 Recommendation 103
5.5 Suggestion for further research 105

BIBLIOGRAPHY 106-111

APPENDIX 1 - Letter of introduction 112
APPENDIX 2 - Study questionnaire 113

LIST OF TABLES

Table		Page
3.1	Population of the Study	58
4.1	Availability of Internet Services / Facilities in the University Libraries and in Library and Information Science Departments	65
4.2	The use of Internet Facilities by Academic Librarians and Library and Information Science Lecturers.	68
4.3	The Benefits of the Internet Services / Facilities to Academic Librarians and Library & Information Science Lecturers.	72
4.4	Preferences for Internet Services / Facilities Use Among Academic Librarians and Library & Information Science Lecturers.	76
4.5	Levels of satisfaction with the provision and use of Internet Facilities/services	78
4.6	Factors affecting Internet use	81
4.7	Cross tabulation between academic librarians and library & information science lecturers on the use of Internet Facilities	85
4.8	Summary of two tailed t-test on Internet use among library and information science academics	88
4.9	T-test analysis on the satisfaction with provision and use of Internet facilities/services.	89
4.10	Summary of two-tailed t-test on Internet use among library and information science academics.	91
4.11	Factors affecting Internet use among academic Librarians and information Science academics.	92
4.12	Summary of two-tailed t-test on factors affecting Internet use among library and information Science academics.	97

CHAPTER ONE
INTRODUCTION

1.0 Background to the Study

The Internet is a worldwide network of computer networks that facilitate access to information. The interconnection of these networks is comparable to the linkage of towns and cities in a country together by state and interstate highways. This is the reason why the Internet is described as "Information superhighway" to emphasize the widely held view that this global network will inevitably transform the way we create, manipulate, store, retrieve, transfer and utilize information Bruce (1998); Oyinloye, (1998); and Shafack, (2002).

Modern day Information and Communication Technology of which Internet is a major tool is very vital today for successful library and information services, including library studies departments. Nair (1999) pointed out that, Just as no individual can continue to live without breathing so can any library and information science academic, whether in the library or in the library studies department, remain effective and efficient today without making use of Internet.

In recent times, Internet has become the single most powerful library and information tool that ever existed. According to Neil, McKnight and Solomon (1995) and Oloruntoba and Bolarinwa (2001) the Internet which is the major facilitator of information network in the new information society has become the greatest wonder of the 20th century. With the emergence of digital libraries and electronic journals, Internet has become an inseparable part of libraries as well as library and information science departments. Thus, no library and information science academic

can exist in the coming days without necessary familiarization in handling the Internet Daniel, (2000) and Omekwu, (2001).

In universities, Internet has become an important component of electronic information services in libraries and faculties. Watson (1999) and Dennis and Espinoza (2001) maintain that, teachers and faculty from elementary to universities are using the Internet for discharge of their statutory responsibilities of teaching and research activities.

Uses of the Internet

The introduction of Internet into library and information services and departments has greatly enhanced the efficiency and effectiveness of the library and information science academics. Going by Egan and Pollack (1995); Ruthowski (1998); Herron (1998) and Osuala (2000), clients can get satisfactory answers to their queries within the shortest time while library and information science academics can perform their functions more efficiently and effectively with the use of Internet. Among the greatest benefits of Internet to library service is the inexpensive way to communicate with other Internet users worldwide. More so, Internet is used to obtain important resources for teaching and learning materials and equipment. In addition, books and journals that have hitherto been impossible to keep current copies in academic libraries especially of the developing countries are now available electronically and instantaneously as they are published.

In developed countries, and indeed in some developing countries, Internet facilities have found extensive uses in library services as well as for education and

research in library and information science departments generally. Internet facilities are used in libraries for interlibrary information requesting (e-mail), document delivery (by the file attachment facility), current awareness services (through bulletin boards and lists) and database searching (online of remote databases) (Tiamiyu, 1999).

The Internet could be used as a teaching tool especially when the lecturer maintains a web page. This practice is becoming more popular with the availability of user-friendly web page publishing software. Examples of web page uses according to Heron (1998) include posting course syllabi, solution to problems, tips for students and announcement.

Internet Use in Nigerian Universities

Even though Internet use among library and information science academics for educational purposes has a long history in the advanced world, the concept is relatively new in Nigeria. According to Udo (1998) Nigerian libraries, by then, had not yet gone far in the computerization of information services. Although the National Universities Commission (NUC) has done much to ensure computerization of university libraries and library science departments, yet not all Nigerian universities computerized their services by 1998.

Furthermore, Oyinloye (1998) maintains that, in spite of the impressive strides on Internet use among the private sector, progress has been significantly slow in the public sector, especially in university libraries and library studies departments. For instance, some pressing problems were identified in the use of the facilities by the

library and information science academics in libraries and for teaching in library departments. These problems included erratic power supply, manpower shortage, inadequate equipment and accessories, failures from telecommunication facilities and poor government attitudes towards computerization.

In addition, Banjo (1998) remarked that, Internet use in Nigerian university libraries and library studies departments was still at rudimentary stage during the last decade. He further reported that by 1992, twenty federal universities; the National Universities Commission and the National Mathematical Center were equipped with computer and library application softwares for use by libraries and information science departments.

In related dimension, Oloruntoba and Bolarinwa (2001) reveal that, one cannot be emphatic about the state of information technology (including Internet) in Nigerian university libraries and library science departments today. The libraries and training departments are making efforts at computerization and are at various stages of development. They further state that, the current demand of the information society coupled with the present day electronic libraries have compelled university libraries and library science departments to join the race in the provision of information resources so that students and faculty, among others, can benefit from a wide range of current information globally.

Whereas it is possible to ascertain the exact state of utilization of the Internet by library and information science academics in the developed nations as exemplified in the works of Bane and Milheim (1995); Abel, Liebscher and Denman (1996); Bar-Ilan and Peritz (1997); Tomney and Burton (1998); Voorbji (1999);

Dennis and Espionozo (2001); among others, the story is quite different in Nigeria. Rather, what we have in Nigeria are studies on challenges and implications of Internet technology for Nigerian librarians by Ajileye (1996) and Oyinloye (1998) respectively. Other works like those of Martin (1996) and Banjo (1998) simply dealt with public libraries and their use of Internet as well as modern trends in information management without specific reference to Internet use among library science academics in Nigerian universities.

The above picture suggests a constant inventory of the nature, extent and utilization of Internet facilities by university library and information science academics with a view to identifying the state of the art and the possible way forward.

1.2 Statement of the Problem

Utilization of Internet facilities among library and information science academics has the potential of accelerating the relevance of the discipline and its practitioners in the universities. Now that Internet has turned the whole world into a global village, books and journals are published electronically; thus the functions and services of the academics are being taken over by Internet technology. As collaborated by Muhammad (2000) and Ajileye (1996) with the Internet, library and information science academics will no longer be mere custodians of library collections. This implies that, the ability to use Computer and Internet will largely determine their value and relevance in the profession and without it; it would be very difficult for the library academics to function professionally.

In an ideal situation, Library and Information Science Academics, which comprises Academic Librarians and Library Science Lecturers, use Internet for their own professional development and to provide students (prospective librarians) with modern skills that will prepare them to access and use global resources of information both in school and in their future careers. In order for this academia to effectively assist their students in understanding the use and usefulness of the Internet they themselves must be familiar with the Internet and must feel comfortable using the different Internet facilities, services and resources available. Thus, library and information science academics are expected to keep abreast of the latest information technology in order to function effectively. Ajileye, (1996); Dennis and Espinoza (1998); Tiamiyu, (1999); Daniel, (2000); Omekwu, (2001); and Oloruntoba and Bolarinwa, (2001).

Unfortunately, the adaptation of Internet in Nigerian universities for use by Academic Librarians and Library Science Lecturers by way of installation of the facilities in the libraries and library studies departments had a rough beginning in the 1990s. Thus, Ajileye (1996) observed that it is still not very clear as to what proportion of the library academics are computer literate and can use the Internet for information gathering and dissemination in libraries and academic departments. Apart from this, the proportion of Academic Librarians and Library Science Lecturers who have re-oriented themselves from the "custodian" concept of librarianship to modern information science approach with much input from Internet is still uncertain. More so, it is not clear whether the curriculum for information and communication technology, with emphasis on Internet use, is compulsory in library and information

science departments in the universities for training and development of potential librarians given the doubts that surround Internet use by librarians (Ajileye, 1996). Nevertheless, the quest for upgrading facilities in university libraries and academic departments coupled with intervention schemes from bodies such as Education Trust Fund (ETF) and other NGOs have intensified over the years but the exact nature and extent of Internet facilities available in the institutions is still in doubt.

Researches have been carried out in the past on Information Technology usage in general but none has addressed itself to Internet use by library and Information Academics in Nigerian Universities Banjo, (1998); Oyinloye, (1998); and Oloruntoba and Bolarinwa (2001). This paucity of information on the use of Internet by Academic Librarians and Library and Information Science Lecturers has left all stakeholders in library and information science in a precarious situation, making international comparison, integration and adjustment of professional services in this era of globalisation intractable.

This study is, therefore, set out to explore the nature and extent of utilization of Internet facilities among Library and Information Science Academics in Nigerian Universities to take advantage of the fastest route to diverse, latest and abundant information available on the Internet.

1.3 Research Questions

The following research questions were put forward to guide the course of the investigation:

1. What type of Internet services are available in the University Libraries and Library and Information Science Departments?
2. What do Library and Information Science Academics use Internet services/facilities for?
3. How useful are the Internet services/facilities to library and information science academics in meeting their information needs?
4. Which Internet services are preferred by Academic Librarians and Library and Information Science Lecturers in the Universities?
5. To what extent are the library and information science academics satisfied with the Internet provision and use in the universities?
6. What factors affect the use of Internet services/facilities by the library and information science academics?

1.4 Hypotheses

In the course of the investigation, the study tested the following hypotheses:

1. There is no significant difference between Academic Librarians and Library and Information Science Lecturers in the use of Internet services.

2. There is no significant difference between the level of satisfaction of the Academic Librarians and that of Library and Information Science Lecturers on the internet services provided to them
3. There is no significant difference between Academic Librarians and Library and Information Science Lecturers on the factors affecting their use of Internet.

1.5 Objective of the Study

The main purpose of this study is to explore the extent of utilization of Internet facilities among library and information science academics in the provision of library services and for educating prospective librarians in academic departments in Nigerian Universities. But in specific terms, the study was undertaken for the following reasons:

1. To find out the type of Internet services that are available in the University Libraries and Library and Information Science Departments.
2. To ascertain what the library and information science academics use Internet services/facilities for.
3. To investigate the extent of usefulness of the Internet services/facilities to Library and Information Science Academics in meeting their information needs.
4. To identify which Internet services are preferred by Academic Librarians and Library and Information Science Lecturers in the Universities.

5. To investigate the extent to which the Library and Information Science Academics are satisfied with the Internet provision and use in the Universities.

6. To find out the factors affecting the use of Internet services/facilities by the Library and Information Science Academics.

1.6 Scope of the Study

The study was restricted to utilization of Internet facilities among Library and Information Science Academics made up of Academic Librarians and Library Science Lecturers in seven (7) Nigerian universities. Specifically, the study covered the availability of Internet facilities, uses, preference, satisfaction and factors influencing the use of Internet services.

The study was limited to the 7 universities that have Internet facilities and staff have access to the facilities for teaching, learning and research as well as for attending to clients.

Questionnaires were administered to the target respondents and the findings are limited to the universities studied

1.7 Significance of the Study

This study explores the extent of utilization of Internet facilities among Academic Librarians and Library and Information Science Lecturers in the conduct of their duties in Nigerian universities. When completed, therefore, the findings would

be of importance to library academics, library and information science students, the university authorities and future researchers.

First of all, the study will reveal the level of Internet use among library and information science academics, facilities and services that are provided in the university, the various uses, and their preferences in the use of the Internet. This will help to bring the Nigerian situation into limelight with a view to revealing the state of the art in the field with possible suggestions for the way forward.

Secondly, the study is significant because the results of the study would help supply information for planning information resources such as expanded Internet access, curriculum, training and utilization of Internet by library and information science academics (including the potential librarians).

Thirdly, the study would also contribute to the depth of literature on Internet use among academia in Nigerian Universities.

Finally the study would serve as a reference material which will constitute a stepping stone for further studies on Internet use by library academics and other related disciplines.

1.8 Basic Assumptions

The researcher conducted the study based on the following basic assumptions:

a) Internet facilities are available for use by Academic Librarians and Library Science Lecturers in the universities.

b) Academic Librarians and Library and Information Science Lecturers are skilled in the use Internet facilities.

c) Library and information science academics require information on Internet to meet their needs in research and teaching activities.

d) There are certain factors affecting Academic Librarians and Library and Information Science Lecturers in the use of Internet facilities.

Definition of Terms

The following terms have been defined operationally for better understanding of the study. They are:

Search Engines A search engine is a service that indexes, organizes and often rates the review websites. It helps in finding the needle on the Internet haystack. Different types of search engines are available and work in different ways:

Some rely on people to maintain a catalogue of websites or pages

Some use software to identify key information on sites across the Internet

Domains Domains divide worldwide web into categories based on the nature of the owner. Domains form part of a sites address or uniform resource locator (URL) popularly and widely used domains include:

com	-	for commercial
org	-	for non-profit organization
net	-	for networks

edu - for educational institutions

gov - for governmental institution

Domain Name Domain name is the unique address of a website. It is essential to acquire an address for a website before it can be posted to the World Wide Web.

Browsers Internet browsers give users a simple way to navigate through the sea of information that exists on the Internet at the click of a mouse: The two most popular browsers are Netscape Navigator and Microsoft Internet Explorer.

Web Web simply means networking, this is a common information space, which allows for communication by sharing information.

Website A space for a specified entity.

Web page A page in the space within a specified site.

Internet Protocols (IP) A protocol is a set of formal operating rules, procedures or conventions that govern a given process. A communication or network protocol therefore, describes the rules that govern the transmission of data over communication networks.

HTTP Hyper Text Transport Protocol (HTTP) is the Internet Standard that enables information to be distributed across the web. HTTP allows programmes to embed hyperlinks in documents.

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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter examines the literature relevant to the study. The literature is derived from textbooks, journals, magazines, newsletters, etc. with a view to putting the study into proper perspective. Besides, the literature would help to reveal the state of the art in the utilization of Internet facilities among Academic Librarians and Library Science Lecturers in the university system. To do this effectively, the review is organized in the following manner: The concept of information and communication, Internet: definition, concept and essence, Brief History of the Internet, Internet access and use, Relevance of Internet to Library and Information Services, Factors influencing use of Internet facilities and services, Internet users: characteristics and information seeking behaviour, Potential of Internet use by academics, Summary of the Review.

2.1 The Concept of Information and Communication

Information has been variously defined. It is an elusive concept and there is a continuing debate about its meaning and about its relationship to its correlates such as knowledge, expertise and the learning process. Burch and Strater (1974) defined information as "the increase in knowledge obtained by the recipient by matching proper data elements to the variables of a problem. It is the aggregation or processing of data to provide knowledge or intelligence or reduce the uncertainty of user. Aiyepekun (1991) saw information as follows: Information is used to describe

mankind's accumulated knowledge derived from all subjects, in all forms and from all sources that could help its users to reduce their levels of uncertainty. Specifically information is defined as data, which is structured to be of value in planning and decision-making, in the execution, monitoring and evaluation of the public and private sector programmes of a nation... "Information is some meaningful message transmitted from source to user..." The two definitions above agree with the frequently cited definition, which is "that which reduces uncertainty" Arrow 1984 in Feeney, (1994).

Nwosu (2000) simply put information as "authentic data processed for useful purpose, such as decision making and knowledge acquisition". Uwem (1990) defined information as data that have been subjected to some processing functions capable of answering a user's query, be it recorded, summarized or simply collected that would help in decision - making. From the two definitions above information is needed for decision-making and knowledge acquisition has its foundation on information.

According to Losee (1997) information is one or more statement of facts that are received by a human and that have some form of worth to the recipient. Akinde's definition agrees with Losee's Akinde (2000) defined information as an entity that arises from a set of data, which has been structured and tailored towards a particular audience, upon which vital decisions may be made.

Kaye (1995) "information is raw materials for the mind which uses it to develop skills, knowledge and, ultimately perhaps wisdom. From the three definitions

above information has meaning only when perceived and interpreted by the human recipient.

Concept of Communication

Communication is most essential distinctive quality which makes possible various links, contact and interactions among members of various organizations. Because of its universal nature and multi-disciplinary application, communication has attracted several definitions from writers and experts in various fields of study. Some of these definitions and their various interpretations are hereby discussed below:

Little (1988:1) perceived communication as "the process by which information is passed between individual and/or organizations by means of previously agreed symbols". Newman and summer (1965:119) described communication as "an exchange of facts, ideas, opinion or emotions by two or more persons". The two views above suggest that for communication to take place there must be an identical medium by which the facts, ideas and opinion are exchanged. They went further to say that "the receiver and sender may not agree, but communication has occurred when one at least understand what the other means to convey". This reaffirms transmission of ideas as the core of communication. Armstrong (1977:316) viewed communication as being "concerned with the creation, transmission, interpretation and use of information". This concept of communication brings out the dynamism in communication. It embodies the sender, message, channel and receiver.

Adewusi (1998) adds the fifth element, which is the most important element of effective communication - the giving or response or feedback to a message. According to him communication is the transferring of a message to another party so that it can be understood and acted upon.

Communication, simply put is the transferring of information. People communicate by speaking or writing to each other. Machines communicate by sending information through cables, or by sending signals through the air. Communication system is required in this modern world to transmit information. A communication system is all the equipment, which must be connected together in order to send and receive information. Data communication marries the technologies of computers and communications to provide information-processing services throughout office or around the world. Data communication according to Dimsdale (1990), often called telecommunications, means transmitting data and information electronically from one point to another using the telephone, radio and microwave transmission devices, laser beams, optical cables and direct wiring.

Computers connected by networks are an example of information and communication system. Modern information and communication technology combines electronics and telecommunications, so that large amount of data can be stored and transmitted. With the aid of Internet, literature searching has been converted from a rather tedious task involving sorting through card catalogues or printed indexes, to a stimulating, interactive process using an on-line connection to remote databases, often located in computer centres hundreds or thousands of kilometers away. The Internet has made it possible for people all over the world to

effectively and inexpensively communicate with each other. Unlike traditional broadcasting media, such as radio and television, the Internet is a decentralized system. Each connected individual can communicate with anyone else on the Internet, can publish ideas, and can sell products with a minimum overhead cost (Ruthwoski, 1998).

2.3 Internet: Definition, Concept and Essence

Although most people have heard of the Internet, different people have sometimes very different ideas about what it actually is. The Internet according to Zerges, (1996) is not a physical thing it is just what the name implies: Inter-networked computer appliances.

Wulf (1995) describes the Internet as "the mechanism that allows people via their computers to access information. Basically, Internet consists of three components:

1. Networks of computers, joined together in various ways
2. The users, and
3. The services and resources, which can be accessed, such as Telnet, File transfer, E-mail, Netnews, Internet phone, Internet relay chat World Wide Web (www).

The network consists of computers of varied size, make and number. Computers in countries and regions of the world are linked through telecommunications system, which revolves around connectivity, Interactivity or communication compatibility among the subsystems of the network

systems (Agbaje 2002). Growing from 200 interconnected computers in 1983 to two millions a decade later and with traffic rates continuing to grow at 10-15% per month, this high level of Internet connectivity fosters an unparalleled degree of communication, collaboration, resources sharing and information access (Oketunji, 1998).

Barigo (2001) reported on the exponential global impact of the Internet. It is on record that it took 38 years of radio to reach 50 million people and 13 years of television to achieve the same result. Empirical evidence according to Omekwu (2002) has shown that the same number of people adopted the Internet in just four years... There were he continued 50 pages on the world wide web in 1993 but today the pages of the world wide web has increased to 1.5 billion with almost two million pages being added each day. About 143 million people logged onto the Internet in 1998. In March 2000, an estimated 276 million worldwide were Internet users with a growth rate of 150,000 per day.

Most people are by now familiar with electronic mail (E-mail) fewer, but a rapidly growing number are familiar with the other tools for finding and accessing information on the Internet - "bulletin boards" for topical discussions, file transfer protocol for moving datasets, "gopher" and "Archie" for searching for information and the "world wide web" and its wonderful Mosaic, for browsing.

As pointed out by Kennedy (1995) "the early Internet was used by computer experts, engineers and was nothing friendly about it. There were no home or office personal computers in those days, and anyone who used it, whether a computer

professional or an engineer or scientists, has to learn to use a very complex system".

Nowadays access to the Internet has become much easier due to the standardization of commands and user friendliness of computer programmes. People no longer have to be professionals or experts to make use of the Internet. The main aim according to Dhaver (2000) of standardization of the commands to gain access to the Internet using various programmes is to make sure that many people are able to obtain access to the Internet not only to make use of the information available but also to contribute to the growth of the Internet".

The basic facilities of Internet are firstly, a Modem (modulator - Demodulator). A modem according to Akanbi (2000) is "basically an interface card which if installed in one of the free slots of your computer makes it possible for your computer to receive and transmit through the ordinary telephone, digital information which can be data, voice, video, graphics or what we can simply call multi-media information. The capacity or quality of a modem is determined by the rate at which it can transfer data, measured in bytes per second".

Secondly, an Internet service provider (ISP). A service provider according to Adesanye (2002) is a company that sells access to the Internet. You dial into its computer, which connects you to the Internet. The ISP after specified subscription payment would load the appropriate software - Internet Browser which invariably comes with an e-mail, enabling a user to communicate with the whole world instantly and cheaply apart from giving a user access to a goldmine of information of interest

and location. Examples of services providers are: Inet, Skannet, Nitel, Hyperia, Linkserve, Inforweb, etc.

Thirdly, a computer; and fourthly, a dedicated telephone line. This could be digital, which is preferable for efficiency or an analogue.

In essence, the Internet is not about computers or the fancy phone lines that string them together. It is about people, communication and sharing knowledge.

2.3 Brief History of the Internet

The interconnection of computers started during the 1960s when the Advanced Research Project Agency (ARPA) of the United States Department of Defense (DOD) initiated a research project to link computers together for resource sharing. In 1969, four (4) computers successfully exchanged data. The network of these four computers became known as ARPANET (ARPA NETWORK) eventually, more computers were linked to it and the ARPANET grew in size. In 1983 according to Oshofisan (1996), it was split into two to form:

MILNET: The Military Portion of the ARPANET and

ARPANET: The research portion.

As the ARPANET grew, with more and more universities and institutions connecting to it, users found it necessary to establish standards for the way that data was transmitted over the network. To meet the need of data transmission standards, computer scientists developed the transmission control protocol (TCP) and the Internet protocol (IP). During the 1970s various governments, scientific and academic groups developed their own network. For example, the British developed

JANET (Joint Academic Network) with the aim of linking all the universities and research institutions in the United Kingdom as well as provide access to the outside world. Other countries also evolved their own network. Commercial cooperative and company network also sprang up. Other examples include the department of Energy (DOE) Magnetic Fusion Energy (MFE) the High Energy Physics Network (HEPNET) and the National Science Foundation Network (NSFNET) (Rutkowski, 1998).

In 1990, Hypertext Marked Language (HTML) was introduced. HTML is a code used in making document readable across a variety of platforms and software. It operates through a series of codes placed within ASCII document (text). With this, i.e. (the HTML), each individual could create graphic pages (a web site), which then became part of a huge, virtual hypertext network called the World Wide Web (www). The enhanced Internet was informally renamed the web and a huge additional audience was created. (Pullar and Wetsch 1998). Worldwide web refers to the documents containing text, sound and videos hyper linked together and contained on web sites all around the world.

Today, the so-called information superhighway, exemplified by the Internet and world wide web has made it possible for an individual anywhere in the world with a personal computer with enough memory and storage and a functional telephone line to have access to millions of pages of information through web sites which are interlinked by search engines that move from one website to another looking for the appropriate information requested (Wirsly and Shafack 2002).

The implication of the above is the availability of new information products and service and their effects on the existing library and information services. Therefore

information scientists, librarians and university administrators can no longer ignore the fact that the use of Internet in the handling of information has come to stay and effort need be made to intensify availability, access and utilization of Internet within the campus.

The Internet growing popularity has introduced a new form of business enterprise in the country. This is the establishment of ***cyber-cafes***. A cyber café, according to Olorunsogo (2001), may be called a computer resource centre, which helps to convert individuals to users of virtually all the facilities the Internet offers. Most cyber cafes in developed countries offer Internet ready computers, computer education and coffee to the under wired community.

The first cyber cafe in the world opened in 1984 (IAC Website 1999). In the early 1990's there were less than 100 cyber cafes. Today the number of cyber cafes is in several thousands. Because of the recent development in Internet technology, the cyber cafe has grown into the first and most unique form of Internet based business in a physical commercial storefront. The cyber cafe is successful because it combines the comfortable environment of coffee house, restaurant or bar with the many developing applications of Internet. Cyber cafes provide the best way to learn about the Internet because the staff of the cyber cafe is available to teach and guide the public. The cyber cafe also is a good way to get Internet access for home or business use because there is a physical place to go to for the answers, not just a dreaded phone call for tech support (IAC Website 1999) .

The cyber cafe is being recognized as an essential point of access for Internet services as the Internet becomes more and more a part of our everyday

lives. No other business is playing such an instrumental role as the cyber cafe in the process of bringing the future of Internet technology to the public.

In developed countries, cyber cafes are open daily from 9.00am to 9.00pm. The hourly rate charges range from US$4 to US$ 7.50 for walk-in customers depending on when they use the facilities. Fees are higher during the busiest time of the day, which generally runs from 2.00pm to 9.00pm. Today numerous cyber cafes exist in several countries of the world particularly in developed world. In Nigeria, cyber cafes exist only in the bigger cities such as Lagos, Ibadan, Kaduna, Abuja, Benin, Port-harcourt and Enugu (Olorunsogo 2001) other cities include Zaria, Bauchi, Ilorin, Sokoto, Kano etc where you find them both in the town and educational institutions. These cyber cafes operate at varying prices depending on location and time of the day. Their presence at academic institutions will surely enhance availability, access and utilization of information of all sorts.

2.4 Services and Resources of Internet

The Internet provides a number of ***resources*** and ***services*** for the purpose of retrieving and disseminating information to and from computers on the network.

Resources are taken to be that thing that can be turned to for help when needed. A resource has the properties that may inform, treat or resolve an information problem. Where access to the resource is obtained via the Internet then it is called an Internet Information resource. Some of such resources include library catalogues, World Wide Web (WWW) sites, campus wide Information systems, and sites that archive softwares and documents for anonymous file transfer. Subject in

its libraries from academic sites to technical information to business pages or the web categorizes resources. A search on the Internet will reveal many other resources that may be of value to individuals.

Service is a system or arrangement that meets public needs especially for communication. Some of the more basic ones include: Electronic mail, Usenet News, File Transfer protocol, Telnet, Wide area Information services (WAIS) Gopher. The service may be grouped into four areas namely:

1 Information Retrieval Services

2 Information Search services

3 Communication Services

4 Multimedia Information Services

Information Retrieval Services

I. File Transfer Protocol (FTP): FTP was one of the first developed Internet services, which enabled users to transfer computer files back and forth between systems. The whole purpose of the Internet according to Woherem (2000) " is to transfer files from one machine to another no matter where in the globe" This Internet tool provides a facility that enables users to connect to a computer on the Internet, ***Browse*** through the list of files that are available on the remote computer, and retrieve files.

ii. Gopher: This is an information ***browser*** similar to FTP, but with significant enhancement for ease of use and flexibility. Gopher allows users to create and use computer file directories. Also its service is linked across the Internet to allow other

users to browse files. This ease-of-use plus the ability to put descriptive titles on the menu items, makes Gopher a much easier method of browsing files than simply using FTP.

The maintainer of Gopher runs a Gopher server located at the address: (gopher.tc.umn.edu). This address gives a user a good starting place to browse through all the Gopher servers and discover the wealth of information available on the Internet.

Information Search Services

I. Wide Area Information Server (WAIS): WAIS is a complex searching programme that locates information resources on the Internet by means of a scoring system. It searches a set of database that has been indexed with keywords, and returns addresses where the user can locate documents that would be of interest.

The WAIS system has these two key features:

1. The ability to have indexes that actually point to other servers
2. It allows the use of client software running on local computer that lets user ask for information in simple, English-like language

Two useful search engines of WAIS are "Archie" and "Veronica"

Communication Services

I. ***Electronic Mail (E-mail):*** The most widely used tool on the Internet is electronic mail. E-mail is used to send written message (memo, letter, graph, etc)

between individuals or group of individuals, often geographically separated by large distances.

The messages are generally sent from and received by Mail ***Servers*** (computers that are dedicated to processing and directing e-mail). Once a server has received a message, it directs it to the specific computer that the E-mail is addressed to.

Examples of e-mail addresses are: 'amokeoni@hotmail.com' and 'h.bruce@uts.edu.au' (excluding the quotes)

E-mail has the following advantages over the conventional communication media. It is faster, cheaper, more reliable and convenient than the normal postal and courier services, as messages reach the recipient computer systems just seconds after being sent. It also makes sending multiple copies to multiple recipients easier through the use of mailing lists. Electronic mail has overwhelming advantages over paper-based mail in that information is essentially a weightless, media-independent commodity.

In relation to the telephone service, e-mail does not depend on the simultaneous availability of both the receiver and the sender. Messages can be stored and then forwarded to the recipient or retrieved by them, from any location, as long as they have access to the network.

E-mail mode of communication has found important applications in the following contexts (Tiamiyu 1999).

1. Fast and cheap information service
2. Document delivery and data exchange. An important e-mail facility is the ability to send any computer - created document or file as an ***attachment*** to an e-mail message much faster than post or courier and much cheaper than fax.
3. Bulletin Board: these are computers on which electronic notice may be posted by other computers through e-mail
4. Computer conferencing: is an application of e-mail for the purposes 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.
5. Distance education: where the teacher and the student have access to computer, e-mail may be used to communicate instruction, messages, study materials, completed assignment, questions and answers etc.

Terminal Emulation Link Network (Telnet)

Telnet is a powerful tool that enables remote login to another computer. It was developed for the purpose of long distance computer. Users located at any remote location can have access to library information anywhere in the world. Libraries use it to offer electronic and catalogue services. The CD-ROM catalogues are made available through this service. Oketunji (1997.9) has this to say about Telnet Access "if one has an access to the Telnet function of Internet, one can search and view "display" 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". A Telnet session, for example can be used to search the library catalogue of a university on the other side of the world, query a database to pull up information about grants or the latest weather for your area.

Usenet

Usenet is the Internet news system from where news and current affairs across the world can be obtained. The Internet news can be likened to a notice board of an organization where different types of information are posted. The Usenet service is used in distributing journals, magazines, newsletters and research publications electronically among collaborating institutions. Usenet service allows users to distribute news messages automatically among thousands of structured news groups.

Internet Relay Chat (IRC):

Internet Relay Chat, a Client/Server application, enables multiple people to communicate simultaneously (by typing, of course). Users who want to communicate with each other must be running an IRC client, and they must connect to an IRC server. Once on the server, they select the ***channel*** on which they want to communicate.

Multimedia Information Services:

Multimedia is a combination of different forms of media-text, graphics sound, photographs and video in a computer-based system.

The World Wide Web (WWW)

The WWW which is the newest service on the Internet, was developed to enable users have access to any type of information anywhere in the world. The use of this service enables users to exchange many types of data, text, graphics and figures. They can also browse, select any part in a document or copy information on the Internet.

WWW resources are organized to allow users to move easily from one resource to another. The connections to different source computer on the network are made with the use of hypertext (a powerful concept that enables one to navigate flexibly through linked pieces of information) and hypermedia, which links resources.

The WWW has emerged as a potentially valuable tool in the classroom, for it enables information access through a method known as hypertext transfer protocol (http). This approach facilitates research on topics of interest by identifying key words and then simply "clicking" the mouse on identifying the topics of interest related to the key words (Fleischman, 1996). These leaps through cyberspace (a term used to refer to the nebulous ether world of information communication via the Internet) lead users to web pages. Information contained on the web is organized into "home pages" generated by the organization or individual sponsoring the information. Home pages contain combination of text, photos, illustrations, headlines, maps and graphics to a layout design similar to a newsletter or magazine format (Philips and Horton 1998)

Teleconferencing

Teleconferencing according to Brightman and Dimsdale (1986) is done electronically by voice over radio or telephone conference call, by one-way or two-way or by computers. It is relatively inexpensive. There are no travel costs and time away from the office, for conference attendance is kept to a minimum.

Video Conferencing

Video conferencing is another innovation provided by information technology. It can enhance remote collaboration, which has traditionally been limited by voice only (telephone) or text only (E-mail) interactions.

Video conferencing according to Littman (1995)... as a communication facilitator in an Academic Library can enable librarians to hold interactive sessions, regardless of location on such topic as internet access and use, computer security, ersonal information and privacy, intellectual freedom and copyright etc".

2.5 Relevance of Internet to Library and Information Services

Modern day Information and Communication Technology of which Internet is a major tool is very vital today for successful library and information services. As no individual can continue to live without breathing so no library and information professional can remain effective and efficient today without making use of Internet.

The introduction of Internet into library and information services has greatly enhanced the efficiency and effectiveness of the library services. Clients can get

satisfactory answers to their queries within the shortest time. Librarians can perform their functions more efficiently. Among the greatest benefits of Internet to library service is the inexpensive way to communicate with other Internet users worldwide. It is used to obtain important resources for teaching and learning materials and equipment, (Osuala, 2000).

Books and journals that have hitherto been impossible to keep current copies of in academic libraries especially of the developing countries are now available electronically and instantaneously as they are published. The advantage of this development to a library is that it renders the maintenance of large collections of printed materials and subscription to wide range of journal unnecessary. (Oyinloye 1998).

Services such as ordering and processing of library materials are made easier through Internet. Libraries using appropriate commercial databases can locate selected material and send out E-mail orders to publishers (Whitaker 1989). The Internet has made reference services and information resources move away from the conventional form such as book format to electronic format. When there is a need, information obtained can be printed so that students, teachers and other researchers can look up items of interest in electronic encyclopedia (Oniyide 1998).

Internet as remarked by Nair (1999:253) has become another alternative for library and information services. With the electronic information, storage mechanisms and the new access and dissemination methods made possible by the Internet, traditional library techniques are losing their relevance. Many of the libraries of educational and research institutions in developed countries are connected to the

Internet. There are systems that connect user to all sites or digital libraries having information on his area of interest. Internet facilitates quick document retrieval services from libraries in the world. Information in any form located anywhere in the world can be accessed by any user at the touch of a button and at negligible cost.

Problems usually associated with conventional libraries include unavailability of materials, deformation of books and journals etc. In addition, some libraries are not comprehensive while yet many are not up-to-date. These inadequacies are not prevalent with Internet database.

Today, Internet has become the single most powerful library tool that ever existed. With the emergence of digital libraries and electronic journals, Internet has become an inseparable part of the library. No librarian can exist in the coming days without necessary familiarization in handling this tool. It is therefore imperative that the library schools in Nigerian Universities overhaul their syllabi to accommodate these new developments. (Daniel 2000) Library and information professionals who will set the pace in the knowledge age need skills: Computer and Internet literacy. These skills are better acquired at school alongside professional training in librarianship (Omekwu 2001).

2.6 Internet Access and Use

Voorbij (1999) in conducting a Dutch academic user survey examine the use and perceived importance of the Internet amongst students and academic in the Netherlands. A detailed questionnaire was distributed among 1000 members of the academic community and three focus group interviews were held with faculty

members. Among other findings, the study revealed that searching the worldwide web (www) is not without difficulty. Libraries should support the users by performing traditional tasks, such as selecting bibliographical description controlled subject indexing, current awareness courses and individual assistance. The www is being used primarily to search general, factual, ephemeral or very specific information. At this moment, full text resources play only a minor role in the academic research process. The Internet may have conquered a place for itself, but it has not pushed aside traditional printed and information resources.

Abel, Liebscher and Denman (1996) study of science and engineering faculties in small south eastern universities and colleges finds that, for faculty to adopt network services, they need access to network from workstations in their offices. This represents an investment decision from administrators consider measurable benefits. Seemingly influencing factors in network adoption differ from those in intensity use. Different approaches are needed to enhance the adoption and increase the use. This study is similar in two aspects. First it explored the use of a broad range of Internet services very similar to those in the present study. Finally, among the conclusion it reached, with regard to the need for further research, was the following: further knowledge of difference in the use of electronic network among faculty by discipline would assist in determining levels of connectivity, priority in providing connection and services offered.

Tomney and Burton (1998) studied the use and attitudes towards electronic format via CD or the Internet. A survey was conducted on faculty members, from Science, Engineering, Arts, Business and Education in a British university. The

results indicate that a small percentage of faculty members used electronic journals. The modest use is attributed to the lack of electronic journal awareness and of relevant electronic journal. Accessibility to electronic journal from their workstation is the top perceived advantage.

Although the study is on both attitude and use, the outcome of use by science and humanity faculties is a point of reference to discuss the outcome of group of users of Internet by library and information faculty members in Nigeria University library schools which is the focus of the present study.

Research conducted by Lazinges, Bar-Ilan and Peritz (1997) on different department in an Israeli university reveals that the Internet is used more by faculties in science and agriculture than those in humanities and social science department. One contributing factor may be access to network from the faculty workstation. Other findings include:

- While faculty members perform various tasks that were previously carried out by a librarian or a secretary, co-operation with colleague increases
- More senior faculty members use the Internet less
- Most faculty members learned to use the Internet without taking course and were interested in learning in a structure and continuing education course. E-mail service is used primarily for research and social purposes.

The results of these last three studies revealed that most faculty members are willing and in need of a formal training programme in basic and advanced topics. The training courses should be customized to meet individual needs. The tales of

libraries and information professionals may shift to technology trainers and promoters.

Dennis and Espionozo (2001) conducted a survey at a regional state university to determine how faculties from various disciplines were using the Internet to supplement their teaching. The questionnaire, which included request for demographic data, questions about how the faculty members were using the Internet, and questions about how they were requiring, or at least encouraging their students to use the Internet, was distributed to 366 full-time and part-time faculties in three distinct colleges at the university. Findings include. The Business and Technology faculty were the most experienced with computers and they required their students to use the Internet more than the other faculty required its use. Though the education faculty were the least experienced with computers, they were more involved than the Arts and science faculty in the integration of the Internet into their courses. Arts and sciences faculty appeared to require mostly research-oriented activities with the Internet, while faculty from the other colleges also emphasized the use of e-mail to improve communications among faculty and students. Faculty from all three colleges indicated a desire to continue improving their own Internet skills and to provide better access for their students so that they could all benefit from the resources and communication available through the net.

This study is similar to the present study in terms of usage but different by population.

Bane and Milheim (1995) conducted a survey of use by academics (a team which they did not define). They subscribed to 231 randomly chosen discussion groups from a list of scholarly electronic conferences. While they reported results regarding use of a number of Internet services in a seventeen countries, they did not collect or publish data on use by discipline, just sector (e.g. commercial, education, government). Among other findings state that many academics are still not aware of its resources and possibilities, and not all foreign countries have access.

Ojedokun (2001) conducted a study on Internet access and usage by student of the university of Botswana. The study is similar to the present study in terms of Internet use but is different by population. Ojedokun investigated the adequacy of provision of access to, and the usage (in terms of use and misusage) of the Internet by the students, as well as the problem the student faced in its use. The study revealed that computer with Internet facilities at the time of this study were inadequate - hence many of the student did not have access. It revealed that although quite a number of the students were aware of the immense benefit of its use to academic studies, they lacked the necessary searching skills to make effective use of the Internet for this purpose. It also revealed that because of the lack of effective searching skills, those who had access used it essentially to search and retrieve information on entertainment, sport and news from around the world. The study noted that the university has greatly influenced the student use of the Internet to access information.

In a four-campus survey of faculty use of electronic information technologies and resources by the SUNY University centre Libraries conducted by (Adams and

Bonk, 1995), included respondents from all academic disciplines and measured the use and frequency of use of electronic information resources. Because the questionnaires were distributed by mail, it measured non-use as well. Variations in use among faculty in disciplines is given but the conclusion state that, in general, the most common obstacle to the use of electronic information resources by faculty is a lack of knowledge about ***what is available,*** and that user training is considered by faculty to be a high priority need.

White (1995) examined a specific segment of faculty members but included non-users as well, distributing the survey by mail to faculty members in professional organization related to the study of mass communication, consumer behaviors and advertising and public relations. Unlike the previous studies, this study found that the majority 73% of faculty in the sample used "computer related communication with younger faculty members and female faculty members showing significantly higher use than the general population.

In another Internet usage in undergraduate management science and operations management courses, Gagnon and Krovi (2000) surveyed 1,353 professors to learn if and how they use the Internet in instructing their introductory undergraduate management science (MS) and operations management (OM) courses. Thirty five percent of the faculty teaching introductory MS or OM courses use the Internet in their instruction. The most reported applications of the Internet were: searching the Internet for information/data, gathering data about a specific company, and retrieving an article. Reading or downloading homework problems and downloading a syllabus. The most common reasons for not using the Internet as

part of course pedagogy were: lack of student access to computer laboratory resources, lack of faculty training in Internet-related areas, lack of relevant website and faculty not being convinced about the learning student receive from its use.

Finally Bruce (1995) in an Australian study analyzed data from two samples of academic from a wide field of discipline in 13 Australian universities, to determine how academics in Australia use the Internet to enhance their teaching. The data revealed that the Internet for Australian academics represents a mechanism for overcoming use disadvantages to academic teaching, which may arise from institutional amalgamation, geographic remoteness or the under-representation of certain teaching disciplines in Australian Universities. The present study looks at how Nigerian Library and Information Science Academics use the Internet for the discharge of their responsibilities which are teaching and research thus it similar in a way.

2.7 Factors Influencing Use of Internet Facilities and Services

Many studies have identified demographics as important factor in the adoption and use of a new innovation. For example, James et al. (1995) found that bulletin board (BBS) users tended to be higher educated, higher income, professional males.

Demographics include gender, income, race or ethnicity, education and age. In a study conducted by Busselle et al. (1999) respondents were asked which income bracket they belonged to choosing from the following: US$ 15,000 or less, more than US$15,000 more than US$ 35,000 and more than US$ 50,000.

Age was determined by asking the respondents what their ages were. Respondents were asked, "How much education have you completed," and were coded as less than high school, high school degree, bachelor's degree and post graduate males were coded "1" and females "2".

Another factor is motivation. An individual's motivations also affect his/her decisions about innovation adoption. These include ***innovativeness*** - waiting to learn and explore new ideas (Lin, 1998; Rogers, 1995); - more active Vs more passive information seeking (Reagan et al. 1998); ***involvement*** - perceiving an innovation as "boring" or "desirable" (Reagan et al. 1998); ***drives*** - one's instinctual needs (Batt and Katz, 1998); perceived needs - how useful an innovation is for work or life (Lin, 1994).

Lin (1998) summarized a set of motivations in four scales of three or four items each. These included ***resources, complexity, advantages*** and ***need*** for innovativeness. Along with the cost issues related to resources, Lin hypothesized that venturesome ness and strong novelty-seeking motives may result in a willingness to adopt an innovation. Additionally, Lin assumed that perceived usefulness and relative advantage are important constraints of adoption motivations. Finally whether a person perceived the innovation as too complex also affected their willingness to use or adopt the innovation (Busselle at al. 1999).

Kraut et al. (2002) conducted a study, on "why people use the Internet" using 100 households in Pittsburgh area, summarized their finding as follows:

People's foremost use of the Internet in 1996 was for pleasure and to obtain more information about their personal interests. They also used the Internet to

sustain personal relationships. The most popular use for the Internet outside of the entertainment category was for corresponding by electronic mails... a substantial minority of people used the Internet for work purposes - either for paid employment in the case of adults or for school work in the case of teenagers... others include meeting new people, joining a group or participating in a chat session.

Barriers to Increase Internet Usage

Internet infrastructure and services in Nigeria are still infantile mainly because of the dearth, unreliability and exorbitant cost of telecommunication services. Moreover, the per capita number of computers is very low because very few Nigerians have access to computers at school, work or home.

The situation in Nigeria is further complicated by several other constraints including, non-availability of adequate telecommunication facilities, lack of computing infrastructure and culture, underdeveloped local information sources and databases, very low literacy level and restriction of universal access to information (Tiamiyu, 1999).

In Library and information services in Nigeria information and communication applications according to Banjo, (1998) 'are relatively insignificant and rudimentary when viewed against global trends and developments". Although accurate, up-to-date and comprehensive data of the current situation is hard to come by, the following as outlined by Banjo, (1998) is a tentative picture:

- Even among the so-called computerized libraries the level of computer availability is low and there are few local or external network capability

- There is no fully operational Internet access for customers
- There is no on-line access to international databases
- E-mail facilities are also generally unavailable except for the current efforts of the National Universities Commission (NUC) under its NUNET project
- Consequently Nigerian LIS, still operate as traditional information stores.

2.8. Internet Users: Characteristics and Information Seeking Behaviour

According to Zerges (1996) it is only possible to estimate the numbers of Internet Users on the basis of the number of hosts. If this number is multiplied by a factor of 7.5 we obtain an optimistic estimate for 1995 of some 50 million users worldwide.

In recent times, Barigo (2001) reports on the exponential global impact of the Internet. It is on record that it took 38 years of radio to reach 50 million people and 13 years of television to achieve the same result. Empirical evidence according to Omekwu (2002) has shown that the same number of people adopted the Internet in just four years... About 143 million people logged into the Internet in 1998. In March 2000, an estimated 276 million worldwide were Internet users with a growth rate of 150,000 per day".

What is known about Internet users? The Internet has been a male dominated technology since its beginning in the late 1960's. As tested by Zerges (1996:4) "all surveys seem to agree that more males use the Internet than females. In the USA the figures are about 68% males to 32% females".

Bimber (2000) in evaluating differences in men's and women's presence on the Internet, testing for the presence of gender specific causes for different rates of Internet use. Stated that two statistically significant gender gaps exist on the Internet: In access and in use. The access gap is not the product of gender. The use gap is the result of both socioeconomic and some combination of underlying gender - specific phenomena. He concluded that around one-half of the "digital divide" between men and women on the Internet is fundamentally gender related.

However, as reported by Los Angeles times the Internet gender gap is closing in US. "The number of women on the Internet is now equal to the number of men online, since over 9 million women become Internet users in the past six months according to a pew research center study.

The findings add to the view that the online population, once primary restricted to technology - oriented males is growing more representative of overall US population. Although past studies have linked Internet user to antisocial behaviour, the pew research center suggests that the Internet actually encourage socialization for example, through e-mail. On an average day, 33 percent of Internet users send between 5 and 20 e-mail message. E-mail is a large draw for women to the Internet; with women saying the technology helps then stay in touch with family and friends. Women tend to visit health and medical site, while men are more likely to research product information and trade stock online. In addition, many working women are turning to e-commerce as a way to save time, although men still represent two-third of online spending, according to a recent report from Angus Raid Group".

Income, education race and age among other characteristics, strongly influence what a person does online. They can affect not only the types of Internet activities and searches, but also even the nature of a person's e-mail. Most significantly, people are using the Internet to improve and advance their current status. For example, those who are unemployed are using the Internet to find jobs, and those with lower incomes and many minorities are using the Internet to take courses or do school research. The 1998 data therefore show the Internet is becoming not only a source of information, communication and entertainment, but also a tool that can help users help themselves (Zerges, 2000).

Information seeking Behaviour

Generally, there are a number of basic ways to access information on the Internet: These according to Cohen (2002) include:

1. Joining an e-mail discussion group or Usenet news group-mail discussion groups cover a wealth of topics. Users can ask questions of the expert and read the answers to question that others ask. Belonging to any of these groups is somewhat like receiving daily newspapers that interest one. These groups provide a good way of keeping up with what is being discussed on the Internet about one's subject area. In addition, these groups can help a user find out how to locate information- both online and offline - that may be of interest to the user. E-mail discussion groups are managed by software programmes namely; Lister, Majordomo, and Listproc.

2. Going directly to a site if you have the address using a web browser to access that site
3. Browsing home pages on the web is a haphazard but interesting way to find desired material on the Internet. The University Libraries web site contains quality links leading into the World Wide Web, and is a good place to start exploration. This site is located at http://library.albany.edu/.
4. Exploring a subject directory: The major subject directories on the web have overlapping but different databases. Most of these directories provide a search capability that allows users query the database on their topic of interest.
5. Using search engine

   An Internet search engine allows the user to enter keywords relating to a topic and retrieve information about Internet sites containing those keywords. Examples of such search engines are Archue, Yahoo, Google, Mamma, Alta vista etc.
6. Exploring the deep / Invisible web.

   Deep web refers to content that is stored in databases accessible on the web but not available via search engines. The only way to access information on the invisible is to search the databases themselves. Examples of sites that collect content from the deep web:

   1. http://www-invisibleweb.com/
   2. http://www.invisible-web.net/

Choo et al, (2000) present findings from a study of how knowledge workers use the web to seek external information as part of their daily work. Thirty-four users from seven companies took part in the study. Participants were mainly IT specialists, managers, research/consulting staff working in organizations that included a large utility company, major bank and a consulting firm, participants answered a detailed questionnaire and were interviewed individually in order to understand their information needs and information seeking preferences... Data from the two interviews and the web- tracker logs constituted the database for analysis. Sixty-one significant episode of information seeking were identified. A model was developed to describe the common repertoires of information seeking that were observed. One axis of the model, episodes were plotted according to the four scanning modes identified by Aguiler (1967), Weick and Daft (1983): Undirected viewing, conditioned viewing, informal search and formal search. Each mode is characterized by its own information needs and information seeking strategies. On the other six of the model, episodes were plotted according to the occurrences of one or more of the six categories of information seeking behaviours identified by Ellis (1989, 1990): Starting, chaining browsing, differentiating, monitoring, and extracting. The study suggests that a behavioural framework that related motivations (Aguolar) and moves (Ellis) may be helpful in analyzing patterns of web-based information seeking.

2.9 Potentials of Internet Use by Academicians

Recent focus groups conducted with education professionals have highlighted a number of uses for the Internet by faculty members. These applications

(developing network with colleagues, transfer of information) are to research and instructional application. Research applications highlight the use of the Web for gathering information from on-line databases, using web search engines to locate a variety of information, publishing opportunities, and self-education applications, Possible instructional applications involve interaction project based learning activities, creative development of learning materials and the actual delivery of undergraduate courses at a distance (Rosen, 1996) Phillips and Horton (1998. 225) in quoting (Sequin and Sequin 1995) concluded that "Internet offers an unprecedented tool for learning, that it is a virtual classroom that requires only a computer and a modem to participate.

According to Devine and wood (1996. 229). The explosive growth in client/server technology and the availability and popularity of Internet based navigational tools and access services present today's reference library with a broad and much publicized array of opportunities to expand the quality of its services and even in some cases, the scope of its mission. Internet based reference services owe their increasing popularity amongst librarians to the increasing need to extend the reference desk beyond the library walls.

Joia (1997. 302) also attested to the pedagogical use of the Internet. Internet according to him can be used for:

- ***Research*** using search engine

  (http://www.altavisa.digital.com)

  http://www.lycos.com etc) students and teachers can research any subject they want.

- ***Educational project*** There are a lot of projects (Mono-disciplinary, inter-disciplinary and cross-disciplinary) on the Internet. Schools can exchange information and develop project with others all over the world.
- ***Educational Adventures:*** The blend of adventure and education is a magic formula to spur pupils to use Internet. In these projects most of the Internet resources are used: E-mail, Web, Discussion Lists (List-Serv, Majordomo etc) News groups (Usenet) videoconferences, virtual reality etc. These projects can lead to inter-and cross-disciplinary approaches, allowing students and teachers of different subject to be involved together.
- ***Videoconferences:*** with the aid of digital camera and software students and teachers can videoconference with others in developed world as part of project.

Publishing for scholarly activities is also possible on the Internet. According to Chan, (2001) Network based scholarly publishing has a major impact upon the ways in which academics communicate the result of their research. The advert of new information technologies and in particular the worldwide web, offers very positive advantages in terms of rapidity of scientific and scholarly exchange and access to information.

Publishing on the Internet according to Agbonlahor (2000) "simply means putting information on one computer where others can see it on the Internet. It basically consists of making computer files available on one computer; usually called a server, and allowing others to view or download them via other computers, usually called clients. Materials that can be published include stories, articles, poems,

pictures or music. The advantage of publishing any materials on the Internet is that every Internet user is a potential audience.

2.10 Summary of the review

In this chapter various works that bordered on Internet use in general were reviewed. The review was presented from previous studies and theoretical framework to give a proper perspective to the present study. The outcome of the review shows that the use of Internet fosters unparalleled degree of communication, collaboration, resource-sharing and information access.

Previous studies reported variations in use among faculty in various disciplines but conclude that the most common obstacle to the use of electronic information resources by faculty is a lack of knowledge about what is available and that user training is considered by faculty to be a high priority need.

The studies reviewed are similar to the present study: they explored the use of a broad range of Internet services very similar to those in the present study.

The relevance of Internet use with particular reference to Library and Information Science Academics in Nigerian Universities is the concern of the present research. It must be noted that most of the work reviewed in this study emanate from developed countries that differ from Nigeria in the rate of adoption and use. Although the studies are different by population, the outcome of use by faculties is a point of reference to discuss the outcome of group of users of Internet by Library and Information Academic in Nigerian Universities.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the research design, which was adopted for the study. The outline of the study design includes the following: Research Method, Population, Sample and Sampling Techniques, Method of Data Collection and the Instrument for data Collection. In addition, the chapter contains the procedures for validation of the Instrument, and the Procedure for Administration of the Instrument. The chapter ends with the procedure for Data Analysis

3.1 Research Methodology Adopted

The study employed the Survey Research Method. This is because, the nature of the study itself warrants the use of the survey method as it enabled the researcher to reach out to study population in their different location. In addition, the survey method was adopted because the work is mainly interested in describing certain variables in relation to the population (Denga and Ali, 1989; and Nworgu, 1991; Aborisade, 1997, Busha and Harter 1980 and Ndagi 1984). Since the researcher is concerned with people's opinion about the use of Internet by library and information science academics for performing their responsibilities, this method is seen to be more appropriate than other research methods used for descriptive studies.

3.2 Population of the Study

The study population was limited to the universities that have Internet facilities in the library and information science department or in the library for which staff have

access to. Consequently, 7 universities were involved in this study based on the above reason.

Thus, all the academic librarians and the library and information science lecturers in the 7 universities formed the study population. The choice of these population groups was based on the fact that, they are supposed to be in the forefront of instilling the use of Internet for teaching, research and provision of information in the universities. In addition, they are the focus of the study, so they will be in the best position to provide the information required for the study.

Based on records available in the NUC Directory (2002) and personnel records of universities in the Records and Statistics Division of the Commission for the year, there are 224 Library and information science academics in the 7 universities under study. This population comprises 139 Academic Librarians and 85 Library Science Lecturers.

The population of the study is as presented on the table 3.1 below:

Table 3. 1: POPULATION OF THE STUDY

S/No	University	Academic Librarians	Lib. Science Lecturers	Total
1.	Ahmadu Bello University, Zaria (ABU)	34	10	44
2.	Bayero University, Kano (BUK)	22	17	39
3.	Delta State University, Abraka (DELSU)	6	10	16
4.	University of Uyo, Uyo (UYO)	7	14	21
5.	University of Maiduguri, Maiduguri (UNIMAID)	20	16	36
6.	University of Ibadan, Ibadan (UI)	30	18	48
7.	Obafemi Awolowo Uni., Ile-Ife (OAU)	20	-	20
	Total	**139**	**85**	**224**

Source: National Universities Commission Directory (2002).

3.3 Sample and Sampling Procedure

Due to the relatively small size of the study population, no sampling was done. Instead, the entire population was used as respondents. This is in line with Best (1981) and Nworgu (1991) who maintain that, when the population is small, Census Survey should be conducted instead of Sample Survey.

3.4 Instrument for Data Collection

The Internet Use Identification Questionnaire (IUIQ) was administered to the respondents for the purpose of data collection. This questionnaire was divided into 7 sections numbered A – G. The first section solicited for the personal data of the respondents, which was used for identification and classification purposes. The other 6 sections (B – G) contained items, which sought data to answer the 6 research questions and test the 3 null hypotheses, both of which guided the course of the investigation.

In all, there were 69 items on the questionnaire. Section A contained 7 items while sections B – D have 12, 17 and 10 items respectively. Finally, sections E – G have 4, 7 and 12 items respectively.

The choice of this method of data collection was based on the following reasons:

First, the respondents are literate and capable of completing the questionnaire without further assistance from the researcher (Best, 1981).

Secondly, the respondents are spread over a wide geographical area, making data collection through questionnaire ideal, especially when viewed against the relatively short time for the study.

Thirdly, the questionnaire method enjoy prominence in educational research. In fact, according to Nworgu (1991) "Questionnaire is by far the most frequently used instrument in educational research. Its popularity is demonstrated by the number of published studies and students projects in education that employ this instrument for data collection".

In a related vein, the questionnaire was accompanied by a brief letter of introduction to the respondents, intimating them of the purpose of the study, and soliciting their co-operation in the study.

In addition, extensive use was made of secondary sources of data (documentary evidence) during the review of related literature with a view to putting the study into proper perspective and for proper guidance of the investigation process.

3.5 Validation of the Instrument

In order to ensure that the IUIQ is capable of eliciting the required data and information from the respondents, the instrument was subjected to face validation. This is a kind of validation in which the draft instrument is made available to experts to peruse and make the necessary observations, corrections, and amendments for the researcher to strengthen the instrument. Thus, a team of experienced researchers comprising the two project supervisors and five others from Ahmadu Bello University Zaria and Kaduna Polytechnic were used for that purpose. Corrections and observations made were reflected before the instrument was finally administered.

The decision by the researcher to adopt face validation is based on the remark of Kerlinger (1973) that, validation by others is an effective method for content validation of research instrument.

3.6 Reliability of the Instrument

In order to determine the consistency of the instrument for data collection, a pilot study was conducted. Because of personal convenience, the pilot study was tried on 18 Academic Librarians and Library and Information Science Lecturers in the University of Nigeria, Nsukka. Since the University was used for the pilot study, it no longer formed part of the respondents in the actual study.

The Split-half Reliability test was carried out using Pearson's Product Moment Correlation Coefficient (PPMC) to arrive at a reliability coefficient of 0.821 which guaranteed the instrument.

3.7 Administration of the Instrument

The researcher administered the IUIQ to all the 224 respondents using hand-to-hand method. The respondents were allowed an interval of one week after which the researcher called back and collected the completed questionnaire.

A cover letter was obtained from the Department of Library and Information Science, Ahmadu Bello University, Zaria, to enable the researcher have unhindered access to the universities under study.

In the end, 198 out of the 224 questionnaire administered were completed and returned for analysis. The number of questionnaire returned constituted 88% return rate.

3.8 Procedure for Data Analysis

The study made use of different statistical tools for data presentation and analysis. The statistical techniques used are summarized as follows:

For the first research questions, frequency distribution tables and percentages were used to present and analyse the data. Research questions two, three and five were answered using the mean scores of the respondents as basis for decision making. The mean of each item in the instrument was weighted against the mean of the 5–point scale used (i.e 5 + 4 + 3 + 2 + 1 = 15 divide by 5 = 3.0). Decisions accepting or rejecting an item were based on the cut-off point, implying that any item with a mean of less than 3.0 was not acceptable while those with 3.0 and above were deem acceptable by the group.

Finally, all the three hypotheses in the study were investigated using the t–test statistic. This was done to test the significance of the differences between mean of Academic Librarians and Library and Information Science Lecturers on the issues studied.

All the hypotheses were tested at 0.05 alpha level as a standard for rejection or acceptance of the hypotheses. This, according to Best (1981) is because, in educational circles, the 5 percent (0.05) alpha level of significance is mostly used as a standard for rejection or acceptance of hypotheses.

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CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

4.0 Introduction

This chapter deals with the presentation, analysis and discussion of the data collected for this study. The presentation and analysis of data have been done under the following sub-headings: Response Rate, Internet Services in the Universities, Uses of Internet Services/Facilities by Library, and Information Science Academics, Importance of the Internet services/Facilities to Library and Information Science Academics, Preference for Internet Use among Library and Information Science Academics, Levels of Satisfaction with the Provision and Use of Internet Facilities/Services by library and information Science academics, Factors Affecting Internet Use and Hypothesis testing

4.1 Response Rate

The fieldwork was restricted to only universities with Internet facilities / services in libraries and/or their library and information science departments. Consequently, only seven universities were involved in the study. Within these institutions, 139 academic Librarians and 85 library and information science lecturers were served copies of the questionnaire. This gives a total of 224 respondents.

One hundred and twenty- two (122) academic Librarians and seventy six (76) library and information science lecturers, making a total of one hundred and ninety eight (198) completed and returned their copies of the questionnaire. This constitutes 88% return rate.

This high return rate was due to the personal administration of the instrument by the researcher who also called back to the respondents several times to collect the completed copies of the questionnaire from the respondents.

4.2 Data Analysis And Discussion

The presentation and analysis of data is integrated with the discussion of result relating to the research questions and hypotheses, using the following sub headings.

4.2.1 Internet Services/facilities available in the Universities

The respondents were provided with a list of Internet services/facilities for use by library and information science academics and were required to indicate whether they are available or not available in their university libraries or their library and Information science departments. The Data collected and analyzed were presented on table 4.1 below:

Table 4.1: Availability of Internet Services/Facilities in the studied University Libraries and in the Library and Information Science Departments

INTERNET SERVICES/ FACILITIES	UNIVERSITIES							TOTAL		REMARK
	ABU ZARIA	BUK KANO	DELSU ABRAKA	UYO	UNI-MAID	U. I IBADAN	O.A.U IFE	FRE	%	
1. Electronic Mail (E-mail)	35	33	12	15	28	37	16	176	89	A
2. World Wide Web (www)	37	34	13	15	30	39	16	184	93	A
3. Internet Chat Facilities	34	32	13	13	14	40	15	161	81	A
4. Internet Discussion Group	36	34	12	08	14	39	16	159	80	A
5. Internet News Group	33	31	11	13	26	33	14	163	82	A
6. Telnet Services	9	7	1	7	9	11	6	50	25	NA
7. FTP (Downloading)	24	20	08	10	22	24	10	118	60	A
8. Internet Phone	6	05	01	05	07	09	06	39	20	NA
9. Video Conferencing Facilities	10	07	02	07	09	12	6	53	27	NA
10. Tele Conferencing Facilities	07	06	02	06	06	12	03	42	24	NA
11. Internet Fax	12	10	03	8	10	14	04	61	39	NA

The table 4.1 above reveals the state of Internet facilities/services in the seven universities studied. These are the universities that offer Library and Information science and as well have Internet facilities/services for use by library and information science academics (except OAU). This small number of seven out of the 16 universities offering library and information science courses in the country collaborates the view of Oyinloye (1998) who laments that, in spite of the impressive results on Internet use in educational institutions, progress has been significantly slow in the Nigerian universities' libraries and library science departments due to some pressing problems.

Notwithstanding the above situation, it could be seen that majority of the listed facilities/services are available in the universities studied, namely: e-mail, www, Internet chat facilities, Internet discussion groups, Internet newsgroup services, FTP (downloading). These results confirm the earlier observations by Watson (1999) and Dennis and Espinoza (2001) that the Internet is being extensively used in universities for teaching/learning and research.

On the other hand, the Internet phone, Telnet service, video conferencing facilities, and teleconferencing facilities are not reasonably available in the universities. This calls to mind the earlier position of Oloruntoba and Bolarinwa (2001) that the libraries and training departments are making efforts at computerization and is at various stages of development.

Therefore, it could be deduced from the above that the Nigerian university libraries and library science departments are trying to meet up the challenges of globalization and information technology. (statistical value obtained below the fourth (4^{th}) percentile was used to define non availability of the facilities/services).

4.2.2 Uses of Internet Services/Facilities by Library and Information Science Academics

In order to ascertain the uses which Library and Information Science Academics make of the Internet facilities/services, the researcher provided them with a comprehensive list of 16 ways such facilities could be utilized for teaching, learning, research and allied services. Thereafter, the respondents were requested to indicate their level of agreement with the theoretical uses of the Internet on a five-point Likert scale containing the following options:

The mean responses and standard deviations of the Academic Librarians and the Library and Information Science Lecturers on the 16 items have been computed and presented on the table 4.2 below:

Table 4.2 **The use of Internet facilities by Academic Librarians and Library Science Lecturers**

S/N	Internet uses	Group	Type of response					Mean	SD	Grand Mean	Remark
			SA (5)	A (4)	U (3)	D (2)	SD (1)				
1.	**To receive business/ professional news**	1	36	81	-	2	3	**4.189**	**0.742**	**4.141**	**A**
		2	16	56	-	3	1	**4.092**	**0.696**		
2	**For accessing electronic journals.**	1	41	75	3	2	1	**4.254**	**0.663**	**3.700**	**A**
		2	17	22	4	21	12	**3.145**	**1.449**		
3	To download software	1	34	82	2	2	2	**4.180**	**0.693**	**4.117**	**A**
		2	17	53	1	3	2	**4.053**	**0.798**		
4	For web browsing	1	23	78	-	18	3	**3.820**	**0.988**	**3.746**	**A**
		2	15	44	-	11	6	**3.671**	**1.182**		
5	For accessing library sites	1	24	56	2	25	15	**3.402**	**1.340**	**3.668**	**A**
		2	13	56	-	3	4	**3.934**	**0.899**		
6	To update my website	1	6	10	6	59	41	**2.025**	**1.079**	**2.019**	**D**
		2	2	5	8	38	23	**2.013**	**0.959**		
7	To search and obtain data for research and publication	1	78	21	-	16	7	**4.205**	**1.285**	**3.665**	**A**
		2	17	23	-	23	13	**3.105**	1.484		
8	For participating in discussion groups	1	6	14	-	83	19	**2.221**	**1.008**	**2.302**	**D**
		2	3	15	-	48	10	**2.382**	**1.070**		
9	For sending and receiving e-mail	1	83	20	-	11	8	**4.303**	**1.246**	**4.395**	**A**
		2	63	2	-	7	4	**4.487**	**1.205**		
10	To contact International colleagues involved in research.	1	30	38	4	42	8	**3.328**	**1.345**	**3.243**	**A**
		2	20	12	6	36	2	**3.158**	**1.337**		
11	To obtain routine information such as conference announcements and job vacancies.	1	19	91	4	6	2	**3.975**	**0.733**	**3.856**	**A**
		2	32	22	1	12	9	**3.737**	**1.446**		

S/N	Internet uses	Group	Type of response SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	SD	Grand Mean	Remark
12	Internet phone	1	2	2	2	86	30	1.852	0.676	1.985	D
		2	3	1	1	68	3	2.118	0.673		
13	Internet fax	1	3	2	2	87	28	1.893	0.725	1.960	D
		2	4	1	7	45	19	2.026	0.938		
14	To identify and approach experts in a field	1	17	21	6	56	22	2.631	1.337	2.507	D
		2	11	12	3	19	31	2.382	1.505		
15	For telnet connections	1	4	8	1	70	39	1.918	0.941	2.209	D
		2	11	13	-	31	21	2.500	1.428		
16	For video conferencing	1	5	6	2	62	47	1.852	0.976	1.887	D
		2	3	5	4	35	29	1.921	1.030		
	Mean of Means	1						3.128	0.986	3.087	A
		2						3.045	1.131		

Note:

Group 1	=	***Academic Librarians***
Group 2	=	***Library and Information Science Lecturers***
N_1	=	***Number in Group 1 (122) Academic Librarians***
N_2	=	***number in Group 2 – (76) Library and Information Science Lecturers***
Cut-off Point	=	***3.00 (Mean of the 5-point Scale)***
A	=	***Agree***
D	=	***Disagree***

Table 4.2. above reveals that, the library and information science academics studied the Internet facilities/services in their institutions in the following descending order: for sending/receiving e-mail ($\bar{X}$ = 4.394), to receive business/professional news ($\bar{X}$ = 4.141) and to download software which represents item 3 on the table with a mean of 4.117. The academics also use the Internet for obtaining routine information such as conference announcements and job vacancies. This item (11) has a mean of 3.856. Others are: for web browsing ($\bar{X}$ = 3.746), item 2 which is using the Internet to access electronic journals got a mean of 3.700, and for

accessing library sites ($\bar{X}$ = 3.668). The rest are: to search and obtain data for research and publication ($\bar{X}$ = 3.665) and to contact international colleagues involved in research, which got a mean of 3.243.

The use of Internet facilities/services by the library and information science academics as outlined above confirms the views of Egan and Pollack (1995); Ruthoski (1998); Herron (1998) and Osuala (2000) that, among the greatest benefits of Internet to library and information science academics is the inexpensive way to communicate with other Internet users worldwide. In addition, the facilities are used to obtain important resources for teaching and learning. This is because, books and journals that have hitherto been impossible to keep current copies in academic libraries especially of the developing countries are now available electronically and instantaneously as they are published.

However, the study also on the internet use reveals that, some important Internet facilities/services are not put to proper use by the library and information science academics. The worst cases are those of video conferencing (with the mean score of 1.887), Internet fax ($\bar{X}$ = 1.960) and Internet phone ($\bar{X}$ = 1.985). The limited use of the Internet facilities/services between library and information science academics, as shown above, could be said to be a general rather than a peculiar case between Nigerian library and information science academics. For instance, Lazinges, Bar-Ilan and Peritz (1997) report that in Israeli universities, the Internet is used more by faculties in science and agriculture than those in humanities and social science departments. Similarly, Dennis and Espionzo (2001) report from a regional study of American universities that, though the education faculty were the least experienced with computers, they were more involved than the arts and

science faculty in the integration of the Internet into their courses. This non-use of some Internet services/facilities is further supported by the study conducted by Bane and Milheim (1995) which reports among other things that, many academics are still not aware of the resources and possibilities of the Internet and not all foreign countries have access to all services.

The findings on the use or non-use of Internet use among library and information science academics are also in line with those of Day and Bartle (1998) from a study on the impact of the Internet as an electronic information services for academic staff of University of Bristol, United Kingdom. The study reports that, the academic community has accepted that electronic information sources are being used and have impacted on their work. They continued that, the services currently available to the academic staff are, unfortunately, not being used to their full potential and some are hardly being used at all.

Based on the above analysis, it could be seen that the Internet has become an invaluable tool for library and information science academics in Nigerian universities. This is because the academics are personally concerned with meeting the challenges of globalization. Moreso, the increase in the volume of computers and Internet service providers in the country coupled with their reduced cost have enabled many academics to hook on to the internet in order to improve themselves and their services. This probably explains the reason why the overall mean of the respondents on the use of Internet facilities/services is 3.087 which supercedes the cut-off point of 3.00 implying that they make use of the facilities.

4.2.3 Benefits (usefulness) of the Internet services/Facilities to Library and Information Science Academics

The researcher provided the respondents with a list of possible benefits or usefulness of the Internet facilities and were asked to show their level of acceptance of the benefits. The data collected from the respondents is as tabled thus:

Table 4.3. Benefits of the Internet services/Facilities to Academic Librarians and Library and Information Science Lecturers

S/N	Types of Benefit	Group	Type of Response					Mean	SD	Grand Mean	Remark
			SA (5)	A (4)	U (3)	D (2)	SD (1)				
1.	Helps Library and information Science Academics to know how to use the ***www*** to enhance their job performance.	**1**	74	26	-	15	7	4.189	1.262	**4.121**	**A**
		2	34	29	-	9	4	4.053	1.188		
2	The www facilitates learning/teaching new developments in Library Science courses/discipline.	**1**	79	25	-	11	7	4.295	1.204	**4.121**	**A**
		2	38	18	-	18	2	3.947	1.305		
3	Search for factual Information in the net helps in answering *specific questions* that increase one's capability for problem solving.	**1**	71	28	-	14	9	4.131	1.304	**4.053**	**A**
		2	33	27	-	13	3	3.974	1.222		
4	The use of Internet helps by providing orientation on a new topic such as starting a new research topic	**1**	69	33	-	17	3	4.213	1.144	**4.205**	**A**
		2	40	25	-	8	3	4.197	1.132		

S/N	Types of Benefit	Group	Type of Response					Mean	SD	Grand Mean	Remark
			SA (5)	A (4)	U (3)	D (2)	SD (1)				
5	Internet has become the most important information source for research.	**1**	14	66	-	37	5	4.295	0.840	**3.917**	**A**
		2	11	43	-	20	2	3.539	1.113		
6	Using Internet has reduced the time spent on using printed information resources.	**1**	17	81	2	20	2	3.746	0.950	**3.775**	**A**
		2	13	47	5	10	1	3.803	0.924		
7	Fast research update from the net improves one's creativity.	**1**	18	17	2	58	27	2.516	1.368	**2.331**	**D**
		2	3	8	4	43	18	2.145	1.029		
8	Saving time and increasing produc-tivity are some of the valuable benefits of using the Internet.	**1**	29	67	-	19	7	3.754	1.152	**3.851**	**A**
		2	27	36	-	8	5	3.947	1.176		
9	The quality and quantity of publication have improved tremendously as a result of the use of Internet.	**1**	63	39	-	13	7	3.811	1.326	**3.952**	**A**
		2	38	24	-	11	3	4.092	1.202		
	Mean of Means	**1**						**3.883**	**1.172**	**3.814**	**A**
		2						**3.744**	**1.143**		

NOTE:

Group 1	=	*Academic Librarians*
Group 2	=	*Library and Information Science Lecturers*
N_1	=	*Number in Group 1 (122) Academic Librarians*
N_2	=	*number in Group 2 (76) Library and Information Science Lecturers*
Cut-off Point	=	*3.00 (Mean of the 5-point Scale)*
A	=	*Agree*
D	=	*Disagree*

The table 4.3 above shows an overwhelming response on the usefulness of the Internet facilities/services by library and information science academics. The respondents agreed with all, except one, of the items relating to the usefulness of the facilities to them.

A cursory look at the usefulness of the facilities/services to the library and information science academics studied shows that, apart from using the www to enhance the overall performance of their jobs, the library and information science academics also use the www to specifically enhance the teaching and learning of new developments in their discipline. Benefits (1 and 2) each had mean scores of 4.121. Closely following them are 4 and 3, which had mean scores of 4.053 and 4.205. This implies that, the Internet is useful to the academics because it provides them with orientation on new topics and also helps in answering specific questions that increase their capability for problem solving.

The table further shows that, the usefulness of the Internet among the academics could be seen in the improved quality and quantity of publication ($\bar{X}$ =3.952). Besides, the Internet has been adjudged to be the most important source of research information, it saves time and increases productivity; and the Internet is beneficial because it reduces pressure on printed information. These items have mean scores of 3.917, 3.851and 3.775 respectively.

These benefits of the Internet to library and information science academics correspond with the position of Oniyide (1998) that, the Internet has made reference services and information resources to move away from the conventional form such as textbooks to electronic format such as electronic encyclopedia. The beneficial results of Internet use confirm the remarks of Neir (1999) that libraries of educational

and research institutions in the developed countries and the developing nations are being connected to the Internet because of the enormous benefits of the system. The benefits of Internet use outlined above have proved the view of Daniel (2000) that, the Internet has become the single most powerful library and information science tool that has ever existed. Daniel also maintains that with the emergence of digital libraries and electronic journals, the Internet has become an inseparable part of the library.

However, the respondents did not agree with the assertion that the use of the Internet improves their creativity because the item had a mean score of 2.331, which is below the cut-off point of 3.00. This position is supported in that intelligence is a concept that is difficult to explain how it comes about. Besides, there is paucity of evidence to support direct relationship between Internet use and intelligence hence the respondents found it objectionable.

Therefore, it could be said that Internet use among library and information science academics in Nigerian universities has far-reaching benefits to the users, the students and other clients. The Internet is, being used in a variety of ways to improve teaching, learning, research and associated academic activities in the institutions. Hence the overall mean of the respondents on the usefulness of the Internet is 3.814, which is in the acceptance region of the five-point scale adopted by the study.

4.2.4 Preference for Internet Service Use among Library and Information Science Academics

The researcher provided the respondents with the following clusters of Internet uses from which they were required to choose the one they use most:

a) Information Retrieval Services *(i.e. using the Internet for receiving news, accessing electronic journals, for downloading purposes, etc.*
b) Information Search Service *(for web browsing, accessing library sites, updating websites, for searching and obtaining data, for research and publications, etc).*
c) Communication services *(for discussions, sending e-mails, making contacts, phoning, faxing, etc.*
d) Multimedia Information Services *(e.g. telnet connections, video conferencing, etc)*

The data collected from the respondents with regard to the Internet services is as tabled below:

Table 4.4: Preference for Internet Services Use Among Academic Librarians and Library Information Science Lecturers

S/N	Internet services	Type of Respondents				Rating
		Academic librarians		Library Science Lecturers		
		No	%	No	%	
1.	Information Retrieval Services	11	9	4	5	**3**
2.	Information Search Services	74	61	47	62	**1**
3.	Communication Services	31	25	23	30	**2**
4.	Multi-media Information Services	6	5	2	3	**4**
	Total	**122**	**100%**	**76**	**100**	

Based on the table 4.4 above, it is clear that the library and information science academics prefer Information search Services. This is because, 74 out of the 122 academic librarians (61%) chose information search services as the most preferred Internet services; while 47 out of the 76 library science lectures under study (constituting 62%) also preferred information search services.

Next on the scale of preference of the library and information science academics is a communication service. Thus, 31 out of the 122 academic librarian respondents (25%) chose the option. Similarly, 23 out of the 76 lecturers who make up (30%) also indicated that their next preferred Internet service is communication services.

After communication services, the respondents further indicated that they make good use of information retrieval services. This can be implied from the responses of 11 out of the 122 librarians and 4 out of 76 lecturers, (representing 9% and 5% respectively) who chose this service.

The library and information science academics indicated that they least prefer multi-media information services. This can be seen in the distribution, which indicates that only 6 (9%) out of the 122 librarian respondents indicated their likeness for the multi-media information services. In the same vein, only 4 (5%) of the 76 library science lecturers chose the option.

This preference for information search services is supported by the work of Gagnon and Krovi (2000) who conducted a related study and discovered that, the most reported applications of the Internet were searching for information/data, gathering data about a specific company, retrieving articles and reading or downloading materials.

In addition, Heron (1998) informs that, users go to the net for various purposes. The academia, for instance, may be interested in increasing efficiency of browsing on the web, identifying Internet resources useful to the professionals, practitioners and students, for facilitating course management, for sharing information among academia, for easing communication channels, etc. This revelation goes a long way to justifying why the library and information science academics in Nigerian universities prefer information search services to others.

4.2.5 Level of Satisfaction with the Provision and Use of Internet Facilities/Services

In this direction, the researchers provided the respondents with a list of areas of satisfaction with Internet use among librarians and were, therefore, requested to indicate their extent of satisfaction with the outlined satisfaction indices using the following scale:

The data collected in this regard has been tabled below:

Table 4.5: Levels of Satisfaction with the Provision and Use of Internet Facilities/Services

S/N	Level of Satisfaction	Group	Levels of Satisfaction					Mean	SD	Grand Mean	Rem.
			VH (5)	H (4)	U (3)	L (2)	VL (1)				
1.	Satisfaction derived from the availability / accessibility of the facilities/services to electronic books/ journals/other academic works without difficulty.	1	24	49	-	38	11	3.303	1.335	3.454	S
		2	18	38	-	12	8	3.605	1.297		
2.	Satisfaction derived from the location of facilities and suitability of the environment for Library and Information Science Academics.	1	19	54	-	33	16	3.221	1.352	3.519	S
		2	22	39	-	9	6	3.816	1.208		

S/N	Level of Satisfaction	Group	Levels of Satisfaction					Mean	SD	Grand Mean	Rem.
			VH (5)	H (4)	U (3)	L (2)	VL (1)				
3.	Satisfaction from the cost-effectiveness of the Internet facilities/services to the Library and Information Science Academics.	1	16	62	-	35	9	3.336	1.231	3.385	S
		2	11	41	-	18	6	3.434	1.226		
4.	Satisfaction derived from the Internet facilities/services in enhancing the services of the academics to students and other members of the University community.	1	23	47	-	28	24	3.139	1.468	1.466	NS
		2	17	29	-	17	13	3.263	1.464		
5.	Satisfaction derived from using the Internet to anticipate problems and develop solutions in advance.	1	11	16	4	64	27	2.344	1.218	2.284	NS
		2	5	10	6	31	24	2.224	1.218		
6.	Satisfaction derived from accessing information worldwide thereby making the academics to be current and more sensitive to the needs of their profession and their students/the University community.	1	26	68	-	21	7	3.697	1.156	3.743	NS
		2	21	39	-	11	5	3.789	1.192		
	Mean of Means							**3.173** **3.355**	**1.293** **1.268**	**3.264**	S

NOTE:

Group 1	=	*Academic Librarians*
Group 2	=	*Library and Information Science Lecturers*
N_1	=	*Number in Group 1 (122) Academic Librarians*
N_2	=	*number in Group 2 (76) Library and Information Science Lecturers*
Cut-off Point	=	*3.00 (Mean of the 5-point Scale)*
S	=	*Satisfied*
NS	=	*Not satisfied*

It is evident from 4.5 table above that library and information science academics derive high satisfaction in the use of Internet to access information worldwide. This helps them to be current and more sensitive to the needs of their profession and their students as well as the university community. This item has the highest mean score of 3.743.

The library and information science academics also derive high level of satisfaction from the availability and location of Internet facilities in their libraries and/or departments. ($\bar{X}$ 3.519). This is followed by high Level of satisfaction derived from the availability/accessibility of the facilities/services to electronic books/ journals/other academic works without difficulty (with a mean of 3.454) which is clearly above the cut-off point of 3.00 mean score.

Furthermore, the respondents indicated that they derive high level of satisfaction from the cost-effectiveness of the Internet facilities/services to the Library and Information Science Academics as the item (3) was scored 3.358 on a five-point scale indicating its popularity with the respondents.

However, the library and information science academics expressed low level of satisfaction from the Internet facilities/services for enhancing their services to students and other members of the University community (item 4). Besides, they derive low satisfaction from Internet use in the area of anticipating problems so as to develop solutions in advance (item 5). These items have low mean scores of 1.466 and 2.284 respectively. Hence they represent the areas of the dissatisfaction of the respondents with the use of the Internet facilities/services.

The above responses on the levels of satisfaction with Internet use have several facets. Similar discoveries were reported by Bruce (1997) that, satisfaction

is a complex, multi-faceted concept, which beats one's imagination anytime it is raised. For instance, when asked how satisfied a user was with the Internet as a way to "communicate," "learn new things," "be more efficient," "get information," etc. different groups of respondents were more satisfied with one item or the other against the popular uses of the net.

4.2.6 Factors Affecting Internet Use by Library and Information science Academics

The researcher reviewed and compiled a list of factors that militate against Internet use. Their responses are as shown below:

Table 4.6 Factors Affecting Internet Use

S/N	Factors	Group	Types of response					Mean	SD	Grand Mean	Rem.
			SA (5)	A (4)	U (3)	D (2)	SD (1)				
1.	Old and unreliable local hardware.	1	33	49	-	31	9	3.541	1.325	**3.475**	**A**
		2	12	29	1	10	15	3.408	1.507		
2.	Unreliable networks or remote hardware	1	29	57	2	19	15	3.541	1.337	**3.402**	**A**
		2	14	32	1	18	11	3.263	1.389		
3.	Organizational limits e.g. budgetary constraints etc	1	21	59	-	37	5	3.443	1.206	**3.399**	**A**
		2	12	39	1	12	12	3.355	1.354		
4.	Connectivity costs and maintenance are prohibitive.	1	44	32	-	25	21	3.434	1.559	**3.401**	**A**
		2	19	31	-	11	15	3.368	1.495		
5.	Low bandwidth.	1	21	45	11	23	22	3.164	1.399	**3.095**	**A**
		2	18	19	9	7	23	3.026	1.591		
6.	Level of computer literacy required for effective use.	1	18	20	2	58	24	2.590	1.365	**2.381**	**D**
		2	8	5	2	38	23	2.171	1.237		

S/N	Factors	Group	Types of response					Mean	SD	Grand Mean	Rem.
			SA (5)	A (4)	U (3)	D (2)	SD (1)				
7.	Locating materials always prove to be problematic on our Internet.	1	30	46	2	26	18	3.361	1.432	**3.424**	**A**
		2	17	35	6	4	14	3.487	1.390		
8.	Lack of time for browsing.	1	13	21	6	56	26	2.500	**1.294**	**2.145**	**D**
		2	4	7	-	23	42	1.789	1.170		
9.	Encountering pages with bad HTML	1	5	26	6	60	25	2.393	1.154	**2.453**	**D**
		2	3	19	3	40	11	2.513	1.137		
10.	Having problems with my browser, e.g. freezing up, poor interface, getting disconnected, turning out.	1	11	17	3	53	38	2.262	1.284	**2.618**	**D**
		2	18	17	2	23	16	2.974	1.532		
11.	Erratic electric power supply hampers the use of the Internet.	1	68	30	-	20	4	4.131	1.226	**3.941**	**A**
		2	36	18	-	11	11	3.750	1.524		
12.	I am not properly trained in the use of Internet to enhance out productivity.	1	24	15	-	53	30	2.590	1.476	**2.282**	**D**
		2	3	17	1	9	46	1.974	1.376		
	Mean of Means	1						**3.079**	**1.338**	**3.002**	**A**
		2						**2.925**	**1.391**		

NOTE:

Group 1	=	***Academic Librarians***
Group 2	=	***Library and Information Science Lecturers***
N_1	=	***Number in Group 1(122) Academic Librarians***
N_2	=	***number in Group 2 (76) Library and Information Science Lecturers***
Cut-off Point	=	***3.00 (Mean of the 5-point Scale)***
A	=	***Agree***
D	=	***Disagree***

From table 4.6 above, many factors are affecting Internet use by library and information science academics. Prominent among these factors, in order of magnitude, are: erratic power supply old, unreliable hardware and problem of

locating materials on the net These responses have mean scores of 3.941, 3.475 and 3.424 respectively.

Other factors affecting Internet use as revealed by the library and information science academics are: unreliable networks or remote hardware ($\bar{X}$ = 3.402), connectivity and maintenance costs ($\bar{X}$ = 3.401), organizational limits such as budgetary constraints ($\bar{X}$ = 3.399), and low bandwidth ($\bar{X}$ = 3.161).

The prevalence of these factors is in line with the results of a similar study conducted by Oyinloye (1998) which discovered that, progress on Internet use in the public sector has been significantly slow due to some pressing problems which include erratic power supply, manpower shortage, inadequate equipment and accessories, failures from telecommunication facilities and poor government attitudes towards computerization.

In the same vein, the results of this study on the factors affecting Internet use among library and information science academics are similar to the earlier observations of Banjo (1998) who remarks that, information and communication applications in Nigerian libraries are relatively insignificant and rudimentary when viewed against global trends and developments.

The results also support those of Tiamiyu (1999) who reported from a related study on library and computerization that, the pressing factors hindering maximum utilization of the facilities include non-availability of telecommunication facilities, lack of computing infrastructure and culture, underdeveloped local information sources and database. Besides, there is general lack of computing infrastructure and culture, underdeveloped local information sources and databases, very low literacy level and restriction of universal access to information.

However, the respondents did not see training on Internet use ($\bar{X}$ =2.414) as a meaningful factor hindering Internet use in their institutions. Their position on this point may not be unconnected with the renowned self-training and development of library and information science academics in the country to catch up with modern trends in the library profession.

More so, the respondents submitted that, encountering pages with bad HTML on the net ($\bar{X}$ =2.453), level of computer literacy ($\bar{X}$ =2.578) and time for browsing ($\bar{X}$ =.599) are not pressing factors inhibiting their use of the Internet.

The decision of the library and information science academics to overlook the above factors is informed by the position of Bimber ($\bar{X}$ =2000) that, the level of one's education and income, among other factors, strongly influence his interest on the use of the Internet. Bimber added that these characteristics affect not only the types of Internet activities and searches but also the determination to improve and advance their current status. Therefore given the educational levels of the library and information science academics, there is every justification for the academics not only to create time for Internet use but to also seek for various avenues including private training arrangement for their self-improvement in the use of Internet.

4.3 Hypothesis Testing

As a by-product of the research questions the following hypotheses were tested:

4.3.1 Hypothesis One

There is no significant difference between academics librarians and library and information science lecturers on the use of Internet services.

It is agreed that both academic libraries and Library Information Science Lecturer use the internet. What the hypothesis seeks to address is where there is a significant difference in the use of the internet.

In order to test this hypothesis, the mean scores of all the academic librarians and the library and information science lecturers on the uses of the Internet were compared as shown on the table below:

Table 4.7: Cross tabulation Between Academic Librarians and Library Science Lecturers on Uses of Internet Facilities

SN	Uses	Group	Type of Response					Mean	SD	t-cal	t-ctr	Rem.
			SA (5)	A (4)	U (3)	D (2)	SD (1)					
1.	**To receive business/ professional news**	**1**	36	81	-	2	3	4.189	0.742	**0.928**	**1.96**	**A**
		2	16	56	-	3	1	4.092	0.696			
2	**For accessing electronic journals.**	**1**	41	75	3	2	1	4.254	0.663	**7.382**	**1.96**	**R**
		2	17	22	4	21	12	3.145	1.449			
3	To download software	**1**	34	82	2	2	2	4.180	0.693	**1.192**	**1.96**	**A**
		2	17	53	1	3	2	4.053	0.798			
4	For web browsing	**1**	23	78	-	18	3	3.820	0.988	**0.964**	**1.96**	**A**
		2	15	44	-	11	6	3.671	1.182			
5	For accessing library sites	**1**	24	56	2	25	15	3.402	1.340	**3.083**	**1.96**	**R**
		2	13	56	-	3	4	3.934	0.899			

SN	Uses	Group	Type of Response					Mean	SD	t-cal	t-ctr	Rem.
			SA (5)	A (4)	U (3)	D (2)	SD (1)					
6	To update my website	1	6	10	6	59	41	2.025	1.079	**0.080**	**1.96**	**A**
		2	2	5	8	38	23	2.013	0.959			
7	To search and obtain data for research and publication	1	78	21	-	16	7	4.205	1.285	**5.563**	**1.96**	**R**
		2	17	23	-	23	13	3.105	1.484			
8	For participating in discussion groups	1	6	14	-	83	19	2.221	1.008	**1.076**	**1.96**	**A**
		2	3	15	-	48	10	2.382	1.070			
9	For sending and receiving e-mail	1	83	20	-	11	8	4.303	1.246	**1.049**	**1.96**	**A**
		2	63	2	-	7	4	4.487	1.205			
10	To contact International colleagues involved in research.	1	30	38	4	42	8	3.328	1.345	**0.874**	**1.96**	**A**
		2	20	12	6	36	2	3.158	1.337			
11	To obtain routine information such as conference announcements and job vacancies.	1	19	91	4	6	2	3.975	0.733	**1.544**	**1.96**	**A**
		2	32	22	1	12	9	3.737	1.446			
12	Internet phone	1	2	2	2	86	30	1.852	0.676	**2.720**	**1.96**	**R**
		2	3	1	1	68	3	2.118	0.673			
13	Internet fax	1	3	2	2	87	28	1.893	0.725	**1.129**	**1.96**	**A**
		2	4	1	7	45	19	2.026	0.938			
14	To identify and approach experts in a field	1	17	21	6	56	22	2.631	1.337	**1.224**	**1.96**	**A**
		2	11	12	3	19	31	2.382	1.505			
15	For telnet connections	1	4	8	1	70	39	1.918	0.941	**3.486**	**1.96**	**R**
		2	11	13	-	31	21	2.500	1.428			
16	For video conferencing	1	5	6	2	62	47	1.852	0.976	**0.477**	**1.96**	**A**
		2	3	5	4	35	29	1.921	1.030			

NOTE:

Group 1	=	*Academic Librarians*
Group 2	=	*Library and Information Science Lecturers*
N_1	=	*Number in Group 1 (122) Academic Librarians*
N_2	=	*number in Group 2 (76) Library and Information Science Lecturers*
t-cal	=	*The calculated value of t-statistic*
t-ctr	=	*The critical or table value of t-statistic*
Alpha Level	=	*0.05*
A	=	*Accepted*
R	=	*Rejected*

Criterion:

Reject the null hypothesis if the calculated value of t equals or exceeds the critical value of t at 0.05 alpha level otherwise do not reject the null hypothesis.

The hypothesis testing presented on the table above show an interesting pattern. It is discovered that, even though no significant difference was found in the mean scores of the respondents on 11 out of the 16 responses, the same respondents differed significantly on the remaining 5 responses.

Precisely, the table reveals that, the respondents did not differ significantly in their scoring of their use of the Internet for: receiving news downloading software web browsing and for participating in discussion groups. Other areas where no significant difference was found among the respondents are: the use of Internet for sending and receiving e-mail to contact international colleagues involved in research for obtaining routine information for faxing purposes, for identification and approaching of experts in the field and for video conferencing.

Conversely, significant differences were found from the mean scores of the respondents on the following responses relating to Internet use: for accessing electronic journals, in accessing library sites, to search and obtain data for research and publication for making Internet phone, and the use of Internet for telnet connections.

The above analysis not withstanding, a summary of t-test analysis for the entire respondents became imperative so as to have a summary result for the first hypothesis. The overall t-test results for the 16 items is as presented below:

Table 4.8: Summary of two-tailed t-test on Internet Use Among Library and Information Science Academics

Group	No	Mean	SD	SE	df	P	t-cal	t-ctr	Remark
I	122	3.128	0.986	0.0134	196	*0.05*	5.487	1.96	Rejected
II	76	3.045	1.131	0.0109					

H_o *Rejected*

Since the computed t-statistic or (5.487) is greater that the table or critical value of t at 0.05 alpha level with 196 degrees of freedom, the first null hypothesis for the study is rejected in favour of the alternative one. This shows that, significant difference was found in the mean scoring of the uses of Internet by academic librarians and the library and information science lecturers studied.

The difference in the mean scores of the academic librarians and the library and information science lecturers may not be unconnected with the demands of their related but diametrically different schedules. For instance, whereas the academic librarian's main preoccupation is administering and managing the library, that of library and information science lecturers is basically teaching and research. In this way, this result tally with that of Day and Bartle (1998) who reported from a study on the impact of Internet as an electronic service on staff in higher education (including library and information science academics). They reported that: the academic community have accepted that electronic information sources have had an impact on their work although services currently available to the academics are not being used to their full potential and some are hardly being used at all.

4.3.2 *Hypothesis Two*

There is no significant difference between the levels of satisfaction of the academic librarians and that of library and information science lecturers on the Internet services provided to them.

Given the nature of the functions performed by academic librarians and library and information science academics using the Internet, the study investigated the extent to which they are satisfied with the available Internet facilities/services in the discharge of their respective duties. Consequently, the mean responses of the two groups were computed after which the t-test statistic was worked out to establish the significance of the difference in their views. This data is as shown on table 4.9 below:

Table 4.9: t-test Analysis on the Satisfaction with Provision and Use of Internet Facilities/Services

S/N	Type of satisfaction	Group	Levels of Satisfaction					Mean	SD	t-cal	t-ctr	Rem.
			VH (5)	H (4)	U (3)	L (2)	VL (1)					
1.	Satisfaction from the availability/ accessibility of the facilities/services to electronic books/ journals/other academic works without difficulty.	1	24	49	-	38	11	3.303	1.335	**1.578**	**1.96**	**A**
		2	18	38	-	12	8	3.605	1.297			

S/N	Type of satisfaction	Group	Levels of Satisfaction					Mean	SD	t-cal	t-ctr	Rem.
			VH (5)	H (4)	U (3)	L (2)	VL (1)					
2.	Satisfaction from the location of facilities and suitability of the environment for Library and Information Science Academics.	1	19	54	-	33	16	3.221	1.352	**3.161**	**1.96**	**R**
		2	22	39	-	9	6	3.816	1.208			
3.	Satisfaction from the cost-effectiveness of the Internet facilities/services to the Library and Information Science Academics.	1	16	62	-	35	9	3.336	1.231	**0.550**	**1.96**	**A**
		2	11	41	-	18	6	3.434	1.226			
4.	Satisfaction from the Internet facilities/services in enhancing the services of the academics to students and other members of the University community.	1	23	47	-	28	24	3.139	1.468	**0.583**	**1.96**	**A**
		2	17	29	-	17	13	3.263	1.464			
5.	Satisfaction from using the Internet to anticipate problems and develop solutions in advance.	1	11	16	4	64	27	2.344	1.218	**0.589**	**1.96**	**A**
		2	5	10	6	31	24	2.224	1.218			
6.	Satisfaction from accessing information worldwide thereby making the academics to be current and more sensitive to the needs of their profession and their students/the University community.	1	26	68	-	21	7	3.697	1.156	**0.543**	**1.96**	**A**
		2	21	39	-	11	5	3.789	1.192			

NOTE:

Group 1	=	*Academic Librarians*
Group 2	=	*Library and Information Science Lecturers*
N_1	=	*Number in Group 1 (122) Academic Librarians*
N_2	=	*number in Group 2 (76) Library and Information Science Lecturers*
t-cal	=	*The calculated value of t-statistic*
t-ctr	=	*The critical or table value of t-statistic*
Alpha Level	=	*0.05*
A	=	*Accepted*
R	=	*Rejected*

Criterion:

Reject the null hypothesis if the calculated value of t equals or exceeds the critical value of t at 0.05 alpha level otherwise do not reject the null hypothesis.

The above table shows overwhelmingly that the two groups of respondents did not differ significantly on 5 out of the 6 types of responses.

These are satisfaction from: availability and accessibility of the Internet to electronic books, journals and other academic works without difficulty, the cost-effectiveness of the Internet the usefulness of Internet in enhancing the services of the librarians and lecturers and the world-wide accessibility of their Internet.

Conversely, the respondents differed in their derivation of satisfaction the location and environmental convenience of the Internet facilities and services.

The overwhelming position of the respondents notwithstanding, the study went ahead to summarize the overall difference in the mean scores of the respondents as shown on the following table.

Table 4.10: Summary of two-tailed t-test on the Levels of Satisfaction Internet Use Among Library and Information Science Academics

Group	No	Mean	SD	SE	df	p	t-cal	t-ctr	Remark
I	122	3.1173	1.293	0.0134	**196**	***0.05***	**0.979**	**1.96**	**Accepted**
II	76	3.355	1.268	0.0109					

$H_{o\ Accepted}$

From the above table 4.10 above, it could be said that since the calculated value of the t-test statistic is not equal to the table or critical value of t at 0.05 alpha levels with 196 degrees of freedom, the null hypothesis is hereby accepted. This denotes that the academic librarians and the library and information science lecturers do not differ significantly in their levels of satisfaction derived from the use of the Internet facilities/services.

4.3.3 Hypothesis Three

There is no significant difference between academic librarians and library and information science lecturers on the factors affecting their use of Internet.

This hypothesis was informed by the realization of the fact that certain factors could affect Internet use thereby inhibiting the maximum satisfaction that could have been derived from the facilities/services. These factors have to be isolated and eliminated in order to enhance Internet use among library and information science academics.

In order to test the hypothesis, the researcher computed the mean scores of the two groups of respondents on the factors that hinder Internet use. Thereafter, the t-test statistic was applied on the two independent means to arrive at the significance in their mean responses as shown below:

Table 4.11: Factors Affecting Internet Use Among Academic Librarians and Library and Information Science Academics

S/N	Factors	Group	Types of Responses					Mean	SD	t-cal	t-ctr	Rem.
			SA (5)	A (4)	U (3)	D (2)	SD (1)					
1.	Old and unreliable local hardware.	1	33	49	-	31	9	3.541	1.325	**0.657**	**1.96**	**A**
		2	12	29	1	10	15	3.408	1.507			
2.	Unreliable networks or remote hardware	1	29	57	2	19	15	3.541	1.337	**1.414**	**1.96**	**A**
		2	14	32	1	18	11	3.263	1.389			
3.	Organizational *limits e.g.* budgetary constraints etc	1	21	59	-	37	5	3.443	1.206	**0.480**	**1.96**	**A**
		2	12	39	1	12	12	3.355	1.354			
4.	Connectivity costs and maintenance are prohibitive.	1	44	32	-	25	21	3.434	1.559	**0.297**	**1.96**	**A**
		2	19	31	-	11	15	3.368	1.495			
5.	Low *bandwidth.*	1	21	45	11	23	22	3.164	1.399	**0.645**	**1.96**	**A**
		2	18	19	9	7	23	3.026	1.591			
6.	Level of computer literacy required for effective use.	1	18	20	2	58	24	2.590	1.365	**2.381**	**1.96**	**R**
		2	8	5	2	38	23	2.171	1.237			
7.	Locating materials always prove to be *problematic on* our Internet.	1	30	46	2	26	18	3.361	1.432	**0.614**	**1.96**	**A**
		2	17	35	6	4	14	3.487	1.390			
8.	Lack of time for browsing.	1	13	21	6	56	26	2.500	1.294	**3.931**	**1.96**	**R**
		2	4	7	-	23	42	1.789	1.170			
9.	Encountering pages with bad HTML	1	5	26	6	60	25	2.393	1.154	**0.722**	**1.96**	**A**
		2	3	19	3	40	11	2.513	1.137			

S/N	Factors	Group	Types of Responses					Mean	SD	t-cal	t-ctr	Rem.
			SA (5)	A (4)	U (3)	D (2)	SD (1)					
10.	Having problems with my browser, e.g. freezing up, poor interface, getting disconnected, and turning out.	1	11	17	3	53	38	2.262	1.284	**4.042**	**1.96**	**R**
		2	18	17	2	23	16	2.974	1.532			
11.	Erratic electric power supply hampers the use of the Internet.	1	68	30	-	20	4	4.131	1.226	**1.951**	**1.96**	**A**
		2	36	18	-	11	11	3.750	1.524			
12.	I am not *properly* trained in the use of Internet to enhance out productivity.	1	24	15	-	53	30	2.590	1.476	**2.955**	**1.96**	**R**
		2	3	17	1	9	46	1.974	1.376			

Group 1	=	***Academic Librarians***
Group 2	=	***Library and Information Science Lecturers***
N_1	=	***Number in Group 1 (122) Academic Librarians***
N_2	=	***number in Group 2 (76) Library and Information Science Lecturers***
t-cal	=	***The calculated value of t-statistic***
t-ctr	=	***The critical or table value of t-statistic***
Alpha Level	=	***0.05***
A	=	Accepted
R	=	Rejected

Criterion:

Reject the null hypothesis if the calculated value of t equals or exceeds the critical value of t at 0.05 alpha levels otherwise do not reject the null hypothesis.

Based on the above t-test analysis, therefore, it could be seen that, the academic librarians and library and information science academics were unanimous in scoring most of the factors affecting their use of the Internet.

Specifically, the respondents did not differed significantly in their mean scores on the assertions that: The Internet facilities are old and unreliable local hardware; the Internet use is characterized by unreliable networks or remote hardware; that organizational limits e.g. budgetary constraints etc. inhibit Internet use and that connectivity costs and maintenance of the Internet facilities/services is simply prohibitive.

Similarly, the respondents did not differ significantly in their scoring of the problem of low bandwidth in Internet use, difficulty in locating materials on the net, encountering pages with bad HTML and erratic power supply as factors affecting Internet use among the library and information science academics.

The above factors inhibiting Internet use rhyme with the findings of Day and Bartle (1998) who conducted a related study on the impact of Internet as an electronic information service, using the staff of higher education in the United Kingdom. They reported that, the Internet facilities and services in the institutions are not been put to full use due to factors, which include technical and networking difficulties. They added that, the major drawback that all the academic staff pointed to with respect to Internet use was the speed at which information could be obtained due to technical hitches. This makes searching for information on the Internet a much more complex task with the likelihood, that the information being sought may not be found.

The table 4.11 above reveals that, the respondents were not unanimous in their scoring of a few factors relating to their use of Internet. For instance, they differed significantly in their scoring of the level of computer literacy level required of them to effectively use the Internet facilities/services. They also differed on having problems

during browsing, the availability of time for browsing, and their training needs for Internet use.

The disparity in the scoring of these factors is in line with the report of the study conducted by Becker (1998) who studied Internet use among teachers in the United States of America. The study reported on the variations in Internet use and perceived values by the teacher's level of Internet success that many factors come into play. These factors, which the study pointed out are deeply rooted in the experience and expertise, include the technology background of the academics. This in turn has to do with the self-reported computer competencies of the academics, duration of computer and Internet use, professional background, educational background, school support for teaching using technology, formal staff development, informal contacts among teachers, school provided computer resources, and pedagogical beliefs and practices, among other things

In a related vein, Udo (1998) reported that, funding computerization and Internet use, staff training and development for the unfolding technologies, and the attitudes of the librarians themselves are some of the major problems relating to computerization of libraries in the Nigeria. All these inform the few differences in the mean scores of the two groups of respondents on the factors affecting their use of the Internet.

Based on the above differing positions of the respondents on the factors affecting their use of Internet, the need arose for a summarize response. Consequently, the researcher applied the t-test analysis on all the respondents as shown below:

Table 4.12 Summary of two-tailed t-test on Factors Affecting Internet Use Among Library and Information Science Academics

Group	No	Mean	SD	SE	df	p	t-cal	t-ctr	Remark
I	122	3.079	1.338	0.0134	**196**	***0.05***	**0.043**	**1.96**	**Accepted**
II	76	2.925	1.391	0.0109					

$H_{o\ Accepted}$

In line with the above table 4.12, it could be said that, since the calculated value of t is not up to the table or critical value of t at 0.05 alpha level with 196 degrees of freedom, the third hypothesis is accepted. Thus, no significant difference was generally found in the mean responses of the academic librarians and the library and information science lecturers on the factors affecting their use of Internet facilities/services for discharging their duties and responsibilities.

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter describes the summary of the findings, conclusion and the recommendations made to overcome the problem under investigation.

5.1 Summary of the Study

It would be recalled that the paucity of studies on utilization of Internet facilities among library and information science academics in Nigerian universities necessitated this study. Using six research questions and three hypotheses, data was collected from 103 academic librarians and library and information science lecturers in seven universities with Internet in their library science department and/or their libraries. The data was treated using frequency distribution tables, percentages, and mean scores while the hypotheses were tested using t-test statistic.

5.2 Summary of Findings

Based on the presentation and analysis of data, the following are findings of the study:

1. The study found out that, the Internet/facilities available in the library and information science departments and/or university libraries for use by library academics include e-mail, www, Internet chat facilities, Internet discussion groups, Internet newsgroup, and, downloading FTP (facilities). Conversely, Internet phone, telnet, Internet phone, video

2. The library and information science academics utilize the Internet services/facilities in a variety of ways. These include the use of Internet for receiving news, for accessing electronic journals, for downloading materials, web browsing, accessing library sites and for searching and obtaining data for research purposes. Other uses of the Internet among the academics include: for sending and receiving e-mail, contacting international colleagues for research, and for obtaining routine information. Unfortunately, the academics sparingly use the Internet to update their websites, for participating in discussion groups for making Internet phone and fax, to identify and approach experts, for telnet connections nor for video conferencing.

3. The academics find the Internet facilities/ services beneficial in a variety of ways. These include using the Internet to enhance their job performances, for teaching / learning new developments in their field, for providing answers to specific questions that increase their problem –solving capabilities, and for getting orientation on new topics. Also, the Internet is useful to the academics because it has reduced the time they spend on using printed information resources, increases their productivity that can be partly seen in the improved quality and quantity of publications. All the same, the academics do not benefit much from the Internet in the areas of making fast research update from the net to improve their creativity.

4. On the preference of the library and information science academics concerning the Internet facilities/ services, it was found that, they first

of all prefer information search services. These have to do with using the Internet for receiving news, accessing electronic journals, and for downloading purposes. Next on their scale of preference is communication services such as e-mail, discussions, phoning, faxing, among others. After communication services come information retrieval services. This involves the use of the net for receiving news, accessing electronic journals and for downloading materials. Finally, the study found out that multi-media information services involving video conferencing, telnet connections, etc. are the least preferred Internet services in the opinion of the library and information science academics.

5. In the area of satisfaction with provision and use of Internet facilities/ services by the academics, it was found that they derive high satisfaction in the availability and accessibility of their Internet facilities to electronic journals and related publications which make them very current and more responsive to their calling. Besides, they are highly satisfied with the location and suitability of the environment where the Internet facilities are situated in addition to the cost-effectiveness of the Internet. However, low level of satisfaction was derived from the use of the Internet to enhance some unconventional services to students and other university members, as well as to anticipate problems thereby developing solutions in advance.

6. With reference to the factors inhibiting Internet use, it was found that, old and unreliable hardware, network problem, organizational limits,

connectivity costs and maintenance problems are exerting negative effect on Internet use. Other problems include low bandwidth, searching and locating some materials on the net and the recurring problem of erratic power supply in the country.

7. Significant difference was found in the use of Internet facilities and services among academic librarians and the library information science lecturers. This was very pronounced in the use of the Internet for accessing electronic journals, and for accessing library sites, for searching and obtaining data for research purposes. Where significant difference was noticed meant that one variable plays prominent role than the other. Other areas of disagreement include the use of the net for making phones, and for telnet connections.

8. No significant difference was found in the level of satisfaction derived by the academic librarians and the library science lecturers on the use of the Internet for executing their duties except on the area of location and suitability of the environment of the Internet.

9. Lastly, the two groups of academics were unanimous in identifying the factors that inhibit Internet use in their institutions except on the level of computer literacy required for effective use of the Internet, and on a technical area of using the browser.

5.3 Conclusion

In line with the findings of the study, the study concludes that, Internet use is unavoidable for library and information science academics due to the unquantifiable benefits derived from it.

However, Internet use is still at rudimentary stage and most universities do not have it at all. Internet has not been given the prominence it deserves among library and information science academics even in this 21st century.

Thus, the activities of library and information science academics are frustrated and they cannot be equated with their counterparts in other parts of the world due to their limited use of the Internet. This situation is further compounded by numerous problems including erratic power supply, obsolete facilities/equipment, connectivity and maintenance costs.

5.4 Recommendations

Based on the findings and conclusions of the study, the following recommendations have been put forward to improve Internet use among library and information science academics in Nigerian universities.

1. Modern Internet facilities should be provided, as a matter of urgency, in all the library and information science departments and university libraries. This will make the academic librarians and the library and information science lecturers to be up to date and more responsive to the challenges of their profession in this computer age. The present situation whereby only seven out of the seventeen universities offering

library and information science have Internet facilities for use by the academics is very discouraging and should be reverted without further delay.

2. Steps should be taken to ensure that the academics make the most use of the Internet facilities/services. Further training and retraining on Internet use is a veritable way of achieving this noble cause. Thus, workshops on the Internet use can be organized by the universities for the benefit of the entire university community. These workshops should lay much emphasis on perfecting all aspects and areas of Internet use among the academics.

3. To maximize the benefits of Internet use among the academics, it is not out of place to recommend that they procure their personal computers and get connected to the net. This will bring about so many other benefits beyond relying on the facilities in the department or the library.

4. More funds should be made available by the university authorities for maintaining the Internet facilities. The present situation whereby the institutions sometimes install but fail to maintain or pay service providers is rather counterproductive and should be stopped.

5. Stand-by facilities such as solar system, generating set etc should be acquired and put in place to ensure smooth Internet use by the academics. The institutions should not rely solely on public power supply for the Internet as the situation is getting worse every passing day.

6. In order to enhance Internet use by the academics, lecturers should use the Internet to teach their students. Similarly, the academic librarians should also use the Internet to attend to their clients in the most desirable manner.

5.5 Suggestions for Further Research

In the course of the investigation, the researcher came across some areas, which are related, but not within the scope of the study. For advancement of Internet use among academics, therefore, further studies need to be undertaken in the following areas:

1. Strategies for incorporating Internet use in the curriculum of library and information science.
2. Strategies for enhancing teachers' use of Internet for instruction in Nigerian universities.
3. A study of the usage and attitudes to electronic journals among academics.
4. Replication of this study at some other time or place.

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APPENDIX 1

Department of Library and Information Science,
Ahmadu Bello University,
Zaria.

14th January, 2004

Dear Respondent,

QUESTIONNAIRE ON UTILIZATION OF INTERNET FACILITIES AMONG IBRARY AND INFORMATION SCIENCE ACADEMICS IN NIGERIAN UNIVERSITIES

I am a Post-graduate student of the above Department and I am undertaking a study on: "Utilization of Internet Facilities Among Library And Information Science Academics In Nigerian Universities." This study has been embarked upon to assess how Library and Information Science Academics in Nigerian Universities use the Internet in discharging their duty.

You are, therefore, selected as one of the respondents for the study. You should, therefore, note that any information provided will be treated with utmost confidentiality and used only for this academic purpose.

Thank you,

Yours faithfully,

ONI, F.A. (Mrs)
Researcher

APPENDIX 2

QUESTIONNAIRE

SECTION A: PERSONAL BACKGROUND INFORMATION

1. Name of University.....

2. Faculty.....

3. Department.....

4. Status: Lecturer ☐ Academic Librarian ☐

5. Qualification: B.Sc/B.A. ☐ BLIS ☐
   MLIS/MLS ☐ Ph.D. ☐

   Others, specify: .....

6. Your field of specialization.....

7. Your years of working experience .....

8. SECTION B: AVAILABLE INTERNET SERVICES IN THE UNIVERSITY LIBRARIES AND LIBRARY AND INFORMATION SCIENCE DEPARTMENTS

Please tick ( ) in the appropriate space to show which Internet facilities/services are available in your University Library and Library and Information Science Department.

	Available	Not Available
a) Electronic Mail (e-mail)		
b) World Wide Web (www)		
c) Internet Chat Facilities		
d) Internet Discussion Groups		
e) Internet Newsgroup		
f) Telnet services		

FACULTY LIBRARY

Available	Not Available

g) FTP (Downloading)

h) Internet Phone

i) Video conferencing facilities

j) Teleconferencing facilities

k) Internet fax.

l) **Others (specify):**

.....

9.SECTION C: USES OF INTERNET FACILITIES BY ACADEMIC LIBRARIANS AND LIBRARY INFORMATION SCIENCE LECTURERS

How do you agree with the following as being the ways Internet Facilities are utilized by Academic Librarians and Library Science Lecturers in your Institution?

	SA	A	U	D	SD
a) To receive business/professional news					
b) For accessing electronic journals.					
c) To download software					
d) For web browsing					
e) For accessing library sites					
f) To update my website					
g) To search and obtain data for research and publication.					
h) For Participating in discussion groups					
i) For sending and receiving e-mail					
j) To contact International colleagues involved in research.					
k) To obtain routine information such as conference announcements and job vacancies.					
l) Internet phone					
m) Internet fax					
n) To identify and approach experts in a field					
o) For Telnet connections					
p) For video conferencing					
q) Others (specify)					

NOTE: SA = Strongly agree, A = Agree, U = Undecided, D = Disagree, SD= Strongly disagree

10. SECTION D: USEFULNESS OF INTERNET SERVICES/ FACILITIES TO ACADEMIC LIBRARIANS AND LIBRARY AND INFORMATION SCIENCE LECTURERS

To what extent do you agree with the following statements as being the usefulness of the Internet facilities/services in your Institution to Academic Librarians and Library and information Science Lecturers in meeting their information needs:

	SA	A	U	D	SD
a) Helps Library and information Science Academics to know how to use the *www* to enhance their job performance.					
b) The www facilitates learning/teaching new developments in Library Science courses/discipline					
c) Search for factual Information in the net helps in answering specific questions that increase one's capability for problem solving.					
d) The use of Internet helps by providing orientation on a new topic such as starting a new research topic					
e) Internet has become the most important information source for research.					
f) Using Internet has reduced the time spent on using printed information resources					
g) Fast research update from the net improves one's creativity.					
h) Saving time and increasing productivity are some of the valuable benefits of using the Internet.					
i) The quality and quantity of publication have improved tremendously as a result of the use of Internet.					
j) Others specify):.....					

11. SECTION E: PREFERENCE FOR INTERNET USE

Please tick in the appropriate box to indicate the Internet Service you most prefer for discharging your duties.

S/N	*Internet service*	*Preference*
i.	***Information Retrieval Services*** (i.e., using the Internet for: receiving business/professional news, For accessing electronic journals, for downloading software, etc.	
ii.	***Information Search Services*** (for web browsing, accessing library sites, updating websites, for searching and obtaining data for research and publication, etc.	
iii.	***Communication Services*** (for participating in discussion groups, sending e-mail, contacting international colleagues involved in research, to obtain routine information such as conference announcements and job vacancies, for making Internet phone, Internet fax and to identify and approach experts in a field, etc.)	
iv.	***Multimedia Information Services*** (such as telnet connections, video conferencing, etc.)	

SECTION F:SATISFACTION WITH PROVISION AND USE OF INTERNET FACILITIES/SERVICES

Tick to indicate your level of satisfaction with the provision and use of internet facilities/services by Library and Information Science Academics in your Institution.

	VH	H	U	L	VL
a) Library and Information Science Academics derive satisfaction from the available Internet services because they are able to have access to books/journals/other academic works without difficulty.					
b) The availability of the facilities in the Library and/or Department makes the environment more conducive for Library and Information Science Academics to derive satisfaction from its use.					
c) The Library and Information Science Academics derive satisfaction from Internet use in the Library and/or Department because it is cost-effective.					
d) There is satisfaction among Library and Information Science Academics because the Internet facilities/services enhance their services to students and other members of the University community.					
e) Library and Information science academics derive satisfaction from the Internet because it makes them to anticipate problems and develop solutions in advance.					
f) Library and Information Science Academics use the Internet to access information worldwide thereby making them to be current and more sensitive to the needs of their profession and their students/the University community.					
g) Others, specify:					

NOTE: Very High= (VH) High= (H) Undecided=(U) Low=(L) Very Low=(VL)

13. SECTION G: FACTORS AFFECTING INTERNET USE

Tick to indicate your level of acceptance of the following as being the factors inhibiting effective use of the Internet in your organization.

	SA	A	U	D	SD
a) Old and unreliable local hardware					
b) Unreliable networks or remote hardware					
c) Organizational limits e.g. budgetary constraints etc					
d) Connectivity costs and maintenance are prohibitive.					
e) Low bandwidth.					
f) Level of computer literacy required for effective use.					
g) Locating materials always prove to be problematic on our Internet.					
h) Lack of time for browsing.					
i) Encountering pages with bad HTML					
j) Having problems with my browser, e.g. freezing up, poor interface, getting disconnected, and turning out.					
k) Erratic electric power supply hampers the use of the Internet.					
l) I am not properly trained in the use of Internet to enhance out productivity.					